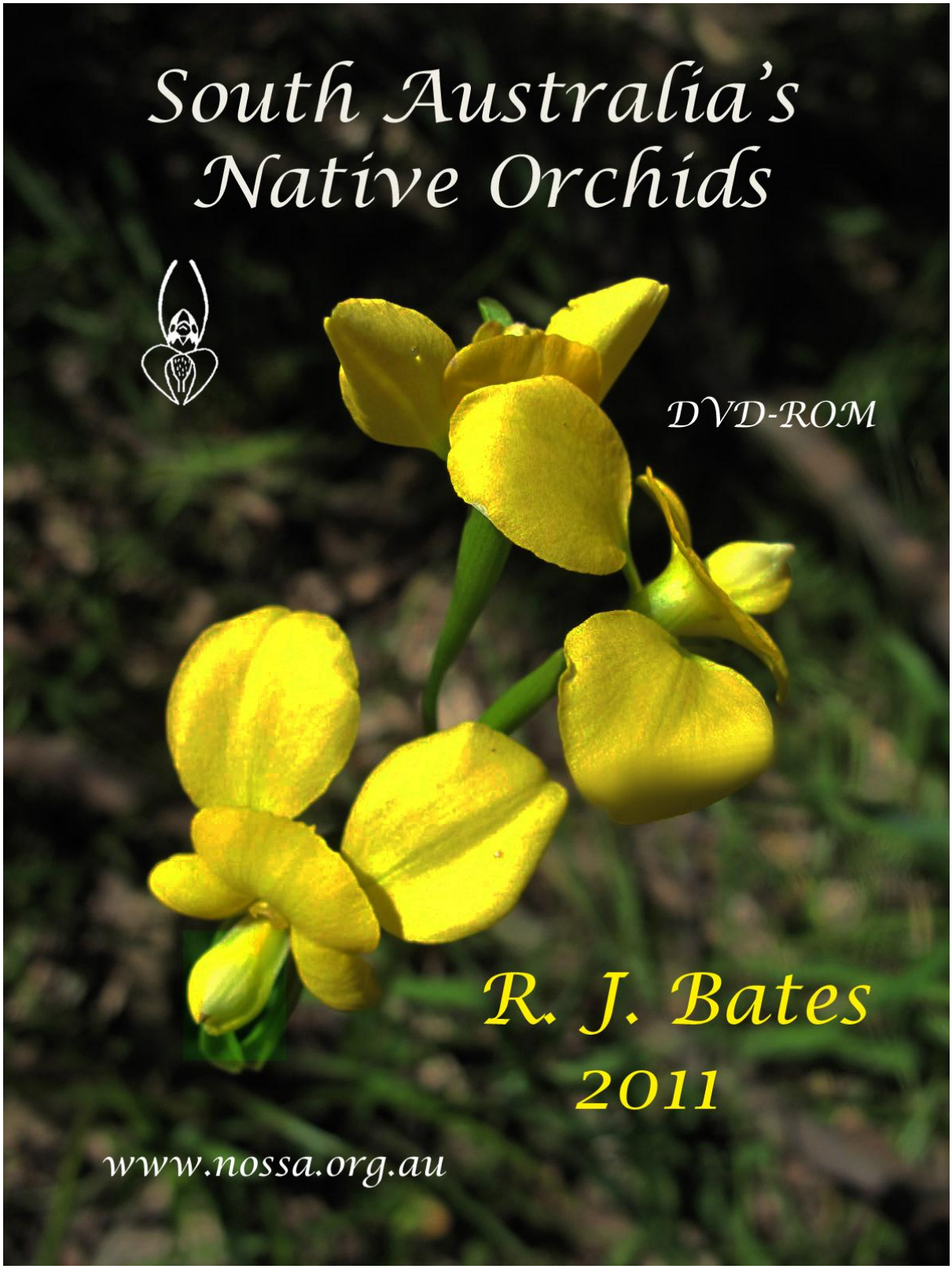

South Australia's
Native Orchids
DVD-ROM
R. J. Bates
2011
www.nossa.org.au

South Australia's Native Orchids

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This work is a result of the combined efforts of many people, both members and non members of the Native Orchid Society of South Australia (NOSSA) Incorporated, Threatened Plant Action Group SA (TPAG), Australian Native Orchid Society (ANOS) Vic, Nature Conservation Society, The Friends of SA Parks and staff at the Plant Biodiversity Centre, Hackney Road, Adelaide. Interstate and country people have all assisted in bringing this project to fruition. Knowledge, photographs, scanning and other editorial assistance have all been provided on a voluntary basis. Many people both in the past and currently have contributed unstintingly of their time, knowledge and resources and so to everyone who has assisted we would give a heartfelt thank you.

Disclaimer

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Remember: Only ever photograph the orchid, do not pick the flower.

PART ONE

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South Australia's Native Orchids

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South Australia's Native Orchids

Preface

This edition of 'South Australia's Native Orchids' builds on the many editions of 'Orchids of South Australia' produced by R. J. Bates over many years.

In this edition, layout and the extent and reliability of the scientific information included help the user to gain maximum information and enjoyment in the use of the disk, either as a Field Guide using a computer in the field, or as a tool for reflective, in depth study. It is a work in progress. The sub-editing committee of the Native Orchid Society of South Australia Incorporated (NOSSA) undertook to produce this edition in time for NOSSA's Spring Show in September of 2011. This edition includes work to date completed within time constraints of volunteers working on the project and to meet production deadlines.

Australian native orchids are a fascinating, varied and complex group of plant species found across most of the continent. In South Australia their habitat ranges from the edges of the desert to the wet swampy areas of the South East of the state. Their flowers vary from spectacular, brightly coloured 'stars' in the forest undergrowth to almost insignificant, well camouflaged structures hidden in leaf litter. The strategies that these plants have developed to survive and reproduce are extremely varied and often highly evolved. However the very specific nature of many of the survival strategies employed by the different species makes them particularly vulnerable to threats to their ongoing survival.

There is still much to learn about South Australian orchids. Members of NOSSA are continuing to locate, photograph and document all South Australian native orchids to assist in developing strategies for their long-term protection. The information collected by NOSSA members, combined with previously published material, has been brought together in this disk publication *South Australia's Native Orchids* in a manner which can be readily expanded and up-dated as further information becomes available. Numerous previously unknown and therefore un-named species have been included following their discovery during this work.

This work has been produced as a reference for persons wanting to know more about the 350 or so orchids occurring or having occurred in South Australia. This builds on the information published in R.J.Bates & J.Z.Weber (1990) in their book *Orchids of South Australia* and includes current information for orchid enthusiasts. It does not aspire to be a flora in the strict sense and is not formatted as such. This disk is comprehensive in dealing with all of the recognised species.

South Australia's Native Orchids is designed for everyone who has an interest in orchids and wants to know more. For the first time this disk brings together a carefully research credible body of work which will meet the needs of not only the enthusiasts but also the serious researcher who requires a creditable reference work. This disk will rate with other volumes produced not only in Australia but internationally

Images and the detailed descriptions provided will assist identification. Notes included help readers gain an understanding of the complexity and beauty of South Australian native orchids.

1 Background Introduction

The growth of knowledge in relation to South Australian Native Orchids over the past two decades has been significant and it is now generally recognised that there are in excess of 350 separate species, several of which are yet to be officially described and named. Many of these species are under threat of extinction. In some cases this may only be local extinction as the species grows elsewhere in Australia but many species of South Australian native orchids are endemic to this state and therefore may be lost completely if not adequately protected.

Australian native orchids are a fascinating, varied and complex group of plant species found across most of the continent. In South Australia their habitat ranges from the edges of the desert to the wet swampy areas of the South East of the state. Their flowers vary from spectacular, brightly coloured 'stars' in the forest undergrowth to almost insignificant, well camouflaged structures hidden in leaf litter and the strategies that these plants have developed to survive and reproduce are extremely varied and often highly evolved. However the very specific nature of many of the survival strategies employed by the different species makes them particularly vulnerable to threats to their ongoing survival.

It is likely that several South Australian orchid species have become extinct since European settlement as a result of wide-spread land clearance for farming, extensive grazing of reserves, the spread of weeds and inappropriate use of herbicides. Large areas of swampy orchid habitat in our South East have been drained, other areas have become saline and the loss of numerous native animals has caused remaining areas to become choked with dense vegetation unsuitable for orchids. Changed fire regimes have also resulted in reduced diversity of orchid species in many areas.

While these threats are not unique to South Australia and a higher percentage of orchids species are threatened with extinction than in any other large plant family in the world, specific local action is required to protect our remaining species and to ensure their ongoing survival.

Identifying the policies and actions required to protect remaining South Australian orchid species will rely, to some degree, on comprehensive documentation of all the different species, their habitats and the strategies employed for their continued survival and reproduction.

South Australia's Native Orchids

How to use this Disk

The disk is written for orchidologists whose interest and knowledge range over many levels. You will be able to choose those areas of the disk most appropriate to your needs.

Part One consists of the following chapters.

Chapter 1 contains a brief history of interest in South Australia's native orchids.

Chapter 2, contains a listing of the various abbreviations used throughout the disk, description of the regions including a map, explanation of the conservation codes used, photographers names and relevant organisations.

Chapter 3 gives background informations on orchids – taxonomy or naming history with an explanation of name choices in this disk, habitats and an overview of orchid distrubition in South Australia.

Chapter 4 has information needed to recognise an orchid including labelled photographs. This is a helpful reference for developing familiarity with the individual parts of the orchid discussed in the species pages.

Chapter 5 uses typical photographs instead of a key to begin the identification process.

This will give guidance as to which would be the appropriate genus to consult for further identification. In this edition, the two weed orchids are dealt with only in this chapter.

Chapter 6 highlights the variations, irregularities and abnormalities that can occur within a species.

Chapter 7, after a general section on pollination, goes into detail concerning the known information about the individual pollinators for each of the genera. This is followed by other forms of reproduction, as well as a brief section on hybrids.

Chapter 8 has, for the history buffs, a brief summary of people and publications linked with South Australian orchids.

Section 9 examines threats to our orchids and current efforts to conserve what we have.

Chapter 10 intoduces growing and propagation of terrestrial orchids as well as techniques to reintroduce orchids to an appropriate area e.g. a linear park or a section of your own rural propery.

Part One concludes with the names of the segregate genera & their synonyms making it possible to relate to other publications; Glossary and further reading.

Part Two contains the chapters for each genus.

The species are listed in alphabetical order under the relevant genus.

Each species has a complete description with at least one accompanying photograph.

Common names are also given.

BLUE headings indicate that the species has been described in other publications.

ORANGE headings are for the undescribed species.

If you have used the Genus Photographic Guide to narrow your search to an individual genus, the detailed list in Part Two will allow you to focus on the species of your find. Sometimes species can be quite similar to each other, and identity can be uncertain. Maybe that is the time to open NOSSA's web site www.nossa.org.au, and ask your question of a NOSSA expert.

2. About this Disk

Purpose of this Disk

The aim of the project by the *Native Orchid Society of South Australia Inc (NOSSA)* in compiling this disk is to provide the most up-to-date information possible to all people wanting to know more about the 350 or so species of Australian native terrestrial orchids occurring or suspected to have occurred in South Australia.

'South Australia's Native Orchids' (electronic) is designed for amateur and professional alike – from people wanting to undertake detailed scientific research through to those keen to see and identify species when walking though any of our numerous parks or reserves. All species, including many not previously illustrated, are shown in colour photographs with detailed descriptions of both the flowers and plant and information on their distribution to assist in the identification of species and the notes included provide the current knowledge in relation to the habitat, growth, conservation status and reproduction of the different species.

The disk is designed to meet the needs of people with a wide range of interests, knowledge and skills in identifying, researching, conserving and growing native terrestrial orchids by presenting information in a standardised format and at a number of different levels. This should allow people to readily find and extract information specific to their needs.

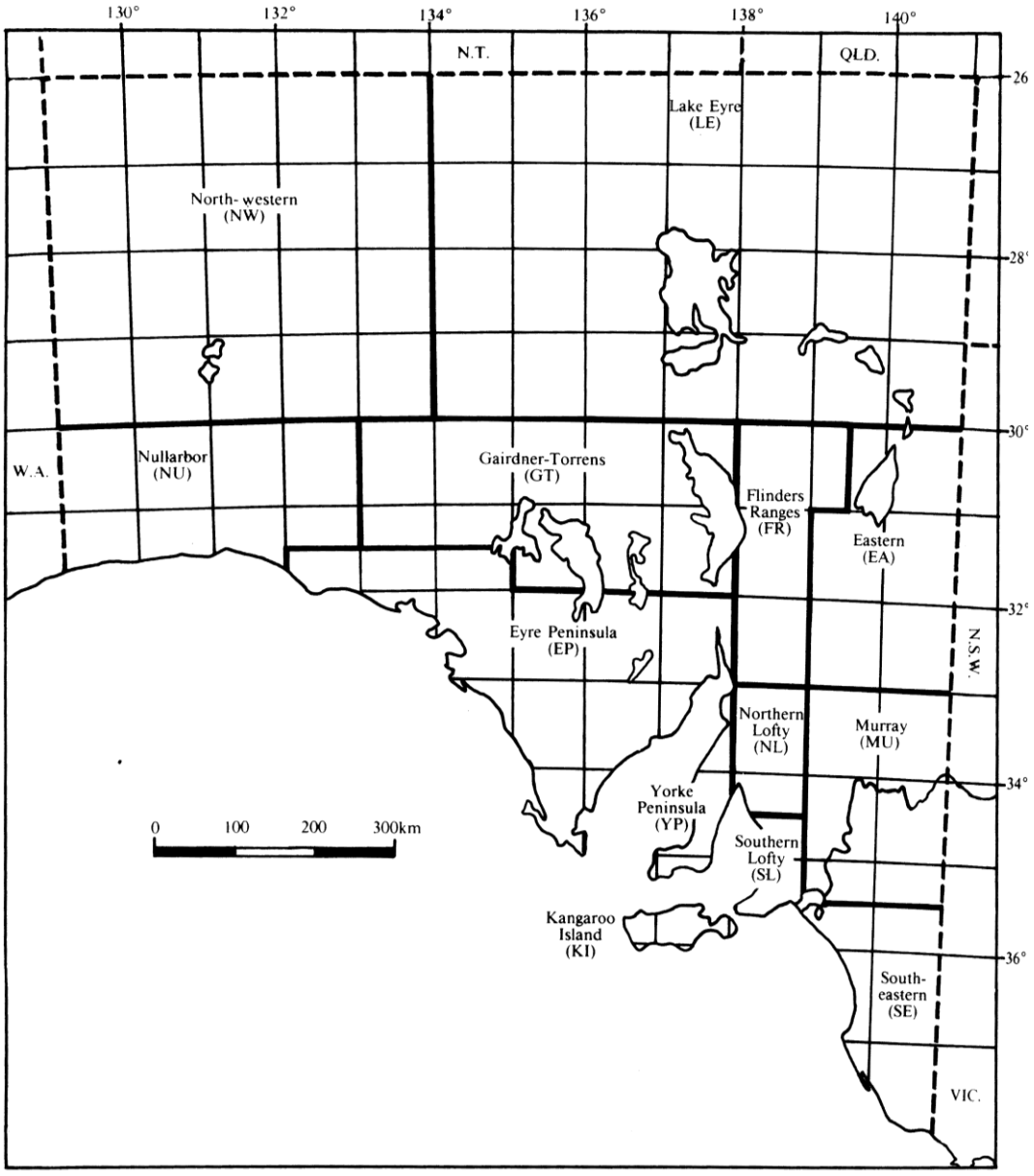
The disk summarises all previous work on South Australian orchids in an accurate and up-dated form and is a result of the combined efforts of many people, both members and non members of the NOSSA. By publishing this information in an electronic form it will be possible to readily update the data as new information becomes available and new versions will be produced as appropriate.

Abbreviations

Regions of South Australia

The information on distribution of the individual species is provided using abbreviations for the principal areas of the state. The abbreviations used and a definition of each region is provided below:

- **NW and LE** **North West and Lake Eyre** regions include a vast area of sandy desert and arid rocky landscape covering the northern half of the state, with as little as 100 mm of rain per year and an evaporation rate a hundred times that. Do not expect to find any orchids here despite the fact that one collection exists from each region. Even though the NW contains the highest altitude in the state (Mt Woodroffe) droughts are the norm!
- **NU** **Nullarbor Plain** region is a flat and featureless 'desert'. Its poor limestone soils, which do not hold water, make it very difficult for orchids and only two have ever been found here, in stunted mallee close to the coast.
- **GT** **Lake Gairdner – Lake Torrens** region. Most of this inland region is desert or salt pan and completely free of orchids these days, although one suspects there were pockets of orchids before over-grazing by rabbits and sheep. There are still a few desert species from the north and west of the Gawler Ranges and about granite monoliths like Mount Finke in the Great Victoria Desert.
- **FR** **Flinders Ranges** region is over 400 km long with a small area of higher rainfall in the southern parts which is extremely rich in orchids. The remaining area is only suitable for arid land species and a lot of walking into rugged terrain is required to find anything new!
- **EA** **Eastern Border** region to the New South Wales border, including large areas of desert with no orchids but does include the 'Olary Spur', a semi arid spur of the Northern Mount Lofty Ranges which has many 'desert orchids'. This region is only worth searching in years of above average winter rainfall!
- **EP** **Eyre Peninsula** region is the best region to see orchids of the wheat-belt; a large and diverse area with continual surprises as orchids new to science are discovered but of lower rainfall and subject to droughts so that in poor years not worth visiting. Unfortunately most of the orchid rich areas suffered over clearing and salinisation since the 1950s.
- **NL** **Northern Mount Lofty Ranges** region including the extreme southern part of the Flinders Ranges. This area must once have been an exciting place for orchids due to its vast area of native grassland and grassy woodland but it was very quickly cleared by early European settlers.
- **MU** **Murray** region including both sides of the Murray River. The western boundary over-laps with part of the Mount Lofty Ranges. This region includes some orchids requiring higher rainfall, a small area of wheat-belt orchids and a large area of dry mallee, not known for orchid diversity.
- **YP** **Yorke Peninsula** region is a wheat-belt region closer to Adelaide but very little orchid rich landscape has survived land clearance.
- **SL** **Southern Mount Lofty Ranges** region including the Adelaide Hills and Fleurieu Peninsula – perhaps the richest area for orchids in South Australia due to ever changing soils and habitat as well as regular winter-spring rainfall.
- **KI** **Kangaroo Island** region is perhaps over rated as an orchid destination as despite its high local plant endemism there are no distinctive orchid species from this region.
- **SE** **South East** region encompassing the extreme southern parts of the state adjacent the Victorian border. This is another rich orchid region and many orchids here do not occur elsewhere in the state and one would expect that most of the orchids of south west Victoria would also have occurred in the South East before European settlement.



Botanical Regions of South Australia
Scanned from Flora of South Australia, 4th Edition 1986

Other location abbreviations

- **SA** South Australia
- **WA** Western Australia
- **Qld** Queensland
- **NSW** New South Wales
- **ACT** Australian Capital Territory
- **Vic** Victoria
- **Tas** Tasmania
- **NZ** New Zealand

Other abbreviations

- **NP** national park
- **CP** conservation park
- **CR** conservation reserve
- **NFR** native forest reserve
- **sp**. a single species
- **spp**. several species
- **aff**. related or with affinities to
- **s.n.** species nov
- **ms.** manuscript
- **var.** variety

Organisations and Departments

- **NOSSA** Native Orchid Society of South Australia
- **TPAG** Threatened Plant Action Group
- **AD** State Herbarium in Adelaide
- **NCSSA** Nature Conservation Society of South Australia
- **ANOS** Australian Native Orchid Society
- **DEH** Department for Environment and Heritage, since renamed (see below)
- **DENR** Department of Environment and Natural Resources

Conservation Status

Status in Legislation Codes

At both Federal and State level, there are Acts which determine the conservation status of each individual species that are considered to be threatened. The Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) lists species under the categories of Extinct, Critically endangered, Endangered and Vulnerable. The State lists species within Schedules 7, 8 and 9 that are part of the National Parks and Wildlife Act 1972. Schedule 7 lists species that are Endangered, 8 lists species that are Vulnerable and 9 lists species that are Rare. From time to time species are added or re-assessed for their current status.

Suggested Status Codes

From his observations in the field, the author has given each species a conservation classification adapted from International Union for Conservation of Nature (IUCN) conservation codes which have been used since 1980.

Conservation Code

- **X**…Extinct, not seen for fifty years or not relocated at previously known sites despite intensive searching. Fortunately, many species previously listed as extinct have been discovered alive and well at sites far removed from the historical ones.
- **E**…Endangered, these are declining species in danger of extinction unless the factors causing their decline are addressed. Their habitat is often so drastically reduced that they have nowhere to go. Some known only from a single non-viable population are regarded as critically endangered.
- **V**…Vulnerable, these are taxa which are likely at any time to become endangered, i.e. if the only large population is wiped out by land clearance for housing or is ravaged by disease, careless misuse of herbicide, overgrazing etc. leaving only small scattered populations.
- **R**…Rare, or not in any immediate danger but surviving populations are fragmented or small or the species is not easily located.
- **K**…Unknown, as for some species occurring only after fire, therefore possibly with large populations but these are not locatable.
- **Out of danger**… i.e. previously rated but good management has seen a population explosion throughout its range. This has not happened to any South Australian orchid previously rated, although some species such as *Oligochaetochilus*, previously known only from threatened sites has since been found in large numbers in new conservation reserves.

Distribution Codes

A numeric code is used to identify the geographic range of a species which can be a factor in the risk of extinction of a species. The codes used in this publication are:

- **1**: known only from the type location
- **2**: with a distribution range less than 100 km
- **3**: species with a range greater than 100 km

Reservation Codes

A letter code is used to identify the extent to which a species is conserved within the Conservation Park, National Park and Reserves system. These categories are:

- **C**…found within a conservation park
- **A**…adequately reserved
- **I**…not adequately reserved… i.e. less than 1,000 plants known from reserves, although for some orchids requiring larger populations to remain viable this figure may be higher.
- **T**…total known population within a conservation park or reserve.

Photographs

Photographers and their abbreviations

This 2011 edition contains pictures of all species treated and these were provided by numerous NOSSA members and friends. Many people have contributed photographs for this disk. The individual photographs are acknowledged with the initials of the photographer and these are listed below in alphabetical order of surname.

Photographer Identification:

Rob Bates (RB)
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Malcolm and Cathy Houston (MH, CH)
Jeff Jeanes (JJ)
Tim Jury (TJ)
Brendan Killen (BK)
Kris Kopicki (KK)
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Joseph Lawrence (JL)
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Steve Rowe (SR)
Carol Royal (CR)
Kevin Schneemilch (KS)
Marj Sheppard (MS)
Jenny Skinner (JS)
Warren Stoutamire (WS)
David Veardsell (DB)
Trevor Wynniatt (TW)

Image Quality

It may be noted that some images used in this work are of poor quality. The reason for this is simply that although most of the common species have been recently captured on digital camera and are of high quality, many of the rarer species have not, requiring them to be scanned from old slides, some of which have become faded or were indeed blurred to begin with. A few of these were replaced with high quality pictures taken in Victoria but it was felt that as this is a work dealing with South Australian orchids a poor quality shot of a plant in South Australia would sometimes be better than a good one from Victoria!

3. Introduction to South Australian Terrestrial Orchids

Orchid Taxonomy or Naming of Orchids

Since 1990 there have been numerous changes in the separation and naming of different orchid species (orchid taxonomy). In many cases, particularly reflected by the works of Szlachetko (2002), Hopper and Brown (2001, 2004) and the ongoing work of D.L.Jones and M.A.Clements, this has involved the segregation of new genera from the old, such as *Pterostylis*, *Caladenia*, *Prasophyllum*, *Microtis* and *Chiloglottis*. In addition there have been many new South Australian species named by D.L.Jones and M.A.Clements in Canberra, by G.Carr in Melbourne and by J.Jeanes, also in Melbourne.

Though aware of this usage amongst some researchers, the Herbaria of Australia do not use the segregate genera, however NOSSA prefers to employ them as we find them practical for field work. Consequently the information in this disk is based on the segregate genera and species.

Orchid Habitats

Worldwide there are over 25,000 species of orchids in 800 genera, making the *Orchidaceae* one of the world's largest plant families. The greatest abundance of orchids is found in the tropics where the majority are epiphytes, i.e. growing in trees, or lithophytes, growing on rocks. The remaining species grow as geophytes in the soil and are termed *terrestrial orchids*. These occur from the Arctic to the sub-Antarctic being most numerous in areas with Mediterranean or temperate climates.

All South Australian orchids are terrestrial and while orchids are found over most of the southern part of the state, they are unable to grow in some of the extreme habitats to the north. These include the extensive saline habitats and the even more extensive deserts of shifting red sandhills or gibber plains. Also they extend far into the mulga plains.

As most terrestrial orchid species survive the hot summer months as dormant, aestivating underground tubers, many orchids are dependent on cool damp conditions and can only grow near the coast or in the areas where rainfall is higher and hot drying winds are less of a problem. More moist and humid micro-habits are all important to dry-land orchids.

Similarly species which can complete their life cycle quickly during the few damp winter months do well in more exposed areas such as the wheat-belt where most habitats are more open, providing daytime warmth and light for faster maturing orchids. There is a trade-off for these mostly in-land orchids which may enjoy warm daytime temperatures but must endure heavy frosts and for wheat-belt orchids it is frost tolerance rather than drought tolerance that is important.

For desert orchids it is often not so much low rainfall that determines where they grow but soil structure and fertility. Once the soil becomes unstable orchids soon disappear. In many fringe desert areas grazing by sheep and plagues of rabbits destroyed the soil crust in the late 1800s and early 1900s before myxomatosis. Dust and sand-storms saw the topsoil blow away and stable dunes become shifting dunes. As a result it is believed that desert orchid populations were severely impacted and have never recovered.

South Australia's Native Orchids

Main South Australian Orchid Habitat Types

As indicated above, South Australian native terrestrial orchids are found across most of the state except the extreme desert and saline areas of the far north. The main orchid habitats are described below:

1. Grassy woodlands

The best habitat to find orchids is in grassy woodland as their very open nature means that the mostly small orchid plants are not smothered by other vegetation. The main grassy woodland trees are eucalypts, native pines and sheoaks and some orchids are more or less restricted to just one of these. There are orchid species for example confined to South Australian blue-gum woodland, others grow only with river red-gum or under sheoaks.



RB, grassy woodland with pines beyond

2. Woodlands with shrubby understorey

In woodland with a shrubby understorey orchids are much harder to find but mostly occur on clearings or track-sides. Nevertheless after a bushfire opens up the understorey orchids may be surprisingly frequent in dense bush. One of the best habitats for orchids is shrubby woodland dominated by *Eucalyptus fasciculosa* simply because this gum-tree species is small and restricted to shallower soils, particularly on ridges where air movement is good and shrubs are sparse. This is one of the most orchid rich environments in SA.

3. Heathland

Many species of orchids are found mostly in heathland and as in the preceding habitat they may only be common after fire. Many are stimulated to flower by ethylene gas produced during a bush-fire but certainly they have less competition for space, increased nutrients, especially potassium, and more light. Good management of heathland requires regular slashing, preferably of long narrow sections which cut through many microhabitats.



RB, coastal heathland, YP

4. Rocky outcrops

Many orchids treat rock outcrops as safe islands in a sea of unsuitable habitat, particularly in semi arid areas where the rocks not only provide extra water as run off but they also provide protection from grazing and browsing animals. The majority of orchids in the pastoral zone will be found about rock outcrops. In the wheat-belt rock outcrops become havens as they are not cultivated.

5. Wet places

In general the orchid flora of bog, swamp, marsh or morass will be highly specific and although there is less than 0.1% of the state which could be termed swampy, some 20% of our orchid species are confined to such wet habitat. Put simply: all of the orchids of swamps are highly threatened as the swamps are either much sought after for grazing and cultivation or they are drained, as in hundreds of square kilometres of the South East.

Some 20 different classes of swamp can be recognised and some orchids are confined to just one microhabitat in these. For example, the tiny swamp helmet orchid *Anzybas* aff. *fordhamii* has only ever been seen on the mossy edges of small mounds in peat bogs! The genus *Hydrorchis* only frequents the sedgy edges of winter wet waterholes. It is something of a paradox that our driest state should have one of the world's few aquatic orchids!

South Australia's Native Orchids

6. Native grassland

Sadly we will never know much about our grassland orchids in South Australia as these areas were overgrazed from the time of first European settlement and it is inferred that many of the orchid species growing there have become extinct. There are some twenty different categories of native grassland so there were a lot of different habitats involved. In the Northern Lofty region alone over a thousand square kilometres of native grassland have been destroyed.

7. Mallee

This is the term given to 100,000 square kilometres of poor land in South Australia which is or was covered with short multi-stemmed eucalypts, often with swollen lignotubers at the base.



RB, mallee with *Triodia*, MU

The poor, often powdery soils, or leached calcareous sands interspersed with hard clay does not hold moisture and as rainfall is low, in most of the mallee, orchids are at a minimum. One would suspect that before rabbits and sheep a few orchid species which evolved to grow in the mallee must have had huge populations. One which is still common in the mallee is the tiny *Hymenochilus pisinnus*.

Nevertheless there are places in the mallee where orchids are numerous such as where there are mounds of spiny porcupine grass (*Triodia*). This grass protected the plants from grazing and collected windblown sand and debris which kept moist longer than the bare patches. In many unstable areas sandhills have formed and orchids can be found on the southern slopes of these where misty rain collects on the mallee leaves in winter and drips down, staying moist longer on these shaded slopes often sporting patches of moss which soak up overnight dews.

Damper micro-habits are all important to dryland orchids.

8. Shrubland

Shrubland is another important dryland orchid habitat. Besides providing shade and shelter for the orchids, shrubs like the many species of wattles, *Acacia* and hop-bush *Dodonea* drop fine leaves which help to hold the soil together and slowly break down into humus rich with nutrient and water storing capability. These shrublands usually form in soils too dry or shallow for trees. Orchids of course have no need for deep soils as they are shallow rooted.



RB, semi-arid shrublands, FR

In the north these shrublands fringe the deserts yet may harbour 20 orchid species.

9. The littoral zone

Many orchid species have a linear distribution following the coastline. Here on the leeward side of sandhills the air is usually moist and mild, few frosts occur so close to the sea and sea-fogs in winter will cause water to drip into the sand which easily soaks up both the moisture and the extra nutrients provided by sea-spray. Some of the best known coastal orchids include the gnats *Cyrtostylis robusta*, pink fairies *Caladenia latifolia*, coast onion-orchids, *Microtis arenaria* and coastal helmet orchids *Corysanthes expansa* as well as *C. despectans*. All of these are colony forming species, mostly because the windblown sand would soon cover 'single plant' species which start to appear after the second line of dunes.

10. Pine Plantations and others

Some fifty orchid species have been recorded in mature plantations of *Pinus radiata* and many seem to favour the shaded, needle-covered ground where species such as helmet orchids and onion-orchids may form huge colonies. In most cases the orchids were already present when the pines were planted or grew adjacent. Unfortunately the 'new' way of planting pines on land deep ripped and sprayed with herbicide may mean future plantations will be even more of a biological desert. Orchids have been noted in eucalypt plantations too.

11. Quarries, mine sites, spoil heaps and sand borrow pits

Orchids are great colonisers and easily re-establish on bare ground. Any species which have thriving populations in land adjacent such bare sites will quickly begin to re-colonise. There is a successional pattern – first orchids such as *Thelymitra* and *Microtis* as well as the introduced *Disa bracteata* begin to take over, preparing the soil for other genera. If there are piles of old tree stumps and baby eucalypts the hyacinth orchids appear next, otherwise it may be *Arachnorchis tentaculata* or *Caladenia carnea*. Most other genera may take years to re-establish but a lot depends on the substrate. If the soil is sandy, species of duck orchids, fringed hare-orchids and fire orchids may appear early on. Some genera or species are very slow to re-appear.

12. The Suburbs

A few species colonise suburban gardens, shade-houses and even cracks in the pavement but these are limited to onion-orchids *Microtis*, the weed orchid *Disa bracteata* and in more natural gardens the greenhood *Pterostylis pedunculata*. These are often introduced as seeds in garden mulch but for those of us lucky to live near the bush many more species will simply blow in.

Where orchids Do Not Grow

Orchids cannot grow in cultivated land, in land which has had mineral fertilizers applied or land regularly and heavily grazed by cloven hoofed animals. Generally orchids do not grow in weed infested places and appear unable to recolonise overgrazed land and most orchid species do not tolerate saline soils.

Usually orchids soon die out in roadside vegetation unless they are constantly recolonised from adjacent native bush. Hence roadside corridors fringed with pasture are unlikely to have sustainable populations of orchids. Similarly most areas with changed hydrology (ie drained or frequently flooded) and areas where the fire regime has been changed significantly (ie too frequent burning or no burning) soon lose their orchids.

Also orchids do not grow in areas where soils are unstable such as sand hill deserts nor do they grow in areas which receive less than 200 mm of rain per year.

Distribution of South Australian Terrestrial Orchids

Due to most of South Australia having a desert climate with the remainder Mediterranean, no epiphytic or tree orchids occur naturally in South Australia, except perhaps *Cymbidium canaliculatum* in the far north east of the state before 1950. All the recognised South Australian species are terrestrial, mostly spending six months or more below ground each year, thereby avoiding heat and low humidity.

Orchids have been recorded for all regions of the state, from the Nullarbor to the Lake Eyre basin, from small offshore islands to mountain tops in the northern Flinders Ranges, from waterholes to rock outcrops, swamps, woodland and grassland, from the coastal shoreline to the edges of inland salt lakes. Some like *Hydrorchis* are largely aquatic and may even flower under water.

However most South Australian species occur in the southern agricultural regions of the state, and have therefore suffered a major loss of habitat in the last 170 years through land clearance. Of the remainder, most are restricted to areas receiving greater than 250 mm rainfall per annum yet some species do occur in desert fringes, especially in moister micro-habitats.

The greatest diversity of South Australian species is found in the Mount Lofty Ranges near Adelaide. Other 'hot spots' for orchids include the South East, Kangaroo Island, central and southern Eyre Peninsula and Yorke Peninsula and the southern Flinders Ranges around Mount Remarkable.

South Australia's Native Orchids

No orchids have been found in the true desert areas of South Australia, although it is possible that they were there before stock and rabbits denuded the landscape and climate drying set in. They also appear to be absent from the arid mountains of the far north-west, or at least no-one has ever found orchids there.

4. Orchid Descriptions

Orchid Structure or What Makes an Orchid?

When one looks at the diversity of form in orchids it appears surprising that they all belong to the same family.

Orchids are monocotyledons (i.e. have a single seed leaf produced by the embryo as with grasses) with three petals and three sepals. In orchids, the sepals, which usually enclose the flower bud before it opens, are often of similar shape and colour to the petals. Orchids are most closely related to the equally large super-family *Liliaceae* and indeed the South Australian sun orchids with all petals and sepals similar can easily be confused with bush lilies.

However orchids all have one important feature in common – that is unlike many other flowers with separate male and female organs (stamens and pistil), orchids have these combined on a single column-like structure known as just that 'the column'.

Most orchids also have one petal highly modified into often bizarre shapes; bearded, insectiform (i.e. shaped like an insect) or a different colour from the other petals. This third petal is generally termed the 'lip' or its Latin equivalent *labellum*.

The labellum is often 'mobile' – in other words it is easily moved. Sometimes the mobile labellum is suspended on a sensitive hinge and when touched, it moves very rapidly to a new position in a similar manner to the movement of the stamen of a trigger plant (*Stylidium*). This pollination mechanism is discussed later in more detail in the section on pollination.

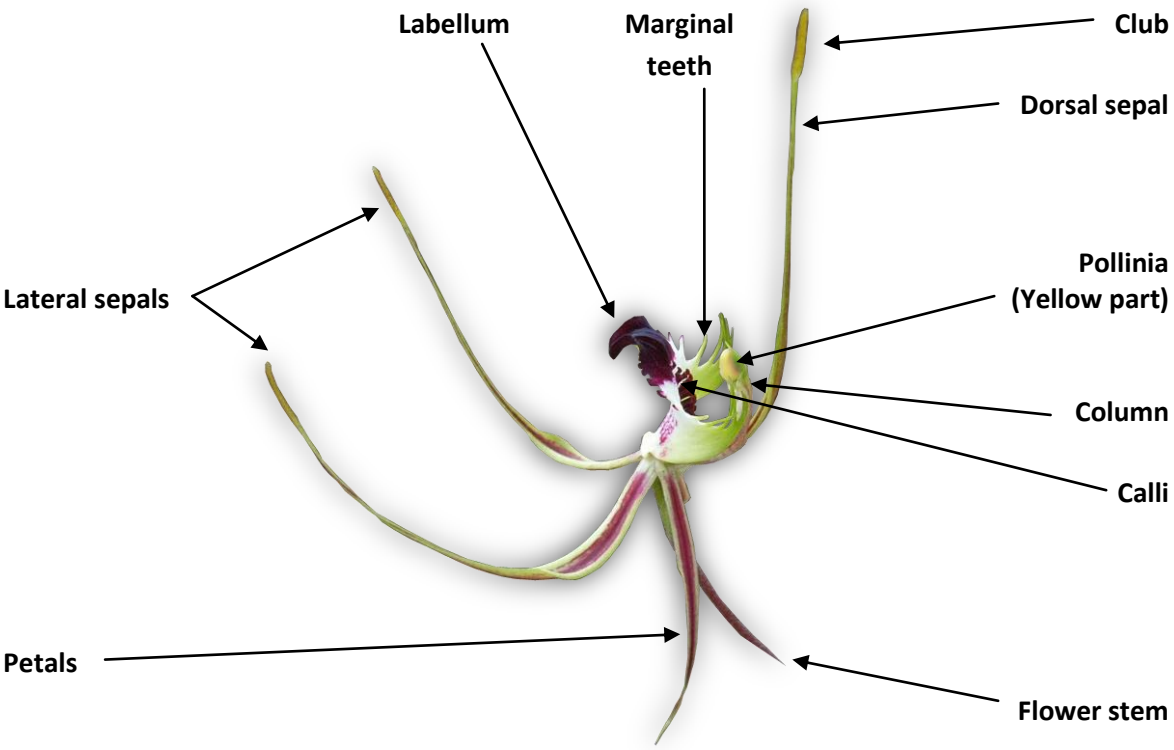
Labelled flowers from *Start with the Leaves* used with permission.

Diuris

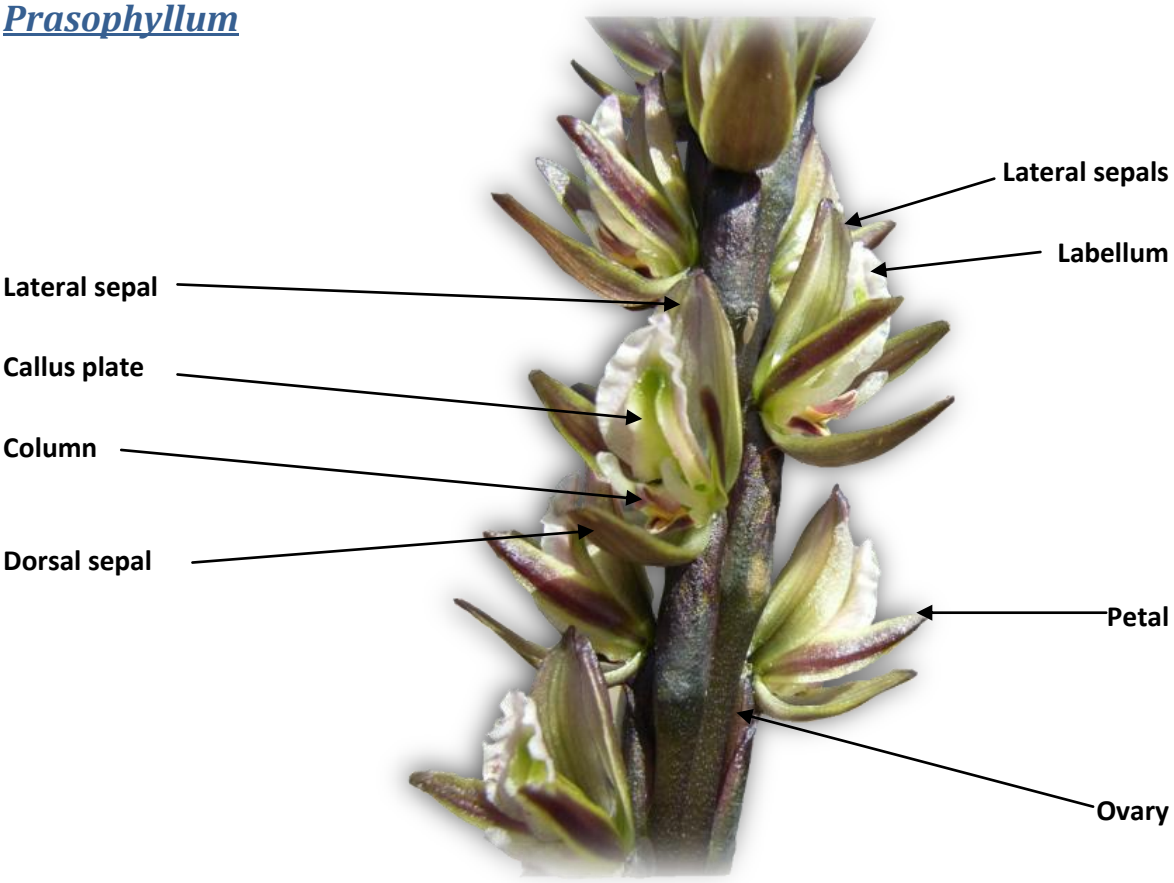


South Australia's Native Orchids

Arachnorchis

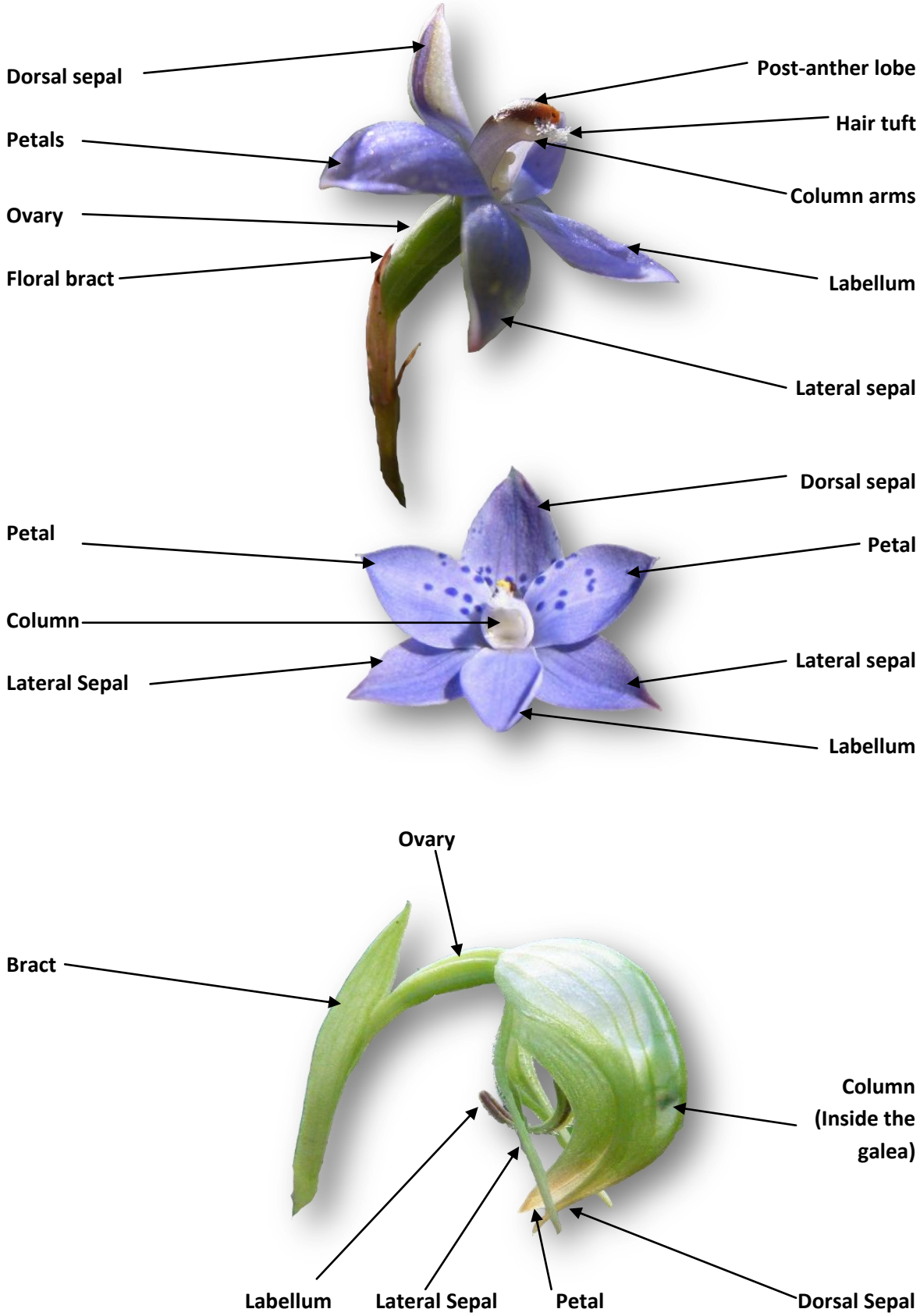


Prasophyllum



South Australia's Native Orchids

Thelymitra



South Australia's Native Orchids

What Constitutes a Species

With more than 350 species in about 44 genera, South Australia has a surprising diversity of terrestrial orchids even though this is a young area in terms of local evolution. Large areas of the state's present land mass were underwater as little as 50,000 years ago so most evolution of new species has taken place since then. Obviously these 'recent species' are unlikely to look all that dissimilar.

At this point it is important to define what constitutes a separate species?

One definition is '*A group of individuals which freely interbreed with each other but not with other species*' although there is considerable scientific argument regarding the division of plants into different genera, species or types.

Species can be defined by factors such as:

1: Incompatible DNA preventing fertilisation of one individual by another, other than to produce sterile hybrids; the barriers to fertilisation may be chemical or physical.

2: Different pollination strategies, different pollinators, different flowering times.

3: Different geographical distributions. Some very similar species are kept apart because they exist on different sides of a gulf or other barrier such as a mountain range.

4: Different habitat requirements. For example, one species may require swampy ground while a close relative may grow only in dry sites, and the progeny of any crossing may not survive in either. Similarly some species grow only on acid soils and other similar species grow only on alkaline soils.

5: There may be mechanical or physiological barriers to crossing. For example the stigmatic surface of one species may contain a chemical which inhibits pollen germination for all but members of its own species.

Many of these factors cannot be recognised readily in the field and often require detailed scientific investigation to differentiate between species and individuals.

Unfortunately morphology or appearance is not as important as we may think and to the untrained eye some species may look the same yet they may be very different genetically.

It is also important to recognise that the natural variation between individuals within a species can also be very substantial. When an observer in the bush calls out 'this one is a different colour from all the other orchids here!' he or she has probably found a freak individual, perhaps an 'albino' or 'melanic' specimen, or a flower affected by virus or herbicide or even a genetic 'mutant' rather than a new species.

Individual plants of different colour or size, or unusual shaped flowers, flowers with miss-shapen segments, segments missing, extra segments, contorted flowers or ends chewed off the petals or flowers which look like an orchid but the leaves are more like some other genus are unlikely to represent a new undiscovered species.

5. Genus Photographic Guide

Acianthus R.Br.

Mosquito Orchids



RL, *A. pusillus*, Hale CP, SL

South Australia's Native Orchids

Anzybas D.L.Jones & M.A.Clem.

Pelican Orchids



BB, *A. unguiculatus*, Nixon Skinner CP, SL

Arachnorchis D.L.Jones & M.A.Clem.

Spider Orchids



KB, *A. leptochila*, Cox Scrub CP, SL

Bunochilus D.L.Jones & M.A.Clem.

Banded Greenhood Orchids



KB, *B. prasinus,* MU

Caladenia R.Br.

Pink Fairies



JN, *C. latifolia*, Potters Scrub, SE

Caleana R.Br.

Duck Orchids



BB, *C. major*, SL

Calochilus R.Br.

Bearded Orchids or Beardies



KB, *C. platychilus*, Adelaide Hills

Corunastylis Fitzg.

Midge Orchids



HL, *Corunastylis* species, SL

Corysanthes R.Br.

Helmet Orchids



HL, *C. diemenicus*, Onkaparinga NP, SL

Cryptostylis R.Br.

Tongue Orchids



KB, *C. subulata*, Tooperang, SL

Cyrtostylis R.Br.

Gnat Orchids



JN, *C. reniformis*, SE

Diplodium Sw.

Shell Orchids



MS, *D. robustum*, Scott Creek CP, SL

Dipodium R. Br.

Summer Hyacinth Orchids



RB, *D. roseum,* Kuitpo Forest, SL

Diuris Sm.

Donkey Orchids



HL, *D. pardina*, Mt Lofty Botanic Garden, SL

Eriochilus R.Br.

Parson's Bands or Autumn Bunnies Orchids



RL, *E.* sp. Hills woodland, Cromer CP, SL

Gastrodia R.Br.

Potato Orchids



KB, *G. sesamoides*, Meadows, SL

Glossodia R.Br.

Waxlip Orchids



RL, *G. major*, Inman Valley, SL

Hydrorchis D.L.Jones & M.A.Clem.

Onion Orchids



KB, *H. orbicularis*, Cowary Swamp, SE

Hymenochilus D.L.Jones & M.A.Clem.

Tiny Shellorchids



KB, *H. calcicolus*, Hartley, MU

Jonesiopsis Szlach.

Wispy Spider Orchids or Daddy-longlegs



RB, *J. capillata*, Hallelujah Hills, NL

Leporella A.S.George

Fringed Hare Orchid



JN, *L. fimbriata*, SE

Leptoceras (R.Br.) Lindl.

Rabbit Ears



RL, *L. menziesii,* Mt Bold, SL

Linguella D.L.Jones & M.A.Clem.

Little Greenhoods



KB, *L.* sp. Hale, Ferries McDonald CP

Microtidium D.L.Jones & M.A.Clem.

Onion Orchids



KB, *Microtidium* species, Cowary Swamp, SE

Microtis R.Br.

Onion Orchids



RB, *M. frutetorum*, Wirrabara NFR, NL

South Australia's Native Orchids

Myrmechila D.L.Jones & M.A.Clem.

Ant Orchids



BB, *M. trapeziformis*, Comaum Forest, SE

Nemacianthus D.L.Jones & M.A.Clem.

Mayfly Orchids



KB, *N. caudatus,* Scott CP, SL

Oligochaetochilus Szlach.

Rufoushood Orchids



KB, *O. boormanii*, Melrose, FR

Orthoceras R.Br.

Horned Orchids



RB, *O. stricta*, Mt Crawford Forest, SL

South Australia's Native Orchids

Paracaleana D.L.Jones

Broad Leaf Duck Orchids



MH, *P. disjuncta*, SL

Pheladenia D.L.Jones & M.A.Clem.

Bluebeard Orchids or Blue Fairy Orchids



RB, *P. deformis*, YP

Plumatichilos Szlach.

Bearded Greenhood Orchids



KB, *Plumatichilos* species, Coonalpyn, SE

Prasophyllum R.Br.

Leek Orchids



KB, *P. australe*, Mt Compass, SL

Pterostylis R.Br.

Greenhood Orchids



BB, *P. nutans*, Hindmarsh Valley, SL

Pyrorchis D.L.Jones & M.A.Clem.

Fire Orchids



KB *P. nigricans*, SL

Speculantha D.L.Jones & M.A.Clem.

Tiny Greenhood Orchids



JN, *Speculantha* species, SE

Spiranthes Rich.

Ladies' Tresses or Spiral Orchids



JN, *S. alticola*, SL

South Australia's Native Orchids

Simpliglottis D.L.Jones & M.A.Clem.

Green Frog Orchids



JN, *S. cornuta,* The Marshes NFR, SE

Stegostyla D.L.Jones & M.A.Clem.

Gremlin Orchids



KB, *S. congesta*, Glencoe, SE

South Australia's Native Orchids

Taurantha D.L.Jones & M.A.Clem.

Cobra Greenhoods



JN, *T. concinna*, Island Swamp NFR, SE

Thelymitra Forst. et Forst.

Sun Orchids



RB, *T. antennifera*, Kuitpo Forest, SL

Urochilus D.L.Jones & M.A.Clem.

Banded Greenhoods



KB, *U. sanguineus*, Victor Harbor, SL

Introduced Weed Orchids

There is no further information in this disk on either of these two weeds.

*Disa bractreata Sw.

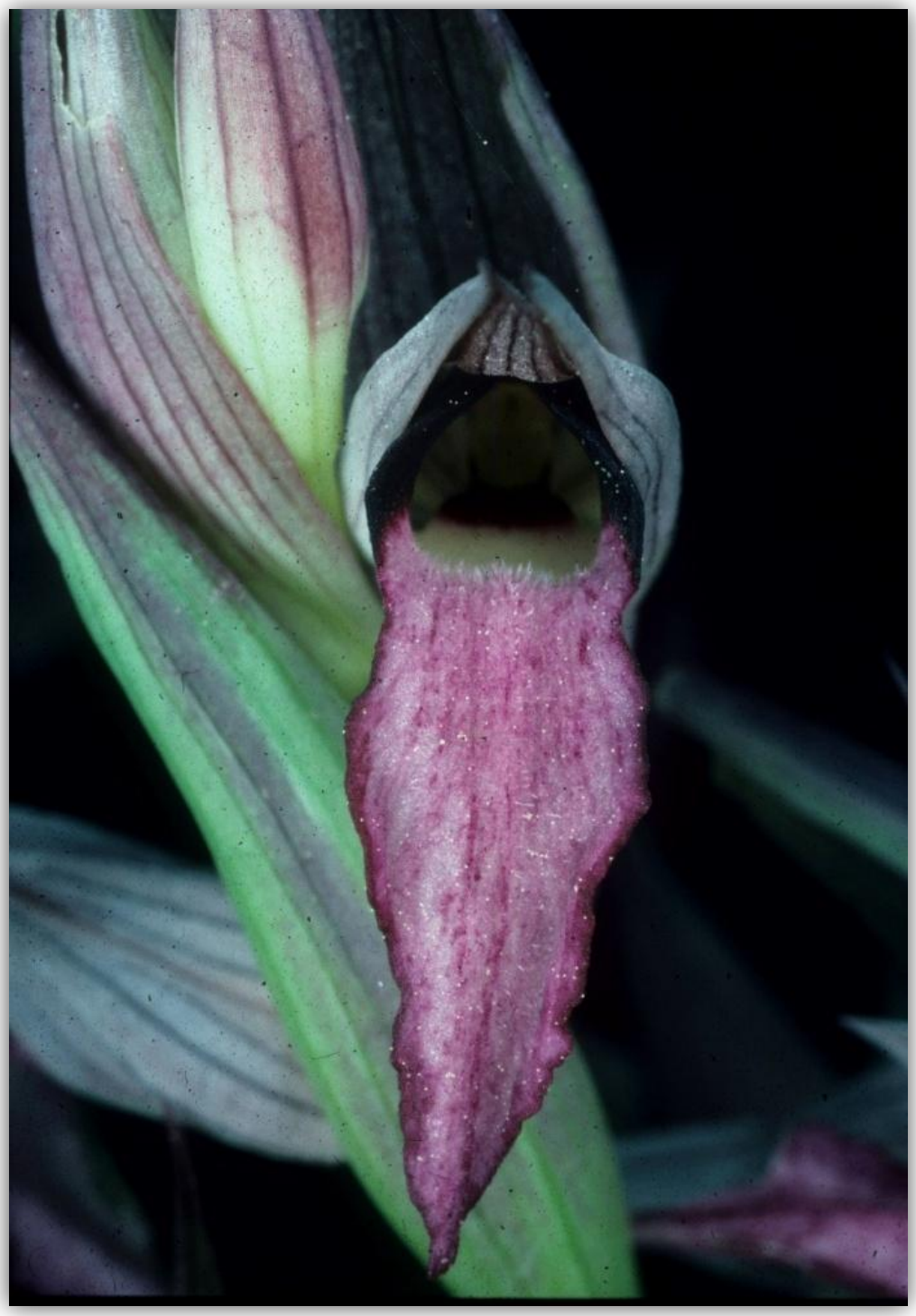
*Monadenia or South African Weed Orchid.



RL, *Disa bracteata*, SL

*Serapias lingua L.

*European Tongue Orchid.



RB, *S. lingua,* Cherry Gardens, SL

6. Colour Variants, Teratological Freaks, Monstrosities & Throwbacks in SA Orchids



RB, Teratological freak, *Arachnorchis tentaculata* with three labella

South Australia's Native Orchids

6. Colour Variants, Teratological Freaks, Monstrosities and Throwbacks

Introduction: Each year I am shown many orchid specimens or photos of orchids from our bush and asked to identify them.

These aberrant specimens fall into several categories.

1 Colour variants

The most common colour variant is the so called 'albino' which is usually just a paler coloured flower than usual. Any orchid species may produce flowers with less pigmentation than usual and occasionally the flower may have no pigment at all.

These odd flowers with less pigment are not new species. They may lack a single gene or be washed out due to dry conditions or the herbicides so frequently misused along our roadsides as spray is allowed to drift onto native vegetation.

Sometimes plants with normal flowers but variegated leaves may appear and these seem to be popular with orchid growers.

Colour is useful in determining species but even white flowered orchid species do not have purely white flowers. *Arachnorchis rigida* for example is said to have 'white flowers' but if you look at the flowers you will notice red teeth on the labellum, a red median strip outside and clubs of black, yellow or red.

Sometimes with sun orchids which usually have pink flowers produced by a combination of anthocyanins and carotenes, you may end up with yellow flowers due to a lack of anthocyanin or blue flowers due to lack of carotene!

When the unusual flower colour is genetically induced the plant is likely to have the same coloured flower every year.



RB, *Calochilus paludosus*, lacking in pigment

South Australia's Native Orchids

2 Teratological Freaks

Flowers which have accidental duplication of floral parts are referred to as teratological freaks; some may present with three perfect labella instead of one (see cover picture), or have 12 segments instead of six. They may have all segments with fringed edges when normally only the labellum is fringed and so on. There seems to be a never ending range of teratological freaks. They may be genetically induced and appear in the same spot year after year or they may be virus induced. Once the plant throws off the virus flowers will return to normal. See adjacent image for an example. This is a specimen of *Thelymitra megcalyptra* with two extra petals.



KB, Coonalpyn, MU

3 Peloric Freaks

In the broader sense 'peloric freaks' covers flowers with floral parts lacking, incomplete or replaced with a petal. Most frequently these are flowers where the labellum is replaced with a simple petal. This effect is often encountered with the bearded orchids *Calochilus.*

Some examples of peloric forms of beard orchids named as species include *C. imberbis* with a naked labellum and *C. richiae (*see opposite) with 'five o'clock stubble' instead of a beard.

The genus *Thelymitra* possibly began as a single peloric freak but has evolved into a very large genus with all species having a petal instead of a labellum.

Some named species of duck orchid are really just peloric forms for example *Paracaleana sullivanii* which always has a non functioning incomplete labellum, (see image under *Paracaleana* chapter).

I have often seen colonies of helmet orchids without a helmet or indeed with no segments at all just a naked column. Sometimes a flower lacks a labellum. Sometimes it has three sepals but no petals or labellum.



ID, *Calochilus richiae* with stubble

South Australia's Native Orchids

4 Monstrosities

Monstrosities occur when an orchid produces features not seen on any other of its kind. A single mutation may produce a flower with fringed segments when no other member of the species has fringed segments.

Attenuated flowers are common in orchids, i.e. the labellum just keeps elongating so that there is a long pendulous or curled under tip, especially in spider orchids. One species, *Arachnorchis echidnachila,* was once named from such a freak.

Many species of *Thelymitra* or *Calochilus* produce long sterile bracts. *T. bracteata* for example can have bracts longer than the leaf; in fact it is unusual to find a mature *T. bracteata* plant with short bracts although young plants can certainly have them.

In general self pollinated species produce a lot more monstrous plants as they can easily duplicate themselves. Some species, like *Prasophyllum goldsackii* are probably self perpetuating monstrous freaks.

Pterostylis foliata, a self pollinated greenhood often produces multiple, distorted flowers instead of the normal single flower.



KB, monstrous
***Pterostylis foliata*, SL**

5 Throwbacks

The ancestors of orchids had six stamens and it is not uncommon in genera like *Thelymitra* to find flowers with stamens separate from the column, usually only one that lacks an anther, so the extra appendage is regarded as a staminodal spur, (see opposite).

I have occasionally seen an orchid with five stamens and malformed anthers or even a cluster of pollinia on the tip of every segment. Some species which normally produce a single leaf may form a rosette with up to six leaves.

Calochilus with their bearded labella sometimes produce throwbacks without a beard or with a modified beard. These forms are sometimes treated as separate species (i.e. *C. richiae* or *C. imberbis*). Temperate species are probably best not treated this way, however some tropical species genuinely lack the beard!

Many so called species are probably just freak forms. An example is *Thelymitra hiemalis* the winter flowered sun orchid.



KB, staminodal sun orchid, SE

South Australia's Native Orchids

Arachnorchis integra look-alikes



MH, *A. septuosa*, unfringed



KB, *A. tensa*, unfringed

For many years the presence of a colony of un-fringed green comb spider orchids on Mount Granite in the Gawler Ranges was interpreted as a possible undescribed *Arachnorchis* species related to *A. integra* from Western Australia. In 2008 I was sent images of three different un-fringed spider orchids from different parts of South Australia and the conclusion had to be made that the presence or absence of a single gene could change any plant of green combed spider orchid to the un-fringed form.

The specimens were 'freaks'. Obviously *Arachnorchis integra* from Western Australia is a species derived from one of these freaks.

None of the South Australian forms have developed large pure breeding populations and for this reason the Mount Granite colony cannot be considered anything but an *Arachnorchis septuosa* freak.

Conclusion: The most important thing to remember is that if there is only one individual or colony that looks different to the other orchids around it then it is probably a freak form.

I have been shown pictures of orchids where segments are wholly or partly eaten off by herbivores. Perhaps the clubs on the sepals were chewed off when the flower was in bud. In any case we should not be fooled into thinking that an orchid with shorter segments than its congenitors is anything special if there is only one.



RB, *Arachnorchis stricta* 'integra form', Brinkley

Gallery of Freaks



KB, teratological *Glossodia*



MH, double labellum *A. brumalis,* YP



MH, *T. rubra*, twin column



MH, *Glossodia*, fused sepal



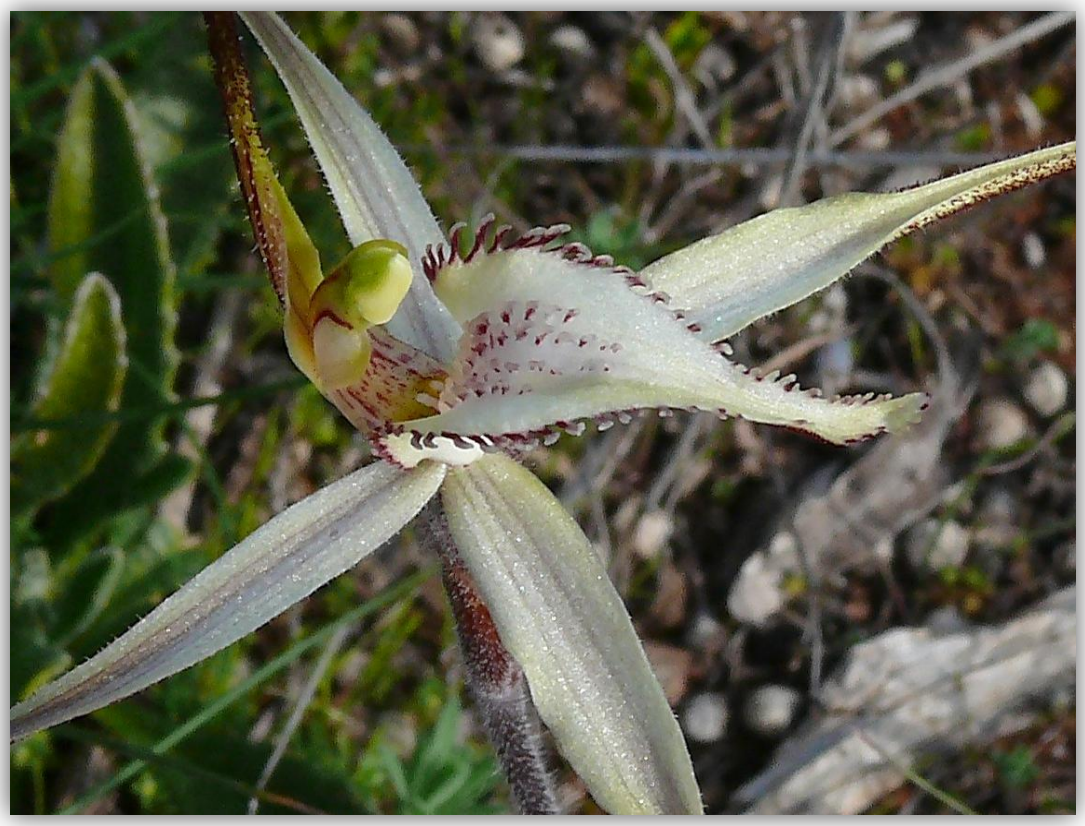
MH, *Arachnorchis stricta* without red colouring, SE



BB, *Thelymitra lucida*,
teratological freak, SE



BB, *Linguella* freak,
Wirrabara NFR



JN, *Arachnorchis brumalis,* YP



BB, an albino *Arachnorchis toxochila*



MH, *Arachnorchis venusta*
*Note no calli on labellum

7. Orchid Reproduction



BB, wasp on *Arachnorchis intuta*, Hardwicke Bay

Pollination & Pollinators

The diversity of pollination strategies, used by South Australian wild orchids is phenomenal. Some South Australian orchids use sexual attraction, producing insect pheromone copies known as 'allomones'. They use these to attract male wasps, ants, bees, sawflies and dipterans, adding visual cues to the flowers so that the male insects see not flowers but 'cover-girl' female insects! Indeed even to the human eye some have flowers with insect like features including eyes. No less than ten South Australian orchid genera or as many as a hundred species may use this false sexual advertising strategy.

Others mimic other non-orchid wild-flowers which are the main food source of native bees. These are the pretty orchid flowers, widely opening, in gorgeous colours, with subtle fragrances, nectar guidelines, false pollen, massed blooming and often larger flowers than the wildflowers they copy.

The wonderful double-tail orchids, the donkey orchids or *Diuris*, mimic bush peas and native bees frequently congregate in or on the orchid flowers, suggesting that some other mysterious attractant is involved.

The sun orchids with their 'regular segments' mimic vernal lilies and like the lilies come in a wonderful array of colours. As with the sexual attractors and other floral mimics they use false advertising as they provide little or no food for the insects they attract.

Other flower mimic orchids include the hyacinth orchids *Dipodium*, which do at least provide a little pseudopollen, and members of the *Caladenia* alliance like *Pheladenia*, *Petalochilus* and *Leptoceras*. There are over a hundred of these floral mimic species which often have odd structures representing false stamens, pseudo-nectaries, loose pollen etc.

South Australia's Native Orchids

Some South Australian orchid flowers are fungus mimics, such as *Corybas* and *Anzybas*; these helmet orchids have 'toadstool like flowers' set on the ground, in cool dank places, emanating musty odours and encouraging fungus flies to visit and perhaps even lay eggs within the flowers. Once again one suspects false advertising. About ten of these species occur in South Australia.

Many species offer a sweet reward to their pollinators just like other flowers but generally most of these are not bee pollinated, therefore do not have large or colourful flowers. Instead they attract flies, wasps and ants. The fly pollinated species are typically dull or purple as in the 'mosquito orchid' genera *Acianthus*, *Cyrtostylis* and *Nemacianthus* which have a nectar line on the labellum, insect like shapes and musty odours.

The 'wasp-food orchid species' have flowers in wasp colours of red, purple and green, offering nectar in cells on the labellum which need to be punctured. These multi-flowered species like *Prasophyllum*, the leek orchids, have small and sweetly perfumed flowers as wasps have a good sense of smell and prefer to work with massed small flowers. Ants also visit these flowers as they are quite capable of puncturing the nectar cells. Ants can only pollinate the very smallest flowers such as *Microtis*. Some leek orchids aim to attract native bees as well and these have a lot of white and pink in their flowers and increased fragrance. About fifty South Australian species use the sweet reward strategy.

For many genera the pollination strategy is not well known and has only been guessed at. *Pyrorchis* for example have a massed flowering strategy but what are they aiming to attract, with no fragrance, hooded flowers, no obvious food rewards and strange colours?

Plumatichilos, the plumed greenhoods have a labellum which would seem to bar the entry of most insects to the flowers and no fragrance, yet one would suspect that green flowers with a vibrating, yellow-plumed labellum must attract some highly specific insect pollinator and indeed rather odd looking flies have been seen emerging from the flowers or buzzing about them.

A further factor which impacts on pollination strategies is that the pollen of orchids is different to that of other flowers. Orchid pollen is formed into small cohesive bundles called pollinia, which are transported en masse during pollination. The pollinia are often attached to a sticky button called the viscid disk which has the job of sticking the pollinia to any insect effecting pollen transfer. The stigma of an orchid flower is usually situated directly below the pollinia but separated from them by an 'impenetrable' shield.

Specific information on the pollination strategies and the pollinators (if they are known) for each of the major South Australian orchid genera is provided below.

Acianthus

Mosquito Orchids

The deep red, greenish or brownish colour of flowers such as those from the genus *Acianthus* is commonly associated with fly pollination. The labellum of these flowers has a nectary at its base. Ants, beetles and other insects have been observed to feed on the nectar but only slender bodied flies have been observed to transfer pollinia. I have seen no pictures of the pollinators at work.

Arachnorchis

Spider Orchids



Most species of this genus are, to some degree, pollinated by sexually attracted male thynnid wasps. The orchids produce a combination of volatile substances (allomone) which approximate the pheromone released by the female wasp to attract males. These allomones are produced by glands (osmophores) on the floral segments which are either concentrated in clubs at the segment tips or spread out along the long filamentous endings of the segments. Once attracted to the orchid the wasp buzzes about the flower before landing on the labellum, the calli of which represent a female wasp. The wasp clasps the decoy and attempts to carry it away. As it moves forward the balance of the delicately hinged labellum is upset and the wasp is thrown against the column. In species like *A. leptochila* it is the labellum itself rather than the calli which represent the female wasp decoy.

The strength of the attractant varies from species to species; some such as the green comb spider orchids and the *A. reticulata* complex are strongly wasp pollinated. These species have flowers in tones of maroon, green and cream. Other species with white flowers, particularly in the *A. patersonii* complex, are also visited by bees and flies with the bees often successfully pollinating the flowers.

Most species studied so far in South Australia are wasp 'species specific'; that is, each *Arachnorchis* species is pollinated by just one species of wasp. This pollinator specificity has supported the proliferation of newly described species of both *Arachnorchis* and *thynnids*.

In general these wasp pollinated species are not perfumed, although some species emit odours which can be detected by some humans with the odours likened to burning tar, petrochemicals or spice. One species however (*A. gladiolata*) has the strongest, spiciest odour of any South Australian orchid.

All species of *Arachnorchis* have a pair of yellow waxy glands at the base of the column. These are thought to represent pseudo-anthers and may attract pollen seeking insects, perhaps they are a relictual feature of an earlier pollination strategy.

South Australia's Native Orchids

Bunochilus and Urochilus

Banded green-hoods

Most species of these genera are out-crossing and pollinated by fungus gnats which when they land on the sensitive labellum, trigger it so that they are flung back inside the hood and must flutter their way up through the column wings to escape, passing first the sticky stigma and gathering a dab of glue, then past the anther where the pollinia are stuck to their thorax. Upon repetition of this action on a second flower the pollinia are peeled off onto the stigmatic plate.



Caladenia (and synonym Petalochilus)

Fairy Orchids (and Pink Fingers)

The flowers of Fairy Orchids are pollinated by several non specific insects such as native bees, hover flies and beetles suggesting that this is an archaic group.

This genus of pink, white or greenish flowered species has the larger forms pollinated by native bees while small species are mostly self pollinated or in the case of non opening flowers, cleistogamous. The out-crossing species are generalist mimics of native flowers and provide little if any reward for visiting insects. The often yellow calli on the labellum look like anthers and the red bars may be regarded as false nectary guide-lines.

Caleana and Paracaleana

Duck Orchids

The flower maroon and green colour combination of Duck Orchid flowers indicates sexual attraction of insects. In the case of *Paracaleana* species small black *thynnid* wasps are attracted and in the case of *Caleana* species large male sawflies, *Pterygophorus*, are attracted.



All species have a highly sensitive labellum on a movable claw. When touched the labellum springs back rapidly into the bowl-shaped column, into which it fits snugly.

Attracted by pheromones produced by the orchid flower, the insect lands on the labellum in the upright or set position, and is swung back into the deep bowl of the column. As it struggles to free itself, it removes the pollinia. When this action is repeated on a second flower, the pollinia are smeared on the stigma. After being sprung the labellum returns to the set position in about twenty minutes, depending on weather conditions and the age of the flower.

Duck Orchids are not fragrant to the human nose and provide no nectar or other food reward.

South Australia's Native Orchids

Calochilus

Bearded Orchids or Beardies

Pollination of Bearded Orchids is affected by male scollid wasps of the genus *Campsomeris* which are sexually attracted to the flowers by both pheromones (as indicated by wasp baiting experiments) and visual stimuli. Wasps on the flowers appear to be attempting copulation. Interestingly the female scollid wasp is a hairy wingless creature lacking the bright colours of the orchid labellum.



All South Australian species self pollinate if not visited by the wasps and produce copious pale seeds in large ribbed capsules. Vegetative reproduction is rare so that large colonies are not formed.

Chiloglottis (Myrmechila & Simpliglottis)

Bird Orchids

The dull green and brown flowers of Bird Orchids emit volatile aromatic substances or allomones which are copies of the sex pheromones of female thynnid wasps and each *Chiloglottis* species has a different and highly specific male wasp pollinator. These pollinators grasp the often insectiform calli on the orchid labellum and as they attempt to copulate with these the orchid pollinia are transferred, either from the insect to the stigma or from the anther to the insect. It is perhaps not surprising that the pollinating wasps do not appear to occur in South Australia and that the most common species in South Australia is self pollinated anyway. After pollination the flower pedicel may elongate so that the seed capsule is eventually well above ground level.

Corunastylis

Midge Orchids

Pollination of Midge Orchids is by small vinegar flies, attracted by the floral odour which is not always obvious to humans. The movable labellum which shivers in the breeze may also act as a secondary attractant.



The pollinating flies hang upside down inside the labellum, presumably getting some reward as they often remain for some time and are frequently attracted in large numbers even when plants are placed in a home garden in the suburbs. They may even find the flowers when placed inside the house. In fact pollination events are more frequently observed in *Corunastylis* than in any other genus of South Australian orchids. One rare South Australian species is self pollinated.

South Australia's Native Orchids

Corybas (Corysanthes & Anzybas)

Helmet Orchids

Helmet orchids are 'sapro-myophilous' – pollinated by fungus flies, and the flowers are possible fungus mimics. They do look rather like small toadstools, to the extent of some species having the labellum veined in a gill-like effect and like fungi, grow in cool moist places, flowering in winter when most fungi fruit. There is occasionally a fungus-like odour to the flowers.

The pollinating flies can sometimes be seen looking like tiny fireflies, with the bright yellow orchid pollinia attached to their heads like miniature headlights, as they flit about in the dark places where the helmet orchids grow. Fungus flies have been observed to actually lay eggs on the flowers. In most species pollination is effected in only about 10% of flowers but this is much higher in self pollinated forms.

Cryptostylis

Tongue or Moose Orchids

All species of the genus *Cryptostylis* attract male *ichneumon* wasps by releasing a allomone or copy of the female wasp sexual attractant pheromone. This can attract male wasps from up to a kilometre away.

The orchid labellum is similar in colour to the female wasp and the male *Lissopimpla excelsa* wasps attempt to copulate with the flowers, probing the column with their 'tails' and thereby transferring pollinia from flower to flower.



Cyrtostylis

Gnat Orchids

Gnat Orchids produce, brownish or maroon insectiform flowers. As would be expected of shade loving, cool season plants with flowers of these colours, they are pollinated by long-legged fungus gnats (*diptera*) which may feed on the ribbon of nectar on the orchid labellum. Hence the column top is set well above the labellum to accommodate these long legged insects.



Diplodium

Shell Green-hoods

All species of the genus Diplodium are pollinated by small sized fungus gnats, and the attractant is not yet known.

Dipodium

Hyacinth Orchids



Dipodium are believed to be general mimics of nectariferous flowers. Although the flowers themselves provide no nectar there is a shiny yellow patch of tissue on the column which could represent pseudo-pollen or nectar. The flowers also have what could be a vestigial nectar spur at the base of the labellum. Bees push into the flower using the furry surface of the labellum to assist them and remove the pollinarium as they withdraw, the sticky viscidium attached to their frons, with the pollinia in a vertical position. Bees push into the flower using the furry surface of the labellum to assist them and remove the pollinarium; as they withdraw they contact the stigma of the next flower visited and the pollinarium are pulled away. Pollination rates vary but in a good season may exceed 25% of flowers on some spikes but even if only a single flower is pollinated it is a pretty good return as one seed pod contains in excess 1,000 seeds. Curiously flowers are not fragrant.

Away from the flowers, at the base of each floral bract is an 'extra-floral' nectar gland. Many orchids possess these curious extra-floral nectaries which are thought to lead ants away from the flowers and thus prevent their entering and stealing pollinia. The ants may also serve to make the flowers less accessible to other insect pests. In any case ants are commonly seen feeding on the scape but rarely enter the flowers.

Diuris

Donkey Orchids

Native bees are the only observed pollinators of Donkey Orchids. The highly coloured and sometimes scented flowers, which lack any nectar, are thought to be floral mimics of bush peas, *Platylobium*, *Pultenea*, *Daviesia*, or in the case of the cowslip orchid, lilies, which they resemble, especially in colour.

The peas are a food resource for the bees and the orchid labellum may well be mimicking the keel, while the dorsal sepal makes a good copy of the standard of the pea flower.

Like most floral mimics, the orchid flowers are usually conspicuous, larger and brighter than the flowers they emulate. Pollination usually occurs in less than 50% of flowers but the out-crossing achieved usually more than compensates for this.

South Australia's Native Orchids

Eriochilus

Parson's Bands

Pollination of flowers from the genus *Eriochilus* is affected by native bees which are attracted by flower colour, scent and nectar provided in a channel at the base of the labellum. They also exhibit a degree of floral mimicry. The genus is unusual in having a deeply recessed stigma with a constricted but elastic border. When a bee bearing pollinia pushes into the tube formed by juxtaposition of column and labellum base, its head will force down the elastic, just as if untying the drawstring on a tiny bag, thus exposing the stigma. The pollinia on the bee's head are at this stage in contact with the sticky stigmatic surface and are pulled away from its head as the insect withdraws, while the elastic fringe returns to its former shape thus holding the pollinia inside. As the bee withdraws further it contacts the overhanging anther flap and catches against the twin viscid discs sitting in two small notches or rostellum, in the upper part of the stigma. These stick to the bee's head and are removed with all or sometimes one half of the pollinia which are soon deflexed from an upright position to a horizontal one. Thus out-crossing is ensured in this genus.

Gastrodia

Potato Orchids

Several genera of native bees have been observed transferring pollinia. The flowers have an attractive spicy fragrance which becomes most obvious when the temperature is above 20˚Celcius. Rewards are provided in the form of a fine sugary, pseudo-pollen produced from the labellum callus. There is no nectar. Each flower lasts for 2-3 days and in some forms only a few are open at any one time, so that large plants may flower over several weeks, in cooler weather. Pollination rates are close to 100% in large colonies.

Glossodia

Waxlip Orchids

Glossodia flowers are pollinated by small native bees of several genera. The orchid exhibits floral mimicry; the bright flowers, light perfume, bee guidelines and the false anthers, ie the yellow forked callus at the base of the labellum, are all bee attractants but the flowers provide no obvious reward for the bees. The bees land on the flower segments and crawl to the centre, grasping the yellow labellum appendages, push forward to gain grip on the pubescence of the labellum base and are lifted up by the forked appendage to contact the stigma and anther. The pollinia are powdery and cream coloured or white.

X Glossadenia

Purple Hybrid Orchids

This hybrid is sterile, the sharing of native bee pollinators by both *Glossodia* and *Pheladenia* is the main reason why such hybrids occur but man's interference has been another influence.

Hymenochilus

Tiny Shell Orchids

South Australia's Native Orchids

Jonesiopsis

Wispy Spider-orchids or Daddy Long-legs

Pollinated by small, largely non thynnid-wasps, the method of attraction is not understood. Several wasps are often seen climbing on a single flower.



Leporella

Fringed Hare Orchids

Pollination of Fringed Hare Orchids is effected by winged male ants of the genus *Myrmecia* the stinging jumper ants, which are sexually attracted to the flowers by sex pheromones (allomones) produced by glands (trichomes) on the petal tips. The ants fly to the flowers from downwind, crawling onto the labellum, straddling it longitudinally and probing with their abdomen as if copulating. The broad velvety labellum apparently represents the female ant. While the male ant is fooling about on the labellum, it tips back against the column and must then twist free to escape, thereby achieving pollination as it does. The ants appear to be sexually active for a short time each year, usually just before thunderstorms. Most years these nuptial flights coincide with the orchid's flowering but some years pollination does not occur as the sexual activity of the ants may be completed before the orchids flower.



Leptoceras

Rabbit Ears

Leptoceras flowers are pollinated by native bees but the pollination strategy can only be guessed at, certainly colour and perfume must be attractants, while the yellow tipped labellum calli probably represent pseudo-stamens and help to position the bees in a pollinating position, but the function of the glandular petals is not known, perhaps they are part of an ancestral pollination strategy.

South Australia's Native Orchids

Linguella

Little Green-hoods

Linguella are all outcrossing, attracting tiny, short bodied but long legged flies. These enter the hood, setting off the irritable labellum which forces the fly to exit through the column wings past a sticky stigma and then to squeeze past the pollinia which are glued to the mesothorax of the insect.

The attractant is unknown, neither food reward, perfume, sexual attraction nor any other are known, but pollination events are often observed.



Microtis, Microtidium & Hydrorchis

Onion Orchids

Despite being both self-pollinating and apomictic, the flowers of Onion Orchids also use nectar and perfume to attract insects. The most successful pollinators at effecting out-crossing are tiny wasps and flies but for some species ants regularly transfer pollinia, though mostly from flower to flower on the same spike. The main attractant is nectar which ponds in a transverse pit at the base of the labellum, adjacent the basal calli. These calli serve to position the pollinators in such a way that they contact the viscid disc to which the pollinia are attached.



Nemacianthus

Mayfly Orchids

Flowers of the genus *Nemacianthus* are pollinated by fungus gnats, *Mycetophilidae* which are attracted by the dark colours and musty odours. As in species of *Acianthus*, the column is arched forward so that the anther and stigma are directly above the well of nectar on the labellum. The mosquito-like gnats feed on nectar at the base of the labellum in such a way that their thorax comes in contact with the pollinia which are then withdrawn, usually one half at a time.

South Australia's Native Orchids

Oligochaetochilus

Rufous Hoods

Like all members of the *Pterostylis* alliance *Oligochaetochilus* flowers are pollinated by *Diptera* (flies) in this case long bodied flies, many of which feed on soil fungus in the larval stage.



The flies are thought to be sexually attracted but this has never been proven. Pollinators are observed to fly in from downwind, hover in front of the flower before alighting on the insectiform labellum and shaking it until it is sprung, thereby being themselves thrown into the hollow galea which is closed off by the sprung labellum. The flies then flutter around inside the translucent hood until they find the narrow escape route upward through the column wings, thereby depositing any pollinia they may have already collected or removing the pollinia of the current flower. The attractant allomone is not highly specific as hybrids are often found between sympatric species, and the hybrids themselves appear fertile so that new 'species' are evolving from the hybrids which best attract pollinators.

Orthoceras

Horned or Crucifix Orchids

The flowers of *Orthoceras* are self-pollinating, and the ovary begins to swell even before the flowers open. There has been little evidence of out-crossing in South Australian plants but as flower colour varies considerably and some clones have a strong spicy perfume there must have at some time been some out-breeding.

Pheladenia

Bluebeard or Blue Fairy Orchids

The flowers are very attractive to a range of small native bees. Pollination is frequently observed, and as the bees prefer freshly opened flowers, many of these therefore tend to be short lived. However, if pollinia are removed, without pollination being effected, an individual flower may remain open for several weeks. The pale pollinia are rather friable, which is the norm for bee pollinated species, as the insects tend to 'buzz' the flowers, shaking the pollen grains out onto their hairy undersides.

Plumatichilos

Bearded Greenhoods

Little is understood about the pollination of *Plumatichilos* but fat bodied flies have been observed in or about the flowers. I have seen no published descriptions of actual pollination events. However the plumed labellum with 'wingless female fly decoy' at its tip, fluttering in the breeze is an obvious visual cue. Why the bristles on the labellum face out from the entrance to the hood is not obvious but the yellow colour of the bristles is known to be a generalist fly attractant. The person who first records the whole pollination event will be very lucky indeed. Most species are out-crossing but some species like *P. tasmanicum* are strongly self-pollinating. Some out-crossing species rarely set seed.

Prasophyllum

Leek Orchids

Pollination of *Prasophyllum* flowers is effected by nectar seeking insects, predominantly flower wasps, while species with white labella are also visited by bees. Nectar occurs on the labellum either free or in tissue which releases it when punctured. Many species have fragrant flowers. Unlike the other states, South Australia has a preponderance of apomictic species, i.e. they freely set seed asexually, without transfer of pollinia.



Pterostylis

Greenhoods

Pterostylis are myophilous, i.e. they attract flies or mosquito-like fungus gnats (*mycetophilids*). These are just as likely to be female as male, so sexual attraction is not likely. Exactly what attracts the flies is not known; the larger flowered species of *Pterostylis* like *P. falcata*, with transparent patches on the flowers, act like miniature glasshouses and are warmer inside and attract fungus gnats although the flowers do not have the musky odours of some other green-hoods nor is the labellum particularly mobile as in many genera. Hybrids are common which indicates low pollinator specificity.



South Australia's Native Orchids

Pyrorchis

Fire Orchids

The pollinators of Fire Orchids are not known and some degree of self-pollinating occurs. Without a summer fire flowering is rare but after a suitable hot burn flowering occurs *en masse* and can be quite spectacular.

Speculantha

Tiny Green-hoods

Most *Speculantha* species are outcrossing and pollinated by tiny *diptera*, not the long bodied fungus gnats which pollinate *Pterostylis* but short bodied vinegar flies which are attracted by musty or sour odours. Some species have a seminal odour, others smell of sour milk and still others are fruity. Some like *S. uliginosa* in South Australia are strongly self-pollinated. As could be expected of a genus with tiny pollinators, the entrance to the flower hood is very small, the pollinia and petals reduced.



Spiranthes

Ladies tresses

The flowers of the *Spiranthes* genus are pollinated by native bees although there are self pollinated species as well.



Stegostyla

Gremlin Orchids

The pollination strategy of Gremlin Orchids is not well understood. Some degree of floral mimicry has been noted and yet species with dark curved labellum calli would appear to be wasp pollinated; wasps are often observed as pollinators pseudo-copulating with the dark, curved mass of calli while native bees can sometimes be seen clasping the labellum and shaking it as in buzz pollination.

South Australia's Native Orchids

Taurantha

Cobra Green-hoods

Pollination of Cobra Green-hoods is effected by small *diptera*, presumably fungus gnats.

Thelymitra

Sun Orchids



Sun orchids are pollinated by small native bees. The bees are attracted by the brightly coloured, lily-like flowers, and sweet perfumes. Sun orchid flowers open in warm, humid conditions when bees are most active. The actual conditions required for opening vary greatly in different species. Some species only open in the morning, others only in sunshine, a few stay open at night.

The sun-orchid flowers are thought to mimic the food flowers of bees, especially small vernal lilies. They have a symmetrical perianth like the lilies, floral guidelines and yellow appendages or fimbriate structures like the stamens of the lilies. Thelymitra flowers provide no food for the bees, which do not land on the perianth but fly straight to the column, appear to chew the yellow parts or vigorously shake the hair tufts, as in buzz pollination, meanwhile collecting the mealy or powdery pollinia on their hairy undersides. The labellum of a *Thelymitra* flower has no particular significance as an attractant positioner or landing platform and therefore is unmodified. It is the column structure and not the labellum that serves to identify each Sun orchid species.

It is the more primitive members of the genus that have a modified labellum, indicating that the regular flowers have evolved from zygomorphic flowered ancestors i.e. *Thelymitra* is a highly evolved (and evolving) genus, not a primitive orchid.

Those species with small, unscented, seldom expanding flowers, with large ovaries tend to be strongly self-pollinated. They have friable, mealy or viscous pollinia which break up spontaneously and fall or ooze on to the stigma. Species with large, colourful, fragrant, easily expanding flowers with small ovaries are exclusively bee pollinated. Nevertheless bees do visit the self pollinated flowers and because they are indiscriminate pollinators hybrids are numerous.

Self-pollination and Apomixy

Few South Australian orchids are purely self pollinated but many South Australian orchids from a range of genera use self pollination as a back-up strategy. *Pterostylis foliata* is self pollinated, as is *Jonesiopsis bicalliata* and *Paracaleana minor.* These are examples of single, self-pollinating species in otherwise out-crossing genera.

Orthoceras, the horned orchid would appear to be 99% self pollinated and is an example of a self-pollinated monotypic genus.

The large genus *Thelymitra* has more self pollinated than out-crossing species, but unlike many inbreeding species which are often evolutionary dead ends, the selfing sun orchids also open for pollen transfer which probably explains the proliferation of similar self-pollinating species in that genus.

South Australia has the highest proportion of self-pollinating leek orchid species of any state but in reality these are apomictic as there is 'asexual production' of seed. Similarly with the onion orchids where most species are apomictic, but also self-pollinate, and open for out-crossing. A three point strategy! Apomictic species are essentially clonal.

Hybrids

Hybridisation is a process whereby two species that would normally be distinct and not fertilised from a different species are somehow cross pollinated, i.e. in the case of orchids pollinia from a plant of one species (or rarely genus) is somehow deposited on the disc of a plant of a different species.

Some orchid genera and species readily form hybrids and not only are there numerous hybrid combinations within each larger genus, there are also inter-generic hybrids. There are even named hybrid genera such as X *Glossadenia*, created for hybrids between *Glossodia* and *Pheladenia.*

With genera which reproduce vegetatively the hybrids may form large colonies and persist for a hundred years or more but most hybrids appear and disappear again within a few years.

Some common hybrids have been named and it is easy enough to find vegetatively reproducing hybrids like *Thelymitra x macmillanii* as they germinate on any disturbed ground and one original plant may increase to hundreds.

It is recognised that hybrids form more readily under disturbed conditions as has happened more frequently since the arrival of Europeans. Immediately after European settlement in South Australia the environment began to change dramatically.

Most hybrids exhibit varying degrees of sterility but occasionally a pollinating insect species will prefer the hybrid flowers and it may be that these will become self-perpetuating.

When there are 'generalist pollinators' such as bees involved and some degree of fertility in the hybrids they may back-cross with the parents to produce hybrid swarms.

Today as park tracks are allowed to grow over and disturbance is minimised hybrids are becoming scarcer.

South Australia's Native Orchids

Germination of orchid seed

(by Kevin Western, NOSSA)

In the natural setting orchid seeds will only germinate if and when they are invaded by the right fungus. The fungi involved are referred to as mycorrhiza and include the genera *Tulasnella, Ceratobasidium and Sebacina* which elsewhere may be involved in disease of crops.

Orchid seeds are extremely small and have almost no nutrient material in them. There is not enough energy for the embryo to germinate and commence growth as there is with other seeds. When just the right strain of fungus attempts to invade an orchid seed, the seed uses the stored energy of a single drop of oil to turn the tables and control the fungus so as to gain initial nutrients and energy to commence growth. As germination does not occur without the appropriate fungus, in nature most orchid seeds perish.

The term '*mycorrhiza'* is used to describe the close association between plants and fungi in symbiosis. The invasive soil fungi aid the host plants in uptake of minerals and nutrients as well as carbon fixation and the fungus gains some protection. The association begins with seed germination, with fungal filaments entering the seed. Orchid seed has minimal food reserves and is highly dependent on mycorrhizal soil fungi for development to continue after germination.

Specificity of orchid/fungus association may be one to one ie an orchid genus may associate only with one fungus or it may be more general such as with the weed orchid Disa bracteata, able to germinate with a whole suite of different fungi.

For many leafy orchids dependence on fungus may drop to almost zero as the plant matures because the leaves produce enough food through photosynthesis and direct absorption.

But for leafless, achlorophyllous species the plants rely on mycorrhizal fungi for food throughout their life. These orchids are termed 'saprophytic' or more correctly in most cases 'epiparasites'. Thus there is a continuum of varying levels of orchid dependence upon host fungi

In the 1920's a researcher speculated that the fungi were providing the seeds with carbohydrates and essential nutrients and that if seed was to be sown on a gel medium with these nutrients and the whole kept sterile they would germinate and grow without the need for mycorrhizal fungi.

Vegetative Reproduction

Vegetative reproduction is the process whereby more plants are produced without sexual reproduction, in the case of orchids by an increase of tubers (and thus 'new' plants) below the ground.

Orchids can be divided into 'colony forming' species and 'individual plant' species.

The colony forming species produce several tubers per plant, each tuber at the end of a long 'dropper root'. Each colony is actually a clone and one characteristic of colony species is the low flowering rate, particularly with fire stimulated species where a colony may exist for hundreds of years without a flower being produced if no fires pass over it. Normally there are a few clones which do flower without fire even in a mainly fire stimulated species.

A few species produce clumps rather than colonies, i.e. extra tubers are produced at the base of plants not on dropper roots. Pollination strategies can vary between clumping, colony forming or single plant species.

Fire

Fire is an integral part of the ecology of South Australian bushland and many orchids are dependent upon fire to flower or have space to grow. This should not be simplified to '*all orchids need fire'*, as some may be wiped out by fire especially now that fire regimes have changed and leaf litter burying marsupials are mostly extinct.

Under present regimes leaf litter builds up to so great a depth that wildfires are not only far more dangerous to humans than in pre European times but may wipe out whole plant communities taking many orchids too.

8. History of South Australian Orchid Study

People

Numerous naturalists and botanists collected and researched South Australian native orchids from the earliest exploration of the country through to about 1900. These included:

Robert Brown (1773 – 1858)
Hans Herman Behr (1818 -1904)
Ferdinand von Mueller (1825 – 1896)
JGO (Otto) Tepper (1841 – 1923)
George Bentham (1800 – 1884)
Robert D FitzGerald (1830 – 1892)
Professor Ralph Tate (1840 – 1901)

Predominantly these scientists made only limited collections in South Australia as part of broader research into Australian flora.

From the early 1900s onward several researchers focussed more on South Australian terrestrial orchids including:

Dr Richard Sanders Rogers (1861 – 1942)
Harold Goldsack (1908 – 1989)
Joseph Z Weber (1930 – 1996).

More recently orchid research has expanded to include detailed laboratory studies using extensive microscopic and molecular biology (DNA) techniques. Some of the key researchers currently involved in South Australian orchid research include:

Gary Backhouse
Robert (Bob or Robbie) Bates
Geoff Carr
Mark Clements
Jeff Jeanes
David Jones
Ray Nash

Included amongst the naturalists and botanists are the artists whose careful detailed drawings and paintings have contributed to the knowledge base of South Austalian orchids. They include:

Rosa Fiveash (1854 – 1938) who worked with Dr R.S.Rogers,
Ludwig Dutkiewicz (1921 – 2008) who did the new orchid drawings in the 3rd Edition of *Flora of Australia*.
Erika Stonor whose illustrations feature in *Orchids of South Australia,*
Kath Alcock whose works are featured in this disk.

Publications

Initially South Australian orchids received limited attention in publications on Australian flora. George Bentham (1873), Ferdinand von Mueller and Robert D FitzGerald were among the few botanists/authors who made reference to some of the South Australian terrestrial orchids but they only identified a limited number of species.

Dr Richard Sanders Rogers is generally considered to be the first South Australian orchidologist but in his initial publications he only recognised about 50 species. Later in the orchid section of the first edition of J M Black's *Flora of South Australia* part 1 prepared by Dr Rogers, he included about a hundred orchid species.

In the 1960s, Adelaide's Maynard G. Pocock published a book titled *Ground Orchids of Australia* in which he recognised 120 South Australian orchid species while in the 3rd edition of *Flora of South Australia*, vol 1 (1976) Weber and Bates identified less than 150 species.

The first comprehensive book on South Australian orchids was *Orchids of South Australia* by Bates and Weber published in 1990 and suggested that there may have been more than 150 species of orchid in South Australia. This publication is often referred to as the 'Pink Book'.

With the wave of new species published since then and numerous name changes, the 'Pink book' is now outdated and there is a growing need for an up to date publication as a reference for scientific investigations and field work alike. This 2011 edition of *South Australia's Native Orchids* doubles that number by including many new and even more undescribed species located by NOSSA members in the last 20 years.

9. Conservation

Orchids are the most threatened group of native plants in South Australia with almost a third of the orchid species in the State being threatened with extinction or already extinct here. There are many reasons for this situation and some are discussed below.

Threats to Native Orchids

For thousands of years the Aboriginal inhabitants managed the land with the view of retaining maximum diversity of animals and plants, recognising that the natural environment supplied them with all their needs. They realised that biodiversity depended on such things as fire to maintain natural regeneration of flora and there-by provide food for fauna. With such knowledge they continually burnt the bush in a patchwork fashion so there was maximum vegetation diversity.

From 1836 the European settlers began to have an impact on the environment. Land clearance, cultivation and fertilisation for crops, grazing of hard hoofed animals and changed fire regimes all adversely impacted on orchid environments. There was limited understanding of fragile Australian soils or the extremes of drought and high summer temperatures experienced across much of the state. As a consequence many areas have become hostile to the highly evolved native flora and fauna through factors such as salinisation and acidification of soils, loss of topsoils through erosion, loss of soil micro-flora and infrequent but severe wild fires.

In many areas the park-like aspect in much of South Australia as described by the first settlers began to change. They created large open areas (their cultivated paddocks and grazing areas) and between the paddocks an un-naturally dense bush often developed. Both these environments are hostile to small plants such as native orchids and many species rapidly became threatened or even extinct.

Gradually, surviving areas of native or semi native vegetation were set aside by government and conservation groups, but the largest of these were mainly areas not attractive for farming and were also the areas poorest in orchids. By contrast, conservation parks in areas of higher rainfall and fertile soils were small, limiting the long term sustainability of orchid populations.

Although it is relatively easy to revegetate degraded land with trees and shrubs, the same is not true of orchids. They will not grow in soils with altered micro-flora, or with increased acidity, salt or nutrient levels as occurs across much of the grazed or cultivated land.

Climate change poses an additional threat to our terrestrial orchids. In the past climate change continually occurred but more slowly, allowing species to adapt to changed conditions or to migrate to suitable habitats. Unfortunately today's orchid populations are isolated and have limited opportunity to migrate to new habitats or to adapt quickly enough to cope with the changed conditions.

The Native Orchid Society of South Australia, together with their sister group the Threatened Plant Action Group, have lobbied for improved management policies and become involved in hands on environmental management. NOSSA is working with the Department of Environment and Natural Resources to have the conservation status of the individual species recognised and to arrange for better management of the most threatened species at least.

Today there are scientists in each part of this state working on writing recovery plans. In addition projects such as the Millennium Seed-bank have been developed for cryogenic seed storage and dozens of conservation minded groups have been formed.

In addition the 'Native Vegetation Act' has been introduced by the State Government to prevent un-necessary clearance; a bush heritage system has been developed and annual environmental grants provided for much necessary conservation work.

10. Terrestrial Orchid Culture Notes

By Les Nesbitt, all images by LN, June 2007



Thelymitra 'Kay Nesbit' cultivar

Introduction

Australian terrestrial orchids have been grown in pots in Adelaide for more than 50 years. Nowadays with a wider range of species and hybrids available there are an estimated 300 cultivars successfully growing here. When the cultivation of the fungus dependent terrestrials is fully understood this number will increase dramatically.

Australian ground orchids are cool climate plants that follow an annual growth cycle comprising 6 – 8 months as growing plants under cool (5 – 20°C max, 0 – 14°C min) moist conditions and 4 – 6 months as dormant tubers in hot dry (18 – 40°C max, 12 – 30°C min) conditions. All species like good air movement and will not thrive in a stuffy humid atmosphere especially if temperatures are high.

Growing Area

In South Australia, terrestrials are grown in shadehouses with 50% cloth on the roof and sides. This lets the rain soak the pots and flush out salts from tapwater use. Some growers add a second layer of 50% shadecloth in summer to lower pot temperatures.

It is very important that winter sun and breezes reach your plants so place the shadehouse away from the winter shadows of buildings and evergreen trees. A shadecloth cover or evergreen tree to the southwest and overhead will give protection from frost, hail and storms. Light frosts of -2°C do not worry the majority of species. Galvanised mesh benching about 750mm high will deter slugs and snails and is a convenient height for observing the pots. Watering with rainwater is better than Adelaide tap water. Fungi and orchids do not like salt.

South Australia's Native Orchids

Light

Some species prefer heavy shade, others full sunlight, but most will adapt to a wide range of light intensity. If the leaves and stems are weak and limp or if the rosettes are drawn up to the light, then the shading is too dense and the amount of light should be increased. The spring flowering species like higher light intensities at flowering time and flowers may have pale colours under dull conditions.

Watering

The soil should be kept moist at all times during active growth by watering gently if there is no rain. Hand watering is especially necessary in spring as soil in pots dries out more rapidly than in the garden. Watering must be done slowly so that the mat of needles on the surface of the pot is not disturbed. If pots are allowed to dry out during the growing season, the plants may go dormant prematurely.

Pests and diseases

Slugs and snails love these plants and must be kept under control. Raising the pots off the ground on galvanised steel benching is very effective in controlling these pests. Thrips, aphids, red spider and caterpillars may cause damage. Blackbirds can scratch out small orchids. Various rots can destroy plants. Orchids showing virus like symptoms should be burnt or dumped.

Fertilising

Be very careful with fertilisers because some terrestrials are easily burnt or even killed by overuse. *Diuris* and *Pterostylis* are very hardy and will benefit from weak applications of foliar feed in the early growth stages.

Repotting

The new tubers are produced in winter – spring. The fast multiplying types form several tubers per plant each year. Sometime in October – November, the leaves go yellow and then brown and dry, as the days get longer, hotter and drier in late spring. After the leaves have turned yellow, let the pot dry out completely to dry up the old roots and tubers otherwise they may turn into a soggy mouldy mess and rot may destroy the adjacent new tubers.

The pots can be knocked out and the tubers examined in summer without harm, in fact we find at the Nursery that the best results are obtained if the tubers are repotted in half fresh soil mix each year. Our soil mix is 45% loam, 50% sand and 5% organic matter with a little blood and bone fertiliser added. A 5 mm sieve is a useful tool for separating tubers from soil. Replant the dormant tubers with the tops 20 mm deep. Cover the soil surface with a mulch of sheoak needles, chopped to 20 – 50 mm lengths, to prevent soil erosion & aerate under the leaves. Repotting is normally done in November, December, January and February in South Australia. Ideal pot sizes are 125 – 150 mm standard plastic pots.

Keep the pots shaded and allow the pots to dry out between light watering until mid February when they should be set out in their growing positions and watered a little more often. The tubers of some species will rot if kept wet during the dormant period, others will produce plants prematurely which are then attacked by pests such as thrip and red spider and fungal diseases in the warm weather. Each tuber sends up a shoot to the surface in autumn and leaves grow rapidly in late autumn – early winter as temperatures fall and the rains set in. *Pterostylis* are usually the first to appear in March followed by *Diuris* and *Thelymitra* in April, *Caladenia* in May and *Corybas* in June – July.

Sun loving species like *Diuris*, *Microtis* and *Thelymitra* prefer a brighter location for good growth. *Corybas* like the shadiest corner in winter.

South Australia's Native Orchids



***Thelymitra nuda* cultivated by Les Nesbit**

Terrestrial Orchid Culture Codes

Terrestrial orchids can be placed into one of three groups that have similar cultural requirements.

- Fast multipliers with an annual increase rate greater than 1.5
- Slow multipliers with an annual increase rate less than 1.5
- Fungus dependent orchids survival rate less than 1

Fast multipliers (FM):

Fast multipliers are the easiest deciduous terrestrials to grow and potfuls are regularly seen at orchid meetings and shows. They multiply rapidly by forming 2 – 4 tubers per plant each year. They will take some fertiliser and grow better if repotted annually. It is usually not commercially viable to grow seed of these in flask. They will grow well in premium potting mix from your local hardware store with some sand added. This group contains many genera including *Acianthus*, *Chiloglottis*, *Corybas*, *Cyrtostylis*, *Diplodium*, *Leptoceras*, *Microtis*, *Pterostylis* and some species from *Caladenia*, *Diuris* and *Thelymitra*.

Slow multipliers (SM):

Slow multipliers are not so easy because there is less room for error. Some very showy *Diuris*, *Pterostylis and Thelymitra* fall within this group. A few have a near zero increase rate and will fade away unless additional plants can be produced to make up for occasional losses from predators and disease. They are more expensive because they have to be raised from seed in flasks. Flowering plants are hand pollinated and the seed collected just before the pods split open and the dust-like seed blows away. The pull-off-the-tuber method can be used with some *Diuris* and *Pterostylis* species to double plant numbers annually. Do not fertilise these except when repotting. Those with large tubers such as *Thelymitra nuda* and *Diuris behrii* should be the first to be repotted in November – December.

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***Caladenia latifolia* cultivated by LN**

Fungus dependent orchids (FD):

Some of Australia's most fascinating orchids rely on a symbiotic fungal association to obtain nutrients from the soil as these orchids have virtually no roots. The majority of Australia's orchids are in this group and many are rare plants as they seldom multiply. We talk about survival rates for these orchids that are normally less than one. They have a reputation for being difficult to grow in pots. However some species have been kept alive in pots for nearly 30 years. Never use fertiliser because it can kill the fungi. They should be repotted only when the tubers reach or come out of the bottom of the pot or seedlings get too crowded. A new thin layer of leaf litter is added to the surface each summer to feed the fungi which is active near the surface. Flowers are hand pollinated to get seed. Seed is sprinkled on the pots each autumn and with good culture, seedlings will appear in spring around mother plants.

Since the fungus cannot be seen with the naked eye, the health of the leaves is used to indicate that the fungal relationship with the orchid is working. If seed is sown in autumn, by springtime, when mature orchids flower, there may be a new crop of tiny seedling leaves around the base of the larger mother plants. The appearance of new seedling leaves around mother plants each spring confirms that the fungal relationship is healthy. Seedlings take 3 – 5 years to reach flowering size.



RB, a pot of *Arachnorchis argocalla*, 40 cm tall

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Important Rules

- Use a mix that is at least 50% sand. The bottom of the pot can be pure sand.
- Never use fertilisers (fertilisers can kill fungi).
- Feed the fungus by adding new leaf litter on top of the old litter layer each summer. Chopped up sheoak needles or gum leaf stalks/nuts are recommended.
- Do not repot unless absolutely necessary (eg the tubers come out the bottom of the pot, overcrowding, disease).

Maintainence throughout the year

Summer

- During summer, very lightly water surface of pots weekly to prevent tuber desiccation especially if dormant seedlings are in the pot.
- Divide overcrowded pots in summer like cutting a cake. Fill spaces with fresh mix. Take care to transfer the surface layer to the surface of the new pot.
- Add fresh leaf litter to surface layer in January to February to March.
- If surface moss gets too thick, peel it off and discard in summer.

Autumn

- Start heavier watering of pots weekly from mid March.
- Mix seed with fine dry sand and sprinkle on mother pots in April.
- Water as required in autumn, winter & spring so that pots never dry out during the growing season yet are not soggy wet.
- Leaves appear from Anzac Day to June.

Winter

- Look for flower buds down inside the largest leaves from mid July onwards.
- Look for new seedling leaves from August to October.

Spring

- Enjoy and photograph flowers September to November.
- Hand-pollinate flowers in September – October. Flowers collapse within days of fertilisation.
- Collect seed pods as they turn brown just before they split open in November – December.
- Dry & store seed over summer in paper envelopes kept indoors.
- Allow pots to slowly dry out in mid – late November to induce dormancy and ripen tubers. Plants die down completely in summer to underground tubers.

For further information on growing fungus – dependent orchids refer to:

- '*Orchids Australia*' February 2006, P58, or '*The Orchadian*' Vol 15, Number 3, March 2006, P100.

Re-establishing Orchids

Replanting in bushland should be restricted to orchid species that grow or once grew in the local area. **No hybrids** please.

If planting out in the garden or bush, choose a location with good air movement and winter sun and a thin layer of surface mulch. Slashed native ground cover is good. Native terrestrial orchids cannot stand competition from weeds, grasses, slugs and snails and scratching blackbirds (all introduced pests). They will rot away in dense weeds or dense understory plants. If in a frost prone area they may need overhead protection from a shrub or trees. For plants in growth, dig out a hole a little bigger than the tube. Knock out the tube and insert the contents into the hole and backfill with as little disturbance as possible. Dormant tubers can be planted in a 30 mm deep furrow and backfilled just like planting beans. Water in. The colony forming species will spread out and form patches of plants over a period of several years.

Orchid seed is like fine dust and can be mixed with fine dry sand to help spread it over a large area. Broadcast using a pepper-shaker over a suitable site. Results are dependent on the season and whether fungi are present. This method is slow to show results as flowers may not be seen for 5 to 10 years after seed is sown. More seedlings germinate if there are mother plants already growing.

South Australia's Native Orchids



Native epiphytic orchids are also grown in Adelaide



11. Species Names & Their Synonyms

This is an alphabetical listing of South Australia's native orchids as they appear in this disk.

Names in brown are the names used in this book. The names indented under these are equivalent names that have been used in other publications. The names in **bold** are those used by the State Herbarium of South Australia. Undescribed species that are not included in the Census of South Australian plants are in red. This census can be checked online at: www.flora.sa.gov.au/census.shtml. The last printed version was published on 18 March 2005.

This list is a comprehensive list of the alternative names or synonyms that have been or are being used for each of the species dealt with in this book. It enables the species names used in this book to be related to names used in other publications.

The Find function in Adobe Reader will allow a reader to look up any name used in another publication and determine the name or names used herein.

Acianthus pusillus D.L.Jones
- *Acianthus exsertus* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986)

Anzybas fordhamii (Rupp) D.L.Jones
- ***Corybas fordhamii*** (Rupp)Rupp
- *Corysanthes fordhamii* Rupp

Anzybas unguiculatus (R.Br.) D.L.Jones & M.A.Clem.
- ***Corybas unguiculatus*** (R.Br.)Rchb.f.
- *Corysanthes unguiculata* R.Br.

Arachnorchis argocalla (D.L.Jones) D.L.Jones & M.A.Clem.
- ***Caladenia argocalla*** D.L.Jones
- *Caladenia patersonii* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986), partly
- *Calonema argocallum* (D.L.Jones)Szlach.
- *Calonemorchis argocalla* (D.L.Jones)Szlach.
- *Caladenia sp.* R.J.Bates & J.Z.Weber(1990, pl. 59, LHS)

Arachnorchis audasii (R.S.Rogers) D.L.Jones & M.A.Clem.
- ***Caladenia audasii*** R.S.Rogers
- *Calonema audasii* (R.S.Rogers)Szlach.
- *Calonemorchis audasii* (R.S.Rogers)Szlach.

Arachnorchis aurulenta D.L.Jones
- ***Caladenia aurulenta*** (D.L.Jones) R.J.Bates

Arachnorchis behrii (Schltdl.) D.L.Jones & M.A.Clem.
- ***Caladenia behrii*** Schltdl.
- *Caladenia patersonii* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986), partly
- *Caladenia aff. patersonii R.Br.*: R.J.Bates & J.Z.Weber(1990, pl. 60)

Arachnorchis sp. Brown bayonets (R.Bates 59762) (Not in the Census)

Arachnorchis brumalis (D.L.Jones) D.L.Jones & M.A.Clem.
- ***Caladenia brumalis*** D.L.Jones
- *Caladenia patersonii* auct.non R.Br.: J.Z.Weber & R.J.Bates(1990, pl. 57), partly
- *Calonema brumale* (D.L.Jones)Szlach.
- *Calonemorchis brumalis* (D.L.Jones)Szlach.

Arachnorchis calcicola (G.W.Carr) D.L.Jones & M.A.Clem.
- **Caladenia calcicola** G.W.Carr
- *Calonema calcicolum* (G.W.Carr)Szlach.
- *Calonemorchis calcicola* (G.W.Carr)Szlach.

Arachnorchis cardiochila (Tate) D.L.Jones & M.A.Clem.
- ***Caladenia cardiochila*** Tate
- *Caladenia tessellata* auct.non Fitzg.: J.Z.Weber & R.J.Bates(1978)
- *Phlebochilus cardiochilus* (Tate)Szlach.

Arachnorchis clavigera (A.Cunn. ex Lindl.) D.L.Jones & M.A.Clem.
- ***Caladenia clavigera*** A.Cunn. ex Lindl.
- *Caladenia cordiformis* R.S.Rogers
- *Phlebochilus clavigera* (A.Cunn. ex Lindl.)Szlach.

Arachnorchis clavula (D.L.Jones) D.L.Jones & M.A.Clem.
- ***Caladenia clavula*** D.L.Jones
- *Caladenia dilatata* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986), partly
- *Calonema clavulum* (D.L.Jones)Szlach.
- *Calonemorchis clavula* (D.L.Jones)Szlach.

Arachnorchis colorata (D.L.Jones) D.L.Jones & M.A.Clem.
- ***Caladenia colorata*** D.L.Jones
- *Caladenia patersonii* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986), partly
- *Calonema coloratum* (D.L.Jones)Szlach.
- *Calonemorchis colorata* (D.L.Jones)Szlach.
- *Caladenia sp.* R.J.Bates & J.Z.Weber(1990, pl. 59, RHS)

Arachnorchis conferta (D.L.Jones) D.L.Jones & M.A.Clem.
- ***Caladenia conferta*** D.L.Jones
- *Caladenia toxochila* auct.non Tate: J.Z.Weber & R.J.Bates(1986), partly
- *Calonema confertum* (D.L.Jones)Szlach.
- *Calonemorchis conferta* (D.L.Jones)Szlach.

Arachnorchis cruciformis D.L.Jones
- *Caladenia* sp. Bordertown (R.S.Rogers 788) R.J.Bates
- *Caladenia aff. reticulata* 'blood red' (Not listed in Census)
- *Arachnorchis* sp. Bordertown

Arachnorchis dilatata (R. Br.) D.L.Jones & M.A.Clem.
- ***Caladenia dilatata*** R.Br.

Arachnorchis ensigera D.L.Jones
- ***Caladenia ensigera*** (D.L.Jones) R.J.Bates
- *Caladenia gladiolata hybrids*: Bates, Orchids of SA CD (2007)

Arachnorchis sp. Finniss (R.Bates 308)
- ***Caladenia* sp. Finniss (R.Bates 308)** R.J.Bates
- *Caladenia clavigera* A.Cunn. ex Lindl. partly

Arachnorchis sp. Fleurieu (R.Bates 3433) (Not in the Census)

Arachnorchis flindersica D.L.Jones
- ***Caladenia flindersica*** (D.L.Jones) R.J.Bates
- *Arachnorchis aff. arenaria 'Flinders'* R.J.Bates, partly
- *Caladenia patersonii* auct.non R.Br.: R.J.Bates & J.Z.Weber(1986), partly

Arachnorchis formosa (G.W.Carr) D.L.Jones & M.A.Clem.
- ***Caladenia formosa*** G.W.Carr
- *Caladenia patersonii* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986), partly
- *Caladenia haemantha* D.L.Jones
- *Calonemorchis haemantha* (D.L.Jones)Szlach.
- *Calonema haemanthum* (D.L.Jones)Szlach.

Arachnorchis fragrantissima (D.L.Jones & G.W.Carr) D.L.Jones & M.A.Clem.
- **Caladenia fragrantissima** D.L.Jones & G.W.Carr ssp. **fragrantissima**
- *Caladenia patersonii* R.Br. var. *suaveolens* Nicholls
- *Calonema fragrantissimum* (D.L.Jones & G.W.Carr)Szlach.

- *Calonemorchis fragrantissima* (D.L.Jones & G.W.Carr)Szlach.

Arachnorchis fuliginosa (D.L.Jones) D.L.Jones & M.A.Clem.
- *Arachnorchis fragrantissima* (D.L.Jones & G.W.Carr)D.L.Jones & M.A.Clem., partly

Arachnorchis fulva (G.W.Carr) D.L.Jones & M.A.Clem.
- ***Caladenia fulva*** G.W.Carr
- *Caladenia demissa* D.L.Jones
- *Calonemorchis demissa* (D.L.Jones)Szlach.
- *Calonema demissum* (D.L.Jones)Szlach.

Arachnorchis gladiolata (R.S.Rogers) D.L.Jones & M.A.Clem.
- ***Caladenia gladiolata*** R.S.Rogers
- *Calonema gladiolatum* (R.S.Rogers)Szlach.
- *Calonemorchis gladiolata* (R.S.Rogers)Szlach.

Arachnorchis hastata (Nicholls) D.L.Jones & M.A.Clem.
- *Caladenia hastata* (Nicholls)Rupp
- *Caladenia patersonii* R.Br. var. *hastata* Nicholls
- *Calonema hastatum* (Nicholls)Szlach.
- *Calonemorchis hastata* (Nicholls)Szlach.

Arachnorchis interanea D.L.Jones
- ***Caladenia interanea*** (D.L.Jones) R.J.Bates
- *Caladenia dilatata* auct.non R.Br.: J.Z.Weber & R.J.Bates, partly
- *Caladenia tensa* auct.non G.W.Carr: Barker et al.(2005), partly
- *Caladenia tentaculata* auct.non Schltdl.: R.J.Bates & J.Z.Weber(1990), partly

Arachnorchis intuta D.L.Jones
- ***Caladenia intuta*** (D.L.Jones) R.J.Bates
- *Caladenia* 'Brentwood'

Arachnorchis sp. Kangaroo Island (R.S.Rogers 786) (Not in the Census)

Arachnorchis leptochila ssp. **leptochila** (Fitzg.) D.L.Jones & M.A.Clem.
- ***Caladenia leptochila*** Fitzg.
- *Phlebochilus leptochilus* (Fitzg.)Szlach.
- *Phlebochilus leptochila* (Fitzg.)Szlach.

Arachnorchis leptochila ssp. **dentata** D.L.Jones
- *Caladenia leptochila* Fitzg., partly

Arachnorchis sp. Little Clowns (E.S.Ising s.n., AD966021716) (Not in the Census)

Arachnorchis macroclavia (D.L.Jones) D.L.Jones & M.A.Clem.
- ***Caladenia macroclavia*** D.L.Jones
- *Caladenia dilatata* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986), partly
- *Calonema macroclavium* (D.L.Jones)Szlach.
- *Calonemorchis macroclavia* (D.L.Jones)Szlach.

Arachnorchis sp. Mallee (Not in the Census)
- *Caladenia tensa* G.W.Carr, partly
- *Caladenia dilatata* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986), partly
- *Caladenia tentaculata* auct.non Schltdl.: R.J.Bates & J.Z.Weber(1990), partly

Arachnorchis necrophylla (D.L.Jones) D.L.Jones & M.A.Clem.
- ***Caladenia necrophylla*** D.L.Jones
- *Caladenia dilatata* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986), partly
- *Calonema necrophyllum* (D.L.Jones)Szlach.
- *Calonemorchis necrophylla* (D.L.Jones)Szlach.

Arachnorchis ovata (R.S.Rogers) D.L.Jones & M.A.Clem.
- ***Caladenia ovata*** R.S.Rogers
- *Phlebochilus ovata* (R.S.Rogers)Szlach.
- *Phlebochilus ovatus (amend.)* (R.S.Rogers)Szlach.

Arachnorchis parva (G.W.Carr) D.L.Jones & M.A.Clem.
- ***Caladenia parva*** G.W.Carr
- *Caladenia dilatata* auct.non R.Br.: D.L.Jones(1991)
- *Caladenia dilatata* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986), partly

Arachnorchis phaeoclavia D.L.Jones (D.L.Jones & M.A.Clem.) (Not in the Census)
- *Caladenia phaeoclavia* D.L.Jones, partly
- *Caladenia dilatata* R.Br., partly

Arachnorchis reticulata (Fitzg.) D.L.Jones & M.A.Clem.
- ***Caladenia reticulata*** Fitzg.
- *Caladenia huegelii* Rchb.f. var. *reticulata* (Fitzg.)J.Z.Weber & R.J.Bates
- *Calonema reticulatum* (Fitzg.)Szlach.
- *Calonemorchis reticulata* (Fitzg.)Szlach.

Arachnorchis richardsiorum (D.L.Jones) D.L.Jones & M.A.Clem.
- ***Caladenia richardsiorum*** D.L.Jones
- *Caladenia* sp. *A* R.J.Bates & J.Z.Weber(1990)
- *Caladenia* aff. *hastata* (Nicholls)Rupp: R.J.Bates & J.Z.Weber(1990)
- *Calonema richardsiorum* (D.L.Jones)Szlach.
- *Calonemorchis richardsiorum* (D.L.Jones)Szlach.

Arachnorchis rigida (R.S.Rogers) D.L.Jones & M.A.Clem.
- ***Caladenia rigida*** R.S.Rogers
- *Caladenia huegelii* Rchb.f. var. *rigida* (R.S.Rogers)J.Z.Weber & R.J.Bates
- *Calonema rigidum* (R.S.Rogers)Szlach.
- *Calonemorchis rigida* (R.S.Rogers)Szlach.

Arachnorchis saxatilis D.L.Jones
- *Caladenia stellata* D.L.Jones, partly
- *Caladenia* aff. *fitzgeraldii* Rupp
- *Arachnorchis stellata* (D.L.Jones) D.L.Jones & M.A.Clem.

Arachnorchis septuosa (D.L.Jones) D.L.Jones & M.A.Clem.
- ***Caladenia septuosa*** D.L.Jones
- *Caladenia dilatata* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986), partly
- *Calonema septuosum* (D.L.Jones)Szlach.
- *Calonemorchis septuosa* (D.L.Jones)Szlach.
- *Caladenia aff. dilatata R.Br.* : R.J.Bates & J.Z.Weber(1990, pl.39), partly

Arachnorchis sp. Short golden bayonets, (R.Bates 57351)
- *Caladenia septuosa* D.L.Jones, partly

Arachnorchis sp. Southeast (R.Bates 66283)
- *Caladenia arenaria* auct.non Fitzg.: Barker et al. (2005), partly
- *Caladenia patersonii* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986), partly
- *Caladenia sp. Inland (F.A.Mason 300)* R.J.Bates in Barker et al. (2005), only with respect to SE, partly

Arachnorchis stellata (D.L.Jones) D.L.Jones & M.A.Clem.
- ***Caladenia stellata*** D.L.Jones
- *Caladenia fitzgeraldii* auct.non Rupp: J.Z.Weber & R.J.Bates(1986)
- *Calonema stellatum* (D.L.Jones)Szlach.
- *Calonemorchis stellata* (D.L.Jones)Szlach.
- *Caladenia aff. fitzgeraldii Rupp* : R.J.Bates & J.Z.Weber(1990)

Arachnorchis stricta (R.J.Bates) D.L.Jones & M.A.Clem.
- ***Caladenia stricta*** (R.J.Bates)R.J.Bates
- *Caladenia dilatata* R.Br. var. *stricta* R.J.Bates
- *Calonema strictum* (R.J.Bates)Szlach.
- *Calonemorchis stricta* (R.J.Bates)Szlach.

Arachnorchis strigosa D.L.Jones
- ***Caladenia australis*** G.W.Carr
- *Arachnorchis australis* (G.W.Carr)D.L.Jones & M.A.Clem.

Arachnorchis sp. Subglabriphylla (N. Lothian 5277) (Not in the Census)
- *Caladenia dilatata* R.Br, partly
- *Arachnorchis tentaculata* (Schltdl) D.L.Jones & M.A.Clem., partly

Arachnorchis tensa (G.W.Carr) D.L.Jones & M.A.Clem.
- ***Caladenia tensa*** G.W.Carr
- *Caladenia dilatata* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986), partly
- *Caladenia tentaculata* auct.non Schltdl.: R.J.Bates & J.Z.Weber(1990), partly
- *Caladenia aff. dilatata R.Br.* : R.J.Bates & J.Z.Weber(1990, pl.40), partly

Arachnorchis tentaculata (Schltdl.) D.L.Jones & M.A.Clem.
- ***Caladenia tentaculata*** Schltdl.
- *Calonema tentaculatum* (Schltdl.)Szlach.
- *Calonemorchis tentaculata* (Schltdl.)Szlach.

Arachnorchis toxochila (Tate) D.L.Jones & M.A.Clem.
- ***Caladenia toxochila*** Tate
- *Caladenia dilatata* R.Br. var. *concinna* auct.non Rupp: J.Z.Weber & R.J.Bates(1977)
- *Caladenia concinna* auct.non (Rupp)D.L.Jones & M.A.Clem.: R.J.Bates & J.Z.Weber(1993)
- *Calonema toxochilum* (Tate)Szlach.
- *Calonemorchis toxochila* (Tate)Szlach.

Arachnorchis valida (Nicholls) D.L.Jones & M.A.Clem.
- ***Caladenia valida*** (Nicholls)M.A.Clem. & D.L.Jones
- *Caladenia fitzgeraldii* auct.non Rupp: J.M.Black(1948)
- *Caladenia reticulata* Fitzg. var. *valida* Nicholls
- *Caladenia aff. huegelii Rchb.f.* : R.J.Bates & J.Z.Weber(1990)
- *Calonema validum* (Nicholls)Szlach.
- *Calonemorchis valida* (Nicholls)Szlach.

Arachnorchis × variabilis (Nicholls) Jeanes
- ***Caladenia* × *variabilis*** Nicholls
- *Caladenia variabilis* Nicholls

Arachnorchis venusta (G.W.Carr) D.L.Jones & M.A.Clem.
- ***Caladenia venusta*** G.W.Carr
- *Caladenia patersonii* auct.non R.Br.: J.Z.Weber & R.J.Bates(1990, pl. 58), partly
- *Caladenia floribunda* D.L.Jones
- *Calonema floribundum* (D.L.Jones)Szlach.

Arachnorchis verrucosa (G.W.Carr) D.L.Jones & M.A.Clem.
- ***Caladenia verrucosa*** G.W.Carr
- *Caladenia dilatata* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986), partly
- *Caladenia rigens* D.L.Jones
- *Caladenia aff. dilatata R.Br.* : R.J.Bates & J.Z.Weber(1990, pl.38), partly
- *Calonema aerochilum* (D.L.Jones) Szlach.

Arachnorchis versicolor (G.W.Carr) D.L.Jones & M.A.Clem.
- ***Caladenia versicolor*** G.W.Carr
- *Caladenia patersonii* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986), partly
- *Caladenia aerochila* D.L.Jones
- *Calonema aerochilum* (D.L.Jones)Szlach.

Arachnorchis villosissima (G.W.Carr) Jones and Clem. (Not in the Census)
- *Caladenia dilata* ssp. *villosissima* G.W.Carr
- *Caladenia parva* ssp *villosissima* (Not in the Census)

Arachnorchis woolcockiorum (D.L.Jones) D.L.Jones & M.A.Clem.

- ***Caladenia woolcockiorum*** D.L.Jones
- *Calonema woolcockiorum* (D.L.Jones)Szlach.
- *Calonemorchis woolcockiorum* (D.L.Jones)Szlach.

Arachnorchis xanthochila (D.Beards. & C.Beards.) D.L.Jones & M.A.Clem.
- ***Caladenia xanthochila*** D.Beards. & C.Beards.

Arachnorchis zephyra D.L.Jones – EP (SE)
- ***Caladenia zephyra*** (D.L.Jones) R.J.Bates
- *Caladenia arenaria* auct.non Fitzg.: Jessop(1993), partly
- *Arachnorchis* aff *arenaria* (Fitzg.) D.L.Jones & M.A.Clem.
- *Caladenia patersonii* auct.non R.Br.: R.J.Bates & J.Z.Weber(1990), partly
- *Caladenia sp. Inland (F.A.Mason 300) R.J.Bates, partly*

Bunochilus chlorogrammus (D.L.Jones & M.A.Clem.) D.L.Jones & M.A.Clem.
- *Pterostylis chlorogramma* D.L.Jones & M.A.Clem
- *Pterostylis longifolia* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986), partly

Bunochilus flavovirens D.L.Jones
- ***Pterostylis* sp. Coastal (R.Bates 37621) R.J.Bates**

Bunochilus littoralis D.L.Jones
- ***Pterostylis littoralis*** (D.L.Jones) R.J.Bates

Bunochilus melagrammus (D.L.Jones) D.L.Jones & M.A.Clem.
- ***Pterostylis melagramma*** D.L.Jones
- *Pterostylis longifolia* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986)
- *Oligochaetochilus melagrammus* (D.L.Jones)Szlach.

Bunochilus prasinus D.L.Jones
- *Pterostylis longifolia* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986), partly

Bunochilus smaragdynus (D.L.Jones & M.A.Clem.) D.L.Jones & M.A.Clem.
- *Pterostylis smaragdyna* D.L.Jones & M.A.Clem.
- *Pterostylis longifolia* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986), partly

Bunochilus viriosus D.L.Jones
- *Pterostylis smaragdyna* auct.non D.L.Jones & M.A.Clem., partly
- *Pterostylis longifolia* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986), partly

Caladenia carnea R.Br.
- *Caladenia catenata* auct.non (Sm.)Druce: Jessop (1983)
- *Caladenia catenata* (Smith)Druce f. *carnea* (R.Br.)Halle
- *Petalochilus carneus* (R.Br.)D.L.Jones & M.A.Clem.

Caladenia coactilis D.L.Jones
- *Caladenia carnea* R.Br. var. *gigantea* auct.non R.S.Rogers: J.Z.Weber & R.J.Bates(1986)
- *Caladenia carnea* R.Br. var. *B* (R.J.Bates & J.Weber 1990)
- *Petalochilus coactilis* (D.L.Jones)D.L.Jones & M.A.Clem.
- *Caladenia quadrifaria* auct. non D.L.Jones: D.L.Jones (1991)

Caladenia sp. Coorong (R.Bates 77515) (Not in the Census)
- *Petalochilus* sp. Coorong (R.Bates 77515)
- *Caladenia quadrifaria* auct. non D.L.Jones: D.L.Jones (1991)
- *Caladenia carnea* R.Br., partly

Caladenia fuscata (Rchb.f.) M.A.Clem. & D.L.Jones
- *Caladenia carnea* R.Br. var. *fuscata* Rchb.f.
- *Petalochilus fuscatus* (Reichb.f.)D.L.Jones & M.A.Clem.

Caladenia sp. Glowing green (R.Bates 66286) (Not in the Census)
- *Petalochilus* sp. Glowing green (R.Bates 66286)

Caladenia x idiastes Hopper & Brown

Caladenia latifolia R.Br.
- *Caladenia latifolia* R.Br. var. *alba* Guilfoyle, partly
- *Caladenia elongata* Lindl.
- *Caladenia mollis* Lindl.

Caladenia mentiens D.L.Jones
- *Petalochilus mentiens* (D.L.Jones)D.L.Jones & M.A.Clem(Not in the Census)
- *Caladenia minor* (R.Br.) Rchb.f., partly

Caladenia aff mentiens Selfing coastal dunes (R. Bates 79943)
- *Petalochilus* aff *mentiens Selfing coastal dunes* (R. Bates 79943) (Not in the Census)

Caladenia ornata (Nicholls) D.L.Jones
- *Petalochilus ornatus* (Nicholls)D.L.Jones & M.A.Clem.
- *Caladenia carnea* R.Br. var. *ornata* Nicholls

Caladenia prolata D.L.Jones
- *Caladenia carnea* R.Br. var. *minor* auct.non (Hook.f.)Hatch: J.Z.Weber & R.J.Bates(1986), partly
- *Caladenia carnea* R.Br. var. *attenuata* auct.non Brinsley: J.Z.Weber & R.J.Bates(1978)
- *Caladenia carnea* R.Br. var. *C* (R.J.Bates & J.Weber 1990)
- *Petalochilus prolatus* (D.L.Jones)D.L.Jones & M.A.Clem.

Caladenia pusilla W.M.Curtis
- *Caladenia carnea* R.Br. var. *pygmaea* R.S.Rogers, partly
- *Petalochilus pusillus* (W.M.Curtis)D.L.Jones & M.A.Clem.
- *Petalochilus* aff. *mentiens,* D.L.Jones partly (Not in the Census)
- *Petalochilus carneus* (R.Br.)D.L.Jones & M.A.Clem, partly
- *Caladenia minor* Hook.f., partly
- *Caladenia catenata* (Sm.)Druce var. *minor* (Hook.f.)W.M.Curtis (Not in the Census)
- *Petalochilus mentiens* (D.L.Jones) D.L.Jones & M.A.Clem.

Caladenia pygmaea R.S.Rogers (Powell) (Not in the Census)
- *Caladenia carnea* R.Br. var. *pygmaea* R.S.Rogers

Caladenia sp. Tiny white (R.Bates 41056)
- ***Caladenia* sp. White (R.Bates 41056)** R.J.Bates (Not in the Census)
- *Caladenia minor* Hook.f., partly
- *Petalochilus* sp. *Tiny white* (R.Bates 41056) (Not in the Census)
- *Caladenia pusilla* auct.non W.M.Curtis: R.J.Bates & J.Z.Weber(1990), partly

Caladenia vulgaris D.L.Jones
- *Petalochilus vulgaris* (D.L.Jones)D.L.Jones & M.A.Clem.

Caladenia xantholeuca D.L.Jones
- *Caladenia carnea* R.Br. var. *A* R.J.Bates & J.Z.Weber(1990)
- *Caladenia* aff. *alba R.Br.* : Jessop(1984)
- *Caladenia carnea* R.Br. var. *alba* auct.non (R.Br.)Benth.: J.Z.Weber & R.J.Bates(1978)
- *Petalochilus xantholeucus* (D.L.Jones)D.L.Jones & M.A.Clem.

Caleana major R.Br.

Calochilus cupreus R.S.Rogers
- *Calochilus campestris* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986), partly
- *Calochilus herbaceus* auct.non Lindley, partly

Calochilus herbaceus Lindley
- ***Calochilus campestris*** R.Br.
- *Calochilus herbaceus* auct.non Lindl.: R.J.Bates & J.Z.Weber(1990)
- *Calochilus saprophyticus* R.S.Rogers
- *Calochilus cupreus* R.S.Rogers

Calochilus paludosus R.Br.

Calochilus platychilus D.L.Jones.

- ***Calochilus robertsonii*** auct.non Benth., partly

Calochilus pruinosus D.L.Jones
- *Calochilus campestris* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986), partly

Calochilus robertsonii Benth.
- *Calochilus imberbis* R.S.Rogers

Corunastylis ciliata (Ewart & B.Rees) D.L.Jones & M.A.Clem.
- ***Genoplesium ciliatum*** (Ewart & B.Rees)D.L.Jones & M.A.Clem.
- *Genoplesium archeri* auct.non (Hook.f.)D.L.Jones & M.A.Clements: R.J.Bates & J.Z.Weber(1993)
- *Prasophyllum archeri* auct.non Hook.f.: J.Z.Weber & R.J.Bates(1986)
- *Prasophyllum ciliatum* Ewart & B.Rees
- *Prasophyllum intricatum* auct.non Benth.: R.S.Rogers(1922)

Corunastylis sp. Adelaide Hills (RH Edge s.n. AD 99104294)
- ***Genoplesium rufum*** (R.Br.)D.L.Jones & M.A.Clem.
- *Prasophyllum nigricans* auct.non R.Br.: J.M.Black(1943)
- *Prasophyllum rufum* R.Br.
- *Corunastylis rufa* (R.Br.)D.L.Jones & M.A.Clem.

Corunastylis sp. Dark midge (R.Bates 60714)
- *Genoplesium rufum* auct.non (R.Br.)D.L.Jones & M.A.Clem., partly
- *Corunastylis rufa* auct.non (R.Br.)D.L.Jones & M.A.Clem., partly

Corunastylis despectans
- ***Genoplesium despectans*** (Hook.f.)D.L.Jones & M.A.Clem.
- *Prasophyllum despectans* Hook.f. var. *intermedia* Ewart & B.Rees
- *Prasophyllum despectans* Hook.f.

Corunastylis sp. Intermediate (R.Bates 60741)
- *Genoplesium 'Linearis'*

Corunastylis sp. Large-bracts (R.Bates 25380)
- *Genoplesium rufum* auct.non (R.Br.)D.L.Jones & M.A.Clem., partly

Corunastylis morrisii (Nicholls) D.L.Jones & M.A.Clem.
- ***Genoplesium morrisii*** (Nicholls)D.L.Jones & M.A.Clem.
- *Prasophyllum morrisii* Nicholls
- *Corunastylis morrisii* (Nicholls)D.L.Jones & M.A.Clem.

Corunastylis sp. Mount Billy (R.Bates 52404)
- *Genoplesium* 'Mt Billy'

Corunastylis nigricans (R.Br.) D.L.Jones & M.A.Clem.
- ***Genoplesium nigricans*** (R.Br.)D.L.Jones & M.A.Clem.
- *Prasophyllum tepperi* F.Muell. ex R.S.Rogers
- *Prasophyllum fuscoviride* Reader
- *Prasophyllum nigricans* R.Br.

Corunastylis nuda (Hook. F.) D.L.Jones & M.A.Clem.
- *Prasophyllum nudum* Hook.f.
- *Prasophyllum beaugleholei* Nicholls
- *Genoplesium nudum.*

Corunastylis tepperi (F.Muell. ex Tepper) D.L.Jones & M.A.Clem.
- *Corunastylis nigricans*
- *Genoplesium nigricans*
- *Prasophyllum fuscoviride* Reader

Corysanthes dentata (D.L.Jones) D.L.Jones
- ***Corybas dentatus*** D.L.Jones
- *Corybas diemenicus* auct.non (Lindl.)Rupp: R.J.Bates & J.Z.Weber(1986), partly

- *Corybas incurvus* auct.non D.L.Jones & M.A.Clem.: R.J.Bates & J.Z.Weber(1990), partly

Corysanthes despectans (D.L.Jones & R.C.Nash) D.L.Jones & M.A.Clem.
- ***Corybas despectans*** D.L.Jones & R.C.Nash

Corysanthes diemenica Lindl.
- ***Corybas diemenicus*** (Lindl.)Rchb.f.
- *Corysanthes fimbriata* auct.non R.Br.: R.S.Rogers(1922)
- *Corysanthes dilatata* Rupp & Nicholls
- *Corybas dilatatus* (Rupp & Nicholls)Rupp
- *Corysanthes pruinosa* auct.non A.Cunn.: Tate(1890), R.S.Rogers(1922)
- *Corysanthes fimbriata* R.Br. var. *diemenica* (Lindl.)Benth.

Corysanthes expansa (D.L.Jones) D.L.Jones & M.A.Clem.
- ***Corybas expansus*** D.L.Jones
- *Corybas despectans* auct.non D.Jones & R.Nash: J.Z.Weber & R.J.Bates(1986), partly
- *Corybas sp. B* R.J.Bates & J.Z.Weber(1990)

Corysanthes sp. Fat dwarf

Corysanthes incurva (D.L.Jones & M.A.Clem.) D.L.Jones & M.A.Clem.
- ***Corybas incurvus*** D.L.Jones & M.A.Clem.
- *Corybas sp.* J.Z.Weber & R.J.Bates(1986)
- *Corybas diemenicus* auct.non (Lindl.)Rupp: J.Z.Weber & R.J.Bates(1986)

Corysanthes × miscella (D.L.Jones)D.L.Jones & M.A.Clem.
- ***Corybas*** × ***miscellus*** D.L.Jones

Corysanthes sp. Red-eyed ghost

Corysanthes sp. Silky Ti-tree Swamps
- *Corybas sp. aff. dilatatus* 'Late helmet Orchid'

Cryptostylis subulata (Labill.) Rchb.f.
- *Cryptostylis longifolia* R.Br.
- *Malaxis subulata* Labill.

Cyrtostylis reniformis R.Br.
- *Caladenia reniformis* (R.Br.)Rchb.f.
- *Acianthus reniformis* (R.Br.)Schltr. var. *reniformis*

Cyrtostylis robusta D.L.Jones & M.A.Clem.
- *Acianthus reniformis* auct.non (R.Br.)Schltr.: Kores(1995), partly

Diplodium sp. Adelaide Hills (R.J. Bates 47923)
- ***Pterostylis alata*** (Labill.)Rchb.f, partly
- *Disperis alata* Labill.
- *Diplodium alatum* (Labill.)D.L.Jones & M.A.Clem.

Diplodium sp. Chunky

Diplodium bryophilum (D.L.Jones) D.L.Jones & M.A.Clem.
- ***Pterostylis bryophila*** D.L.Jones
- *Pterostylis obtusa* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986), partly

Diplodium dolichochilum (D.L.Jones & M.A.Clem.) D.L.Jones & M.A.Clem.
- *Pterostylis dolichochila* M.A.Clem. & D.L.Jones
- *Pterostylis alata* auct.non (Labill.)Reichb.f.: J.Z.Weber & R.J.Bates(1978), partly
- *Pterostylis primulata* Nash ms.

Diplodium erythroconchum (M.A.Clem. & D.L.Jones) D.L.Jones & M.A.Clem.
- ***Pterostylis erythroconcha*** M.A.Clem. & D.L.Jones
- *Pterostylis hamiltonii* auct.non Nicholls: J.M.Black(1943)

Diplodium sp. Joanna (R.Bates 72520)

Diplodium sp. Newland Head (C. Houston 73)
- *Pterostylis alata* (Labill.)Rchb.f, partly

Diplodium sp. Nora Creina (R.Bates 72500)

- *Pterostylis striata* Fitzg., partly
- *Pterostylis alata* (Labill.)Rchb.f, partly

Diplodium robustum (R.S.Rogers) D.L.Jones & M.A.Clem.
- ***Pterostylis robusta*** R.S.Rogers
- *Pterostylis reflexa* auct.non R.Br.: R.S.Rogers(1922)
- *Pterostylis alata* (Labill.)Rchb.f. var. *robusta* (Ewart)Tovey & P.Morris
- *Pterostylis praecox* Lindl. var. *robusta* Ewart
- *Pterostylis scabra* Lindl. var. *robusta* (R.S.Rogers)A.S.George
- *Pterostylis alata* (Labill.)Reichb.f. var. *robusta* (R.S.Rogers)J.Z.Weber & R.J.Bates, nom.illeg.

Diplodium striatum (Fitzg.) D.L.Jones & M.A.Clem.
- ***Pterostylis striata*** Fitzg.
- *Pterostylis reflexa* R.Br. var. *intermedia* Ewart
- *Pterostylis alata* auct.non (Labill.)Rchb.f.: R.J.Bates & J.Z.Weber(1990, pl.148)

Diplodium sp. Tall purple (R.J. Bates 62866)

Diplodium tenuissimum (Nicholls) D.L.Jones & M.A.Clem.
- ***Pterostylis tenuissima*** Nicholls

Dipodium campanulatum D.L.Jones
- *Dipodium punctatum* auct.non (Sm.)R.Br.: J.Z.Weber & R.J.Bates(1986), partly
- *Dipodium punctatum unnamed form* R.J.Bates & J.Z.Weber(1990, pl. 96)

Dipodium pardalinum D.L.Jones

Dipodium punctatum (Sm.) R.Br.
- *Dendrobium punctatum* Sm.

Dipodium roseum D.L.Jones & M.A.Clem.
- *Dipodium punctatum* auct.non (Sm.)R.Br.: J.Z.Weber & R.J.Bates(1986), partly

*__Disa bracteata__ Sw.
- *Monadenia bracteata* (Sw.)Durand & Schinz
- *Monadenia australiensis* Rupp

Diuris behrii Schltdl.
- *Diuris pedunculata* auct.non R.Br.: J.Z.Weber & R.J.Bates(1978), partly
- *Diuris lanceolata* auct.non Lindl.: J.Z.Weber & R.J.Bates(1986), partly
- *Diuris pedunculata* R.Br. var. *gigantea* Nicholls

Diuris brevifolia R.S.Rogers (Rare status in SA) – (EP) SL KI
- *Diuris sulphurea* R.Br. ssp. *brevifolia* (R.S.Rogers)J.Z.Weber & R.J.Bates
- *Diuris emarginata* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986)

Diuris daltonii (C.Walter) D.L.Jones
- *Diuris punctata* Sm. var. *punctata*

Diuris × fastidiosa R.S.Rogers

Diuris orientis D.L.Jones
- *Diuris longifolia* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986), partly
- *Diuris corymbosa* auct.non Lindl.: R.J.Bates & J.Z.Weber(1990)
- *Diuris aff. corymbosa Lindl.* R.J.Bates & J.Z.Weber(1993)

Diuris × palachila R.S.Rogers

Diuris palustris Lindl.

Diuris pardina Lindl.
- *Diuris maculata* auct.non Sm.: J.Z.Weber & R.J.Bates(1986)
- *Diuris brevissima* auct.non Fitzg. ex Nicholls: R.J.Bates & J.Z.Weber(1990)

Diuris sp. Red-gum waterholes (M. Houston 69) (Not in the Census)
- *Diuris chryseopsis* D.L.Jones, partly
- *Diuris lanceolata* auct.non Lindl.: J.Z.Weber & R.J.Bates(1986), partly
- *Diuris pedunculata* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986)

Diuris sp. Sandhills (Not in the Census)

- *Diuris chryseopsis* D.L.Jones, partly
- *Diuris lanceolata* auct.non Lindl.: J.Z.Weber & R.J.Bates(1986), partly
- *Diuris pedunculata* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986)

Diuris sp. Short tailed (R. Bates 66289) (Not in the Census)

Diuris sulphurea R.Br.

Eriochilus sp. Hills woodland

- ***Eriochilus cucullatus*** (Labill.)Rchb.f, partly
- *Epipactis cucullata* Labill.
- *Eriochilus autumnalis* R.Br., nom.illeg.

Eriochilus sp. Smooth-leaf plains (Not in the Census)

- ***Eriochilus cucullatus*** (Labill.)Rchb.f, partly
- *Epipactis cucullata* Labill.
- *Eriochilus autumnalis* R.Br., nom.illeg.

Eriochilus sp. Swamp (D.E.Murfet 1950b)

- *Eriochilus aff. cucullatus 'Swamp'* D.L.Jones

Gastrodia procera G.W.Carr

- *Gastrodia sesamoides* R.Br., partly

Gastrodia sesamoides R.Br.

Gastrodia vescula D.L.Jones

- *Gastrodia sesamoides* auct.non R.Br.: R.J.Bates & J.Z.Weber(1990), partly

× Glossadenia tutelata (R.S.Rogers) Kavulak

- ***× Calassodia tutelata*** (R.S.Rogers)M.A.Clem.
- *Caladenia × tutelata* R.S.Rogers
- *Glossadenia × tutelata* (R.S.Rogers)Kavulak , nom.inval.

Glossodia major R.Br.

- *Glossodia major* R.Br. var. *alba* McKibbin

Hydrorchis orbicularis (R.S.Rogers) D.L.Jones & M.A.Clem.

- ***Microtis orbicularis*** R.S.Rogers

Hymenochilus anemophilus D.L.Jones

- ***Pterostylis cycnocephala*** Fitzg., partly
- *Hymenochilus cycnocephalus* (Fitzg.)D.L.Jones & M.A.Clem.
- *Oligochaetochilus cycnocephalus* (Fitzg.)Szlach.

Hymenochilus calcicolus D.L.Jones

- ***Pterostylis cycnocephala*** Fitzg., partly
- *Hymenochilus cycnocephalus* (Fitzg.)D.L.Jones & M.A.Clem.
- *Oligochaetochilus cycnocephalus* (Fitzg.)Szlach.

Hymenochilus cymbellus D.L.Jones

- ***Pterostylis cycnocephala*** Fitzg., partly
- *Hymenochilus cycnocephalus* (Fitzg.)D.L.Jones & M.A.Clem.
- *Oligochaetochilus cycnocephalus* (Fitzg.)Szlach.

Hymenochilus nemoralis D.L.Jones

- ***Pterostylis cycnocephala*** Fitzg., partly
- *Hymenochilus cycnocephalus* (Fitzg.)D.L.Jones & M.A.Clem.
- *Oligochaetochilus cycnocephalus* (Fitzg.)Szlach.

Hymenochilus pagophilus D.L.Jones

- ***Pterostylis mutica*** R.Br, partly
- *Hymenochilus muticus* (R.Br.)D.L.Jones & M.A.Clem.
- *Oligochaetochilus muticus* (R.Br.)Szlach.

Hymenochilus pisinnus D.L.Jones

- ***Pterostylis mutica*** R.Br, partly
- Hymenochilus muticus (R.Br.)D.L.Jones & M.A.Clem.

- Oligochaetochilus muticus (R.Br.)Szlach.

Jonesiopsis bicalliata (R.S.Rogers) D.L.Jones & M.A.Clem.
- ***Caladenia bicalliata*** R.S.Rogers ssp. ***bicalliata***
- *Caladenia bicalliata* R.S.Rogers, partly
- *Caladenia filamentosa* R.Br. var. *bicalliata* (R.S.Rogers)J.Z.Weber & R.J.Bates
- *Calonema bicalliatum* (R.S.Rogers)Szlach.
- *Calonema bicalliatum* (R.S.Rogers)D.L.Jones & M.A.Clem.
- *Calonemorchis bicalliata* (R.S.Rogers)Szlach.
- *Caladenia bicalliata* R.S.Rogers ssp. *cleistogama* Hopper & A.P.Br. (Not in the Census)
- *Calonema cleistogamum* (Hopper & A.P.Br.)D.L.Jones & M.A.Clem.
- *Calonemorchis cleistogama* (Hopper & A.P.Br.)D.L.Jones & M.A.Clem.

Jonesiopsis capillata (D.L.Jones) D.L.Jones & M.A.Clem.
- ***Caladenia capillata*** D.L.Jones
- *Caladenia filamentosa* R.Br. var. *tentaculata* R.S.Rogers
- *Caladenia tentaculata* Tate(1889), non Schltdl.(1847)
- *Calonema capillatum* (D.L.Jones)D.L.Jones & M.A.Clem.
- *Calonemorchis capillata* (D.L.Jones)D.L.Jones & M.A.Clem.

Jonesiopsis filamentosa (R.Br.) Szlach.
- ***Caladenia filamentosa*** R.Br. var. ***filamentosa***
- *Caladenia denticulata* auct.non Lindl.: J.Z.Weber & R.J.Bates(1986), partly

Jonesiopsis flaccida (D.L.Jones) D.L.Jones & M.A.Clem.
- ***Caladenia flaccida*** D.L.Jones
- *Caladenia filamentosa* R.Br. var. *filamentosa* auct.non Benth.: J.Z.Weber & R.J.Bates(1986), partly
- *Calonema flaccidum* (D.L.Jones)Szlach.(2001)
- *Calonema flaccidum* (D.L.Jones)D.L.Jones & M.A.Clem.(2001)
- *Calonemorchis flaccida* (D.L.Jones)Szlach.

Jonesiopsis sp. Monarto South (H. Goldsack 163) (Not in the Census)
- ***Caladenia* sp. Monarto South (H.Goldsack 163 AD97708605A)** R.J.Bates
- *Caladenia filamentosa* auct.non R.Br.: J.Z.Weber & R.J.Bates

Jonesiopsis sanguinea (D.L.Jones) Szlach.
- ***Caladenia sanguinea*** D.L.Jones
- *Caladenia aff. filamentosa R.Br.* : J.Z.Weber & R.J.Bates(1993), partly
- *Caladenia filamentosa* R.Br. var. *filamentosa* auct.non Benth.: J.Z.Weber & R.J.Bates(1986)

Leporella fimbriata (Lindl.) A.S.George
- *Caladenia fimbriata* (Lindl.)Rchb.f.
- *Eriochilus fimbriatus* (Lindl.)F.Muell.
- *Leptoceras fimbriata* Lindl.

Leptoceras menziesii (R.Br.) Lindl.
- *Caladenia menziesii* R.Br.

Linguella sp. Coastal nana (R. Bates 15008) (Not in the Census)
- ***Pterostylis nana*** R.Br., partly
- *Linguella paractites* D.L.Jones ms (Not in the Census)
- *Linguella nana* (R.Br.)D.L.Jones & M.A.Clem., partly

Linguella sp. Hale (R.Bates 33950)
- ***Pterostylis sp. Hale (R.J.Bates 21725)***
- *Pterostylis sp. Hale (R.J.Bates 59781)*
- *Pterostylis sp. Veined leaf (R.J.Bates 59781) R.J.Bates*
- *Linguella nana* (R.Br.)D.L.Jones & M.A.Clem., partly
- *Pterostylis* Hale Anon.(Lofty Block Threatened Orchids)
- *Pterostylis* sp. 10 (Hale) Anon.(Lofty Block Threatened Orchids)

- *Pterostylis* aff. *nana* R.Br.: Anon.(SA orchid publications)

Linguella sp. Hills nana (R.H.Edge s.n.) (Not in the Census)
- ***Pterostylis nana*** R.Br., partly
- *Linguella longiseta* D.L.Jones, ms
- *Linguella nana* (R.Br.)D.L.Jones & M.A.Clem., partly

Linguella sp. Mallee nana (E.N.S. Jackson 5627) (Not in the Census)
- ***Pterostylis nana*** R.Br., partly
- *Linguella tenuis* DLJ, Little (?)
- *Linguella nana* (R.Br.)D.L.Jones & M.A.Clem., partly

Linguella sp. Tall mallee nana (Not in the Census)
- ***Pterostylis nana*** R.Br., partly
- *Linguella nana* (R.Br.)D.L.Jones & M.A.Clem., partly

Linguella sp. Warren (R.Bates 33950) (Not in the Census)
- ***Pterostylis nana*** R.Br., partly
- *Linguella nana* (R.Br.)D.L.Jones & M.A.Clem., partly

Microtidium atratum (Lindl.) D.L.Jones & M.A.Clem.
- ***Microtis atrata*** Lindl.
- *Microtis atrata* Lindl. var. viridula Rchb.f.
- *Microtis minutiflora* F.Muell.

Microtis arenaria Lindl.
- *Microtis biloba* Nicholls
- *Microtis unifolia* auct.non (G.Forst.)Rchb.f.: J.Z.Weber & R.J.Bates(1986), partly

Microtis sp. Curved lip (N.N. Donner 5999) (Not in the Census)
- *Microtis curvichila* ms.

Microtis eremaea R.J.Bates
- *Microtis parviflora* R.Br. auct. non. R.J.Bates & J.Z.Weber(1990), partly

Microtis sp. Flinders (R. Bates 45201) (Not in the Census)
- *Microtis flindersica* ms.

Microtis sp. Fragrant (R. Bates 26215) (Not in the Census)

Microtis frutetorum Schltdl.
- *Microtis unifolia* auct.non (G.Forst.)Rchb.f.: J.Z.Weber & R.J.Bates(1986), partly

Microtis sp. Hanging bogs (R. Bates) (Not in the Census)

Microtis sp. Late flowered (R. Bates 16589) (Not in the Census)
- *Microtis postremus* ms.

Microtis sp. Narrow labellum (Hj. Eichler 18099) (Not in the Census)
- *Microtis leptochila* ms.

Microtis sp. Nash (R. Bates 44740) (Not in the Census)
- *Microtis nashii* ms.

Microtis oblonga R.S.Rogers (Not in the Census)
- *Microtis rara* R.Br., partly

Microtis parviflora R.Br. ssp. **parviflora**
- ***Microtis parviflora* R.Br.**

Microtis parviflora ssp. Dense spikes (R. Bates 57790) (Not in the Census)
- *Microtis parviflora* ssp. *brevichila* ms.

Microtis rara R.Br.
- *Microtis brownii* Rchb.f.
- *Microtis oblonga* R.S.Rogers
- (*Microtis magnadenia*)

Microtis sp. Short-leaf (R.J.Bates 54342)
- *Microtis unifolia* auct.non (G.Forst.)Rchb.f., partly

Microtis sp. Topperwein (R. Bates) (Not in the Census)

Microtis unifolia (G.Forst.)Rchb.f.
- *Microtis frutetorum* auct. non. Schltdl.
- *Epipactis porrifolia* Sw.
- *Microtis porrifolia* (Sw.)R.Br. ex Spreng.
- *Ophrys unifolia* G.Forst

Myrmechila trapeziformis Fitzg.
- ***Chiloglottis trapeziformis*** Fitzg.

Nemacianthus caudatus (R.Br.) D.L.Jones & M.A.Clem.
- ***Acianthus caudatus*** R.Br.
- *Acianthus caudatus* R.Br. var. *caudatus*
- *Acianthus caudatus* R.Br. var. *pallidus,* partly

Oligochaetochilus arenicola (M.A.Clem. & J.Stewart) Szlach.
- ***Pterostylis arenicola*** M.A.Clem. & J.L.Stewart
- *Pterostylis squamata* auct.non R.Br.: J.M.Black(1943), partly
- *Pterostylis boormanii* auct.non Rupp: J.Z.Weber & R.J.Bates(1986)

Oligochaetochilus sp. Rock ledges (pl. 185, Bates & Weber 1990) R.J.Bates
- ***Pterostylis* sp. Rock ledges (pl. 185, Bates & Weber 1990) R.J.Bates**
- *Oligochaetochilus aculeatus* ms D.L.Jones
- *Pterostylis* aff. *aciculiformis* (Nicholls)M.A.Clem. & D.L.Jones R.J.Bates & J.Z.Weber(1993)
- *Pterostylis aciculiformis* auct.non (Nicholls)M.A.Clem. & D.L.Jones: R.J.Bates & J.Z.Weber(1990)
- *Pterostylis pusilla* R.S.Rogers var. aciculiformis Nicholls
- *Oligochaetochilus aciculiformis* (Nicholls)Szlach.

Oligochaetochilus sp. Arkaroola (R.J. Bates s.n., AD 159960)

Oligochaetochilus sp. Bimbowrie (R.Bates 41164)

Oligochaetochilus bisetus (Blackmore & Clemesha) Szlach.
- ***Pterostylis biseta*** Blackmore & Clemesha
- *Pterostylis psammophylla* (D.L.Jones) R.J.Bates, partly
- *Pterostylis rufa* auct.non R.Br.: J.M.Black(1943)
- *Pterostylis* Mt Brown Anon.(Lofty Block Threatened Orchids)

Oligochaetochilus sp. Blue-bush Plain (R.Bates 26130)
- *Pterostylis thamnophilus* ms
- *Pterostylis lingua* M.A.Clem., partly

Oligochaetochilus boormanii (Rupp) Szlach.
- ***Pterostylis boormanii*** Rupp
- *Pterostylis squamata* auct.non R.Br.: J.M.Black(1943), partly

Oligochaetochilus sp. Broughton River Gorge (R.Bates 35061) (Not in the Census)

Oligochaetochilus sp. Canegrass (R.Bates 77674) (Not in the Census)

Oligochaetochilus cobarensis (M.A.Clem.) Szlach.
- ***Pterostylis cobarensis*** M.A.Clem.
- *Pterostylis excelsa* auct.non M.A.Clem.: R.J.Bates & J.Z.Weber(1990), partly
- *Pterostylis* sp. R.J.Bates & J.Z.Weber(1990, pl. 192)

Oligochaetochilus sp. Crossed Sepals (R.Bates 57329) (Not in the Census)
- *Pterostylis* aff. *hamata* Blackmore & Clemesha: Weber and Bates(1978)

Oligochaetochilus despectans (Nicholls) Szlach.
- ***Pterostylis despectans*** (Nicholls)M.A.Clem. & D.L.Jones
- *Pterostylis rufa* R.Br. var. despectans Nicholls
- *Pterostylis* aff. *despectans* (Mt Bryan): Anon.(Lofty Block Threatened Orchids)

Oligochaetochilus sp. Everard Range (L.Scott 173) (Not in the Census)

Oligochaetochilus exallus D.L.Jones
- ***Pterostylis exalla*** (D.L.Jones) G.N.Backh.

- *Oligochaetochilus aff. boormanii 'Coastal'* R.J.Bates: Orchids SA CDRom (Nov, 2007)
- *Oligochaetochilus "Belvidere" DE Murfet 3603* R.J.Bates: J. Native Orchid. Soc. S. Australia(2006)
- *Pterostylis boormanii* auct.non Rupp: Barker et al.(2005), partly

Oligochaetochilus excelsus (M.A.Clem.) Szlach.
- ***Pterostylis excelsa*** M.A.Clem.
- *Pterostylis mitchellii* Lindl. f. major Lindl.
- *Pterostylis mitchellii* auct.non Lindl.: J.M.Black(1943)
- *Pterostylis hamata* auct.non Blackmore & Clemesha: J.Z.Weber & R.J.Bates(1978)

Oligochaetochilus excelsus, southern EP form

Oligochaetochilus ferrugineus D.L.Jones
- ***Pterostylis ferruginea*** (D.L.Jones) G.N.Backh.
- *Pterostylis* sp. Sand plain (D.N. Kraehenbuehl 5670) R.J.Bates
- *Pterostylis squamata* auct.non R.Br. J.M.Black, partly
- *Oligochaetochilus* sp. Sandplain
- *Oligochaetochilus rufa* R.Br., partly

Oligochaetochilus sp. Flinders (Not in the Census)

Oligochaetochilus sp. Gammon Range (R.Bates 34295) (Not in the Census)
- *Pterostylis* aff. *hamata* Blackmore & Clemesha: Weber and Bates(1978)
- *Pterostylis excelsa* M.A.Clem.
- *Pterostylis magnus* ms

Oligochaetochilus lepidus D.L.Jones
- ***Pterostylis lepida*** (D.L.Jones) G.N.Backh.
- *Pterostylis* sp. Halbury (R.Bates 8425) R.J.Bates
- *Pterostylis* aff. *boormanii* Rupp R.J.Bates & J.Z.Weber(1993)

Oligochaetochilus linguus (M.A.Clem.) Szlach.
- ***Pterostylis lingua*** M.A.Clem.

Oligochaetochilus sp. Lower Murray (R. Edge s.n.) (Not in the Census)

Oligochaetochilus maximus (M.A.Clem. & D.L.Jones) Szlach.
- ***Pterostylis maxima*** M.A.Clem. & D.L.Jones

Oligochaetochilus mirabilis D.L.Jones
- ***Pterostylis* sp. Eyre Peninsula (R.Bates 19474) R.J.Bates**
- *Pterostylis despectans* "summer flowered form" R.J.Bates & J.Z.Weber(1990, pl. 164)
- *Pterostylis cernua* ms.
- *Pterostylis* 'Eyre Peninsula'

Oligochaetochilus sp. Mt Geharty (R.Bates 30699)

Oligochaetochilus sp. Mt Olinthus (R.Bates 62451)

Oligochaetochilus sp. Mt Victoria Uranium Mine (Not in the Census)
- *Pterostylis* 'Mt Victoria'

Oligochaetochilus sp. Old Boolcoomatta (Bates 62450) (Not in the Census)
- *Pterostylis lingua* M.A.Clem., partly

Oligochaetochilus sp. Outback (R.Bates 41674)
- *Pterostylis aff lingua* MA Clem.

Oligochaetochilus ovatus (M.A.Clem. Szlach.
- ***Pterostylis ovata*** M.A.Clem.
- *Pterostylis mitchellii* auct.non Lindl.: J.Z.Weber & R.J.Bates (1978)

Oligochaetochilus sp. Oratan Rock (R.Bates 62448)

Oligochaetochilus planulatus (D.L.Jones & M.A.Clem.) D.L.Jones & M.A.Clem.
- ***Pterostylis planulata*** D.L.Jones & M.A.Clem.
- *Pterostylis biseta* auct.non Blackmore & Clemesha: R.J.Bates & J.Z.Weber(1990), partly

Oligochaetochilus psammophilus D.L.Jones

- ***Pterostylis psammophila*** (D.L.Jones) R.J.Bates
- *Oligochaetochilus* sp. 'Sandy Creek' (R. Bates 347875B) R.J.Bates
- *Pterostylis lingua* auct.non M.A.Clem.
- *Pterostylis biseta*, Blackmore & Clemesha, partly
- *Pterostylis* 'Sandy Creek'

Oligochaetochilus pusillus (R.S.Rogers) Szlach.
- **Pterostylis pusilla** R.S.Rogers

Oligochaetochilus sp. Quartz (R.Bates s.n.)

Oligochaetochilus setiferus (M.A.Clem., Matthias & D.L.Jones)Szlach.
- ***Pterostylis setifera*** M.A.Clem., Matthias & D.L.Jones
- *Pterostylis mitchellii* auct.non Lindl.: J.Z.Weber & R.J.Bates(1978)

Oligochaetochilus sp. Slender desert (R.Bates 41266) (Not in the Census)

Oligochaetochilus sp. Tall woodland (R.Bates 55028) (Not in the Census)
- *Pterostylis biseta* Blackmore & Clemesha, partly
- *Oligochaetochilus sigmoidea* ms

Oligochaetochilus xerophilus (M.A.Clem.) Szlach.
- ***Pterostylis xerophila*** M.A.Clem.
- *Oligochaetochilus* sp. Trilobus (pl. 191, Bates & Weber 1990), partly
- *Pterostylis* sp. Triloba (pl.191, Bates & Weber 1990) R.J.Bates & J.Z.Weber(1990), partly

Orthoceras strictum R.Br. – FR EP NL MU YP SL KI SE

Paracaleana disjuncta D.L.Jones
- *Caleana* aff. *nigrita* (Lindl.)Blaxell : R.J.Bates & J.Z.Weber(1990), as syn.
- *Paracaleana* aff. *nigrita* (Lindl.)Blaxell : R.J.Bates & J.Z.Weber(1990)

Paracaleana minor (R.Br.) Blaxell
- *Caleana minor* R.Br.
- *Caleana sullivanii* Nicholls
- *Paracaleana sullivanii* (R.Br.)Blaxell

Pheladenia deformis (R.Br.) D.L.Jones & M.A.Clem.
- *Cyanicula deformis* (R.Br.)Hopper & A.P.Br.
- *Caladenia barbata* Lindl.
- *Caladenia deformis* R.Br.
- *Caladenia deformis* R.Br. var. *albiflora* Benth.

Plumatichilos sp. Mallee Bearded Greenhood (Not in the Census)
- ***Pterostylis plumosa*** Cady, partly
- *Pterostylis barbata* auct.non Lindl.: J.M.Black(1943)
- *Plumatichilos plumosum* (Cady)Szlach.

Plumatichilos sp. Woodland Bearded Greenhood (Not in the Census)
- ***Pterostylis plumosa*** Cady, partly
- *Plumatichilos plumosum* (Cady)Szlach., partly
- *Pterostylis barbata* auct.non Lindl.: J.M.Black(1943), partly
- *Plumatichilos plumosum* (Cady)Szlach., partly

Plumatichilos tasmanicum (D.L.Jones) Szlach.
- ***Pterostylis tasmanica*** D.L.Jones
- *Pterostylis barbata* auct.non Lindl.: J.M.Black(1943), partly
- *Pterostylis plumosa* auct.non Cady: J.Z.Weber & R.J.Bates(1986), partly

Prasophyllum sp. Alligator Gorge (Not in the Census)
- *Prasophyllum fitzgeraldii* auct.non R.S.Rogers & Maiden, partly

Prasophyllum australe R.Br.

Prasophyllum sp. Bright Shiny Maroon (R.Bates 3404) (Not in the Census)
- *Prasophyllum fitzgeraldii* auct.non R.S.Rogers & Maiden, partly

Prasophyllum sp. Bushfires (R.S.Rogers 2681)

- *Prasophyllum gracile* R.S.Rogers, partly
- *Prasophyllum constrictum* R.S.Rogers
- *Prasophyllum pyriforme* E.Coleman
- *Prasophyllum* aff. *pyriforme* E.Coleman

Prasophyllum calcicola R.J.Bates
- *Prasophyllum macrostachyum* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986)

Prasophyllum sp. Callitris (J.Carrick 3738) (Not in the Census)
- *Prasophyllum odoratum* R.S.Rogers, partly
- *Prasophyllum patens* R.Br., partly

Prasophyllum catenemum D.L.Jones
- ***Prasophyllum* sp. West Coast (R.Tate AD96945167) R.J.Bates**
- *Prasophyllum odoratum* R.S.Rogers, partly
- *Prasophyllum patens* R.Br., partly

Prasophyllum sp. Coast sandhills (Hj.Eichler 14100) R.J.Bates
- *Prasophyllum carnosum* ms.
- *Prasophyllum odoratum* R.S.Rogers, partly

Prasophyllum collinum D.L.Jones
- *Prasophyllum odoratum* R.S.Rogers, partly

Prasophyllum constrictum R.S.Rogers
- *Prasophyllum fuscum* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986), partly
- *Prasophyllum gracile* R.S.Rogers

Prasophyllum sp. Desert (J.Carrick 2398) (Not in the Census)
- *Prasophyllum odoratum* R.S.Rogers, partly
- *Prasophyllum album* R.S.Rogers, partly

Prasophyllum elatum R.Br.

Prasophyllum sp. Enigma (R.Bates 2350) R.J.Bates (Not in the Census)
- *Prasophyllum* goldsackii J.Z.Weber & R.J.Bates, partly
- *Prasophyllum* sp. Enigmum

Prasophyllum fecundum R.J.Bates
- *Prasophyllum fitzgeraldii* auct.non R.S.Rogers & Maiden: J.Z.Weber & R.J.Bates(1986), partly

Prasophyllum fitzgeraldii R.S.Rogers & Maiden

Prasophyllum frenchii F.Muell.
- *Prasophyllum hartii* R.S.Rogers

Prasophyllum sp. Gilbert River (R. Bates 16499) (Not in the Census)

Prasophyllum goldsackii J.Z.Weber & R.J.Bates
- *Prasophyllum pudicum* ms

Prasophyllum sp. Gum Lagoon (P.J.Lang 1633)
- *Prasophyllum* aff. *fitzgeraldii* sp. 3
- *Prasophyllum fitzgeraldii* R.S.Rogers & Maiden, partly

Prasophyllum sp. Jip Jip (Not in the Census)
- *Prasophyllum fitzgeraldii* auct.non R.S.Rogers & Maiden, partly
- *Prasophyllum occultans* R.J.Bates, partly

Prasophyllum sp. Late Coastal Dunes (H. Goldsack 555) (Not in the Census)
- *Prasophyllum odoratum* R.S.Rogers, partly

Prasophyllum laxum R.J.Bates
- *Prasophyllum* aff *lindleyanum* Rchb.f.

Prasophyllum litorale R.J.Bates
- *Prasophyllum frenchii* F.Muell., partly
- *Prasophyllum hartii* R.S.Rogers, partly

Prasophyllum murfetii D.L.Jones
- *Prasophyllum frenchii* auct.non F.Muell.: J.Z.Weber & R.J.Bates(1990, pl.133), partly

- *Prasophyllum hartii* R.S.Rogers, partly

Prasophyllum occidentale R.S.Rogers
- *Prasophyllum fuscum* R.Br. var. *occidentale* (R.S.Rogers)J.Z.Weber & R.J.Bates(1986)
- *Prasophyllum gracile* R.S.Rogers, partly

Prasophyllum occultans R.J.Bates
- *Prasophyllum occidentale* auct.non R.S.Rogers: J.Z.Weber & R.J.Bates(1986), partly
- *Prasophyllum pallidum* auct.non. Nicholls: J.Z.Weber & R.J.Bates(1986)

Prasophyllum odoratum R.S.Rogers
- *Prasophyllum patens* auct.non R.Br.: J.Z.Weber & R.J.Bates(1990), partly
- *Prasophyllum patens* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986) var. *patens*, partly
- *Prasophyllum odoratum* R.S.Rogers var. *album* (R.S.Rogers)R.S.Rogers
- *Prasophyllum album* R.S.Rogers

Prasophyllum pallidum Nicholls
- *Prasophyllum fuscum* auct.non R.Br.: R.S.Rogers(1922)

Prasophyllum aff. parviflorum (Not in the Census)
- *Prasophyllum parviflorum* Nicholls
- *Prasophyllum hartii* R.S.Rogers
- *Prasophyllum frenchii* F.Muell.

Prasophyllum sp. Pink lip (M. Houston 63) (Not in the Census)
- *Prasophyllum* aff *fitzgeraldii* sp. 1
- *Prasophyllum* sp. Bagdad

Prasophyllum praecox D.L.Jones
- *Prasophyllum odoratum* R.S.Rogers, partly
- *Prasophyllum* sp. 'Early' (Not in the Census)

Prasophyllum pruinosum R.S.Rogers
- *Prasophyllum patens* R.Br. var. *pruinosum* (R.S.Rogers)R.S.Rogers
- *Prasophyllum patens* auct.non R.Br.: J.M.Black(1943)
- *Prasophyllum fuscum* R.Br. var. *grandiflorum* Benth., partly

Prasophyllum rotundiflorum R.S.Rogers
- *Prasophyllum odoratum* auct.non R.S.Rogers: R.J.Bates & J.Z.Weber(1993), partly

Prasophyllum sp. Sandplain (K & B Bayley s.n.) (Not in the Census)
- *Prasophyllum odoratum* auct.non R.S.Rogers, partly
- *Prasophyllum* 'Sandhill Leek-orchid'

Prasophyllum spicatum R.J.Bates & D.L.Jones
- *Prasophyllum truncatum* auct.non Lindl.: J.Z.Weber & R.J.Bates(1986), partly
- *Prasophyllum odoratum* R.S.Rogers var. *album* auct.non (R.S.Rogers)R.S.Rogers: R.S.Rogers(1922)

Prasophyllum sp. Topperwein (R.Bates 67084) (Not in the Census)

Prasophyllum validum R.S.Rogers
- *Prasophyllum fuscum* R.Br. var. *validum* (R.S.Rogers)J.Z.Weber & R.J.Bates

Prasophyllum sp. Verran Tanks (D.Murfet 1298)
- *Prasophyllum constrictum* R.S.Rogers, partly
- *Prasophyllum fuscum* R.Br., partly

Prasophyllum viretrum D.L.Jones & D.T.Rouse (Not in the Census)
- *Prasophyllum hartii* R.S.Rogers, partly

Prasophyllum sp. Waterholes (R. Bates 9037)
- *Prasophyllum odoratum* auct.non R.S.Rogers, partly

Pterostylis cucullata R.Br. ssp. **cucullata**
- *Pterostylis cucullata* R.Br. ssp., partly

Pterostylis cucullata R.Br. ssp. **sylvicola** D.L.Jones
- *Pterostylis cucullata* R.Br. ssp., partly

Pterostylis curta R.Br. (Rare status in SA) – FR NL SL SE
Pterostylis falcata R.S.Rogers
- *Pterostylis furcata* auct. non: Lindl.: J.Z.Weber & R.J.Bates(1986)
Pterostylis foliata Hook.f.
- *Pterostylis vereenae* R.S.Rogers
Pterostylis × ingens (Rupp)D.L.Jones
- *Pterostylis acuminata* R.Br. var. ingens Rupp
Pterostylis lustra D.L.Jones
- *Pterostylis falcata* R.S.Rogers, partly
- *Pterostylis furcata* auct. non: Lindl.: J.Z.Weber & R.J.Bates(1986)
Pterostylis nutans R.Br.
Pterostylis pedunculata R.Br.
Pyrorchis nigricans (R.Br.) D.L.Jones & M.A.Clem.
- *Lyperanthus nigricans* R.Br.
- *Burnettia nigricans* (R.Br.)Hopper & A.P.Br.
***Serapias lingua** L.
Speculantha parviflora (R.Br.) D.L.Jones & M.A.Clem.
- ***Pterostylis parviflora*** R.Br.
- *Pterostylis* sp. J.Z.Weber & R.J.Bates(1978)
Speculantha uliginosa (D.L.Jones) D.L.Jones & M.A.Clem.
- ***Pterostylis uliginosa*** D.L.Jones
- *Pterostylis aphylla* auct.non Lindl.: J.Z.Weber & R.J.Bates(1986)
- *Pterostylis parviflora* R.Br. var. *aphylla* (Lindl.)Ewart & Jean White
- *Pterostylis* aff. *aphylla* Lindl. : R.J.Bates & J.Z.Weber(1990)
Speculantha sp. Sandheath (Not in the Census)
- *Pterostylis parviflora* R.Br., partly
- *Pterostylis sp. Sandheath* (D.Murfet 3190) R.J.Bates
Spiranthes alticola D.L.Jones
- ***Spiranthes australis*** (R.Br.)Lindl.
- *Neottia australis* R.Br.
- *Spiranthes sinensis* (Pers.)Ames ssp. *australis* (R.Br.)Kitamura
- *Spiranthes sinensis* auct.non (Pers.)Ames: R.J.Bates & J.Z.Weber(1990)
Spiranthes sp. Late selfing white (R.Bates 909)
- *Spiranthes sinensis* (Pers.)Ames, partly
- *Spiranthes cleistogama* ms, partly
Simpliglottis cornuta (Hook.f.)Szlach.
- ***Chiloglottis cornuta*** Hook.f.
- *Chiloglottis muelleri* Fitzg.
Simpliglottis valida (D.L.Jones) Szlach.
- ***Chiloglottis valida*** D.L.Jones
- *Chiloglottis gunnii* auct.non Lindl.: J.Z.Weber & R.J.Bates(1986)
Stegostyla congesta (R.Br.) D.L.Jones & M.A.Clem.
- ***Caladenia congesta*** R.Br.
Stegostyla cucullata (Fitzg.) D.L.Jones & M.A.Clem.
- ***Caladenia cucullata*** Fitzg.
Stegostyla gracilis (R.Br.) D.L.Jones & M.A.Clem.
- ***Caladenia gracilis*** R.Br.
- *Caladenia testacea* auct.non R.Br.: R.S.Rogers(1922)
- *Caladenia carnea* R.Br. var. *quadriseriata* Benth.
- *Caladenia angustata* Lindl.
Stegostyla aff. iridescens (Not in the Census)

- *Stegostyla iridescens* (R.S.Rogers) D.L.Jones & M.A.Clem.
- *Stegostyla* aff. *transitoria (1)* (D.L.Jones) D.L.Jones & M.A.Clem.
- *Petalochilus cleistantha*

Stegostyla aff. transitoria(Not in the Census)
- *Stegotyla transitoria* (D.L.Jones) D.L.Jones & M.A.Clem.
- *Petalochilus cleistantha* (Not in the Census)

Taurantha concinna (R.Br.) D.L.Jones & M.A.Clem.
- ***Pterostylis concinna*** R.Br.

X Taurodium D.L.Jones & M.A.Clem. (Not in the Census)

Thelymitra albiflora Jeanes
- *Thelymitra pauciflora* auct.non R.Br.: R.J.Bates & J.Z.Weber(1990), partly

Thelymitra albiflora ssp. Late cleft (R.Bates 66563) (Not in the Census)

Thelymitra alcockiae Jeanes ms
- *Thelymitra.* sp. 'Laxifolia'
- *Thelymitra longifolia* J.R.Forst. & G.Forst, partly
- ***Thelymitra nuda* R.Br.**, partly

Thelymitra antennifera (Lindl.) Hook.f.
- *Macdonaldia antennifera* Lindl.

Thelymitra arenaria Lindl.
- *Thelymitra pauciflora* auct.non R.Br.: R.J.Bates & J.Z.Weber(1990), partly

Thelymitra aristata Lindl.
- *Thelymitra murdochiae* Nicholls

Thelymitra azurea R.S.Rogers
- *Thelymitra canaliculata* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986)
- *Thelymitra azurea* auct.non R.S.Rogers: R.J.Bates & J.Z.Weber(1990), partly

Thelymitra batesii Jeanes
- *Thelymitra pauciflora* auct.non R.Br.: R.J.Bates & J.Z.Weber(1990), partly
- *Thelymitra* aff. *holmesii* Nicholls R.J.Bates

Thelymitra benthamiana Rchb.f.
- *Thelymitra fuscolutea* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986)

Thelymitra bracteata J.Z.Weber ex Jeanes
- *Thelymitra pauciflora* auct.non R.Br.: R.J.Bates & J.Z.Weber(1990)

Thelymitra brevifolia Jeanes
- *Thelymitra pauciflora* auct.non R.Br.: R.J.Bates & J.Z.Weber(1990), partly

Thelymitra brevifolia ssp. Porters (R.Bates 83123) (Not in the Census)
- *Thelymitra* sp. Pale

Thelymitra carnea R.Br.
- *Thelymitra imberbis* Hook.f.

Thelymitra × chasmogama R.S.Rogers

Thelymitra circumsepta Fitzg.
- *Thelymitra retecta* Rupp

Thelymitra sp. Clare (R.Bates 77464)

Thelymitra crenulata R.J.Bates
- *Thelymitra* sp. Black buds (R.J.Bates 64389) R.J.Bates
- *Thelymitra* sp. Dark buds (R.J.Bates 64416) R.J.Bates

Thelymitra cyanapicta Jeanes
- *Thelymitra pauciflora* auct.non R.Br.: R.J.Bates & J.Z.Weber(1990), partly

Thelymitra cyanea (Lindl.) Benth.
- *Thelymitra venosa* auct.non R.Br.: J.Z.Weber & R.J.Bates(1986)

Thelymitra epipactoides F.Muell.

Thelymitra exigua Jeanes

- *Thelymitra pauciflora* auct.non R.Br.: R.J.Bates & J.Z.Weber(1990), partly

Thelymitra flexuosa Endl.
- *Thelymitra smithiana* (Gunn ex Lindl.)Hook.f.
- *Macdonaldia smithiana* Gunn ex Lindl.

Thelymitra glaucophylla Jeanes ms
- *Thelymitra nuda* R.Br., partly

Thelymitra sp. Glen Shera (R.Bates 66742)
- *Thelymitra cyanapicata* x *T. juncifolia*

Thelymitra grandiflora Fitzg.
- *Thelymitra aristata* (Adelaide Hills) R.J.Bates & J.Z.Weber(1990)
- *Thelymitra aristata* var. *grandiflora* (Not in the Census)

Thelymitra hiemalis D.L.Jones and MA Clem.
- *Thelymitra ixioides* Sm. ex Sw. var. *subdifformis* Nicholls

Thelymitra holmesii Nicholls
- *Thelymitra pauciflora* R.Br. var. *holmesii* (Nicholls)Nicholls

Thelymitra sp. Hybrid dark column (Not in the Census)

Thelymitra hygrophila R.J.Bates
- *Thelymitra* sp. Springton (R.Bates 63666) R.J.Bates, Orchids of SA CD (2007)
- *Thelymitra* sp. Springton (R.Bates 64102) R.J.Bates, Orchids of SA CD (2009)

Thelymitra inflata Jeanes
- *Thelymitra pauciflora* auct.non R.Br.: R.J.Bates & J.Z.Weber(1990), partly
- *Thelymitra mucida* sp. *sylvestris*

Thelymitra sp. Insipid (R.Bates 64418) (Not in the Census)

Thelymitra × irregularis Nicholls
- *Thelymitra ixioides* var. *carnea* Guilf. (Not in the Census)

Thelymitra ixioides Sm. ex Sw.
- *Thelymitra juncifolia* Lindl.
- *Thelymitra lilacina* F.Muell. ex Lindl. (Not in the Census)

Thelymitra juncifolia Lindl.
- *Thelymitra ixioides* auct.non Sm. ex Sw.: R.J.Bates & J.Z.Weber(1990), partly

Thelymitra sp. Laterite (R.Bates 63950) (Not in the Census)

Thelymitra latifolia R.J.Bates
- *Thelymitra* sp. latifolia (R.Bates 64051) R.J.Bates, Orchids S.Australia CD(2008)
- *Thelymitra* sp. Latifolia (R.Bates 64108) R.J.Bates, Orchids S.Australia CD(2006)
- *Thelymitra pauciflora* R.Br., partly
- *Thelymitra peniculata* Jeanes

Thelymitra lucida Jeanes
- *Thelymitra holmesii* Nicholls, partly
- *Thelymitra mucida* Fitzg., partly

Thelymitra luteocilium Fitzg.

Thelymitra ×mackibbinii F.Muell.
- *Thelymitra chisholmii* Nicholls

Thelymitra × macmillanii F.Muell.

Thelymitra malvina M.A.Clem., D.L.Jones & Molloy
- *Thelymitra pauciflora* auct.non R.Br.: R.J.Bates & J.Z.Weber(1990), partly

Thelymitra matthewsii Cheeseman
- *Thelymitra daltonii* R.S.Rogers
- *Thelymitra d'Altonii* orth. var. R.S.Rogers

Thelymitra megcalyptra Fitzg.
- *Thelymitra aristata* Lindl. var. *megcalyptra* (Fitzg.)R.S.Rogers

Thelymitra × merraniae Nicholls

- *Thelymitra ixioides* f. *merraniae* (Nicholls) Nicholls

Thelymitra mucida Fitzg.

Thelymitra nuda R.Br.
- *Thelymitra longifolia* auct.non J.R.Forst. & G.Forst.: J.Z.Weber & R.J.Bates, partly
- *Thelymitra aristata* auct.non Lindl.: J.M.Black(1943)
- *Thelymitra nuda* R.Br. var. *grandiflora* Lindl.

Thelymitra occidentalis Jeanes (Rare status in SA) – (EP)
- *Thelymitra azurea* auct.non R.S.Rogers: R.J.Bates & J.Z.Weber(1990), partly

Thelymitra odora R.J.Bates
- *Thelymitra* sp. Odorata (R.Bates 61708) R.J.Bates, Orchids S. Australia CD(2008)
- *Thelymitra* sp. Slate buds (R.Bates 64092) R.J.Bates, Orchids S. Australia CD(2006)
- *Thelymitra* 'Slate buds'
-. *Thelymitra* 'Viola-fragrans'

Thelymitra odora R.J.Bates ssp. Horse Manure (Not in the Census)
- Thelymitra sp. Horse manure

Thelymitra orientalis R.J.Bates

Thelymitra pallidifructis R.J.Bates
- *Thelymitra* sp. Pale capsules (R.Bates 64170) R.J.Bates, Orchids S Australia CD(2007)
- *Thelymitra pauciflora* R.Br., partly

Thelymitra sp. Pale buds (R. Bates 67079) (Not in the Census)

Thelymitra sp. Papillose
- *Thelymitra* × *truncata* R.S.Rogers

Thelymitra pauciflora R.Br.

Thelymitra peniculata Jeanes
- *Thelymitra pauciflora* auct.non R.Br.: R.J.Bates & J.Z.Weber(1990), partly
- *Thelymitra* aff. *holmesii* (Bates 1999, Jeanes and Backhouse 2001.)

Thelymitra polychroma D.L.Jones

Thelymitra rubra Fitzg.
- *Thelymitra carnea* auct.non R.Br.: R.S.Rogers(1922)
- *Thelymitra elizabethae* F.Muell.
- *Thelymitra rubra* Fitzg. var. *magnanthera* Rupp
- *Thelymitra carnea* R.Br. var. *rubra* (Fitzg.)J.Z.Weber & R.J.Bates
- *Thelymitra urnalis* Fitzg.

Thelymitra rubricaulis R.J.Bates
- *Thelymitra* sp. Rubricaulis (R.Bates 64273) R.J.Bates, Orchids S Australia CD(2006)

Thelymitra sp. Thomas Gully (R.Bates 66393) (Not in the Census)
- *Thelymitra pauciflora* R.Br., partly

Thelymitra sp. Topperwein (Not in the Census)
- *Thelymitra* aff. *holmesii*

Thelymitra × truncata R.S.Rogers
- *Thelymitra decora* auct.non Cheeseman: J.Z.Weber & R.J.Bates(1978)
- *Thelymitra ixioides* Sm. ex Sw. var. *truncata* (R.S.Rogers)Nicholls

Urochilus sanguineus (D.L.Jones & M.A.Clem.) D.L.Jones & M.A.Clem.
- ***Pterostylis sanguinea*** D.L.Jones & M.A.Clem.
- *Pterostylis vittata* auct.non Lindl.: J.Z.Weber & R.J.Bates(1986)
- *Oligochaetochilus sanguinea* (D.L.Jones & M.A.Clem.)Szlach.

12. Botanical Glossary

For a more extensive Glossary go to:

Flora of Australia

http://www.anbg.gov.au/glossary/webpubl/splitgls.htm

aberrant: different from usual
acuminate: tapering to an acute point
aff.: affinities with or related to, usually associated with an undescribed species being related to a named one
alpine or subalpine: above the snowline as in the Australian alps, there are no alpine areas in South Australia. The term subalpine is sometimes used for the highest grassland areas in SA where snow and sleet fall in most winters.
anther: pollen producing male section of the orchid column
anthesis: the flowering period, which is cut short in orchids once pollination occurs
apex: the uppermost point
apomixis: production of an embryo (seed**)** without fertilization. This is the norm for about twenty SA orchid species.
articulate: on a movable hinge
auricle: an ear like lobe
autogamous: self pollinated

backcrossing: as in hybrids crossing back with either parent species, often developing a swarm of intermediate forms
bifid or bilobed: forked or divided into two lobes
blade: the flat part of a leaf
blotch: a large irregular spot of colour
boss: a mound of some sort as on the orchid lip of helmet orchids
botanist: a person who studies plants, botanical
bract: a leaf at the base of a flower peduncle or isolated on the stem as a sterile bract
bud: an unopened flower, in orchid flowers which close at night, once a flower has opened it can no longer be termed a bud once it closes again

calcareous: with much lime in the soil, most of the South Australian coastline has calcareous soils
calli, callus: non secreting glands
campanulate: roughly in the shape of a bell
capsule: the ripe orchid fruit
cauda, caudate: a long tail, with a long tail
cauline: on the stem, as in cauline leaves
chlorophyll: the green light absorbing pigment of plants (**achlorophyllous**: without chlorophyll)
cilia: fine, soft hairs as those on the labellum of midge orchids
clavate: club shaped, as in the thickened tip of a sepal
claw: the flattened stalk at the base of an orchid lip
cleistogamous: flowers which do not open
climax: the last stage in the development of a plant community, usually many years after fire or disturbance
clone: plants which are identical genetically, either from vegetative reproduction or apomixis
club: see osmophore
column: a structure, largely unique to orchids formed by the union of stamens, pistil and stigma
column wings: enlarged or expanded edges to the column, very large in genera such as *Caleana*
concave: hollowed like a basin, as in the column wings of *Caleana*
congested: crowded together as in the labellum calli of many orchids

connate: joined together along one margin
constricted: narrowed
convex: mounded like the outside of a hemisphere
cordate: heart shaped
crenate: (diminutive crenulate) margin indented like rounded teeth
crisped: similar to previous but buckled as in the leaves of a lettuce
cross, crossing: i.e. hybrid progeny of two different species due to 'cross pollination'
cucullate: like a hood, especially a sepal over the column
cylindrical: rounded in cross section as in many orchid leaves

deciduous: losing leaves in one season and growing them again, as in most SA orchids, enable them to over-summer as tubers below the ground
decurved or deflexed: curving or bent downward
dehiscent: splitting, as in the seed capsule of an orchid which may dehisce all along the sides or only at the top
dentate: (diminutive denticulate) edged with teeth
depauperate: reduced in size, some orchids are depauperate in dry years
dimorphic: having two different forms i.e. as in sexually dimorphic, where the males and females are very different in size, colour or shape
divergent: spreading apart, as in divergent sepals
DNA: deoxyribonucleic acid, the chains from which chromosomes are made, these can be used to identify clones, species or less satisfactorily genera
dormancy: the period when orchids are resting in SA, mostly summer, although some rest in winter or only autumn while a few rest for up to nine months!
dorsal: on the upper side, but be aware that some orchid flowers twist in bud so that the dorsal sepal may be underneath! – see resupinate

ecology: the science concerned with the interaction of organisms with their environment, often very complex and little understood with orchids, 'ecologists'
endemic: confined to a particular area, and or habitat. Some orchids are known for their extreme endemism, for example one particular swamp
entire: describing a smooth margin without any irregularity
epiparasite: plant deriving nutrient from another species through a particular fungus i.e. as in a mycorrhizal association
epiphyte: plant species growing on trees, having no contact with the soil, not parasitic, more than half the world's orchids are epiphytes
etoliolate: spindly or drawn up toward the light
ex situ: being grown away from its habitat

falcate: flat and curved like a sickle
feral: as in normally tame organisms escaping into the wild i.e. 'feral olives are a serious pest in SA'
fertile: able to reproduce sexually, possessing a flower
fertile: bract a bract immediately below a flower
fertilization: as in pollen fertilizing an egg (ova)
filiform: rather thread-like
fimbriate: as a margin fringed by fine hairs
flexuose: bent in a zig zag manner as in the scape of some orchids
floriferous: bearing many flowers
free: not attached
fused: completely united

galea: a hooded structure as in the galea of a greenhood where the dorsal sepal hoods the two petals and is united with them to some degree

genus: plural genera a somewhat arbitrary group of related species placed together for convenience
geophyte: growing in the ground and usually meaning that the plant spends some time dormant within the soil each year i.e. as with most SA orchids
gibbous: part swollen or with a hollow spur
glabrous: lacking hairs, a good diagnostic feature often overlooked
gland: secretory organ
glandular hairy: as in most *Caladenia*, bearing gland tipped hairs
glaucous: having a blue or powdery white tinge, especially to the leaves
granular: the surface is grainy not smooth

habit: the growth form or special arrangement, 'i.e. rosetted leaf habit or single leaf habit or habit of being leafless at flowering'
habitat: the external environment of a plant as in forest, swamp or grassland habitat
hispid: covered with short bristles or rough scales
hoary: a frosty white appearance, usually covered in short white hairs as in the leaves of *Arachnorchis tentaculata*
hybrid: a product or crossing between parents of two different genetic systems

in copula: many insects copulate while flying, particularly the flower wasps which pollinate orchids
in situ: in its original place
in vitro: in glass, as per growing seeds in airtight flasks
i**ncurved**: curved gradually inwards
indigenous: occurring naturally, weeds are not indigenous
inflexed: bent inward
inflorescence: the flower spike
insectiform: shaped like an insect, as for the labellum or even whole flower of some species which sexually attract their pollinators

labellum: a modified third petal, often called the 'lip' or even 'tongue' in orchids
lamina: a flat surface such as a horizontal leaf or labellum surface
lanceolate: a structure that is broadest at the base, much longer than wide and tapering gradually
lateral: arising at the sides, as in lateral lobes or less than ten times as long as wide as in 'latifolia' a broad linear leaf
lax: drooping, especially toward the top
linear: as in a leaf which is at least ten times as long as wide and with parallel sides
lip: another name for the labellum
lithophyte: a plant growing on rocks not in soil
littoral: growing by the sea shore, as in many orchids which are often splashed by sea spray

mallee: low growing, multi stemmed gum trees, often with a lignotuber at the base. Vast areas of South Australia are covered by mallee. This habitat supports very few orchids, mostly because the mallee have surface roots which soon soak up any light rain and thereby dry the soil out too much for orchids.
mealy: pale and powdery like flour as in the mealy pollinia of sun orchids
median: the mid line of a segment, often differently coloured in orchid flowers
mid lobe: the central lobe, usually of three
mimicry: the resemblance of the orchid flower or parts of the orchid flower to other flowers or insects
mobile: a transportable telephone or in the case of orchids referring to a movable part
monotypic: containing a single species, there are many orchid genera in SA with but a single species

montane: pertaining to the mountains, below the alpine zone, in South Australia on any high peaks which have only low vegetation
morphology: the form and structure, the shape of organisms
mycorrhiza: a root modified by its relationship to a fungus or indeed the relationship between the root and fungus

nectar: sweet liquid provided as a reward to visiting pollinators, either free or within the cells
nectary: the gland secreting this nectar

oblong: rather longer than broad, a good diagnostic feature
obtuse: having a rounded tip
orbicular: having a roughly circular shape
orchidologist: one who studies orchids
ornate: much adorned, as in some orchids with ornate labella
osmophore: a scent producing gland as the allomone producing osmophores on the tips of spider orchid sepals
ovary: the ovule bearing part below the orchid flower, the ovules once fertilised develop into seeds
ovate: an elliptical lamina, broader in the lower part
ovoid: egg shaped

papillae: minute, rounded protuberances, on papillate surfaces
pedicel: the stalk supporting an individual flower
peduncle: the main axis of a branched inflorescence, or stem of a single flower
peloric: as in a symmetrical flower of a species normally asymmetrical
pendent: hanging down as in a pendent labellum
perennial: persisting for three or more years
perianth: collective term for petals and sepals
petal: the inner segment of a whorl, as in orchids with six segments, the outer three are sepals, the inner three are petals, one of which is modified to become the labellum
petiole: of a leaf, the stalk thereof
pheromone: in orchids, volatile hormones emitted by osmophores to attract pollinators, also termed allomones
pilose: covered with soft hairs
pollen: the one celled male spores found in the anthers of flowers
pollinia: in orchids the waxy bundles of pollen grains, held in one to several masses
pollination: the transfer of pollen or pollinia from anther to stigma
polymorphic: variable in form, rapidly evolving orchids often have polymorphic flowers
pseudocopulation: when a male insect attempts to copulate with an orchid flower as part of the pollination strategy of that species
pseudopollen: false pollen, usually yellow structures on an orchid flower, positioned to attract and set the pollinator in the correct place to best effect pollen transfer
pubescent: covered with short soft downy hairs, as on the labellum of many orchid species to provide traction for a visiting pollinator pushing into the flower
pyriform: pear shaped as in the ovary of many orchid species

raceme: an unbranched inflorescence with stalked flowers, as in many orchids
recurved: bending outwards
reflexed: bending back upon itself
reniform: roughly kidney shaped as in the leaves of *Cyrtostylis*
resupinate: twisted around so as to be presented upside down as in the flowers of *Prasophyllum*
reticulate: with an obvious network of veins, often differently coloured as in the labellum of *Arachnorchis reticulata*

revolute: decurved in a complete circle at least
rhizome: an underground stem, a storage organ which can produce new stems and roots
rosette: a cluster radiating from a central point, usually in one plane, many SA orchid species have a leaf rosette flat upon the ground or rarely held above it
rostellum: a beak like organ separating anther from stigma, usually forked and holding a sticky disc attached via a thread to the pollinia

saprophyte: leafless or nearly leafless species mostly dependent on another organism for its nutrient requirements, there are several saprophytic orchid species in SA
scape: the floral stem, its structure often diagnostic in determining cryptic species
sclerophyll: a plant with hard, leathery or stiff leaves as in many xerophytic plant species in SA, indeed most of our trees and shrubs are sclerophyllous and some orchid species approach sclerophylly
segment: any part of the orchid perianth
segregate genera: often a large and unwieldy super-genus with species so different as to be unrecognisably in the same genus is divided up into more sensible groups of species; these groups are termed segregate genera and of course are given new generic names. NOSSA favours the use of these smaller genera
senescence: the aging process, a senescent flower or leaf is one which has begun to die or is already dead
sensu: in the sense of, as in 'sensu stricto' meaning in the strict sense and 'sensu lato' in the broad sense. '*Oligochaetochilus bisetus* sensu lato' refers to an orchid species, probably un-named which looks like *O. bisetus* but is not.
sepal: part of the outer whorl of flower segments, in an orchid the three segments which enclose the flower in bud
serrate: as in a saw toothed margin
serrulate: with a minutely saw toothed margin
sessile: attached directly i.e. to the ovary, without a stalk
seta, setae (pl): bristles
sheathing: as in enclosing the base of some other structure, like in a fertile bract enclosing part of the ovary
sigmoid: shaped like the letter 'S' from Greek '*sigma*'
sinuate: as in a wavy margin, referring to snakes and evil
sinus: a cavity and/or area between two lobes
spathulate: spoon shaped
species (plural also species): the most commonly used taxonomic term, the species name written without a capital and usually given with its genus name. As in ***Arachnorchis*** (the genus) ***argocalla*** (the species).
spike: an unbranched inflorescence usually with sessile flowers as in *Prasophyllum* and *Microtis*
spur: a long, often curved hollow organ containing nectar, especially on butterfly and moth pollinated orchids. Some SA orchids have vestigial spurs, indicating a period in their evolution when such *lepidopterans* were involved in their pollination
staminode: a sterile stamen. Orchids have no separate stamen as it is fused within the column, but occasionally odd flowers will produce a stamen without anthers, this is a staminode
stellate: star shaped with all segments of a similar length and stiffly spreading
sterile bract: any bract not subtending a flower
stigma: part of the column receptive to pollen, usually sticky
striate: with diffuse stripes
stringy bark: common eucalypts associated with orchid rich woodland, these are covered with dense fibrous bark to protect the trunk during fire
sub-alpine: see alpine
sub-sessile: with hardly any stem

sub-species: a taxonomic group below species level, usually indicating that a species is still evolving into new forms

subtending: standing below and supporting

swale: the depression between two sand hills. In the South Australian mallee the orchids of clay swales are usually different species to those growing on the sand.

symbiosis: relationship whereby two organisms mutually benefit each other (as opposed to parasites)

sympatric: occupying the same geographical areas. It is a good test of species validity when two similar species occupy the same areas but remain fixed or rarely hybridise.

syndrome: the complexity of factors suggesting adaptation to particular behaviours such as pollination. Some species may have evolved a pollination syndrome such as sexual attraction of wasps.

synonym (syn.): a previously used but no longer favoured name for a taxon, there is often argument among botanists as to which synonym should be used. This electronic version of *South Australia's Native Orchids* (SANO) favours the use of the segregate genera rather than subgenus.

taxon (plural taxa): term used to describe any taxonomic group

taxonomy: the systematic classification of organisms into an organised hierarchical scheme vis., family *Orchidaceae***,** genus *Arachnorchis*, species *argocalla*

terete: round in cross section and tapered

terminal: at the tip

terrestrial: growing in the ground

trichomes: hairy or papillose glandular processes such as the trichomes attached to the post anther lobes of many *Thelymitra* species.

trilobed: divided into three lobes, the central one termed the mid-lobe, and the others side-lobes

truncate: somewhat cut off at the end

tuber, tuberoid: underground storage organs, tuber a stem, tuberoid a root but terrestrial orchid storage organs are usually a combination

vegetative: as in vegetative reproduction when there is no fertilisation of ovules, flowers are not vegetative parts

verrucose: covered with warty protuberances

vestigial: small and non functional, usually a feature important in an earlier stage of evolution but no longer used and atrophied as in the human appendix

viscid: sticky

viscidium: a sticky part of the rostellum serving to attach pollinia to the pollinating agent

wing: a thin flat membranous extension to a plant organ, in orchids particularly the column wings, used to position a pollinator

xerophytic:

13. Further Reading

A Complete Guide to Native Orchids of Australia Including the Island Territories, DL Jones, 2006

Australian Orchid Research, an AOF publication vols. 1-5, authors DL Jones and M Clements

Australian Orchids, RD Fitzgerald, facsimile edition, 1977

Interactive key of Australian orchids on CD, Jones et al 2006

Introduction to South Australian Orchids, RS Rogers 1909, 1911 and numerous reprints

J. Native Orchid Society SA, 34 volumes since 1977

Lindleyana, various volumes since 1985, authors Clements and Jones

Muelleria, various volumes since 1986

Nuytsia, journal of WA botany, many volumes

Orchids of South Australia, Bates & Weber, 1990

Orchids of South-west Australia, Hoffman & Brown, 1998 edition

Orchid Flora of the ACT, Jones et al 2008

Start with the Leaves Lawrence 2011

The Orchadian, a publication of the Australian Native Orchid Society, Vols. 1-15

The Orchids of Victoria, Backhouse & Jeanes, 1995

Threatened Australian Plants, Briggs & Leigh 1989

Western Australian Orchids, CD available from NOSSA, PO box 565 Unley South Australia

Wild Orchids of Victoria, *Australia* Jeanes & Backhouse 2006

PART TWO

Orchid Genera

South Australia's Native Orchids

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Acianthus R.Br.
Nemacianthus D.L.Jones & M.A.Clem.

Mosquito & Mayfly Orchids



RL, *A. pusillus*, Hale CP, SL

Acianthus R.Br.

Mosquito Orchids

Etymology: The name is derived from the Greek *akis* a barb or needle and *anthos a* flower, in reference to the slender, acuminate floral segments of most species.

Taxonomy: Until about 20 years ago mosquito, mayfly and gnat orchids were all treated under the genus *Acianthus*, but in reality they, as suggested by Robert Brown 200 years earlier, are not all that closely related. Brown treated them as two genera, *Acianthus* and *Cyrtostylis* and more recently Jones has made them three by treating the mayfly orchid as a monotypic genus *Nemacianthus*.

Nemacianthus often occurs with *Acianthus* but is spring flowered unlike the autumn flowered *Acianthus*.

In the past the super-genus *Acianthus* included many species from South East Asia and Oceania which now belong to as many as six separate genera. Only one species of *Acianthus* occurs in South Australia and no *Acianthus* or *Nemacianthus* occur in Western Australia.

Description: They are glabrous plants that grow mostly in the cooler months. The leaf is solitary, green, petiolate, ovate-cordate, red below. The small flowers are purplish or green, few to many, with free perianth segments. The labellum is distinct, immobile, hardly ornamented. The Column is exserted from the flower, recurved above, semi-terete; anther terminal with four round, hard, pollinia, stigma near the top of the column. The insect-like appearance of the flowers is reflected in the common name.

Mosquito orchids prefer cool, shaded sites in higher rainfall areas but extend into semi arid areas where suitable microhabitats exist, i.e., in gorges and about rock outcrops.

In ideal conditions very large colonies may occur due to vegetative reproduction. Flowering is inhibited by bushfires and dry autumns.

Pollination: The deep red, greenish or brownish colour of the flowers is commonly associated with fly pollination. The labellum has a nectary at its base. Ants, beetles and other insects have been observed to feed on the nectar but only slender bodied flies have been observed to transfer pollinia. I have seen no pictures of the pollinators at work.

Distribution and habitat: There are about 25 species in New Guinea, Oceania, New Zealand and Australia, although many of those outside Australia now have new generic epithets. There are 12 eastern Australian species, only one of which occurs in South Australia.

Most species occur in higher rainfall, coastal or mountain areas in woodland and forest but the South Australian species extends into the wheat-belt.

Each year colonies are found outside the previously known range. For example, *Nemacianthus* was first recorded on Eyre Peninsula in 2001, on Yorke Peninsula in 2003 and new locations in the South East in 1998. I suspect it will be found in the Flinders Ranges eventually.

Acianthus pusillus D.L.Jones

Mosquito Orchid

Etymology: *'pusillus'* Latin for insignificant, weak, referring to the flowers, which are much smaller than *A. exsertus*, an eastern states species with which it was previously confused.

Synonyms: Until the 1990s it was lumped under *A. exsertus* R.Br., which is a larger, early flowered species from the Eastern States.

Description: **Leaf** heart shaped, to 40 mm long, dark green above and purplish-red below, often set several centimetres above the ground on a slender petiole. The **flower stem** is reddish to 15 cm tall, the **flowers** usually numerous, about 6 mm across, in tones of maroon and grey-green. Segments short with fine points; top sepal erect, to 10 mm; lateral sepals similar, curving downward; petals smaller, narrowly ovate, spreading back, **labellum** to 5 mm long, narrowly caudate, column to 3 mm.

Flowering: Apr – May – June – July – Aug.

Similar species: None when in flower, but in leaf *Nemacianthus caudatus*.



KB, Scott CP, SL

Distribution: **FR, EP, NL, MU, YP, SL, KI, SE; Qld, NSW, Vic, Tas.**
It is very widespread and abundant in South Australia from the West Coast near Venus Bay, across Eyre Peninsula, where it extends well inland even to the semi arid Gawler Ranges, through the southern Flinders Ranges and the Mount Lofty Ranges, to the South East; also in southern Queensland through to Tasmania.

Habitat: Found in a variety of well drained sites from rock outcrops inland, through mallee and heath covered sand hills, on limestone near the coast, rocky scrubs and less commonly in damp heath and woodland. Tolerant of salty soils and sea spray so it occurs in the littoral zone and on small offshore islands.

Distinguishing features: The heart-shaped leaf which is red below (as in the next species ***N. caudatus***), but not crenulate or crinkled and is often set well above ground level. The numerous tiny, unscented, pale green and maroon flowers which have a late autumn-winter flowering period set it apart from the spring flowered Mayfly orchid.

- The very similar ***A. exsertus*** which has larger flowers and begins flowering earlier does not occur in South Australia but is occasionally cultivated here.

Notes: Pollinated by small flies which feed on the tiny amounts of nectar produced at the base of the labellum, however, despite the large numbers of flowers in bigger colonies, pollinators are rarely seen. As in other mosquito orchids, wholly green flowers do occur. Intensity of colour varies from deep red through to insipid blends of grey and green or semi-transparent red.

The flowers are long lived if not pollinated. Flowering is dependent on the onset of rains and after false 'breaks in the season' most flowers will abort. In low rainfall districts colonies may only flower every 2-5 years. Flowering may be reduced to zero after hot fires but some plants in each colony survive.

Conservation status

Status in Legislation: Not Listed.

Suggested Status: Abundantly conserved.



JN, *A. pusillus*, Mt Scott CP, SE

South Australia's Native Orchids

Nemacianthus D.L.Jones & M.A.Clem.

Mayfly Orchids



KB, *N. caudatus,* Scott CP, SL

Nemacianthus D.L.Jones & M.A.Clem.

Mayfly Orchids

Etymology: Named from the Greek *nema* a thread and *Acianthus*, it refers to the thread like sepal tips on this near-relative of the mosquito orchids. The name mayfly is suggested by the long tailed sepals being reminiscent of those long legged insects.

Taxonomy: The genus *Nemacianthus* was only described and named in 2002 and although not all botanists accept it as being distinct from *Acianthus*; flower shape and leaf structure together with DNA support the split.

Description: This genus is easily separated from *Acianthus* by its more crenulate leaf set on the ground and by the flowers having a detectable if unpleasant odour and long filamentous sepals. The leaf is dark green and heavily veined above, deep maroon below.

Pollination: Pollination is by fungus gnats, *Mycetophilidae* which are attracted by the dark colours and musty odours. As in species of *Acianthus*, the column is arched forward so that the anther and stigma are directly above the well of nectar on the labellum. The mosquito-like gnats feed on nectar at the base of the labellum in such a way that their thorax comes in contact with the pollinia which are then withdrawn, usually one half at a time.

Distribution and Habitat: This monotypic genus is common in the Eastern states and southern South Australia. It is found in woodland and heath, especially in leaf litter under gum trees and wattles in higher rainfall, near-coastal areas.

Notes: This species often occurs with *Acianthus,* but it is spring flowered, unlike the autumn and winter flowered *Acianthus*.

At present it is treated as a monotypic genus.

The flowers *en masse* smell like wet dog.

Nemacianthus caudatus
(R.Br.) D.L.Jones & M.A.Clem.

Mayfly Orchid

Etymology: *'caudatus'* Latin for tailed, referring to the long filamentous or caudate sepals on the flowers.

Synonyms: *A. caudatus* R.Br, *A. caudatus* var. *pallidus.*

Description: **Leaf** heart shaped, basal, to 30 mm long, dark green above, purplish below, margins crenulate. **Stem** to 25 cm, slender purplish. The **flowers** are 1-7, dark purplish; sepals fine, with long filamentous points to 40 mm long; top sepal erect, lateral sepals deflexed and spreading; petals to 5 mm long, narrowly ovate, reflexed. **Labellum** to 7 mm long, ovate, curved downward, with a pointed tip. Column to 5 mm long, arched over the labellum.



RB, many-flowered spikes, Tooperang

Flowering: Late July – Aug – Sept.

Similar species: None when in flower, but in leaf *Acianthus pusillus.*

Distribution: **EP, NL, MU, YP, SL, KI, SE, NSW, Vic, Tas.** In South Australia common and widespread. Since 2006 single colonies have been found near Koppio on Eyre Peninsula and Southern Yorke Peninsula. Common in the Southern Mount Lofty Ranges and on Kangaroo Island; rare in the South East at Messent CP, in the Bordertown to Bangham area, and near Penola; also in New South Wales, Victoria and Tasmania.

Habitat: Prefers sandy or gravelly-clay, acid soils in light leaf litter under forest or heathy woodland, mostly near the coast in higher rainfall areas. Forms large colonies and may invade mature *Pinus radiata* plantations.

Distinguishing features: The crenulate or crinkled leaves at ground level, the long filamentous tails to the sepals, the late winter-spring flowering and the musty odour (which not everybody is capable of detecting) make this species easily identifiable.

- This species often occurs with ***Acianthus pusillus*** which is autumn / winter flowered.

Notes: The floral odour is often likened to the smell of 'wet dogs.'

Recent DNA studies support mayfly orchids as a separate genus *Nemacianthus*.

The variety '*pallidus*' Rupp is a rare, green flowered, semi albino form with leaves green not red below. There are occasional pale brown and green marked flower forms also. Very hot bushfires may wipe out entire populations as the tubers are shallowly buried.

The species is very difficult to cultivate for longer than one season.

Conservation status

Status in Legislation: Not Listed.

Suggested Status: Common and well conserved although it is vulnerable in the Eyre Peninsula, Murraylands, Yorke Peninsula and South East.



CH, *N. cuadatus*, Aug

Gallery



KB, a green *A. pusillus*, Mount Billy CP, SL



KB, *N. caudatus* var. *pallidus*, Aug



KB, *N. caudatus* var. *pallidus*, SL



Portrait of *Nemacianthus* by Kath Alcock, SL
Courtesy JN



KB, *A pusillus* Mt Billy



RL, *A. pusillus*, SL



KB, *N. caudatus*, Scott CP, SL



BB, deep red *A pusillus*, SE, June

Arachnorchis D.L.Jones & M.A.Clem.

Spider Orchids



KB, *A. leptochila*, Cox Scrub CP, SL

South Australia's Native Orchids

Arachnorchis D.L.Jones & M.A.Clem.

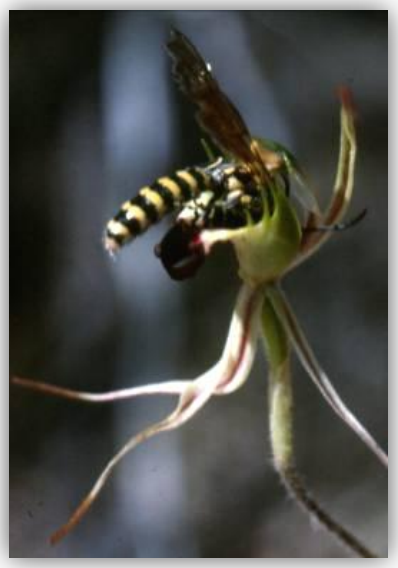
Spider Orchids

Etymology: The name is from the Greek *arachne* a spider and *orchis* an orchid.

Taxonomy: The genus *Arachnorchis* was erected in 2001 by Jones *et al* for the 'spider orchid' section of what had until then been *Caladenia* in the broad sense. There are more than a hundred species, many of them only recently recognised.

Description: *Arachnorchis* species have a globose tuber, which is sheathed above with soft cloth-like material, a single hairy, lanceolate to oblong-lanceolate basal leaf, hairy stems and ovaries. The floral segments have clubbed or elongate tips bearing osmophores; the labellum is tremulous on a narrow hinge and the base of the column has two yellow waxy glands.

Pollination: Most species are to some degree pollinated by sexually attracted male thynnid wasps. The orchids produce a combination of volatile substances which approximate the pheromone (allomone) released by the female wasp to attract males. These allomones are produced by glands (osmophores) on the floral segments, which are either concentrated in clubs at the segment tips or spread out along the long filamentous endings of the segments. Once attracted to the orchid the wasp buzzes about the flower before landing on the labellum, the calli of which represent a female wasp. The wasp clasps the decoy and attempts to carry it away. As it moves forward, the balance of the delicately hinged labellum is upset and the wasp is thrown against the column. In species like *A. leptochila,* it is the labellum itself rather than the calli, which represent the female wasp decoy. The strength of the attractant varies from species to species; some, such as the green comb spider orchids and the *A. reticulata* complex are strongly wasp pollinated. These species have flowers in tones of maroon, green and cream.



RB, wasp on *A. clavula*, EP

Other species with white flowers, particularly in the *A. patersonii* complex, are also visited by native bees and flies with the bees often successfully pollinating the flowers.

Most species studied so far in South Australia are wasp 'species specific' that is each *Arachnorchis* species is pollinated by just one species of wasp. This pollinator specificity has supported the proliferation of newly described species of both *Arachnorchis* and thynnid wasps.

In general these wasp pollinated species are not perfumed, although some species emit odours which can be detected by some humans but not others and the odours are likened to burning tar, petrochemicals or spice. One species however, *A. gladiolata* has the strongest, spiciest odour of any South Australian orchid.

All species of *Arachnorchis* have a pair of yellow waxy glands at the base of the column. These are thought to represent pseudo-anthers and may attract pollen-seeking insects. Perhaps they are a relictual feature of an earlier pollination strategy.

Distribution and Habitat: *Arachnorchis* is widespread through southern Australia and abundant in South Australia from coast to pastoral zone, plains and mountains, common in woodland and heath but mostly they avoid swamps. Flowering is mostly in the late winter or spring but there are species blooming as early as May or as late as January.

Arachnorchis arenaria
(Fitzg.) D.L.Jones & M.A. Clem.

Arachnorchis sp. Southeast (R. Bates 66283)

Sandplain Spider Orchid

Etymology: The common name shows this to be a species of sand plains, particularly of the Upper South East of South Australia, from Coomandook and Meningie, south to Keith and Kingston.

Synonyms: Once included in *Caladenia patersonii, C. arenaria, C.* aff. *arenaria* or *A.* aff. *arenaria.*

Description: **Leaf** lanceolate to 18 cm, rigid, very hairy. **Flower stem** stocky green, hairy to 35 cm. **Flower** large, single, sometimes two, opening lemon-yellow becoming to cream; segments horizontal at first then drooping; dorsal sepal erect and incurved, lateral sepals to 90 mm, broad at first then attenuated with darker glandular for half their length; petals narrow, spreading then drooping behind the flower; **labellum** with short linear teeth on the margins, becoming shorter towards the apex, lamina with 4-6 rows of pale, sometimes reddish, fine calli. The flowers are without fragrance.



JN, Carcuma CP, SE

Flowering: Sep - Oct

Similar Species: *A. colorata*

Distribution: **MU, SE.**
The species is widespread in the upper South East.

Habitat: Found on sandy plains in mallee heath.

Distinguishing Features: The large white to cream flowers, rigid strigose leaf, short fringed labellum, drooping sepals and lack of fragrance serve to separate it from more colourful and long fringed species.

- ***A. colorata*** is similar, but smaller and coloured.

Notes: This species is part of a complex of a dozen white flowered species of the *C. patersonii* complex. The flowers have non clavate drooping floral segments.

It flowers best after fires or on disturbed corridors through mallee heath.

Hybrids with *A. cardiochila* have been observed.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Common and well conserved in parks like Messent CP and Gum Lagoon CP.



KB, *A.* sp. South East, Keith, Sept

Arachnorchis argocalla
(D.L.Jones) D.L.Jones & M.A.Clem.

White Beauty Spider Orchid

Etymology: It is named from the Greek *argo* white and *calla* callus, in reference to the slender white labellum calli.

Synonyms: *Caladenia argocalla*. Also previously treated as a form of *C. patersonii.*

Description: One of our most beautiful orchids. **Leaf** linear-lanceolate, to 20 cm long, with long silky hairs. **Flower stem** robust, rigid, to 60 cm tall, covered with white hairs. **Flowers** one or two, large, white, about 10 cm across, not perfumed; **sepals** to 15 cm long, creamy, drooping, the tips dark and glandular for up to 5 cm, not clubbed, petals similar but smaller; **labellum** broad, about 2 cm x 1.5 cm, white rarely with a pink blush; marginal calli short often dark, lamina with 6-8 rows of slender purplish or white topped calli varying from linear to golf club shaped; column about 15 mm high, broadly winged, the basal glands yellow with red markings.

Flowering: Mid Sept – Oct – early Nov

Similar Species: *A. behrii, A. brumalis.*



RB, Kapunda, NL
*Note smaller *A. colorata*

Distribution: **NL, MU, SL**
Endemic to South Australia where it is restricted to the Mount Lofty Ranges. Almost extinct over the southern half of its range but still present near Mount Crawford and Clare.

Habitat: Prefers open grassy herbland under light, mixed *Eucalypt* and *Callitris* forest.

Distinguishing Features: The large creamy-white, un-perfumed flowers with broad labellum, shortly toothed on the margins and with at least 6 rows of rather slender calli make this a distinct species.

- Can be confused with the smaller winter flowering coastal ***A. brumalis,*** which has short, lanceolate leaves with a felt-like surface, smaller flowers, often more yellow than white and generally with a narrower labellum with fewer rows of colourful calli. The species have different habitat requirements and a different geographical range.
- ***A. behrii*** is a much more slender species, the flowers perfumed and with a pink labellum tip on most flowers. Albino flowers of A. *behrii* are frequently misidentified as *A. argocalla* but the narrow labellum and perfume of the former should prevent confusion.

Notes: *A. argocalla* was once known as the 'Common spider orchid' due to its abundance near Adelaide. It is now extinct within forty kilometres of the CBD.

Like most woodland orchids *A. argocalla* flowers profusely without fires.

Conservation Status:
Status in Legislation: Nationally endangered; endangered in South Australia.
Suggested Status: 3Eci, nationally endangered.



JN, *A. argocalla,* Spring Gully CP, October
*Note white calli

Arachnorchis audasii
(R.S.Rogers) D.L.Jones & M.A.Clem.

Audas' Spider Orchid

Etymology: Named in honour of the Type collector, J.W. Audas, a Victorian naturalist.

Synonyms: *Caladenia audasii*

Description: **Leaf** lanceolate, to 10 cm long, sparsely hairy, sub erect. **Flower stem** to 25 cm tall, with long hairs. **Flower** single, to 10 cm across, pale yellow, with red markings; segments linear lanceolate, to 60 mm long, red striped, tapering into long sparsely glandular tips; dorsal sepal erect, lax; lateral sepals pendant in front of the flower; petals shorter and spreading behind; **labellum** ovate, pale, spotted or veined in red, tip decurved, with six rows of short, clubbed, red calli, margins entire.



RM, Deep Lead, Vic

Flowering: Aug – Sept – Oct.

Similar Species: *A. leptochila.*

Distribution: **SE**
The only South Australian collections have come from the Bordertown area in the South East.

Habitat: Occurred in fertile soils in light woodland, probably in disturbed areas.

Distinguishing Features: The narrow, entire labellum separates this species from all except ***A. leptochila*** but that species has erect, not drooping segments.

Notes: Little is known of this taxon which has not been collected in South Australia for decades. One might suspect that plants attributed to this name are little more than freak forms. The South Australian plants were apparently growing with *A. patersonii* complex hybrids and were collected by Doctor R.S.Rogers and his wife Jean.

D.L.Jones, personal communications, suggests that the South Australian plants are not true *A. audasii* and for this reason they are sometimes referred to as *A.* aff. *audasii* South East.

In times past collections of this species were responsible for some of the records of *A. leptochila* in Victoria.

The pollinating wasp is not known.

Conservation Status:
Status in Legislation: Nationally endangered; endangered in South Australia.
Suggested Status: 3Eci, nationally endangered, probably extinct in South Australia.



JJ, *A. audasii*, Kinglake, Vic

Arachnorchis aurulenta D.L.Jones

Long Golden-club Spider Orchid

Etymology: From the Latin *aurulentus* ornamented with gold, which the flowers certainly are.

Synonyms: *C.* sp. Golden bayonets, *A.* sp. Golden bayonets.

Description: **Leaf** lanceolate, erect, to 10 cm long, shortly hirsute, red based. **Flower stem** to 25 cm, purplish, hairy. **Flower** usually single, to 6 cm across, cream, green, and red and gold; segments linear, to 5 cm long, cream with red median stripe; sepals ending in long, heavy, flattened, deep yellow or orange clubs to 25 mm long; dorsal sepal erect with lax apex; lateral sepals parallel or crossed in front of the flower, angled down; petals shorter and filiform, angled down behind the flower; **labellum** lobed in second half, rather broad and flat on top, margins deeply fringed, apex crimson and rolled under, calli fleshy and in 4 crowded rows. No fragrance noted.

Flowering: Aug – Sept.

Similar Species: *A. macroclavia, A. septuosa*, *A.* sp. Short Golden bayonets.

Distribution: **EP**
Endemic to Eyre Peninsula, especially in the southern foothills of the Gawler Ranges but extending in smaller numbers to the west coast.

Habitat: In fertile coloured sands in light woodland, about salt lakes, clay-pans and alluvial fans, usually with a variety of other dry-land orchids. Forms localised populations in moisture retentive soils.



JN, Carrapee Hill CP, EP

Distinguishing Features: No other species has such long, flattened osmophores of such intense golden colour as *A. aurulenta.*

- The long, flat, golden-orange clubs (osmophores), broad labellum, dense labellum calli, and deep colours serve to separate this species from ***A. septuosa*** its closest ally.
- ***A. macroclavia*** has similar but smaller dark clubs and a small labellum.
- ***A.* Short golden bayonets** has much shorter osmophores and a smaller leaf.

Notes: This species was named in January 2006, publication being in *The Orchadian,* although it had been recognised for about 15 years previously.

A. aurulenta is sometimes seen growing with *A. stricta* or *A. septuosa* but without hybrids. It also grows close to another green-comb spider orchid recently named, i.e. *A. interanea,* a species of granite outcrops.

Pollinated by a striped thynnid wasp not yet identified.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3Rci, nationally rare.



RB, *A. aurulenta,* (left) and *A. clavula*, Gawler Ranges, Sept

Arachnorchis behrii
(Schtdl.) D.L.Jones & M.A.Clem.

Pink lip Spider Orchid

Etymology: The name *behrii* honours 1840s' botanist Hans Herman Behr who made the first collection of this species.

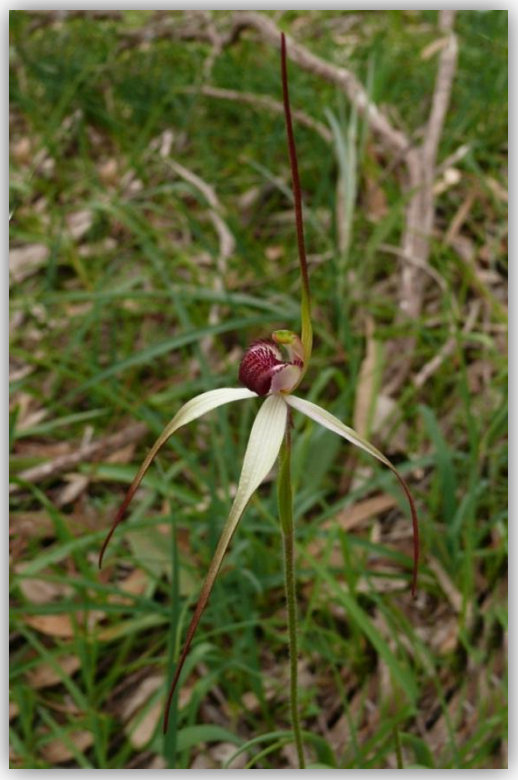
Synonyms: *Caladenia behrii* and also included for over a century in *C. patersonii.*

Description: **Leaf** long and narrow, hairy to 20 cm long and 1 cm wide. **Flower stem** to 50 cm tall, slender but rigid, hairy. **Flowers** 1 or 2, greenish fading to creamy-white, usually with a deep pink labellum apex and dark segment tips; segments to 20 cm long, all similar, linear-lanceolate with glandular, filamentous tips; dorsal sepal erect but often with a drooping apex; lateral sepals spreading at the base then drooping in front of the flower; petals similar, behind the flower; **labellum** oblong, slightly trilobed, to 3 cm long, with a red apex curled under, side lobes fringed, lamina with four to six rows of flat topped often reddish calli. The flowers have a distinctive burnt spice odour likened by some to the smell of a candle-wick recently snuffed.

Flowering: Aug – Sept – early Oct.

Similar Species: *A. colorata, A. fulva, A. woolcockiorum.*

Distribution: **SL.**
Endemic to South Australia where it is confined to the higher parts of the Mount Lofty Ranges.



JN, Mt Gawler, SL

Habitat: *A. behrii* grows on quartzite derived soils in woodland, often with yaccas *Xanthorrhoea semiplana,* usually on ridges and steep south facing slopes.

Distinguishing Features: *A. behrii* is distinguished by the tall stems, the creamy-white of mature flowers, the attractive crimson of the labellum mid-lobe and the spicy fragrance.

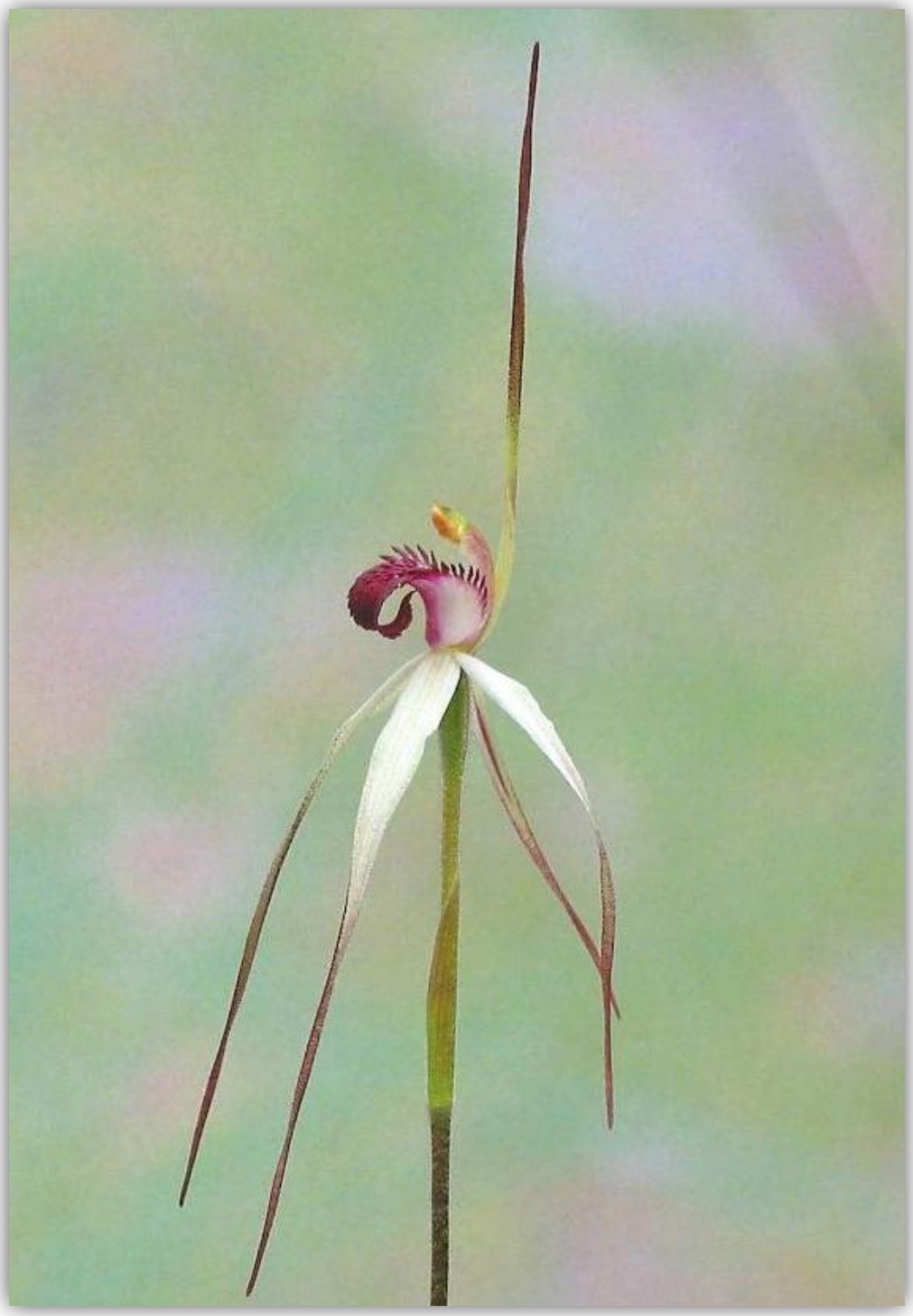
- ***A. colorata*** is a smaller species from lower altitudes, with less distinctive, more varied colouring.
- ***A. argocalla*** sometimes produces flowers with pink labellum but these are not fragrant, have broad lips and linear calli.

Notes: The usual pollinator *of A. behrii* is a large black, shiny thynnid wasp *Tachynomia* sp., but bees do visit. Pollination rates are usually about 10%. Dr Topa Petit, whilst doing research into its pollinators, observed that a female wasp adjacent a population of *A. behrii* had the same odour as that mentioned in the description of the species.

A. behrii occurs as small, scattered populations, which need some disturbance to thrive.

No hybrids are known although bees have been observed depositing *Glossodia* pollinia on stigmas of *A. behrii.*

Conservation Status:
Status in Legislation: Nationally endangered; endangered in South Australia.
Suggested Status: 3Eci, nationally endangered.



KB, *A. behrii*, Sept

Arachnorchis brumalis
(D.L.Jones) D.L.Jones & M.A.Clem.

Winter Spider Orchid

Etymology: From the Latin *brumalis* pertaining to winter, referring to the mid to late winter flowering.

Synonyms: *Caladenia brumalis* and has been treated as a form of *C. patersonii.*

Description: **Leaf** to 8 cm long, oblong-lanceolate, soft green, red based, with dense short hairs. **Flower stem** to 20 cm tall, rigid, with close short hairs, bracts linear. **Flower** single, rarely two, to 70 mm across, creamy with darker markings on many flowers; segments linear lanceolate, often short and stiff, 40 - 75 mm long, with dark glandular tips; dorsal sepal erect, with a fine, glandular, channelled point; lateral sepals similar, at first spreading then angled down or drooping in front of the flower; petals shorter but similar; **labellum** about 15 mm long and 8 mm wide, creamy, often with some red markings, obscurely lobed, the tip curved under, not red; side lobes erect, to 4 mm high; margins with pale or reddish linear teeth often angled forward; labellum calli golf-stick shaped, white or reddish, in four rows.



KB, Curramulka, YP

Flowering: Late June – July – Aug – Sept.

Similar Species: *A. argocalla, A.* sp. South East, *A. colorata, A. fragrantissima, A. intuta.*

Distribution: **EP, YP, SL (rare)**
Endemic to South Australia, total distribution unsure due to confusion with other species, but mostly on the 'leg' of Yorke Peninsula and probably southern Eyre Peninsula, with one collection from the coast south of Adelaide.

Habitat: Mostly on terra rossa soils or fertile sands over limestone, in mallee-broombush associations, light woodland or sedge dominated grasslands. Most commonly found within a few kilometres of the sea and never in the ranges.

Distinguishing Features: A mid to larger whitish spider orchid with horizontal then drooping segments commencing flowering in the winter time.

- Very similar in size to ***A. colorata*** which flowers later, has more colourful flowers with drooping, more heavily glandular flowers.
- *A. brumalis* is a similar colour to ***A. argocalla*** but smaller in all its parts and flowers earlier.

Notes: *A. brumalis* must once have been abundant on the leg of Yorke Peninsula as nearly every relict patch of native vegetation from Yorketown north to Port Broughton had a few plants in the 1970s. Probably was fairly common on the coloured sand and limestone districts around coastal Adelaide, but extinct there now.

A. brumalis forms hybrids with *Caladenia latifolia* and *A. conferta.*

Conservation Status:
Status in Legislation: Nationally vulnerable; vulnerable in South Australia.
Suggested Status: 3Vci, nationally vulnerable



JN, *A. brumalis*, Port Vincent, Aug

Arachnorchis calcicola
(G.W.Carr) D.L.Jones & M.A.Clem.

Limestone Spider Orchid

Etymology: The name *calcicola* means limestone dweller, a comparative reference to the similar A. *reticulata* which grows in acid soils and avoids limestone.

Synonyms: *Caladenia calcicola*.

Description: **Leaf**, linear lanceolate, to 10 cm long and 1 cm broad, felted above. **Flower stem** to 25 cm, red or green, with long hairs. **Flower** usually single, about 4 cm across, mostly red on a paler background, glossy; segments to 40 mm, much tapered toward their tips, the sepals ending in clubs about 8 mm long, these clubs usually paler than the rest of the flower but varying from yellow-green to maroon; dorsal sepal erect over the column; lateral sepals and petals stiffly spreading to deflexed; **labellum** obscurely lobed, the lamina sometimes with reticulate veining as in *A. reticulata*, the tip curled under, a brighter red; the margins of the side lobes finely toothed, the calli in 4-6 rows, with flat, often paler tops.

Flowering: Sept – Oct.

Similar Species: A. *reticulata, A. valida, A. stellata, A. lowanensis, A. cruciformis.*

Distribution: **SE; Vic.**
This is perhaps the main species in the *A. reticulata* complex in the South East region; also in Victoria.



KB, Geegeela CP, SE

Habitat: In open forest and woodland especially in coloured sandy soils over limestone, or in fertile sands.

Distinguishing Features: The predominance of plants with broader leaves, glossy flowers, paler osmophores and crowded, paler flat topped calli serve to separate the populations apart from ***A. reticulata***.

Notes: This is a member of the *A. reticulata* complex.

Some authors treat *A. calcicola* as a Victorian endemic but most orchidologists now accept that our South Eastern plants belong here. After all the only known Victorian populations are close to the South Australian border in similar habitat to that described above. The species was probably once common in South Australia but now confined to relict populations due to massive clearing of its habitat for farming.

The remaining populations seem to frequently hybridise with other spider orchids such as *A. cardiochila* and *A. colorata.* The frequent hybridising seems to happen with many other relict much disturbed populations of *Arachnorchis* in Australia. The confusing array of features in these hybrid populations makes it difficult to assign individual plants to any species.

Pollinated by the ubiquitous *Phymatothynnus* aff. *nitidus 1.*

Conservation Status:
Status in Legislation: Nationally vulnerable; endangered in South Australia.
Suggested Status: Nationally vulnerable, 3Vci.



JN, *A. calcicola*, Dry Creek CP, SE

Arachnorchis cardiochila
(Tate) D.L.Jones & M.A.Clem.

Thick Lip Spider Orchid

Etymology: The name *cardiochila,* heart-lipped, refers to the labellum shape.

Synonyms: *Caladenia cardiochila*, *Calonema cardiochila* and has been included in *Caladenia tessellata.*



KB, Warooka, YP

Description: **Leaf** lanceolate, to 10 cm long, dark green with red blotches, rigid with bristly hairs. **Flower stem** 5-30 cm tall, reddish, sparsely hairy. **Flowers** are one or two, variably coloured yellowish and red-brown, about 2 cm across; perianth segments are similar, spreading except for the erect dorsal sepal, shortly lanceolate, to 25 mm long, with a red-brown central stripe and acuminate, non clubbed tips; **labellum** cordate, 10-15 mm long, yellow or red-brown with dark divergent veins and smooth margins except for a conspicuous dark-brown thickening around the apex; calli dark, clavate, fleshy, crowded in two crowded or rarely four rows. Flowers are not fragrant.

Flowering: Late Aug – Sept – Oct.

Similar Species: *A. tessellata* from the Eastern states.

Distribution: **FR (rare), EP, NL, MU, YP, SL (rare), KI, SE; Vic, Tas**
One of the most widespread *Caladenia* in South Australia, from the west coast across Eyre Peninsula and inland to the Gawler Ranges, Yorke Peninsula, the Mount Lofty and southern Flinders Ranges (Mambray Creek only), the Murray Mallee and Kangaroo Island, and in the upper South East; also in the Eastern States.

Habitat: Mostly in sandy soils in the mallee especially in mallee broombush or in *Callitris* woodland and about rock outcrops but also in coastal dunes and headlands. Mostly a plant of the sandy plains and dunes, it is rarely found in the ranges.

Distinguishing Features: The heart-shaped labellum with entire margins and thickened apex, together with the short, thick lateral sepals make this an easily identified species.

Notes: There are two types, the slender, short, inland plant and a robust coastal plant.

The inland plant is pollinated by a small black thynnid wasp, *Phymatothynnus sp;* the pollinator of the coastal one has not yet observed. Hybrids have been recorded with several species most notably *A. colorata* to give *A.* x *variabilis,* with *A. reticulata* (*A.* x *halmaturina*), *A. calcicola, A.* sp. South East and *A. stricta.*

There are many colour variations of this species and some unusual colours are locally dominant.

It is somewhat surprising that *A. cardiochila* is not more widespread in the Flinders Ranges but perhaps this is due to the paucity of sandy soils there.

A. cardiochila was perhaps the most abundant *Caladenia* in the state before settlement but its favoured habitats throughout the wheat-belt have long been converted to agriculture.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Secure.

South Australia's Native Orchids



MH, Bangham, SE



MH, pink, YP



BB, magenta, YP

KB, clubbed, SE



KB, green, SE



Arachnorchis clavigera
(A.Cunn. ex Lindl.) D.L.Jones & M.A.Clem.

Plain Lip Spider Orchid

Etymology: The Latin *clavigera* bearing clubs, referring to the small black glandular clubs on the sepal tips.

Synonyms: *Caladenia clavigera.*

Description: **Leaf** lanceolate to 15 cm long and 8 mm broad, sparsely hairy, green with red spots at base. **Flower stem** to 30 cm tall, hairy, greenish. **Flower** usually single, to 4 cm across, yellow-green and red; segments to 40 mm long, slender and tapering to fine points, sepals usually ending in short, dark bead-like clubs; dorsal sepal erect and much curved over the column; lateral sepals and petals spreading with drooping tips; **labellum** heart-shaped, indistinctly lobed, calli in 4-6 rows, clubbed and ending before the midpoint, labellum margins entire, horizontal or down-curved, mid-lobe bright red, decurved.

Flowering: Sept – Oct – Nov.

Similar Species: None, although some *Caladenia cardiochila* hybrids have similar features.

Distribution: **SE; NSW, ACT, Vic, Tas.**
Confined to the lower South East as far north as Naracoorte and very rare in South Australia but more common in the eastern states.

Habitat: Heath and woodland fringes in well drained sand and clay loams. Most of its habitat in South Australia has long since been cleared for farming.



KB, SE, Oct

Distinguishing Features: Labellum with entire margins, the sepals with small bead-like clubs and the yellowish-green and red segments set this species apart.

- ***A. cardiochila*** has more distinctly heart-shaped labellum with red veining.

Notes: Probably once common in its limited South Australia distribution but estimated now at less than 100 plants. *A. clavigera* has only ever been seen as scattered individual plants in South Australia which would mean its long term survival here is unlikely without human intervention.

A similar but as yet undescribed species once occurred around Finniss in the Southern Mount Lofty Ranges.

Pollinated by a sexually attracted male wasp *Phymatothynnus monilicornis.*

Hybrids of *A. clavigera* and other spider orchids occur in Victoria but none have been collected in South Australia.

Conservation Status:
Status in Legislation: Not listed nationally, endangered in South Australia.
Suggested Status: 3Eci; also in Victoria where it is rare even in National Parks.



JN, *A. clavigera*, Dry Creek NFR, Oct

Arachnorchis sp. Finniss (R. Bates 308)

Finniss Spider Orchid

Etymology: The phrase name refers to the type location.

Synonyms: Previously included in *Caladenia clavigera* (1974).

Description: **Leaf** linear-lanceolate, about 6 cm x 5 mm, purple at base, with sparse long hairs. **Flower stem** purplish, about 15 cm tall, with long fine hairs. **Flower** single, to 3 cm across, yellow-green and red; segments linear-lanceolate, to 3 cm long, with a red median stripe; sepals ending in small dark clubs; dorsal sepal very erect; lateral sepals spreading and falcate; petals shorter spreading behind; **labellum** yellow-green, ovate with a red decurved apex; margins entire, thickened; calli pyriform, red, in four rows.

Flowering: Sept – Oct.

Similar Species: *A. clavigera*

Distribution: **SL.**
Known only from limited area on the flats near Finniss and perhaps near Hartley.

Habitat: In fertile clay soils of broombush dominated shrub-lands.

Distinguishing Features: Differed from ***A. clavigera*** in the narrower, differently shaped labellum, with thickened margins and different calli shape.

Notes: This sort of habitat was limited in South Australia to small areas near Lake Alexandrina and on Kangaroo Island south east of Kingscote, but because the soils were so fertile they were cleared early, consequently other than for road and rail corridors the habitat is now lost. Consequently the species is thought to be extinct.

Other orchids known to have occurred with it include *Caladenia latifolia, Pheladenia deformis* and *A. tensa*.

It is likely to have been pollinated by a species of thynnid wasp, probably *Phymatothynnus* sp.

Conservation Status:
Status in Legislation: Not listed nationally, endangered in South Australia.
Suggested Status: 2X, nationally extinct.



RB, *A.* sp. Finniss, Hartley, SL

Arachnorchis clavula
(D.L.Jones) D.L.Jones & M.A.Clem.

Kimba Spider Orchid

Etymology: From the Latin *clavulus,* a little club, in reference to the small dark clubs of this species. The common name refers to the town of Kimba on northern Eyre Peninsula, the centre of distribution for this local endemic.



JN, Carrapee Hill CP, EP

Synonyms: *Caladenia clavula* and also previously treated as a form of *Caladenia dilatata* R.Br.

Description: A stunted species with **flower stem** to 20 cm tall; **leaf** ovate-lanceolate, usually less than 5 cm long, sparsely hairy, decumbent and usually thin textured. **Flower** usually single, to 35 mm across, greenish-yellow with red labellum apex and calli, dark brown osmophores; segments all similar, greenish with red median stripe or flecks, to 35 mm long, sepals only with small, dark brown, narrow osmophores; dorsal sepal erect or bent over the column; lateral sepals spreading obliquely down in front of the flower; petals smaller, downswept behind the flower or spreading **labellum** tremulous, to 2 cm long , trilobed, the midlobe with a crimson apex and markings underneath, sidelobes erect with very few linear green teeth in the mid section; calli in 4 rows, well spaced, red, clubbed.

Flowering: Sept – Oct.

Similar Species: *A. tensa, A. verrucosa, A. parva, A.* sp. Brown bayonets.

Distribution: **?FR, EP.**
Endemic to South Australia where it is confined to the inland side of the wheat-belt on central and northern Eyre Peninsula, with a possible outlier near Mambray Creek.

Habitat: Found in dry woodland and mallee, in various soils including hard clay-loams not favoured by other *Arachnorchis.*

Distinguishing Features: This is an example of one of several very similar species in this group which may be difficult to recognise.

- *A. clavula* can be determined by a combination of features such as the small labellum with small area of shortly fringed margin, the tiny, narrow dark brown osmophores and the flaccid leaf, which is often senescent at flowering.

Notes: Paradoxically the small, hardly distinctive flowers are pollinated by an easily recognised, large, yellow striped, male thynnid wasp, *Lestricothynnus* sp., which is readily attracted during wasp baiting experiments. Plants are frequently found with the labellum broken off, presumably by the wasps, which fly off with them.

It hybridises freely with *A. zephyra*.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Well conserved on Eyre Peninsula.



KB, *A. clavula*, Sept

Arachnorchis colorata
(D.L.Jones) D.L.Jones & M.A.Clem.

Pretty Spider Orchid

Etymology: From the Latin *coloratus* coloured, in reference to the variously coloured flowers.

Synonyms: *Caladenia colorata,* also previously treated as a form of *Caladenia patersonii* R.Br., *Caladenia* Mallee Princess.

Description: **Leaf** ovate-lanceolate, to 10 cm long, densely felted, red based. **Flower stem** 5-25 cm tall. **Flowers** one or two, about 5 cm across, commonly cream-green with red or purple-brown markings, but variable and sometimes wholly purple-brown, with dark-glandular tips to all segments; perianth segments all similar, linear lanceolate, to 5 cm long, often red striped in the upper half with attenuated dark-glandular tips; dorsal sepal narrow throughout, erect; lateral sepals with a broad flat almost horizontal base and narrow pendulous tips; petals similar but shorter, behind the flowers; **labellum** flat, a single lobe, with an elongated, curled under tip, the margins shortly fringed-dentate, the mid lobe usually darker.



BB, Ngarkat CP, SE

Flowering: Late Aug – Sept – early Oct.

Similar Species: *A. behrii, A. brumalis, A. concolor, A. fulva, A. woolcockiorum.*

Distribution: **?NL, MU,SE.**
Endemic to South Australia. Found from the Barossa Valley in the north, through the Murray and Lake flats and upper South East but absent from high rainfall districts.

Habitat: Mostly in *Callitris* or South Australia blue gum woodland, in sandy, more fertile soils, but also about rock outcrops and in mallee-broombush associations.

Distinguishing Features: It is recognised from a combination of features such as the short, pale-felted leaves, small size, varicoloured flowers, frequently with coloured median stripe on sepals.

- ***A. behrii*** and ***A. woolcockiorum*** are taller plants of the ranges, with longer leaves, the segments pale and uniformly coloured.
- ***A. brumalis*** is of a similar size, is also a plains dweller, has mostly cream coloured flowers, paler glands and a different geographical region.
- Wholly red flowers are difficult to separate from ***A. concolor***, which probably does not occur in South Australia.

Notes: Pollinated by sexually attracted male wasps; these have not yet been collected. Forms frequent hybrids and sets up hybrid swarms with A. *cardiochila*, *A. calcicola, A. fulva* and *A. stellata*. Less frequently crosses with *A. verrucosa* and other green comb spiders.

Conservation Status:
Status in Legislation: Nationally endangered; endangered in South Australia.
Suggested Status: 3Rc nationally rare.



BB, *A. colorata*, SE, Sept
*Note normal variation in flowers

Arachnorchis conferta
(D.L.Jones) D.L.Jones & M.A.Clem.

Dwarf Comb Spider Orchid

Etymology: From the Latin *confertus* crowded, referring to the dense mass of berry-like calli on the labellum.

Synonyms: *Caladenia conferta.* Also previously treated as the coastal form of *Caladenia toxochila.*

Description: **Leaf** ovate to oblong, to 7 cm x 2 cm, decumbent, hirsute. **Flower stem** usually dwarfed, 2-15 cm tall, shortly hairy. **Flowers** one or two, greenish and crimson, to 3 cm across; segments all similar, to 2 cm long, green with a broad red median stripe, or wholly red; sepals with short flattened, yellowish osmophores; dorsal sepal erect and much incurved over the column; lateral sepals spreading rigidly, petals curved back behind the flower; **labellum** on a small tremulous claw, broader than deep when tip curled under , cordate, midlobe crimson, rather flat with the tip curled under, margins with a few short sparse teeth, lamina with a dense mass of short, crimson, swollen, flat headed calli in six irregular rows.

Flowering: July – Aug – Sept.

Similar Species: *A. toxochila*

Distribution: **EP, YP, SE.**
Mainly near the coast, on Eyre Peninsula, on the leg of Yorke Peninsula and in the upper South East.



MH, Port Julia, YP

Habitat: In fertile shallow loams, in mallee-broombush or on rock outcrops, favouring bare open sites.

Distinguishing Features: Easily recognised from its dwarf stature; short, broad, ground hugging leaf (except where in taller vegetation); the broad labellum with its dense mass of grapey-like calli and the segments spreading.

- ***A. toxochila*** has deflexed segments.

Notes: *A. conferta* forms sporadic hybrids with A. *brumalis* wherever the two are sympatric. Along with *A. brumalis,* it is one of the earliest spider orchids to flower in South Australia.

It is occurs in areas of reliable winter rainfall.

It is pollinated by a small black sexually attracted thynnid wasp not yet identified, perhaps a species of *Aeolothynnus*.

A. conferta has become rare due to grazing pressure and land clearance. The Eyre Peninsula plants may represent a separate taxon as the labellum calli differ.

Conservation Status:
Status in Legislation: Nationally endangered; endangered in South Australia.
Suggested Status: 3Vci, nationally threatened.



JN, *A. conferta*, Port Vincent, YP

Arachnorchis cruciformis D.L.Jones

Bordertown Spider Orchid or Red Cross Spider Orchid

Etymology: From the Latin *crux* a cross and *forme* shape as for the cross-shaped flowers.

Synonyms: *Caladenia* aff. *reticulata* Blood red, *Arachnorchis* sp. Bordertown.

Description: **Leaf** linear, erect, to 6 cm long, with felty golden hairs above. **Flower stem** to 20 cm tall, reddish, with pale yellow hairs. **Flower** single or two, deep wine-red to purplish, to 4 cm across; segments short and stiff, linear-lanceolate, uniformly deep crimson or with paler edges, sepals ending in dark purple-black glandular clubs; dorsal sepal erect with lax apex; lateral sepals spreading obliquely in front; petals smaller not clubbed, spreading behind; **labellum** red except for a pale base, hardly lobed, margins sub erect with simple linear teeth to 1.5 mm, apex curled under; calli linear falcate at the base, becoming shorter and papillate toward the labellum bend.

Flowering: Sept – Oct.

Similar Species: *A. calcicola* and *A. reticulata*.

Distribution: **SE; Vic**
Known only from the Bordertown to Padthaway area of the upper South East; the type of *A. cruciformis* is from Victoria.

Habitat: Open woodland in fertile soils in company with numerous other *Arachnorchis* species.

Distinguishing Features: This species has features shared by no other *Arachnorchis* and the combination of deep red flowers and large dark clubs is unique, as are the short golden leaf hairs.

- It differs from ***A. calcicola*** and ***A. reticulata*** in its often wholly red flowers.

Notes: This species seems very distinctive.

A. cruciformis from western Victoria seems very close and it seems best to use this name for the South Australia plants.

At the time of Doctor and Mrs. Roger's visit, there were large areas of parkland like habitat around Bordertown, which had not been cleared. There were numerous disturbed areas and Rogers collected from obvious hybrid swarms.

Similar plants were seen by the author near Frances in the 1960s. It seems unlikely that the species survives in a pure state today as all fertile soils in this area have now been cleared of natural vegetation.

A. cruciformis is pollinated by *Phymatothynnus* aff. *nitidus* sp. 1.

Conservation Status:
Status in Legislation: Not listed nationally, endangered in South Australia.
Suggested Status: 3E, nationally endangered



JJ, Western Victoria
From *Orchids of Victoria*

Arachnorchis dilatata
(R.Br.) D.L.Jones & M.A.Clem.

Green Comb Spider Orchid

Etymology: The Latin *dilatata* dilated or expanded referring to the spreading segments or the sepals which have expanded glandular tips.

Synonyms: *Caladenia dilatata* R.Br.

Description: A summer flowered species with a **flower stem** to 30 cm tall; **leaf** narrow, hairy. **Flower** usually single green red and white, to about 3 cm across; all **sepals** with red median stripe, lanceolate with orange-brown clubs of varying size; dorsal sepal erect to 2.5 cm long; lateral sepals spreading and angled downward, to 3 cm long; petals shorter and spreading behind with short indistinct clubs on tips; **labellum** trilobed, white basally, side lobes deeply fringed, mid lobe curled under and maroon, calli in 4-6 indistinct rows, golf-club shaped.



KB, Penola CP, SE

Flowering: Nov – Dec – Jan.

Similar Species: *A. tensa, A. parva, A. necrophylla.*

Distribution: **SE; Vic, Tas.**
In South Australia just reaching into the lower South East; also in the Eastern states.

Habitat: Mostly in sandy woodland around waterholes and swamps in high rainfall areas near Mount Gambier.

Distinguishing Features: One should look for the fact that most plants have some sort of clubbing on the petals as well as the sepals, although the sepals have much larger clubs. Although this was the first of the green comb spiders to be named it is still the least understood and may be a purely Tasmanian species.

- There is very little to separate *A. dilatata* and ***A. necrophylla,*** they both flower late, usually after the leaves have begun to shrivel, both have clubs on all segments. *A. dilatata* prefers damp acid soils while *A. necrophylla* is more of a mallee species on alkaline ground, especially near or on limestone.

Notes: In Tasmania, the flowers are pollinated by a grey and white striped thynnid wasp; in South Australia, no such wasp has ever been seen on the flowers.

Conservation Status:
Status in Legislation: Not listed nationally, endangered in South Australia.
Suggested Status: 2Rci in South Australia but more common in the east, at least in Tasmania and Victoria.



KB, *A. dilatata*, Honan NFR, SE, Dec

Arachnorchis ensigera D.L.Jones

Hybrid Spider Orchid

Etymology: From the Latin, *ensiger*, sword bearing, alluding to the long sword shaped osmophores, or clubs, on the segments.

Synonyms: Previously referred to as *A. gladiolata* hybrids i.e. with *A. woolcockiorum, A. saxatilis* and *A. flindersica.*

Description: A variable hybrid with the main features of ***A. gladiolata*** and ***A. woolcockiorum.*** **Leaf** to 15 cm, green with red markings at the base, hairy. **Flower stem** to 40 cm, greenish or purplish. **Flower** one to two, rarely three, yellow-green with or without red veining; segments with long, brown, bayonet clubs; dorsal sepal erect, lateral sepals obliquely deflexed in front of the flower, petals spreading then deflexed behind the ovary; labellum variable, green with maroon apex, lamina with 4 – 6 rows of reddish purple, clubbed calli.

Flowering: Late Aug –Sept – Oct

Similar Species: None.

Distribution: **FR.**
Known only from the Alligator Gorge area of the Mount Remarkable National Park, in the southern Flinders Ranges.

Habitat: Restricted to blue-gum (*Eucalyptus leucoxylon* ssp. *pruinosa*) woodland in areas that were massively disturbed during road construction and tree-cutting operations in the 1960s.



BB, Alligator Gorge, FR

Distinguishing Features: Like most hybrids, this one is intermediate between the parent species, the most obvious feature being the long flat clubs on sepals and petals.

Notes: The author has studied these hybrids since teaching at Port Augusta in 1972. At that time hybrid spider orchids were numerous on the much bulldozed ground along tracks near Alligator Gorge. *A. gladiolata* occurred in thousands, with scattered hybrids between it and *A. saxatilis, A. flindersica* (then known as *Caladenia patersonii*) and *A. woolcockiorum.* There were many other hybrid orchids in the area, all due to the mass disturbance of previously virgin bush.

This species is found with *A. gladiolata* where it occurs with populations of *A. woolcockiorum, A. saxatilis* and *A. flindersica.* Numbers are decreasing as the effects of earlier disturbance become less obvious.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: This is not applicable as this hybrid may soon disappear as the effect of disturbance lessens.



JN, *Arachnorchis ensigera*, Aug

Arachnorchis flindersica D.L.Jones

Flinders Range Spider Orchid

Etymology: Named for the southern Flinders Ranges where it occurs.

Synonyms: Previously included under *Caladenia arenaria, C. patersonii* and *A.* aff. *arenaria* Flinders.

Description: Slender plants with **flower stems** with long silky hairs to 60 cm; **leaf** oblong-lanceolate, to 15 cm long, erect, with short and long hairs. **Flowers** one or two, 5-10 cm across, creamy to green or yellow-green, sometimes with red-brown markings; segments lanceolate, to 5 cm long, glandular outside, sometimes with a red median stripe and terminating in dark filamentous, glandular tips; dorsal sepal erect; lateral sepals at first spreading then drooping in front of the flower; petals shorter, spreading behind; **labellum** ovate-lanceolate, to 20 mm long, trilobed, the side lobes shortly erect, finely toothed, lamina with four to 6 rows of green or reddish, flat-topped calli, mid-lobe curled under, few teeth along the margins. The flowers have no fragrance.

Flowering: Late Aug – Sept – Oct.

Similar Species: *A. brumalis.*

Distribution: **FR.**
Restricted to the southern Flinders Ranges, from Mount Brown south to Telowie Gorge.

Habitat: In open heathy woodland, forest and scrubs, in better soils and usually associated with Sugar gums (*Eucalyptus cladocalyx*).



CH, Alligator Gorge, FR

Distinguishing Features: This species differs from the similar ***A. brumalis*** in its later flowering time, different flower colour and shape, larger flowers and different geographical location.

Notes: As treated here may include more than one taxon

- a very tall, long segmented, large pale greenish flowered taxon from Telowie Gorge
- a small greenish white flowered variant with red-brown appointments from Alligator Gorge
- and a wholly yellowish variant.

Where it does occur, it may set up large populations which are rather isolated.

Determination of the pollinating wasps and DNA testing may help to sort out the taxa.

All variants hybridise freely with members of the *A. dilatata* complex and rarely with *A. toxochila*. See Bates in the *Orchadian* 1996 for an illustration of such hybrids.

Previously confused with *Caladenia arenaria* which is confined to central western New South Wales.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3Rc, nationally rare but conserved.



JN, *A. flindersica*, Alligator Gorge, Sept

Arachnorchis formosa
(G.W.Carr) D.L.Jones & M.A.Clem.

Elegant Red Spider Orchid

Etymology: From the Latin, f*ormosa,* meaning finely formed, handsome, beautiful in reference to the attractive flowers.

Synonyms: *Caladenia formosa*, *C. haemantha* D. L. Jones. The species has also been included in *C. concolor* and *C. patersonii.*

Description: **Leaf**, rigid, lanceolate, to 10 cm long and 12 mm wide, hairy, green with red spots at the base. **Flower stem** to 50 cm tall, slender, hairy, green and purplish. **Flowers** 1 or 2, to 60 mm across, usually blood red but appearing in all shades of pink with occasional wholly cream specimens; segments to 80 mm long, broad at the base then suddenly tapering into long filamentous, glandular drooping tips; dorsal sepal erect but curved; lateral sepals and petals at first spreading then drooping; **labellum** with 4 – 6 rows of clubbed calli, smaller and more spaced toward the strongly curved apex, margins shortly toothed throughout.



RB, Padthaway CP, SE

Flowering: Sept – Oct.

Similar Species: *A. concolor, A. colorata.*

Distribution: **SL, SE; Vic.**
In the South East, as far north as Bordertown, on Fleurieu Peninsula; also in Western Victoria.

Habitat: The fact that this species has been recorded from such diverse habitats as River Red-gum flats, limestone hillocks, and sandy heath-land, would indicate that the species is not clearly understood.

Distinguishing Features: A deep red-purple species (there are variants, see description) with large flowers with narrow, drooping segments having a somewhat restricted, but disjunct occurrence in South Australia.

- ***A. colorata*** is a smaller species of the mallee with more distinctly multicolored flowers.

Notes The *A. patersonii* complex in South Australia is far from worked out yet and as red flowered plants have been recorded from the swamps of the South East to semi arid Peterborough in the Flinders Ranges, while populations of *A. formosa* contains all colour forms found in between, it is clear that *A. formosa* is probably the least well defined of all. All species of the complex frequently hybridise with species of other complexes.

The flowers are pollinated by *Phymatothynnus* aff. *pygidialis.*

Conservation Status:
Status in Legislation: Nationally vulnerable; vulnerable in South Australia.
Suggested Status: Unresolved.



MH, *A. formosa*, Naracoorte, SE

Arachnorchis fragrantissima
(D.L.Jones & G.W.Carr) D.L.Jones & M.A.Clem.

Scented Spider Orchid

Etymology: The name *fragrantissima,* means fragrant, a reference to the variable floral perfume.

Synonyms: *Caladenia fragrantissima*, *C. patersonii* var. *suaveolens* Nicholls.

Description: **Leaf** lanceolate, rigid, to 10 cm long and 20 mm wide, with soft hairs. **Flower stem** to 40 cm tall, hairy, greenish. **Flowers** one or two, strongly perfumed, to 80 mm across, thick textured, creamy with minor red markings; segments to 80 mm long, narrow near the base then tapered to pendulous apices with dark glandular hairs becoming more crowded at the tips; dorsal sepal erect, other segments drooping; **labellum** obscurely lobed with 6-8 rows of short clubbed calli extending to the bend; margins with longer basal teeth reducing toward the recurved to revolute tip.

Flowering: Late Sept – Oct – Nov.

Similar Species: *A. patersonii* complex, *A.* sp. South East.

Distribution: **SE; Vic.**
Restricted in South Australia to the lower South East region; also in western Victoria.

Habitat: *A. fragrantissima* is a species of heath-land, often near the sea but extending inland on sandy soils, especially old dunes.



MH, Honan NFR, SE

Distinguishing Features: Best recognised from the fragrant, cream coloured not white flowers, with their minor red tints, mostly on the labellum fringe and calli. The soft hairs on the stem, rigid leaf, and drooping segments with heavy glandular tips are also useful in identifying this species.

- ***A.* sp. South East** is not fragrant and is a species from the upper South East.

Notes: Another member of the *A. patersonii* complex, its main ally is *A. fuliginosa* from calcareous sands.

The extent of this species in South Australia is still to be worked out. Some were previously treated as *Arachnorchis* aff. *arenaria* or *A. colorata.* It would appear that only fragrant flowered forms should be treated as *A. fragrantissima* but as this is not obvious from dried herbarium material, specimens are hard to place.

The eastern Victorian forms are now treated as *A. orientalis*.

Wasp pollinated, it attracts *Phymatothynnus aff pygidialis 2,* similar to that which pollinates *A. richardsiorum*.

Conservation Status:
Status in Legislation: Not listed nationally, vulnerable in South Australia.
Suggested Status: 3Vci, nationally threatened



JN, *A. fragrantissima*, Dry Creek CP, Oct

Arachnorchis fuliginosa D.L.Jones

Coastal Spider Orchid

Etymology: The Latin *fuliginosa*, dark tipped, referring to the heavily coloured drooping tips to the segments.

Synonyms: Previously treated as a form of *A. fragrantissima*.

Description: **Leaf** lanceolate, rigid, to 15 cm long and 20 mm wide, with a mix of rigid and soft hairs. **Flower stem** to 40 cm tall, stout, hairy, greenish. **Flowers** 1 or 2, with a burned chemical smell, to 80 mm across, thick textured, creamy to yellowish-green, with minor red markings and reddish dark segment tips; segments to 80 mm long, broad near the base then abruptly tapered to pendulous apices with dark glandular hairs becoming more crowded at the tips; dorsal sepal erect and curved forward, the other segments drooping; **labellum** broad, obscurely lobed with 6-8 rows of short clubbed calli extending to the bend; margins with longer basal teeth reducing toward the recurved to revolute tip.

Flowering: Sept – Oct.

Similar Species: *A. brumalis, A. fragrantissima*

Distribution: **EP, YP, SL_x.**
Endemic in South Australia. Strictly coastal, from southern Eyre Peninsula, Yorke Peninsula and the Southern Lofty (extinct).



RB, YP, Sept

Habitat: Mostly on stabilised sand hills near the sea, either in low heath, among sedges or under shade of scattered trees. The species is not tolerant of frosts and has a preference for alkaline soils.

Distinguishing Features: Not generally confused with other species due to the fleshy-textured yellowish flowers with thickly tapered segments, distinct perfume, the large leaves and the specific habitat.

- Nevertheless it may intergrade with the non perfumed winter flowered ***A. brumalis*** on Yorke Peninsula, as in damp seasons the latter will flower into spring. Certainly some specimens of later flowered plants attributed to *A. brumalis* seem to emit some perfume.

Notes: *A. fuliginosa* had 90% of its habitat cleared for farming in the period from 1960 – 1980, after it was realised that the addition of trace elements to the soil made farming viable throughout its range.

This taxon was previously treated as a variant of *A. fragrantissima*, a species with unknown distribution in South Australia, probably still in the South East, and still present in western Victoria.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3Eci, nationally endangered.



BB, *A. fuliginosa*, Foul Bay, YP
*Note the short fleshy leaves, velvet white hairs on stems and heavy osmophores

Arachnorchis fulva
(G.W.Carr) D.L.Jones & M.A.Clem.

Tawny Spider Orchid

Etymology: From the Latin, *fulvus*, meaning tawny. This, and the common name, both refer to the dark outer sepals and buds of the species.

Synonyms: *Caladenia fulva* and previously also included in *C. patersonii.*

Description: Stocky plants with a **flower stem** to 15 cm tall and a large hairy **leaf** to 10 cm long. **Flowers** 1 or 2, to 4 cm across, variable but often thick textured, rather dark in bud and on the underside of the sepals, creamy or greenish-white inside,; sepals and petals drooping and ending in dark osmophores but not clubbed; **labellum** not lobed, marginal fringe medium-short with a red labellum apex, the tip decurved or in-rolled, the lamina with 4-6 rows of red calli. Flowers have some faint fragrance.



RB, Padthaway CP, SE

Flowering: Sept – Oct.

Similar Species: Red labellum members of the *A. patersonii* complex, such as *A. behrii* and *A. formosa*.

Distribution: **SE; Vic.**
The South East of South Australia, particularly in the Bordertown to Naracoorte area, but very rare there now; in Victoria east to Stawell.

Habitat: A woodland species, growing on sandy or loamy soils.

Distinguishing Features: The dark glandular segments to the thick textured flowers is useful to identify this species.

- It can be confused with species such as ***A. behrii,*** a species from Mount Lofty Ranges, and ***A. formosa***, but those species are taller and more slender.

Notes: A member of the *A. patersonii* complex on which still much work is needed. There are many populations in South Australia which cannot be easily placed in any of the named taxa. DNA testing may throw some light on the relationships between the many forms.

Some authors do not accept that *A. fulva* occurs in South Australia.

Conservation Status:
Status in Legislation: Nationally endangered; endangered in South Australia.
Suggested Status: Unknown, probably 3Eci, nationally endangered.



JN, *A. fulva*, Bangham CP, Sept

Arachnorchis gladiolata
(R.S.Rogers) D.L.Jones & M.A.Clem.

Bayonet Spider Orchid

Etymology: From Latin *gladiola*, a bayonet or sword, in reference to the bayonet shaped clubs on the sepals.

Synonyms: *Caladenia gladiolata.*

Description: **Leaf** broad lanceolate, more ground hugging than most species, to 6 cm long and 1 cm wide, shortly hairy, green. **Flower stem** to 20 cm tall, hairy, green with reddish markings. **Flower** usually single, to 3 cm wide, in tones of green and red, with brown bayonet-shaped clubs on the sepals and petals; segments 2-4 cm long, green with a red longitudinal stripe, loosely spreading, or drooping in larger flowers, often more than half their length made up of large, flattened, brown, glandular clubs, which emit a powerful, musky fragrance; **labellum** yellowish-green and red, small, margins minutely denticulate with four crowded rows of dark reddish clubbed calli.



JN, *A. gladiolata*, FR, Sept

Flowering: Late Aug – Sept – Oct.

Similar Species: None.

Distribution: **FR, NL, SL.**
Once common throughout the Mount Lofty and Southern Flinders Ranges, as far north as Arden Vale, via Quorn.

Habitat: Woodland, grassland and grassy open forest on fertile loams i.e. in the drier parts of the Mount Lofty Ranges and wetter parts of the Southern Flinders.

Distinguishing Features: Flowers with large brown bayonet clubs to the segments and the musky odour make this species distinctive. Plants in the Adelaide Hills tend to have shorter segments, but this feature is variable in any population.

Notes: *A. gladiolata* is now rare, due to conversion of its habitat to farmland. The only large populations remaining are in the Mount Remarkable National Park, near Alligator Gorge. It is now thought to be extinct throughout most of its former range, surviving only in the northern and southern limits of its distribution. The southern population has crashed since fire swept through its habitat. It struggles now to maintain the handful of plants remaining.

At Alligator Gorge there was a population explosion of this species following disturbance during road building, in the 1960s. Following this disturbance there was extensive hybridising with *A. saxatilis, A. flindersica, A. tensa* and *A. woolcockiorum.*

Pollination is effected by sexually attracted male thynnid wasps of *Zaspilothynnus* sp. The scent of *A. gladiolata* can be recognised by humans from up to 100 metres away but it is likely that the wasps can recognise it from even greater distances.

Conservation Status:
Status in Legislation: Nationally endangered; endangered in South Australia.
Suggested Status: 3Eci, nationally endangered.



MH, *A. gladiolata*, Scott Creek CP, SL



KB, Alligator Gorge, FR
*Note the differences between the plant from the north & the plant from the south



MH, *A. gladiolata*, Scott Creek CP, SL

Arachnorchis hastata
(Nicholls) D.L.Jones & M.A.Clem.

Mellblom's Spider Orchid

Etymology: From the hastate, or spear shaped, clubs on the sepals. The common name honours the original collector.

Synonyms: *Caladenia hastata*. (Nicholls) Rupp

Description: **Leaf** to 12 cm long, hairy. **Flower stem** to 30 cm with a single creamy white **flower** with very dark clubs; segments to 4 cm long, with dark osmophores forming clubs to 2 cm; dorsal sepal erect, lateral sepals drooping, petals spreading to decurved; **labellum** hardly lobed, margins finely toothed, 4 – 6 rows of purple calli.

Flowering: Oct – Nov.

Similar Species: *A. richardsiorum.*

Distribution: **SE; Vic.**
From near Portland Victoria to Robe, where it is only known from a single old collection.

Habitat: Largely confined to heathy coastal woodland

Distinguishing Features: This species is best identified by the creamy-white flowers with very dark clubs on all segments.

- The closely related ***A. richardsiorum*** grows in alkaline sands and has green and brown flowers



RB, Portland, Vic, Nov

Notes: Flowering is more frequent after fires open up its habitat.

Only recently added to the South Australia Flora, the single collection having been previously confused with *A. richardsiorum*.

This species has been the subject of an intense recovery program but remains critically endangered nationally. It is possible that *A. hastata* could be discovered in the Robe area following a bushfire in the overgrown coastal sand scrubs. In any case plants grown from seed collected at Portland could feasibly be re-introduced in the Robe area.

It is pollinated by *Lophocheilus villosus*.

Conservation Status:
Status in Legislation: Nationally endangered, not listed in South Australia.
Suggested Status: X in South Australia, but nationally 2Eci, critically endangered.



BB, *A. hastata,* Portland, Vic

Arachnorchis interanea D.L.Jones

Inland Green-comb Spider Orchid

Caladenia campestris and also as sp Mallee Woodland but with a wider range

Etymology: The name is from *interaneus,* Latin for interior, a reference to the inland distribution of the species.

Synonyms: Previously included in *Caladenia tentaculata*, *A.* aff. *tensa.*

Description: A tall, often robust, species with a **flower stem** to 65 cm high with a large linear-lanceolate, hirsute, sub-erect **leaf** to 28 cm long. **Flower** usually single, quite large, to 5 cm across, green with dark red median stripe on the segments, the osmophores 4-10 mm long, brownish, on sepals only; **labellum** on a short claw, green with a maroon mid lobe and calli, the lamina trilobed, to 17 mm long, apex recurved, lateral lobes about 6mm across, erect with 4-7 linear teeth 3-8 mm long, lamina calli in 4 crowded rows, linear clavate to 4 mm long and reaching only to the labellum bend.

Flowering: Sept – early Oct.

Similar Species: *A. tentaculata, A. tensa.*

Distribution: **GT, EP.**
Common in granite country across the north and east of Eyre Peninsula from north of Port Lincoln to Hiltaba Station and Carrapee Hill CP.



JN, Gawler Ranges, EP, GT

Habitat: Found among jumbled boulders, or in small canyons, and large cracks in the rock, or on shady rock ledges, under shrubbery.

Distinguishing Features: These include the long narrow erect leaf, the tall stems, and the large green and maroon flowers with curved sepals, the labellum side lobes with a long fringe.

- Plants are much larger than the similar ***A. tensa*** and do not have such straight deflexed lateral sepals.
- Leaves are quite different from the short, broad, white-haired leaf of ***A. tentaculata*** which has even larger flowers with longer labellum fringe and floppy sepals.

Notes: Like most inland orchids, this species does not flower every year, but makes up for that in wet years with massed flowering.

A. interanea is often found growing with the tiny flowered *A. toxochila* and, less often, with *A. stricta* and *A. aurulenta,* which are all green comb spider orchids.

The pollinator unknown.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Common and well conserved, in the Gawler Ranges, but feral goats and climate change are serious threats to orchids there.



JN, *A. interanea*, Mt Centre, Gawler Ranges, Sept

Arachnorchis intuta D.L.Jones

Ghost Spider Orchid

Etymology: The Latin name, *intuta,* means unprotected, and refers to the precarious conservation status of the species.

Synonyms: None, but previously given the phrase name *Caladenia* sp. Brentwood.



MH, Brentwood, YP

Description: **Leaf** decumbent, oblong-lanceolate, to 5 cm long, and 2 cm wide, grey-green with a dense cover of short grey hairs. **Flower stem** to 25 cm tall, green with short rigid hairs. **Flower** one or two, clear white, sometimes with red calli, and teething and some minor striping outside, to 50 mm across; segments spreading, hardly drooping at their tips, linear-lanceolate to 40 mm long; sepals and sometimes the petals with darker glandular tips, not, or indistinctly clubbed; dorsal sepal erect; lateral sepals spreading obliquely in front of the flower; petals shorter and spreading behind with only minor glands on their tips; **labellum** ovate, trilobed, the side lobes obliquely erect, margins obliquely toothed, lamina with 4 rows of pale stalked, flat, often red topped calli, mid lobe narrower but same colour as the mid lobe, and curled under, margins shallowly toothed. The flowers are not fragrant.

Flowering: Jul – Aug – Sept.

Similar Species: *A. brumalis, A. rigida.*

Distribution: **YP.**
Endemic to a small area of Yorke Peninsula, from about Stansbury, across to Hardwicke Bay.

Habitat: Grows in sandy soils in woodland dominated by sheoaks, *Allocasuarina verticillata* and mallee box, *Eucalyptus porosa.*

Distinguishing Features: Differs from the more common ***A. brumalis*** (which is rarely sympatric) in the clear white rather than creamy flowers, and the shorter more rigid, less glandular segments.

- It differs from ***A. rigida***, of the Adelaide Hills, in the different leaf, longer labellum fringe, and in not having distinctly clubbed sepal tips.

Notes: In the late 1990s a large constant population was discovered by NOSSA members, and subsequently a type collection was made.

In 2007 a large population was found near Hardwicke Bay, a discovery which more than doubled the known population size.

Conservation Status:
Status in Legislation: Critically endangered nationally; endangered in South Australia.
Suggested Status: 2E, nationally critically endangered.



KB, *A. intuta*, Brentwood, Aug

Arachnorchis leptochila ssp. **leptochila**
(Fitzg.) D.L.Jones & M.A.Clem.

Narrow Lip Spider Orchid or Queen Spider Orchid

Etymology: From the Greek, *lepto,* thin and *cheilos,* a lip, in reference to the thin strap-like labellum.

Synonyms: *Caladenia leptochila*.

Description: **Leaf** narrow-lanceolate, erect, to 20 cm long, blotched red below, with long silky hairs. The **flower stem** is very slender to 45 cm tall, with mixed short and very long hairs. The **flowers** are 1 or 2, rarely three, to 3 cm across, yellow-green and red; segments upswept, green, narrow, and rigid, to 3 cm long, the sepals ending in small dark clubs; **labellum** a thin, red, curved strap with the apex tucked under, margin entire; calli reduced to small irregular sessile bumps, near the base. Flowers have no fragrance. Golden varieties are sometimes seen.



KB, Mt Lofty area, SL

Flowering: Sept – Oct – Nov – early Dec.

Similar Species: *A. leptochila* ssp. *dentata, A. ovata.*

Distribution: **NL, MU, SL, ?KI.**
Endemic to South Australia in the Mount Lofty, with a single collection purportedly from Kangaroo Island.

Habitat: In forest, woodland and scrub, in a variety of acidic soils. Mostly in the ranges where it favours leached stony soils, over clay.

Distinguishing Features: A very distinctive species recognisable from the upswept segments and strap-like labellum. Recognisable when not in flower from the narrow leaf which has a mix of short and very long silky hairs.

- The related ***A. ovata*** has a broad ovate, rather than a strap-like, labellum.

Notes: Occasionally pale coloured forms are found.

The pollinator of *A. leptochila* has never been captured, although small black wasps have been observed to buzz the flowers. It would seem rather unusual that no-one has ever reported on the pollination of an orchid so common near Adelaide. The long lived flowers infrequently form seed and about 10% of flowers are pollinated, so pollination events must be rare.

Once thought to occur in Victoria but the collections from there are doubtful.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3Uc, restricted to South Australia.



RB, *A. leptochila* ssp. *leptochila*, Oct

Arachnorchis leptochila ssp. dentata D.L.Jones

Red Queen Spider Orchid

Etymology: The Latin, *dentatus,* meaning 'with teeth', refers to the shortly serrated labellum margins.

Synonyms: Previously referred to as a form of *A. leptochila* or the Southern Flinders form of *Caladenia leptochila.*



BB, note teeth on lip

Description: Very similar to ssp. *leptochila* and intergrading with it; **leaf** narrow-lanceolate, erect, to 20 cm long, blotched red below, with long silky hairs. The **flower stem** is very slender to 45 cm tall, with mixed short and very long hairs. The **flowers** are 1 or 2, rarely three, to 3 cm across, wholly red or sometimes yellow-green and red, as in ssp. *leptochila*; segments upswept, red, narrow, and rigid, to 3 cm long, the sepals ending in small dark clubs; **labellum** thin, red, a curved strap with serrated or coarsely toothed edges, the apex tucked under; calli reduced to small irregular sessile bumps, near the base. Flowers have no fragrance.

Flowering: Late Sept – Oct –early Nov.

Similar Species: *A.leptochila* ssp. *leptochila*, *A. ovata.*

Distribution: **FR, NL.**
Mostly in the Mount Remarkable National Park, as far north as Wilmington, but occasionally in the Mount Lofty Ranges. Endemic to South Australia.

Habitat: Found in a variety of woodland types, mostly in heavier clay soils in the mountains, on ridges or flats. It is found especially in dry locations, sometimes in pure populations or scattered among ssp. *leptochila* and with some intergrades.

Distinguishing Features: Mostly recognised by the red flowers and toothed edges to labellum or less erect segments but sometimes only one or two of these features are present. Flowers which are wholly yellow have been observed.

Notes: Although this subspecies has been recognised for many years, its variability and similarity to *A. leptochila* ssp. *leptochila,* and even *A. ovata,* prevented it from being named until 2006. No pollinators have ever been collected on either subspecies of *A. leptochila,* nor on *A. ovata.* Until that happens or until DNA studies are done the true relationships of the three taxa will remain obscured.

This taxon was named as a subspecies because there are intermediate forms. All three taxa above are strongly outcrossing but infrequently produce seed. All are becoming increasingly scarce. To further complicate things, both red and green forms occur for both subspecies of *A. leptochila.*

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Well conserved



RB, *A. leptochila* ssp. *dentata,* Alligator Gorge, FR

Arachnorchis macroclavia
(D.L.Jones) D.L.Jones & M.A.Clem.

Tall Bayonet Spider Orchid

Etymology: From the Greek, *macro,* large, and *clavus,* a club, in reference to the large sepaline osmophores.

Synonyms: *Caladenia macroclavia*.



MH, Port Vincent, YP

Description: **Leaf** oblong-lanceolate, to 10 cm long, rigid, shortly hairy, red based. **Flower stem** to 30 cm, reddish, slightly hairy. **Flower** usually single about 5 cm across, yellow-green and maroon with dark brown osmophores; segments all similar, linear-lanceolate with red central stripe, the sepals ending in large dark brown, flattened clubs to 16 mm long; dorsal sepal erect; laterals sepals rigid, thrust forward and down in front of the flower; petals smaller, with or without osmophores, spreading behind the flower; **labellum** on a short tremulous claw, trilobed, small compared with the rest of the flower, apex crimson and curled under; side lobes entire near the base, but fringed with a about 12 pairs of long, linear, green teeth; calli in four congested rows, stalked and clavate. Flowers not scented.

Flowering: Sept –Oct.

Similar Species: *A. septuosa.*

Distribution: **EP, NL, YP.**
Endemic to South Australia. Rare on central Eyre Peninsula, once common on central and northern Yorke Peninsula (but native vegetation largely cleared now), with a single collection from Telowie Gorge CP, in the southern Flinders Ranges.

Habitat: Favours fertile shallow loams in mallee-broombush associations, usually where other orchids are numerous.

Distinguishing Features: Easily recognised by the large bayonet shaped, sepaline clubs.

- Its closest ally is probably ***A. septuosa*** from Eyre Peninsula which can also occur as a large clubbed form, but the clubs of that species are not dark brown and flattened, and the labellum is large for the flower size.

Notes: Recently (1991) described, before which it was treated as a form of *A. dilatata*. The pollinator has not been collected.

A. macroclavia can be a large and spectacular species in a good season, but is usually seen as somewhat dwarfed plants. This indicates that the few remaining plants are on the fringe of their preferred fertile loams, which soils have long since been put to agricultural use.

Hybrids with *A. brumalis* are seen rarely.

Conservation Status:
Status in Legislation: Nationally endangered; endangered in South Australia.
Suggested Status: 2E, nationally critically endangered.



MH, *A. macroclavia,* Pt Vincent, YP, Aug

Arachnorchis necrophylla
(D.L.Jones) D.L.Jones & M.A.Clem.

Late Mallee Spider Orchid.

Etymology: From the Greek, *necro,* dead, *phyllon,* a leaf, in reference to the leaf being senescent at flowering time.

Synonyms: *Caladenia necrophylla D.L.Jones*. Previously listed under the name *Caladenia dilatata* R.Br.



RB, Mount Boothby CP, SE, Nov

Description: **Leaf** senescent at flowering, ovate-lanceolate, 4 – 14 cm, sub-erect, felty when green. The **flower stem** is to 20 cm tall, sparsely hairy, slender but rigid. **Flower** usually single, about 5 cm across, in tones of yellow-green and red with yellow-brown osmophores; segments all similar, linear lanceolate, to 6 cm long, with red median stripe, terminating in yellow-brown osmophores, those on the sepals long and obvious, those on the petals shorter and less distinct; dorsal sepal erect and incurved; lateral sepals falcate, spreading in front of the flower, drooping or not; petals smaller, spreading behind the flower; **labellum** tremulous on a short claw, yellow-green with red mid-lobe, prominently trilobed , the mid-lobe curved under, the side lobes fringed with long green linear teeth, decreasing in size toward the apex; calli in four congested rows, red, stalked, with swollen heads, the basal ones to 3 mm long. The flowers have a petrochemical odour.

Flowering: Late Oct –Nov –Dec.

Similar Species: *A. dilatata, A. tentaculata, A. phaeoclavia.*

Distribution: **SE; Vic.**
Mostly in the South East region and extending into western Victoria.

Habitat: In red loamy soils or sand in woodland, scrubs, heath and mallee-heath.

Distinguishing Features: *A. necrophylla* is easily recognised by the combination of senesced or senescing leaf, late flowering and osmophores on petals, as well as sepals.

- Flowers are very similar to ***A. dilatata*** which also is late flowering and has petaline osmophores, but is found in wetter climes.

Notes: Pollinated by a black thynnid wasp, *Thynnoides senilis*. *A. dilatata* is pollinated by a grey striped thynnid wasp. Both of these green comb spider orchid species seem to occur in the South East.

Hybrids are not known for either.

Conservation Status:
Status in Legislation: Not listed nationally, rare in South Australia.
Suggested Status: 3Vci, nationally vulnerable.



BB, *A. necrophylla*, Desert Camp CR, SE
*Note long sepals of this species

Arachnorchis ovata
(R.S.Rogers) D.L.Jones & M.A.Clem.

Ovate Lip Spider Orchid.

Etymology: The name refers to the ovate labellum, the most distinctive feature of the flower.

Synonyms: *Caladenia ovata* R.S.Rogers.

Description: **Leaf** lanceolate, to 7 cm long, erect, hairy. **Flower stem** to 25 cm tall, slender, hairy. **Flower** one, rarely two, mainly red and yellow, to 3 cm across; segments to 3 cm, red or yellow, lanceolate, falcate all upswept, sepals ending in tiny dark osmophores; **labellum** on a tremulous claw, to 1 cm long, broadly ovate, flat not lobed, margins entire with a red tip rolled under, small, red mamillary calli, mainly near the base or even absent. The flower has no fragrance.

Flowering: Sept – Oct.

Similar Species: *A. leptochila.*

Distribution: **SL, KI.**
Endemic to South Australia on Kangaroo Island and adjacent Fleurieu Peninsula.

Habitat: Rough scrubby heath and woodland, in lateritic soils.

Distinguishing Features: A species with a broad ovate labellum, mainly red flowers with upswept segment tips.



KB, American River, KI

Notes: Sometimes regarded as a subspecies of the more widespread *A. leptochila*, the two approach each other in form, and intermediate forms have been found.

The pollinators of *A. ovata* have never been observed. They are undoubtedly sexually attracted thynnid wasps and if it could be shown that the pollinators of *A. leptochila* and *A. ovata* are different we could be sure they are separate species. In view of the wide labellum of *A. ovata* one would assume that a larger wasp is involved.

Natural hybrids of *A. ovata* are not known but a man made hybrid with *A. gladiolata* has been recorded and photographed.

A. ovata has almost disappeared from Kangaroo Island but may still occur in Deep Creek CP, on Fleurieu Peninsula.

Conservation Status:
Status in Legislation: Vulnerable nationally, endangered in South Australia.
Suggested Status: 2Eci, nationally critically endangered.



BB, *A. ovata*, Kangaroo Island, Sept

Arachnorchis parva
(G.W.Carr) D.L.Jones & M.A.Clem.

Small Comb Spider Orchid

Etymology: From Latin, *parve* small, referring to the small stature of the species.

Synonyms: *Caladenia parva* Carr and previously treated under *Caladenia dilatata R. Br.*



CH, Penola, SE, Sept

Description: **Leaf** lanceolate, to 10 cm long and 1 cm wide, hairy above and below, green with red spots toward the base. **Flower stem** to 20 cm tall, hairy, green. **Flowers** 1 or 2, to 30 mm wide, segments green with red median stripe, clubs small, pale; segments to 30 mm long, slender, deflexed, only the sepals clubbed; dorsal sepal erect, slightly incurved; lateral sepals strongly deflexed and often crossed, the clubs to 5 mm long, thin textured; petals much smaller; **labellum** lobed, with a white lamina and green side lobes, 4 rows of stalked, clubbed, maroon calli extending onto the mid-lobe, side lobes obliquely erect with a few long teeth to near 4 mm, mid-lobe triangular, maroon, recurved, margins with small blunt teeth.

Flowering: Aug – Sep – early Oct.

Similar *Species*: All members of the *A. dilatata* complex, especially *A. clavula, A. phaeoclavia, A. tensa* and *A. verrucosa.*

Distribution: **SL, SE; Vic.**
Endangered in the Adelaide Hills but more common in the South East; quite frequent in Victoria.

Habitat: Mostly on fertile sandy soils, of lightly forested flats, in high rainfall areas, such as at Meadows in the Adelaide Hills, where it is now extinct due to grazing, and near Penola in the South East.

Distinguishing Features: Can be separated from other species by its early flowering and small flowers with indistinct clubs, and especially compared with the leaf size.

- ***A. clavula*** is very similar but is restricted to Eyre Peninsula in very dry habitat. *A. clavula* has dark brown clubs and a very different pollinator.
- ***A. phaeoclavia*** is a larger flowered species, tending to flower later.
- ***A. tensa*** has stiffly held lateral sepals obliquely deflexed in front of the flower.
- ***A. verrucosa*** is a species of the mallee areas with distinct yellow clubs.

Notes: Like all members of the *A. dilatata* complex, it is pollinated by sexually attracted male thynnid wasps *Lophocheilus anilatatus* which are often seen buzzing the flowers on warm days.

A. parva was named in 1991 and confirmed in South Australia about 1995. Some researchers suggest it is merely a form of *A. phaeoclavia* which is not officially listed for South Australia, i.e. it does not appear in the Census. That species is pollinated by a larger form of *Lophocheilus anilitatus* and the flowers are much later.

Conservation Status:
Status in Legislation: Not listed nationally , endangered in South Australia.
Suggested Status: 3Uc in South Australia but common in Victoria.



KB, *A. parva,* Penola CP, SE, Sept

Arachnorchis phaeoclavia

now a synonym for C parva

D.L.Jones (D.L.Jones & M.A.Clem.)

Fawn-clubbed Spider Orchid

Etymology: From the Greek, *phaeus* dark, referring to the brown osmophores and *clavia* clubs.

Synonyms: Previously *Caladenia phaeoclavia* D.L.Jones and before that included in *C. dilatata* R.Br.

Description: **Leaf** to 13 cm, erect, hairy; **flower stem** greenish-brown, to 25 cm tall. **Flower** single, rarely two, green with red mid veins, sepals with yellowy-brown clubs; dorsal sepal erect then incurved over the column; lateral sepals broader, then abruptly contracted, stiffly divergent or obliquely deflexed; petals spreading beside the ovary; **labellum** trilobed, side lobes green with tall teeth, midlobe maroon, recurved, lamina white with 4 rows of crimson calli.

Flowering: Sep – Oct – Nov – early Dec.

Similar Species: Especially *A. dilatata, A. necrophylla, A. parva, A. rileyi* and *A. tensa.*

Distribution: **SE, NSW, Vic.**
Widespread and common in coastal New South Wales, Victoria and just reaching into South Australia, west of the Grampians to Penola.

Habitat: Found on moisture retentive soils in grassy *Eucalyptus camaldulensis* woodland, usually where there are many other orchids.

Distinguishing Features: Best recognised from the short often rigid segments, and the sepals ending in pale brown fleshy osmophores.

- Very similar to ***A. dilatata*** but flowering earlier, having shorter segments and without osmophores on the petals

Notes: Pollinated by males of the thynnid wasp *Lophocheilus anilitatus.* This species shares its pollinator with the preceding *A. parva*, and some authors treat *A. parva* and *A. phae*oclavia as one taxon but due to the difference in flowering times and size it is retained here.

Despite having similar flowers, *A. dilatata* and *A. phaeoclavia* each have their own specific pollinator.

Often found with other green comb spider orchids but not crossing with them. This species flowers over a long period usually from September to early December.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Endangered in South Australia but common elsewhere.



JN, *A. phaeoclavia*, Topperwein NFR, SE, Oct

South Australia's Native Orchids

Arachnorchis reticulata
(Fitzg.) D.L.Jones & M.A.Clem.

Veined Spider Orchid or Soldier Spider Orchid

Etymology: The name *reticulata* refers to the reticulate or netted pattern of veins on the labellum.

Synonyms: *Caladenia reticula* Fitzg., *C. huegelii.*



KB, Cox Scrub CP, SL

Description: **Leaf** rather long and thin, somewhat erect, to 20 cm by 10 mm, often purplish at the base with very long silky hairs above and below. **Flower stem** to 30 cm tall, slender, green & purplish red, with long silky hairs at right angles to the stem. **Flowers** usually single, less commonly two, rarely three, to 5 cm across with red or red brown dominant on a paler buff background, with dark clubs on the sepals; segments to 4 cm long, gradually tapering from a broader base to filamentous but rigid, down-angled tips, all segments typically with a red median stripe; sepal clubs 5-10 mm long; dorsal sepal very erect, lateral sepals and petals spreading downward; **labellum** indistinctly trilobed, with 4 – 6 rows of widely spaced, clubbed calli, gradually deceasing in size toward the apex, base of the labellum pale with the red veins standing out, side lobes erect, short, with a variable fringe of irregular short and longer teeth; mid lobe a uniform darker red, much decurved with short marginal calli.

Flowering: Late Aug – Sep – Oct

Similar Species: *A. calcicola, A. stellata, A. strigosa, A. rigida.*

Distribution: **SL, KI.**
Restricted to the Mount Lofty Ranges and perhaps Kangaroo Island. In the strict sense, confined to the Southern Lofty region.

Habitat: Found in forest, woodland, scrub and scrubby heath in a variety of acidic soil types, especially shallow, sandy or gravelly soils over yellowish clay.

Distinguishing Features: All of the related species have broader leaves with shorter hairs than the leaves of *A. reticulata* so that with practice it becomes easy to tell them apart.

- ***A. calcicola*** is found growing on calcareous soils,
- ***A. stellata*** has predominently yellow flowers
- ***A. strigosa*** has felty white hairs on leaves and stem.
- Of other similar species which may grow with the soldier spider, ***A. rigida*** differs in having white flowers.

Notes: Usually found as small loose colonies mixed with common spider orchids *A. tentaculata* and *A. leptochila,* as well as the rarer *A. behrii* and *A. rigida*.

Each member of the *A. reticulata* complex is pollinated by a different species of *Phymatothynnus,* a large genus of thynnid wasps. This species is pollinated by *Phymatothynnus victor*. This close specificity of wasp/orchid species serves to isolate each orchid species.

A reticulata was once thought to be widespread throughout the eastern states but all eastern plants are now placed in separate species. *A. reticulata* is replaced by *A. calcicola* etc., in the South East and by *A. saxatilis* in the Flinders Ranges, and *A. stellata* in the Northern Lofty and Murray Mallee. An unusual *A. reticulata* x *A. leptochila* hybrid has been found in the past as wild plants near Adelaide may have been due to human interference. *A. reticulata* x *A.* rigida hybrids were collected in 2009.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: It is becoming rare nationally.



RB, *A. reticulata*, Para Wirra NP, Sept

Arachnorchis richardsiorum
(D.L.Jones) D.L.Jones & M.A.Clem.

Nora Creina Spider Orchid

Etymology: The name honours Helen and Barry Richards, of Victoria, who have done much to further the knowledge of Australian orchids.

Synonyms: *Caladenia richardsiorum* .D.L.Jones.

Description: **Leaf** linear-lanceolate, large, to 20 cm long, pale green, velvety. The **flower stem** to 40 cm tall, slender, shortly hairy. **Flower** single, to 5 cm across; segments all similar, lanceolate, rigid, to 4 cm long; sepals yellowish-green with dark brown clubbed osmophores; dorsal sepal erect and curved slightly over the column; lateral sepals spreading obliquely, broad at the base then suddenly constricted into narrow points at about the middle; petals smaller, upswept behind the flower; **labellum** to 15 mm long, ovate, hardly lobed, broadest at the midpoint, apex curled under, margins with chocolate brown, regular, linear, short teeth, lamina calli short and brown in four to six well spaced rows.

Flowering: Sep – Oct

Similar Species: *A. valida, A. hastata.*

Distribution: **SE.**
Endemic to South Australia, in coastal sands, between Canunda CP and Kingston, often near salt-lakes.

Habitat: In grey/white sands on dune systems covered with coastal mallee, or less often in terra rossa soils over limestone, either in sheltered sites in deep leaf litter, or more exposed sites amid sedges in the shelter of shrubby trees.



JN, Beachport, SE

Distinguishing Features: A rather constant species most closely related to ***A. valida,*** as indicated by the upswept petals and velvety leaf, but the consistently dark brown clubs, calli and fringing serve to set it apart.

- ***A. hastata*** has white to creamy coloured flowers with very dark clubs.

Notes: Only discovered in the 1980s and named in 1991.

The pollinator is a sexually attracted species of flower wasp, an undescribed *Phymatothynnus* species aff. *pygidialis.* Colin Bowyer of New South Wales has set up experiments which show that it strongly attracts these wasps which resemble the wasp pollinator of *A. fragrantissima*. The two wasps show little interest in other spider orchids used as bait.

This species has probably evolved from *A. valida* and occasional plants with red labellum apices are occasionally seen. No hybrids have been recorded.

Conservation Status:
Status in Legislation: Nationally endangered; endangered in South Australia.
Suggested Status: 2Vci, nationally vulnerable.



KB, *A. richardsiorum*, Little Dip CP, Sept

Arachnorchis rigida
(R.S.Rogers) D.L.Jones & M.A.Clem.

Rigid White Spider Orchid

Etymology: The name *rigida* refers to the rigidly spreading flowers.

Synonyms: *Caladenia rigida R.S.Rogers, C. huegelii* var. *rigida.*

Description: **Leaf** narrow-lanceolate, to 20 cm long, with long fine pale hairs. **Flower stem** to 30 cm, hairy. The **flowers** are usually 1 or 2, to 5 cm across white with red marks on calli and labellum fringe, red median stripe on the outside surface of sepals and variously coloured clubs; segments narrow lanceolate, rigid, to 4 cm long, the sepals ending in distinct cylindrical clubs which vary from pale green to red or almost black; dorsal sepal erect, lateral sepals spreading in front, petals behind; **labellum** ovate, about 1 cm long, white with red-brown subulate marginal teeth, calli in four rows, mostly clubbed, and red with white tips. The flowers are not fragrant.



KB, Kersbrook, SL

Flowering: Late Aug – Sep – early Oct.

Similar Species: *A. intuta*.

Distribution: **MU, SL.**
Endemic to the Southern Mount Lofty Ranges within about 40 km of Adelaide (extending to Mt Beevor).

Habitat: In woodland, mostly on ridges and upper slopes, in open places, amid sedges such as the endemic *Lomandra fibrata*, with a few plants in dense shrubbery and about grass-trees *Xanthorrhoea semiplana.* Prefers hard soil with embedded quartzite.

Distinguishing Features: *A. rigida* is easily recognised by the rigid, very white flowers with clubbed sepals.

- ***A. intuta*** is found in a distinct different geographical location.

Notes: *A. rigida* was once common throughout the park-like woodland of the Adelaide Hills but in recent years it has suffered a massive decline in the southern parts of its range. A large, but now disjunct population centred in the Millbrook to Williamstown area is being managed to suit the species. It may hybridise with *A. behrii* and *A. reticulata* but there are no clear cut records.

A. rigida is pollinated by both native bees and sexually attracted thynnid wasps, *Phymatothynnus* species. Therefore, like most white spider orchids, it has two different pollination strategies, one involving sexual attraction with pheromones, the other a general floral mimicry.

The linking of this species to the Western Australian *Caladenia huegelii* in the 1970s was rather fanciful.

Conservation Status:
Status in Legislation: Nationally endangered; endangered in South Australia.
Suggested Status: 3Vc nationally threatened.



KB, *A. rigida*, Mt Crawford NFR, Sept

Arachnorchis saxatilis D.L.Jones

Rock-Star Spider Orchid

Etymology: From the Latin, *saxatilis,* meaning among rocks, refers to the favoured habitat.

Synonyms: *Caladenia stellata* partly, *C.* aff. *fitzgeraldii* [Orchids S.A. plate 44, 1990] and once referred to as *A. stellata*.

Description: **Leaf** broadly lanceolate, dull green, rigid, sub-erect, with a dense short covering of hairs, base with purplish blotches. **Flower stem** robust 10-60 cm, with short hairs. **Flower** one to two, to 5 cm across, pale yellow-green often with red blotches or stripes; segments all similar, linear-lanceolate, to 4 cm long, spreading stiffly, the sepals ending in small dark clubs; dorsal sepal erect; lateral sepals spreading obliquely in front of the flower; petals spreading behind; **labellum** not lobed, ovate, lamina flat but curved at the tip, wholly greenish or with red blotches and/or a red, often broad apex; marginal teeth short throughout, calli not in distinct rows, linear, clubbed, greenish or red. Flowers have a somewhat unpleasant perfume.

Flowering: Aug – Sep – Oct

Similar Species: *A. australis, A. reticulata, A. stellata, A. valida.*



BB, Wirrabara NFR, NL

Distribution: **FR, NL.**
Endemic to South Australia where it occurs mostly in the southern Flinders and Northern Lofty Ranges.

Habitat: Grows mostly around rocky mountain ridges, under yaccas *(Xanthorrhoea* sp.) and sugar gums (*Eucalyptus cladocalyx*); once locally common. Also found in open woodlands of *Eucalyptus* and *Callitris.*

Distinguishing Features: *A. saxatilis* is easily separated from related members of the ***A. reticulata*** complex by its broad, shortly hairy leaves, and the contrasting red and yellow-green flowers which are not veined.

Notes: Quite a variable species, ranging from robust plants with large flowers, in the higher parts of the Flinders Ranges, to small plants with small flowers in the mallee. Some populations, i.e. near Stockwell (NL), are of wholly green plants, while others have mixed green and coloured plants. Certainly many plants key out to *A. xanthochila* and some would suggest that all are just forms of *A. stellata.*

These populations have long since been grazed out of existence. *A. saxatilis* crosses with *A. gladiolata, A. flindersica* and *A. woolcockiorum* near Mt Remarkable.

Pollinated by sexually attracted male thynnid wasps *Phymatothynnus nitidus.*

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Locally common but overall nationally rare.



KB, *A. saxatilis*, Wood Hut Track, Mt Remarkable NP, Sept

Arachnorchis septuosa
(D.L.Jones) D.L.Jones & M.A.Clem.

Eyre Peninsula Comb Spider Orchid

Etymology: From the Latin, *septuosus,* indistinct or obscure, in reference to the poorly developed side lobes of the labellum.

Synonyms: *Caladenia septuosa D.L.Jones,* previously treated as a form of *C. dilatata.*

Description: **Leaf** linear-lanceolate, erect, to 8 cm long, shortly hairy, green above red below. The **flower stem** is up to 20 cm tall, slender hairy, reddish and green. **Flower** usually single, crimson and cream and green, to 5 cm across; segments all similar, linear-lanceolate, green with a red median stripe, to 4 cm long; dorsal sepal erect; lateral sepals spreading obliquely in front of the flower and often crossed, ending in distinct yellow-brown clubs of variable length; petals smaller and spreading behind; **labellum** hardly lobed, somewhat laid back, green basally with a large, red, mid-apical section which curls under, margins fringed with long linear teeth which become smaller and more sparse toward the apex, calli red, slender, stalked, in four neat rows, extending well forward.

Flowering: Sep – Oct

Similar Species: *A. tensa, A. clavula, A. macroclavia.*

Distribution: **EP.**
Endemic to South Australia on Eyre Peninsula where it extends from the west, south and east coasts to the Gawler Ranges.

Habitat: Grows in woodland, mallee-broombush, scrubs and shrub-land, as well as about rock outcrops, in more fertile soils, including over limestone, especially on the south side of shrubs.



BB, EP, Sept

Distinguishing Features: This species is recognised by the broad, laid-back, hardly-lobed labellum with its expansive red tip.

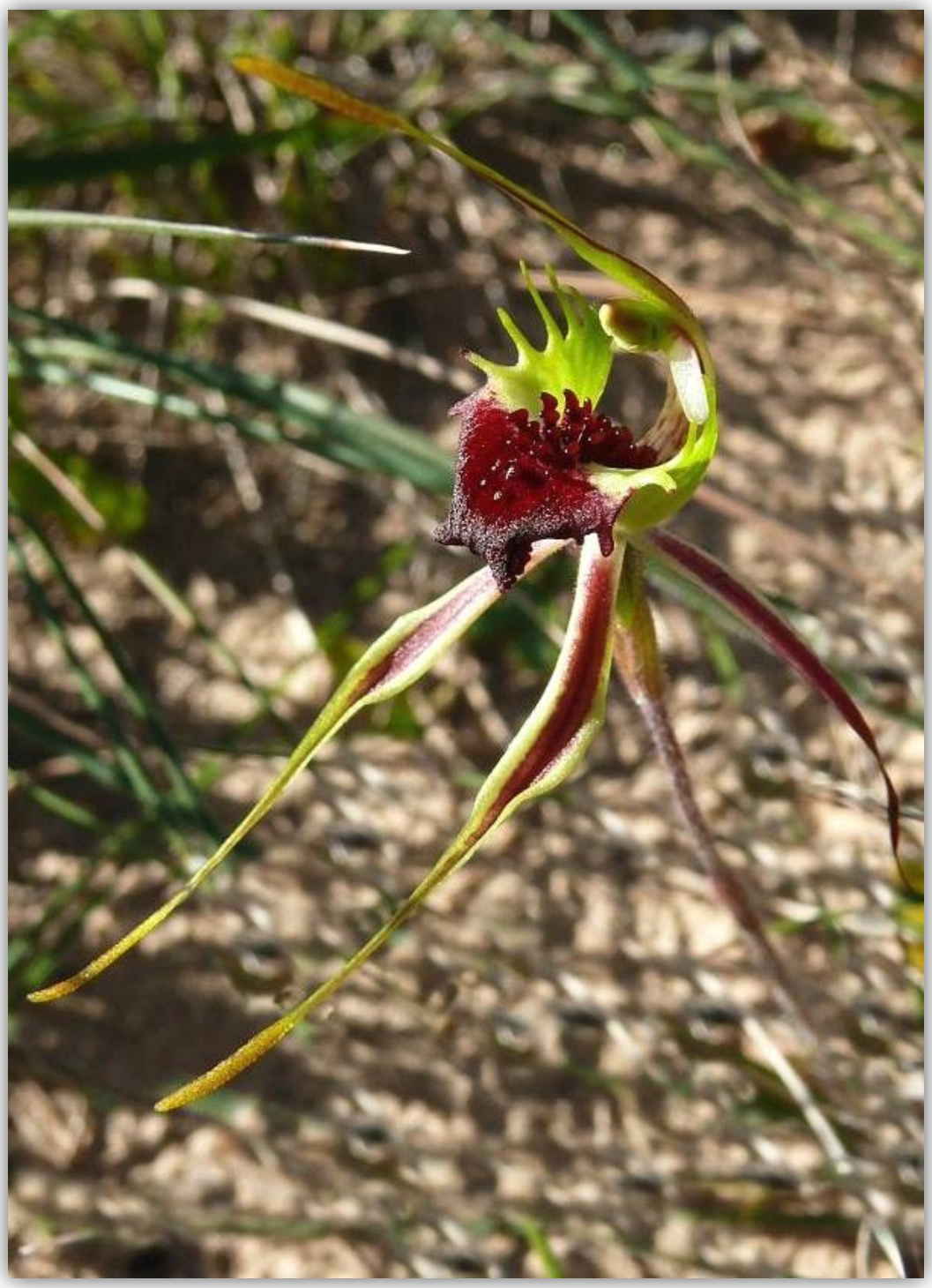
- ***A. macroclavia*** differs in its relatively smaller labellum and larger bayonet-shaped, dark brown sepal clubs.

Notes: It is one of several spider orchids named in 1991.

It is the most common of several similar species restricted to Eyre Peninsula and each pollinated by a different, highly specific, sexually attracted, male, flower wasp, from widely different genera. *A. septuosa* is pollinated by a large black thynnid wasp *Thynnoides mesopleuralis.*

Its closest ally appears to be *A. macroclavia* and some look-alikes do exist. Hybrids have been observed with *A. zephyra.*

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Common and secure on Eyre Peninsula.



JN, *A. septuosa*, Carrapee Hill CP, Sept

Arachnorchis sp. Short golden bayonets (R Bates 57351)

Caladenia bruniella

Golden Tip Spider Orchid

Etymology: The phase name refers to the flattened golden clubs on sepals.

Synonyms: Previously included with *Caladenia septuosa.*

Description: **Leaf** lanceolate, erect, to 6 cm long, with few short hairs, longer near the red base. **Flower stem** to 20 cm, green with long sparse hairs. **Flower** usually single, to 35 mm across, cream, green and maroon with lemon yellow clubs; segments lanceolate, to 30 mm long, cream with red median stripe; dorsal sepal erect with a lemon yellow to cream, flattened, bayonet shaped club about 5 mm long; lateral sepals similar but spreading or parallel in front of the flower; petals shorter and without clubs, spreading behind; **labellum** trilobed, ovate-lanceolate, side-lobes obliquely erect, green with fine teeth to 2 mm long; lamina with 4 rows of clubbed, smooth, maroon calli; mid-lobe curved under, maroon, with short marginal calli.



RB, Poongello, EP

Flowering: Late Aug – Sept.

Similar Species: *A. aurulenta, A. septuosa, A. verrucosa.*

Distribution: **EP, YP.**
Endemic to South Australia where it is confined to Eyre and Yorke Peninsulas.

Habitat: Predominantly around the base of rocky hills and outcrops in woodland, mallee heath and scrub in the better soils, rarely on limestone. Usually found with other species of green comb spider orchids.

Distinguishing Features: The species is easily recognised by the short flattened, yellow clubs.

- Could be confused with ***A. verrucosa*** which often has pale yellow clubs but these are rounded not flattened.
- ***A. aurulenta*** has broader leaves and longer, deeper coloured clubs and a more northerly distribution.
- ***A. septuosa*** has less distinctly golden clubs, often longer and is a more robust plant.

Notes: Forms large localised populations but is becoming rare due to loss of habitat.

A. sp. Short golden bayonets hybridises with *A. zephyra* wherever the two are sympatric, i.e. at Carrapee Hill CP, the type location of *A. zephyra*.

Conservation Status:
Status in Legislation: Not Listed
Suggested Status: 3Rci, nationally rare.



BB, *A.* sp. Short golden bayonets, Kimba, Sept

Arachnorchis stellata
(D.L.Jones) D.L.Jones & M.A.Clem.

Star Spider Orchid

Etymology: Latin, *stella*, star shaped; this and the common name refer to the starry flower shape.

Synonyms: *Caladenia stellata* D.L.Jones, and before that treated as a form of *Caladenia reticulata, Caladenia fitzgeraldii.*

Description: A small yellow and red or wholly yellow spider orchid with a short felty **leaf**. **Flower stem** to 20 cm tall with short, even-length hairs. **Flowers** one or two, about 4 cm across; segments rigid, star shaped, dimorphic; dorsal sepal erect and slightly in-curved with a reddish club; the lateral sepals larger with small red clubs, spreading, in front of the flower; petals linear lanceolate, spreading, without clubs; **labellum** hardly trilobed, margins finely toothed grading to entire, the mid-lobe broad often mostly red, rolled under, calli in 4-6 rows, small linear; anther cap red.

Flowering: Late Aug – Sept.



JN, Monarto, MU

Similar Species: *A. saxatilis, A. xanthochila, A. valida, A. australis.*

Distribution: **NL, MU, YP, SL; NSW.**
Found on the eastern foothills of the Adelaide Hills towards Murray Bridge and as far south as Langhorne Creek, and also in the northern Lofty region and once on Yorke Peninsula; also in central western New South Wales.



CH, Hartley, MU

Habitat: Usually found in sandy soils or with native pines on low rises but fast disappearing.

Distinguishing Features: The small star shaped flowers with short clubs on the sepals, the yellow or yellow and red colouring, flat labellum, short leaf and short hairs, distinguish it from all related taxa except

- ***A. saxatilis*** which prefers rocky mountain sides and may have much larger flowers.

Notes: *A. stellata* previously included several other species such as *A. saxatilis*, from the Flinders Ranges (until 2006) and A. *xanthochila* from Wolseley (until 1996). Some authors still regard all three as one species.

A. stellata is pollinated by *Phymatothynnus monilicornis*.

The flowers are not fragrant or they have a burned plastic odour. They are long lived, if not pollinated, but as pollination rates are high, most flowers are replaced quickly with fat capsules full of seed.

A. stellata hybridises freely with many species and once formed hybrid swarms of thousands of plants with *A. colorata*.

Conservation Status:
Status in Legislation: Not listed nationally, rare in South Australia.
Suggested Status: 3E, critically endangered in South Australia, nationally rare



BB, *A. stellata*, Hartley, Aug

Arachnorchis stricta
(R.J.Bates) D.L.Jones & M.A.Clem.

Stiff Spider Orchid

Etymology: The name *stricta* refers to the strict or rigidly erect flower stem and firm rigid segments.

Synonyms: *Caladenia stricta*, *C. dilatata* var. *stricta* R.J. Bates.



MH, Yumali, Sept

Description: **Leaf** lanceolate to 10 cm long and 16 mm wide, thick textured, rigid, only slightly hairy, with red base and few red spots below. **Flower stem** to 30 cm, somewhat sturdier than most other spider orchids, hairy, red-brown or greenish. **flower** usually single, to 40 cm wide, greenish and red; segments to 3 cm long, greenish with a red median stripe, without clubs or osmophores; dorsal sepal narrow and curved over the column; lateral sepals deflexed in front of the flower, petals backswept and curved downward; **labellum** the largest segment, yellow-green, with a red apex, trilobed, with 4 rows of crowded, stalked, clubbed, red calli, typically yellowish basally; the side lobes green and deeply fringed, the mid-lobe with short marginal teeth.

Flowering: Sep – Oct

Similar Species: *A. dilatata* complex.

Distribution: **EP, NL, MU, YP, SL, KI, SE**
Very widespread in the wheat belt, from the West coast, near Ceduna, right across into western Victoria, but rare in the Southern Lofty region and Kangaroo Island. It is absent from the Flinders Ranges and higher parts of the Mt Lofty Ranges.

Habitat: The typical spider of mallee-broombush associations, but extending also into other mallee heaths, woodlands, and dry shrub-lands or about rock outcrops. *A. stricta* occurs from coastal sandhills, to hundreds of kilometres inland, but not in the mountains.

Distinguishing Features: *A. stricta* is the only large member of the ***A. dilatata*** alliance to lack clubs on the sepals. The yellow base to the labellum calli is a noticeable feature.

Notes: As one might expect of a species with a large labellum, the pollinator is a large undescribed, matt-black thynnid wasp, closely related to *Thynnoides pugionatus*, but with red patches on the mesothorax.

A. stricta is known to hybridise with members of the *A. patersonii* complex, notably *A. brumalis* and A. *fuliginosa.*

Conservation Status:
Status in Legislation: Not Listed
Suggested Status: Common and well conserved.



JN, *A. stricta*, Hartley, MU

Arachnorchis strigosa D.L.Jones

Coorong Spider Orchid

Etymology: *Strigosa* means felt-like, in reference to the leaf texture.

Synonyms: *A. australis* sensu lato, previously treated as a form of *Caladenia stellata*.



CO, Potters Scrub, SE

Description: **Leaf** broadly lanceolate, surface felt-like to 8 cm long and 1-2 cm wide. **Flower stem** to 30 cm tall, robust. **Flower** single, rarely two, variable in tones of green, red and cream, the labellum apex tending to bright red but often cream, speckled red; sepaline osmophores red; perianth segments to 6 cm long dorsal sepal erect then curved forward, with a flattened osmophore; lateral sepals spreading and in front of the flower with rather flattened osmophores; petals spreading behind the flower, rarely clubbed; **labellum** ovate, margins finely toothed, apex recurved, margins with short regular calli, lamina with 4 rows of well spaced calli.

Flowering: Late Aug – Sept.

Similar Species: *A. reticulata, A. stellata, A. valida*.

Distribution: **SE.**
Purely coastal, mostly south from the Murray Mouth but it once occurred all around Lake Alexandrina and Lake Albert.

Habitat: Well drained coloured sands in dry heath and coastal scrub especially under soap mallee *E. diversifolia*.



JN, leaf of *A. strigosa*

Distinguishing Features: The most distinct feature is its broad felty leaf.

- ***A. reticulata*** is confined to the Mount Lofty Ranges, and perhaps Kangaroo Island, and has a narrow, reticulate-veined labellum and striped sepals.
- ***A. valida*** has broad, white or green-white floppy sepals and never has flat osmophores.
- ***A. stellata*** has more rigid segments and much shorter labellum fringe.

All three have different habitat preferences.

Notes: Only recently named (2006), the best known populations are in Potters Scrub CP, at the top of the Coorong National Park.

Pollinator unknown, but possibly *Phymatothynnus* sp.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 2Eci, nationally endangered.



KB, *A. strigosa*, Potters Scrub, Sept
*Note stems white felted to the top

Arachnorchis tensa
(G.W.Carr) D.L.Jones & M.A.Clem.

Common Comb Spider Orchid

Etymology: The epithet *tensa* meaning, rigid or straight, refers to the straight sepals of this species.

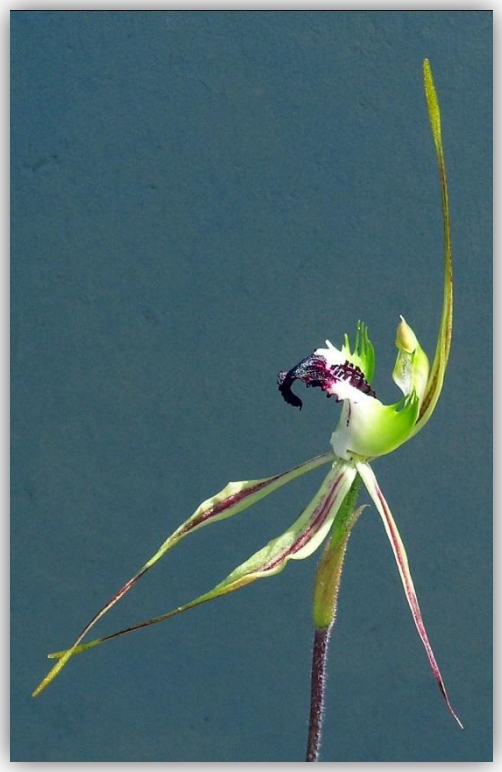
Synonyms: *Caladenia tensa* G. Carr**.** This is part of the *Arachnorchis dilatata* complex and previously included under that name.

Description: **Leaf** lanceolate, to 12 cm long, with red spots toward the base, not very hairy. **Flower stem** to 30 cm tall, hairy, often red tinted. **Flowers** usually single, green, white and red, to 50 mm across; perianth segments green with a red median stripe, sepals with dull yellowish indistinct osmophores to 10 mm long; dorsal sepal erect over the column; lateral sepals projected stiffly forward and down; petals shorter and spreading behind the flower; **labellum** broad, white, trilobed, with 4 rows of uncrowded, stalked, clubbed, red calli, lateral lobes not extensive, with long green fringe basally, midlobe with marginal teeth shorter and paler, apex red, crisped and curled under.

Flowering: Late Aug – Sep – Oct.

Similar Species: *A. parva, A. phaeoclavia, A. verrucosa, A. tentaculata*, *A. interanea*.

Distribution: **FR, NL, MU, KI, SE; Vic.**
This is unsure in South Australia. Probably not on Eyre Peninsula but certainly in the South East, Murraylands, Northern Lofty region and Flinders Ranges, perhaps on Kangaroo Island, and certainly in Victoria.



CH, Ki Ki, SE

Habitat: In dry woodland, low scrub and about rock outcrops in a variety of soil types.

Distinguishing Features: *A. tensa* is separated from **other *A. dilatata* complex** members by a combination of dull green leaf, rigid, straight segments with dull osmophores on sepals only, broad, white based labellum with long marginal fringe restricted to lower portion and un-crowded calli.

Notes: The exact delimitation of the species is not yet determined. Most forms so far studied have been pollinated by the slender black thynnid *Thynnoides* aff*. gracilis* which has yellow mandibles. Kangaroo Island plants are pollinated by a similar wasp without the yellow mandibles and may represent a separate taxon.

Hybrids have been recorded with many members of the *A. patersonii* complex, i.e. *A. colorata* and *A. woolcockiorum,* as well as *A. verrucosa* and *A. toxochila.*

Conservation Status:
Status in Legislation: Nationally endangered; not listed in South Australia.
Suggested Status: In the broad sense secure but some forms which may prove to be distinct species would have a vulnerable rating.



RB, *A. tensa*, Robertstown, NL
*A possible variation of the species with dense, short hairs, on scape and leaf

Arachnorchis sp. Mallee

Caladenia campestris also with A interanea

Little mallee Green-comb Spider Orchid

Etymology: The common name indicates that this species was previously included under *A. tensa* but is a smaller, more colourful, mallee form.

Synonyms: Until 1990 it was placed under the broad name *Caladenia dilatata*, then known as *Caladenia tensa* and then as *A. tensa* complex.

Description: Small with a lightly pubescent **leaf; flower stems** hardly hairy. **Flower** usually single, small and colourful green and red, with very little white; segments yellow-green with a red median stripe; dorsal sepal erect with a small glandular clubbed tip; lateral sepals strongly deflexed, with small indistinctly clubbed tips; petals linear lanceolate, swept down behind the flower; **labellum** small, with a short, often sparse fringe, the apex maroon, narrowed and decurved, the calli very slender.

Flowering: Late Aug – Sept.

Similar Species: *A.dilatata* complex, including *A. tensa.*

Distribution: **EP, YP, NL, SL, MU, KI, SE; Vic.**
Widespread in the South Australian mallee and probably extending to western Victoria.

Habitat: Found mostly in mixed mallee, often with native pines (*Callitris* sp.), frequently in sandy soils but not really substrate specific. Frequently sympatric with other green comb spider orchids like *A. stricta, A. septuosa* and *A. verrucosa.*

Distinguishing Features: This mallee taxon does not have dense short hairs on the scape or leaf and is a smaller, more colourful species than ***A. tensa.***

Notes: Flowering is strongly tied to soil moisture availability and number of frosts. Following a warm wet June-July and sudden drying in August flowers will be short lived, but after a cold, dry winter and damp September flowering may continue on into October.

The *A. dilatata* complex has speciated in recent times matching available pollinators, which are usually highly specific. Pollinator trials and DNA testing may help to sort out the *A. tensa* complex.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Unknown.



RB, *A.* sp. Mallee, Brinkley, MU, Oct.
*Note the slender flowers with very little white

Arachnorchis tentaculata
(Schltdl) D.L.Jones & M.A.Clem.

King Spider Orchid or Large Comb Spider Orchid

Etymology: The Latin epithet, *tentaculata,* refers to the long tentacle-like sepals. The common names show that this is the largest or 'king' of the comb spider orchids.

Synonyms: *Caladenia tentaculata Schltdl***.** Previously included under the name *Caladenia dilatata* R.Br.

Description: **Leaf** large, to 10 cm x 2 cm, grey-green except for some purplish markings near the base, densely covered with short silky hairs. **Flower stem** to 60 cm, hairy. **Flowers** usually 1 or 2, occasionally 3, to 10 cm across, segments green with a red median stripe and dull yellowish sepaline clubs; segments to 8 cm long, slender with filiform tips; dorsal sepal erect, its tip floppy; lateral sepals curved down at the base then usually upswept, often with floppy tips, the clubs long and slender but not distinctive; petals swept downwards alongside the ovary, not clubbed; **labellum** large, whitish, markedly trilobed, the side lobes with tall green fringes, the mid lobe curled under with a crimson or maroon narrowed tip; calli in 4 rows, fine, crimson, including two tall basal ones.



KB, Scott CP, SL

Flowering: Sep – Oct – Nov – Dec.

Similar Species: *A. necrophylla*, *A. tensa*.

Distribution: **MU, SL, SE; NSW, Vic.**
True *A. tentaculata* is probably limited to higher rainfall parts of the Mount Lofty Ranges and South East; also in the Eastern States.

Habitat: In forest, woodland and scrubby heath in a variety of often poor acid soils, quickly colonising forest clearings after disturbance.

Distinguishing Features: The large green and red flowers with lateral sepals at first downward and then upswept make this species easily identified.

- ***A. necrophylla*** does not occur in high rainfall areas.
- ***A. tensa*** is a species rigid obliquely downward lateral sepals and is a smaller flower.

Notes: This is the dominant spider orchid in the Adelaide Hills, occurring in extensive, often dense populations. There is a small flowered subspecies from sandy soils and large flowered subspecies elsewhere.

Pollination events are easily observed on warm days especially when shifting flowers for wasp baiting. The pollinator is a large black wasp, *Thynnoides pugionatus.* The wasps are aggressive and have even been observed to fight over the flowers or carry off detached sepal tips and labellum.

Plants with similar flowers occur in the Northern Lofty region and central Flinders Ranges but do not have the leaf densely covered with short silky hairs and are certainly biologically separate entities as they do not attract *Thynnoides pugionatus*.

Hybrids have been recorded with *A. argocalla*.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Widespread, common and secure.



RB, *A. tentaculata*, foreground flower's labellum has been damaged by wasp activity, Sept

Arachnorchis sp. Subglabriphylla (N. Lothian 5277)

North Flinders Comb Spider Orchid

Etymology: The name *subglabriphylla* means 'having a relatively smooth leaf'. The common name reflects the fact that this is the only spider orchid restricted to the northern Flinders Ranges.

Synonyms: Previously included in *Caladenia dilatata*, and more recently as a form of *A. tentaculata.*

Description: **Leaf** unusual for the green-comb spider orchids in being oblong-lanceolate, rigid and glistening and appearing glabrous to the naked eye, often with purple-red blotches especially below, reaching to 15 cm long (when growing in *Triodia* tussocks). **Flower stem** rigid, to 50 cm tall, with long and short hairs. **Flower** single, to 4 cm across, in contrasting tones of yellow-green grading to cream, and bright red; segments linear lanceolate, rigid, to 4 cm long, greenish, with red median stripe, sepals with small, dull yellow-brown, cylindrical osmophores; dorsal sepal erect to 3 cm; lateral sepals held firmly in front of the flower, falcate, to 4 cm long; petals similar but shorter rigidly spreading; **labellum** not strongly lobed, creamy white, margins with few long varicoloured combs to 6mm; apex bright red, strongly decurved; lamina with 4 rows of slender red calli, the two central rows extending almost to tip.

Flowering: Sep – Oct.

Similar Species: *A. tensa, A. tentaculata, A. interanea.*

Distribution: **FR**
Endemic to South Australia in the central and northern Flinders Ranges.

Habitat: Mostly on rocky quartzite ridges, in scrubs, or in *Triodia* grassland and also in *Callitris*-River Redgum (*Eucalyptus camaldulensis*) woodland.

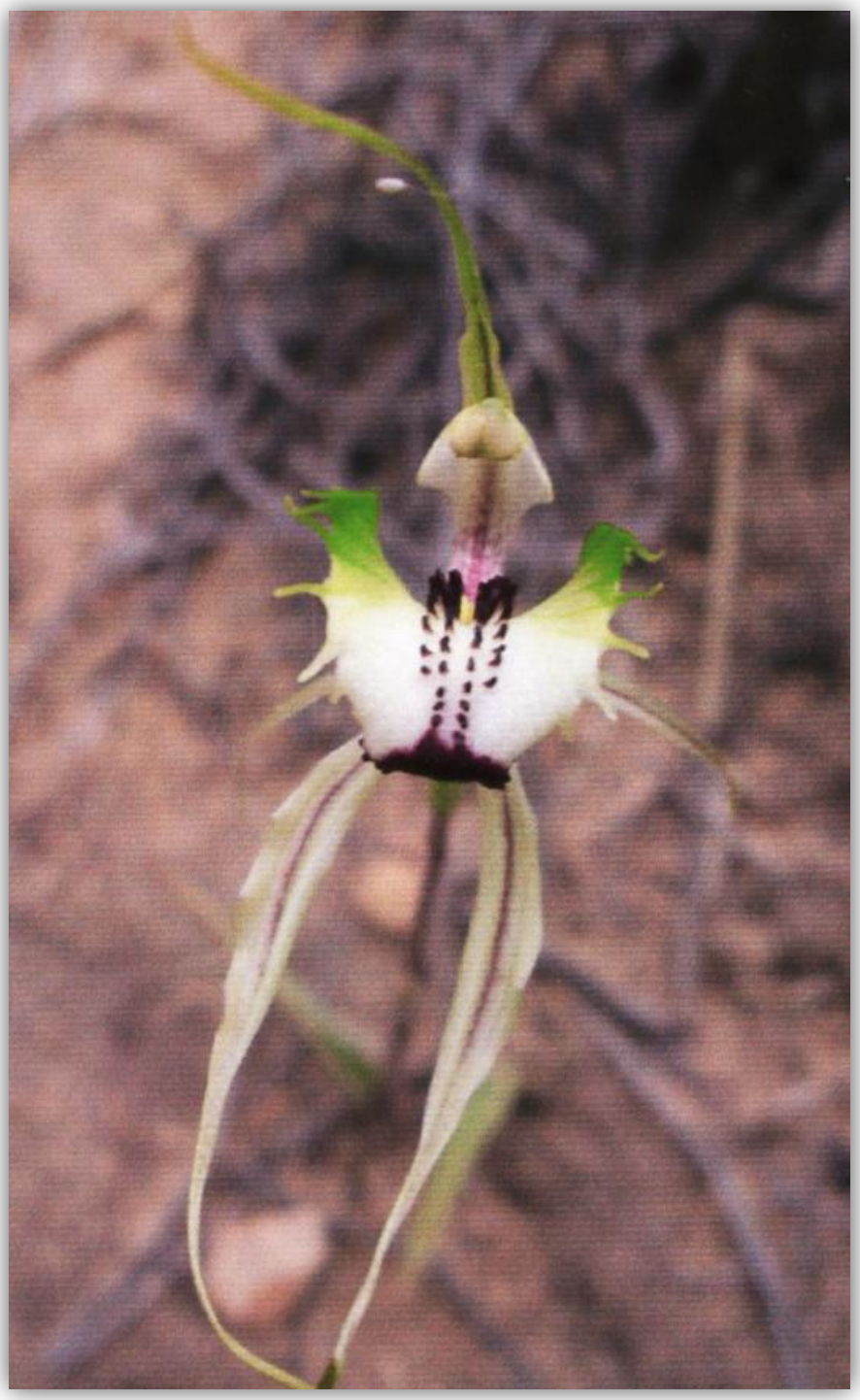
Distinguishing Features: Distinguished by the rigid, sub-glabrous leaf, which is usually senescent at flowering time and the remarkably tall rigid stem. Where it grows, it is the only common large green-comb species.

- The flower which looks like an ***A. tentaculata*** except for the rigid segments and a smaller, 'out of proportion' labellum.
- This species is also related to ***A. tensa,*** but again the rigidity and height of the plant set it apart.

Notes: This drought tolerant species is restricted to mountainous places in the pastoral zone. It does not flower in dry years. Only *A. toxochila* and *Jonesiopsis capillata* extend as far inland but they are not confined to the pastoral regions.

A. sp. Subglabriphylla is pollinated by a shiny, black thynnid wasp.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3Rc



PD, *A.* sp. Subglabriphylla, Wilpena, Sept

Arachnorchis toxochila
(Tate) D.L.Jones & M.A.Clem.

Dry Land Spider Orchid or Bow Lip Spider Orchid

Etymology: The name *toxochila* bow lipped, refers to the broad labellum, bowed in cross section.

Synonyms: *Caladenia toxochila, C. concinna* (Rupp) Jones & Clements; *C. dilatata* var. *concinna* Rupp.



MH, Koolunga, NL

Description: **Leaf** broadly ovate-lanceolate, to 5 cm long, slightly hairy, decumbent or suberect. **Flower stem** very slender to 30 cm, but usually shorter than 10 cm. **Flowers** one or rarely two, only about 1 cm across, in shades of cream, green and rusty red; segments all similar, to 2 cm long, strongly deflexed, except for the erect dorsal sepal, green with a red median stripe, osmophores absent or insignificant; lateral sepals often crossed; **labellum** broader than long, on a mobile claw, hardly lobed, greenish with a red apex turned under, margins shortly toothed; calli, red, in four crowded rows, rather short and rounded, column broad.

Flowering: Late Jul – Aug – Sept.

Similar Species: *A. conferta.*

Distribution: **GT, FR, EA, EP, NL, MU; NSW.**
Widespread in the pastoral districts and adjacent wheat-belt, from the West coast as far west as Fowlers Bay, inland through the Gawler Ranges, common in the Flinders Ranges as far north as Leigh Creek and extending through dry rocky fringes of the Northern Lofty region along the Olary Spur; also in western New South Wales.

Habitat: In dry scrubs, mallee and *Callitris* woodland, especially about rock outcrops, often with *Jonesiopsis capillata* but extending further inland than that species. Before the introduction of rabbits and goats it extended even further inland, probably as far north as Arkaroola and possibly into red sand-hill country near Yumbarra.

Distinguishing Features: *A. toxochila* is best recognised from its flowers being rather small for the leaf size, with a bow shaped flat labellum with reduced teeth on the margins and the lateral sepals and petals deflexed against the ovary.

- The similar ***A. conferta*** from damper southern districts is a much shorter, stockier plant, with broad segments that are spreading, often with short flat clubs. The labellum of *A. conferta* is differently shaped and has a dense mass of berry-like calli.

Notes: *A. toxochila* flowers well only in wet years. Despite extending into semi arid country the buds soon abort if conditions become too dry.

A southern form from the Murray Mallee and upper South East (see picture in Gallery) has flowers approaching *A. conferta*.

The flowers are pollinated by a small male thynnid wasp, *Aeolothynnus* sp. Hybrids with *A. flindersica* have been collected near Mambray Creek and with *Jonesiopsis capillata* in the Flinders and Gawler Ranges. These latter hybrids were once misidentified as *Caladenia radialis* but that is a Western Australian species.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Secure.



MH, *A. toxochila*, Fullerville, FR

Arachnorchis valida
(Nicholls) D.L.Jones & M.A.Clem.

Coastal Spider Orchid

Etymology: The name *valida* means greenish, and the flowers are green when they first open. This is a comparison made with the red-brown flowered *A. reticulata* with which it was once included.

Synonyms: *Caladenia valida*. Previously also included under *Caladenia reticulata*, *Caladenia huegelii* or as *Caladenia* aff. *huegelii.*

Description: **Leaf** lanceolate, to 15 cm, decumbent or semi erect in dense vegetation, with dense short hairs, base blotched red. **Flower stem** to 40 cm tall, hairy. **Flowers** one or two, rarely three, to 7 cm across, opening green, then fading to white or cream, the segments often with red streaks; segments to 50 mm long, broad at the base and tapering to fine points with dark glandular clubs on the sepals; dorsal sepal erect and curved forward; lateral sepals, large, flat, spreading obliquely downward in front of the flower; petals smaller spreading obliquely upward or horizontal behind the flower; **labellum** hardly lobed, on a tremulous claw, curved throughout, whitish, often with a red lip, margins evenly fringed with linear, forked, crimson and white teeth, gradually decreasing in size toward the apex; lamina with 4-6 rows of well spaced, clubbed red calli, extending well down toward the apex.



KB, Flinders Chase NP, KI

Flowering: Aug – Sep – Oct.

Similar Species: *A. reticulata, A. stellata.*

Distribution: **SL, KI; Vic.**
Restricted to Kangaroo Island and adjacent Fleurieu Peninsula; also in Victoria.

Habitat: Various soils including sand and laterite in scrubby woodland and heath, preferring small clearings, often in the protection of grass trees, *Xanthorrhoea*.

Distinguishing Features: The diagnostic features of felted leaves, broad based sepals, backswept petals and pale greenish white flowers with red lips and without veining are those to look for.

Notes: *A. reticulata* occurs adjacent to some populations of *A. valida,* yet there are no intergrades as each species is pollinated by a different sexually attracted species of slender flower wasp *Phymatothynnus.* *A. valida* is pollinated by *Phymatothynnus pygidialis.*

South Australian plants exhibit extreme variability in flower size.

Conservation Status:
Status in Legislation: Not listed nationally, endangered in South Australia.
Suggested Status: 3Vci, nationally vulnerable.



KB, *A. valida*, Victor Harbor, SL, Aug

Arachnorchis x variabilis (Nicholls) Jeanes

Variable Spider Orchid

Etymology: The name refers to the variation in flower morphology, so typical of orchid hybrids.

Synonyms: *Caladenia* x *variabilis, Caladenia variabilis.*

Description: **Leaf** lanceolate to 5 cm long, erect, hairy. **Flower stem** to 20 cm, green or reddish, hairy. **Flowers** are usually single, rarely two, cream-yellow and red-brown, to 3 cm across; segments 3-5 cm long, lanceolate and attenuated into dark glandular but not clubbed tips; dorsal sepal erect; lateral sepals and petals spreading, the tips drooping; **labellum** broad-lanceolate, about 1 cm across, margins with blunt red-brown teeth, lamina with divergent red veins and four indistinct rows of variable dark calli; mid-lobe curved, with thickened brown margins.



KB, Minlaton, YP

Flowering: Sept – Oct.

Similar Species: Any hybrids with *A. cardiochila* as one of the parents.

Distribution: **EP, NL, YP, SE; Vic.**
Likely to occur throughout the agricultural regions but collections have been made from Central Eyre Peninsula, the Barossa Valley and the upper South East; also in Victoria.

Habitat: Found mostly in sandy disturbed sites in mallee-heath and blue-gum woodland.

Distinguishing Features: The broad labellum with red veining and thickened apex margins together with the sepaline osmophores on segments set this hybrid apart.

Notes: The original collection of *A. x variabilis* is said to have had *A. tessellata* and *A. fragrantissima* as parents but South Australian plants have been mostly derived from *A. cardiochila* crossed with *A. colorata* or *A. brumalis*. The hybrids in each case exhibit very similar variation and it seems useful to retain the name for all such crosses. It has been noted that the crosses are naturally pollinated and set viable seed, which is unusual for hybrids. Some variation in the hybrids is attributed to individual specimens taking after either one parent species or the other, perhaps dependent on the pod parent.

This hybrid was common enough after extensive land clearance in the upper South East in the 1960s but continued grazing of the cleared land, or return to natural bush, has seen the large areas of disturbance required to support hybrids eliminated.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Not really significant for a hybrid but could be rated as 3Eci.



KB, *A.* x *variabilis*, Mt Monster CP, Sept

Arachnorchis venusta
(G.W.Carr) D.L.Jones & M.A.Clem.

Graceful Spider Orchid

Etymology: The name *venusta* means beautiful or graceful, and indeed the delicate white flowers on tall stems, with sepals waving in the breeze, do make a pretty picture.

Synonyms: *Caladenia venusta, Caladenia floribunda* D.L.Jones, previously included in *C. patersonii.*

Description: **Leaf** lanceolate, to 16 cm long, hairy on both sides. **Flower stem** to 60 cm tall, hairy, green. **Flowers** 1 or 2, rarely 3, large, to 12 cm across, white, the segments with dark glandular tips; segments to 12 cm long, broad near base but tapering into fine glandular tips; dorsal sepal erect but with the apex usually lax and floppy; lateral sepals drooping in front of the flower; petals shorter and spreading backwards with drooping tips; **labellum** large, white, hardly lobed, on a tremulous claw, margins fringed with long, linear red and white teeth; lamina gradually curled under, calli in 4-6 rows of red and white, slender-stalked clubs. The flowers are sweetly fragrant.

Flowering: Late Sept – Oct – Nov.

Similar Species: *A. argocalla, A. fragrantissima.*

Distribution: **SE; Vic.**
Restricted to flats in the lower South East but more widespread in Victoria.



RB, Nangwarry, Oct

Habitat: Damp sandy forests, amid low heath and sedges, and along tracks, especially near swamp margins.

Distinguishing Features: A very attractive species matched only by ***A. argocalla,*** from the Mount Lofty Ranges which also has large white flowers but with a shorter labellum fringe, linear white calli and non perfumed flowers, which are usually thicker textured.

Notes: Both *A. venusta* and *A. argocalla* are known to have been common a hundred years ago but have become very rare through loss of habitat. It flowers freely only after fires.

A. venusta forms hybrids with *A. tentaculata* and *A. necrophylla* and may intergrade with *A. formosa* where the two are sympatric.

The pollinators are not known.

Conservation Status:
Status in Legislation: Not listed nationally, vulnerable in South Australia.
Suggested Status: 2Eci in South Australia, rare in Victoria, nationally vulnerable.



MH, *A. venusta*, Nangwarry NFR, SE
*Note finished flower developing a seed capsule

Arachnorchis verrucosa
(G.W.Carr) D.L.Jones & M.A.Clem.

Little yellow-club Mallee Spider Orchid

Etymology: The name *verrucosa,* refers to the verrucose (wrinkled) glandular labellum calli.

Synonyms: *Caladenia verrucosa* G Carr, *C. rigens* and previously included in *C. dilatata.*



RB, Brinkley, MU

Description: **Leaf** narrow-lanceolate, to 12 cm long, hairy, with red blotches near the base, sub-erect. **Flower stem** to 30 cm, very slender, hairy, green or red. The **flower** is usually single, to 4 cm across, perianth segments green with a red median stripe; segments to 40 mm, all similar, narrow-lanceolate, the sepals with short, very distinct, pale yellow clubs; dorsal sepal erect over the column; lateral sepals spreading rigidly and obliquely in front of the flower, often crossed and falcate; petals decurved behind the ovary; **labellum** tri-lobed, small, yellow green basally with a maroon apex, lamina with four rows of small, congested, clubbed, warty or winkled, glandular, crimson, pale topped calli; lateral lobes with extremely long basal fringing, mid-lobe much curled under and crinkled, the margins with short, teeth.

Flowering: Late Aug – Sept – early Oct.

Similar Species: A. tensa, A. parva.

Distribution: **?FR, NL, MU, YP, SL, SE; NSW, Vic.**
Widespread across the eastern wheat-belt from Yorke Peninsula, the Barossa Valley and the upper South East but absent from Kangaroo Island; also in Victoria and New South Wales.

Habitat: Sandy soils in mallee broombush, open woodland and C*allitris* forests.

Distinguishing Features: Easily recognised from its small neat flowers, the usually pale distinct cylindrical clubs, the crossed sepals and the short, verrucose, glandular labellum calli which are often paler on top.

- Some forms could be treated as ***A.rigens*** **D.L.Jones**, which is described as having bright yellow osmophores whereas *A. verrucosa* was not, but as there is a gradation of bright yellow to orange clubs in South Australia as one goes further south the two are probably conspecific.

Notes: *A. verrucosa* is an adventive species, forming large colonies by seed recruitment in disturbed sand where native vegetation is being allowed to regenerate. Unfortunately very little disturbed South Australian bush is being allowed to regenerate!

Pollinated by a small black thynnid *Zaspilothynnus* species, which is a very efficient pollinator, such that a high proportion of flowers are pollinated soon after opening. *Zaspilothynnus* is easily attracted to *A. verrucosa* in wasp baiting experiments.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Secure.



KB, *A. verrucosa*, Peebinga CP, MU

Arachnorchis versicolor
(G.W.Carr) D.L.Jones & M.A.Clem.

Candy Spider Orchid or Lolly Spider Orchid

Etymology: The Latin name, *versicolor,* means variously coloured, and this suits the species with its varying shades of pink, lilac, purple and white, i.e. the 'candy cane' colours.

Synonyms: *Caladenia versicolor G. Carr, Caladenia aerochila* D.L.Jones. Previously included in *C. patersonii.*

Description: **Leaf** lanceolate, to 5 cm long, hairy on both surfaces, with red basal spots. **Flower stem** to 25 cm, slender, hairy, red or green. The **flower** is usually single, to 5 cm across, in tones of pink, purple and white; segments slender, all similar, to 5 cm long, coloured with white edges, spreading with only the dark glandular tips drooping, not clubbed; dorsal sepal erect; lateral sepals spreading in front of the flower; petals spreading behind; **labellum** narrow hardly lobed, the apex rolled under, margins finely toothed, the teeth shorter and finer toward the apex, calli pale, in four to six rows, the middle two rows extending well onto the mid-lobe. The flowers emit a vague floral odour.

Flowering: Sept – Oct.

Similar Species: *A. colorata.*

Distribution: **SE; Vic.**
Restricted in South Australia to a small area near Penola and collected only twice, but probably more widespread before land clearance; also in Victoria.

Habitat: River Red Gum flats in sandy-loams overlying clay, amidst low sedges.

Distinguishing Features: Similar to some colour forms of ***A. colorata,*** but with a narrow labellum and shorter segments and preferring a damper environment.

Notes: One of the smallest and most colourful members of the *A. patersonii* complex.

Has not been located in recent times so is likely to be extinct, due to grazing pressures.

Pollination by native bees has been observed, but it may have a specific wasp pollinator as well.

Conservation Status:
Status in Legislation: Nationally vulnerable; endangered in South Australia.
Suggested Status: Possibly extinct in South Australia, 3Eci nationally.



BB, *A. versicolor*, Western Victoria, Oct

Arachnorchis villosissima
(G.W.Carr) D.L.Jones & M.A.Clem.

Velvet leaf Spider Orchid

Etymology: The name refers to the fine silky (villous) hairs on the leaf and stem.

Synonyms: *Caladenia parva* ssp. *villosissima*

Description: A medium size green comb spider orchid with a short densely hairy **leaf**, the **flower stem** to 20 cm tall with clear white perpendicular hairs over most of its length. **flowers** often two in the same plane, green with strong red median stripes; segments linear-lanceolate, the sepals with yellow-brown narrow clubs; dorsal sepal erect then curved over the column; lateral sepals held stiffly horizontal; petals deflexed; **labellum** trilobed, with a medium short fringe to the basal half, midlobe maroon, narrowed, with few teeth, the apex curled under.

Flowering: Oct – Nov.

Similar Species: *A. parva, A. phaeoclavia.*

Distribution: **SE; Vic.**
The best known sites are in Victoria, near Deep Lead, but it has been collected in the lower South East near Penola.

Habitat: It grows in fertile sandy or clay flats with *A. venusta* and other green comb spider orchids.



JN, Nangwarry NFR, SE, Oct

Distinguishing Features: This is the only green comb spider orchid to regularly have two flowers, as well as the lateral sepals in the horizontal plane.

- Several green comb spider orchids have villous white hairs on the stem and leaf, including the best known, ***A. tentaculata***, but none consistently have flowers and segments in a horizontal plane.

Notes: It has at times been included under *A. parva* and *A. phaeoclavia* and in reality all may be just forms of one species; they certainly grow in the same areas and are pollinated by the same wasps, even if they do flower at different times. However, having the same pollinator (*Lophocheilus anilatatus*) does not prove it is the same species as *A. parva* and *A. phaeoclavia*.

Flowering time is extended in damp years.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: If accepted, the taxon is nationally endangered, being highly localised.



KB, *A. villosissima*, Nangwarry NFR, Oct
*Note broad villous leaf

Arachnorchis woolcockiorum
(D.L.Jones) D.L.Jones & M.A.Clem.

Mount Remarkable Spider Orchid

Etymology: Named in honour of Colin and Dorothy Woolcock, both keen orchidologists. Colin was a fine botanical illustrator and together they published Australian Terrestrial Orchids (1984).



MH, Mt Remarkable NP

Synonyms: *Caladenia woolcockiorum D.L.Jones*. Prior to 1990 it was included in *Caladenia patersonii*.

Description: **Leaf** large and rigid, to 15 cm x 1 cm, greenish with purple botched base, hirsute. **Flower stem** to 35 cm tall, and hairy. **Flower** usually single, 4-6 cm across, in tones of yellow-green, purple-brown and red; segments lanceolate, to 4 cm long, greenish, glandular outside, all similar with dark, glandular, drooping, fleshy tips; dorsal sepal erect , lateral sepals spreading in front of the flowers; petals narrower and depressed on either side of the ovary; **labellum** hardly trilobed, greenish usually with a red midlobe, side lobes shortly fringed, midlobe flat and horizontal at first but decurved toward the apex; calli in 4 well spaced rows, stalked, flat topped, red or green. The perfume is faintly musk.

Flowering: Aug – Sept.

Similar Species: *A. saxatilis* and the *A. patersonii* complex.

Distribution: **FR**
Endemic to the Mount Remarkable National Park in the southern Flinders Ranges, although probably extending north and south of there before land clearance.

Habitat: Prefers grassy, open *Eucalyptus* woodland and forest clearings in better soils, also on ledges amid *Callitris.* Mostly at higher altitudes but ranging from 300 m to 950 m. It has been recorded growing with no less than ten other *Arachnorchis* species.

Distinguishing Features: Flowers with shorter segments and heavier glands, with a yellow-green background, and a flatter labellum lamina.

- The most similar ***A. behrii*** of the Mount Lofty Ranges is a white flower with long drooping sements.
- ***A. saxatilis*** is a species with dark clubbed tips to the sepals.

Notes: *A. flindersica* from the *A. patersonii* complex also grows in the Southern Flinders Ranges but *A. woolcockiorum* does not introgress with this.

A. woolcockiorum occurs in small to quite extensive colonies and hopefully will recolonise the new park section of previously grazed high altitude woodland west of the Mount Remarkable summit ridge.

It is pollinated by a sexually attracted male thynnid wasp but the species has not been determined.

Hybrids have been recorded with *A. gladiolata*, *A. saxatilis* and *A. tensa* in disturbed sites.

Conservation Status:
Status in Legislation: Nationally vulnerable; endangered in South Australia.
Suggested Status: 2Vc, nationally threatened.



BB, *A. woolcockiorum,* Mt Remarkable NP, FR, Sept

Arachnorchis xanthochila
(D.Beards. & C.Beards.) D.L.Jones & M.A.Clem.

Yellow Lip Spider Orchid

Etymology: From the Greek, *xanthos,* yellow, and *cheilos*, a lip. Both the scientific and common names refer to the yellowish labellum.

Synonyms: *Caladenia xanthochila* Beardsell. Sometimes included in *A. stellata.*

Description: the **leaf** broadly lanceolate to 5 cm long, with short dense hairs; **flower stem** to 20 cm tall. **Flower** single to 4 cm across, the segments all pale yellow-green, the tips drooping with variable, usually small osmophores of brown or yellow, and only on the sepals; petals more rigidly spreading; **labellum** small, obscurely trilobed, yellowish or cream, shortly or not fringed, calli in 4 rows, usually greenish, rarely red.

Flowering: Mostly Sept.

Similar Species: *A. stellata, A. rigida.*

Distribution: **SE; Vic**
Known only from the Bordertown area of the South East; also in Victoria.

Habitat: Sandy open grassy woodland, the South Australian populations grew in bulloke woodland, now cleared or the understorey destroyed by overgrazing.



KB, Bordertown, SE

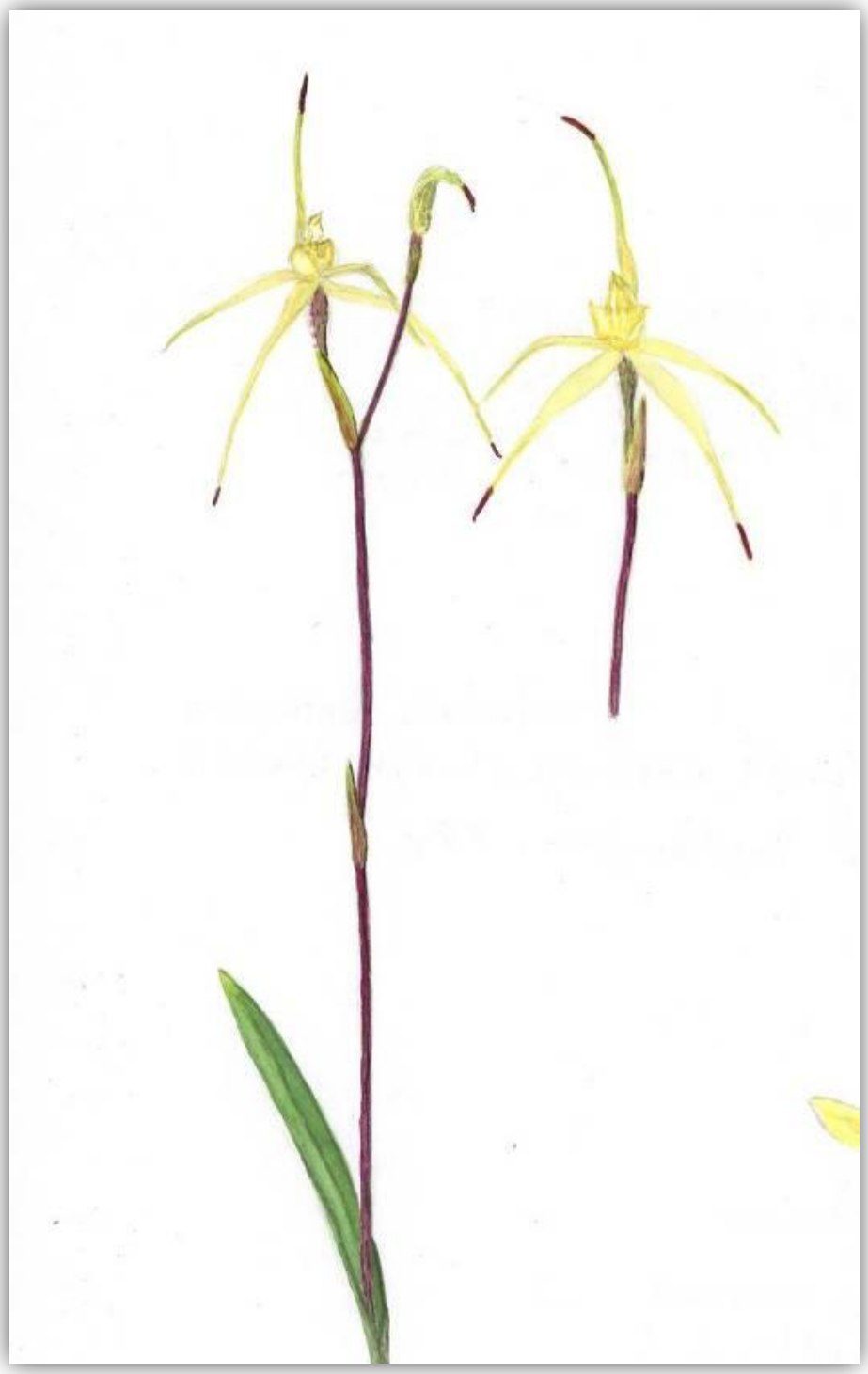
Distinguishing Features: The neat yellowish flowers, felty leaves and small osmophores are an indicator.

- The similar ***A. stellata*** is more rigid, with a more starry shape, often larger, usually with a red labellum, it does however have some wholly yellow flowers in most populations and sometimes these dominate.
- ***A. rigida***, endemic to the Adelaide Hills, has white flowers with red outer stripe.

Notes: Has not been seen in South Australia for many years and is possibly extinct now due to loss of habitat.

Pollinated by *Phymatothynnus* sp. near *nitidus.*

Conservation Status:
Status in Legislation: Nationally endangered; endangered in South Australia.
Suggested Status: 3Eci nationally, possibly extinct in South Australia now.



***A. xanthochila*, Wolseley, art by Kath Alcock 1960s, Courtesty JN**

Arachnorchis zephyra D.L.Jones

West Wind Spider Orchid

Etymology: From *zephyr*, the west wind, or a gentle breeze, referring to the westerly winds dominating its growing season.

Synonyms: Previously referred to *Caladenia arenaria,* C. *patersonii* and more recently *A.* aff *arenaria* or *A.* sp. Inland.

Description: **Leaf** rigid and felt-like, about 3 cm long. **Flower stem** hairy, to about 40 cm. **Flower** creamy or greenish often with brown tinges, segments moderately long, linear lanceolate, glandular for about half their length; dorsal sepal erect, curved forward over the column; lateral speals obliquely decurved; petals spreading and deflexed; **labellum** trilobed, the side lobes shortly erect, finely toothed, lamina with 4 rows of red-brown calli, mid-lobe rolled under, with fine teeth. Flowers are not fragrant.



KB, EP, Sep

Flowering: Sep – Oct – early Nov.

Similar Species: *A. flindersica, A. brumalis*.

Distribution: **EP, ?SE**
Endemic to Eyre Peninsula where it was once common, throughout the wheat-belt, and perhaps upper South East.

Habitat: In better soils, mostly in the company of native pines, *Callitris gracilis,* and broombush, *(Melaleuca uncinata* and *Baeckea behrii).* It does not grow in poor sandy soils or in mallee.

Distinguishing Features: It is difficult to separate from the earlier flowered more coastal ***A. brumalis***, but that species is early flowered, lacks brown tints and is pollinated by a black thynnid wasp.

- Very similar to ***A. flindersica*** which has a different pollinator and grows in a montane habitat.

Notes: The blooms are long lived, unless pollinated by a small brown thynnid wasp.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3Vci, nationally threatened.



KB, *A. zephyra*, Carrapee Hill CP, Sept

Undescribed Arachnorchis

Arachnorchis sp. Brown bayonets (R. Bates 59762)

Port Lincoln Spider Orchid

Etymology: The phrase name refers to the flat brown clubs on the sepal tips.

Synonyms: None.



BB, Carrapee Hill CP,

Description: **Leaf** to 5 cm long, decumbent, oblong-lanceolate, softly hairy, red based. **Flower stem** to 15 cm high, with sparse hairs, bracts short. **Flower** single to 30 mm across, in tones of green, cream and maroon; segments linear lanceolate, to 25 mm long, yellow-green with red median stripe and dark brown tips; dorsal sepal erect with a dark brown, flattened, bayonet shaped osmophore about 5 mm long; lateral sepals spreading in front of the flower, similar but with clubs to 8 mm long; petals similar but with osmophores reduced or absent, spreading behind; **labellum** tri-lobed, ovate, the side lobes erect, greenish with short fringe to 4 mm long, lamina with four rows of red, clubbed calli, mid-lobe maroon, decurved, with short calli on the margins.

Flowering: Aug – Sept.

Similar Species: *A. macroclavia, A. clavula.*

Distribution: **EP.**
Widespread but localised across Eyre Peninsula from Streaky Bay southwards and westward, mostly coastal; endemic to South Australia.

Habitat: Found in mallee heath in a variety of heavier soils (terra rossa or clay-loam over limestone) often just metres from the sea or coastal saltpans and generally with other spider orchids.

Distinguishing Features: This species is easily recognised by the indistinct flat, dark clubs found on the sepals and sometimes on the petals too.

- The segments are all shorter than in ***A. macroclavia*** which has a comparatively smaller labellum.
- ***A. clavula***, which is sometimes sympatric, is a smaller plant with much smaller, not flattened clubs and never has clubbed petals.

Notes: There are at least four green comb spider orchids with bayonet shaped clubs on Eyre Peninsula but each has clubs of a different colour or size, all occur in pure populations and where two or more occur together there are no intermediates as each is likely to have a different species-specific pollinator. This species is pollinated by an unidentified thynnid wasp.

Most populations are under threat from development, salination or weeds.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3Rc, nationally rare.



PH, *A.* sp. Brown bayonets, Sept

Arachnorchis sp. Fleurieu (R. Bates 3433)

Fleurieu Spider Orchid

Etymology: The phrase name indicates that this species was first recognised as distinct from a population in Deep Creek CP, Fleurieu Peninsula, in the 1980s.

Synonyms: Some material was previously included in *Caladenia patersonii.* Since 1990 referred to as *C.* aff. *behrii.*

Description: Plants with **flower stem** to 30 cm tall, the **leaves** rigid, lanceolate erect with strigose hairs. **Flowers** 1 or 2, the sepals white or pink, at first horizontal but with drooping pale brown, glandular tips; **labellum** variously red, speckled red and white or purplish, hardly lobed, the marginal fringe rather short, calli in 6 rows, linear, red.

Flowering: Sep – Oct.

Similar Species: *A. behrii, A. colorata, A. formosa*.

Distribution: **SL, KI.**
Has become rare and highly restricted with three populations on Fleurieu Peninsula and three near Kingscote.

Habitat: Near coastal, in scrubs of low eucalypt over coloured sands or terra rossa soils.

Distinguishing Features: Easily separated from ***A. behrii*** on the strigose, rigid leaf and habit, lack of fragrance and the flowers with segments horizontal at first, the labellum not so distinctly marked white with a red tip.

- ***A. colorata*** is a smaller species with colourful flowers, found in a different geographical location.
- ***A. formosa*** is generally a deep red species with less variation in flower colour.

Notes: The pollinators are not known and the rapid decline of all populations suggests the pollinators are no longer present.

All populations need to be given conservation significance.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3Eci, nationally endangered.



RB, *A.* sp. Fleurieu, Deep Creek CP, SL

Arachnorchis sp. Little Clowns (E.S. Ising s.n., AD966021716)

Little Clown Spider Orchid

Etymology: The phrase name refers to the curious flowers, reminiscent of funny figures.

Synonyms: Not previously recognised.

Description: A small species with **flower stem** to 10 cm tall, with the **leaf** narrow, having short dense hairs. **Flower** single to 2 cm across in tones of red or purple and cream; all segments short, creamy-green, mostly about 1 cm long, often held rigidly, with small clubs or none at all, sometimes with a red median stripe; **labellum** hardly lobed, tremulous on a short claw, cream with a red or purple apex neatly curved under, calli small, red in untidy rows. Flowers have no fragrance.



RB, Keith-Bordertown road, SE

Flowering: Late Aug – Sept –early Oct.

Similar Species: *A.* sp. Kangaroo Island.

Distribution: **SE; Vic**
Only known from the Upper South East of South Australia and western Victoria.

Habitat: Grows in fertile but light sandy soils in mallee-broombush shrubland, with scattered low blue-gum (*Eucalyptus leucoxylon*) i.e. in Mount Monster CP and Little Desert NP.

Distinguishing Features: The short stems, short sepals often lifted horizontally, the tiny clubs and overall neat appearance are features to look for. Small colonies have the individuals looking like dancing clowns.

Notes: This species must once have been abundant in the Keith-Bordertown area but as its fertile soils were much in demand for cropping and the light scrub cover easily cleared; little of its habitat now remains.

It is often found with other spider orchids such as *A. verrucosa, A. fulva, A. stricta* and *A.* sp. South East and it hybridises with all of these.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3K but probably nationally endangered.



***A.* sp. Little Clowns, art work by Kath Alcock, courtesy JN**

Arachnorchis sp. Kangaroo Island (R.S.Rogers 786)

Kangaroo Island Hybrid Spider

Etymology: The common name reflects the distribution of the taxon on Kangaroo Island.

Synonyms: *A.* x *macropodiana* ms

Description: **Leaf** linear-lanceolate, rigid, erect, to 6 cm long, with a cover of pale hairs. **Flower stem** to 20 cm, reddish. **Flower** single, in red-brown tones about 3 cm across; segments all similar, linear lanceolate, pale brown with darker red blotches or streaks, the sepals ending in short dark clubs; dorsal sepal erect; lateral sepals broad at first then acuminate, spreading in front, deflexed; petals shorter, spreading behind; **labellum** tremulous on a short claw, pale brown with red veins, and a red decurved apex, hardly lobed; margins variously dentate to almost entire, apically thickened and crenulate, calli few, simple, linear, maroon. There is no fragrance.



BB, Harriet Flats, Sept

Flowering: Late Sept –Oct –Nov.

Similar Species: *A.* x *variabilis* Nicholls

Distribution: **KI.**
Endemic on Kangaroo Island.

Habitat: In clay and lateritic rubble, in mallee-broombush, amid low sedges.

Distinguishing Features: Despite its similarity to ***A. cardiochila*** this taxon is easily distinguished by the shallowly fringed labellum margins, four rows of well spaced labellum calli and the small clubs on the sepals.

- *A.* sp. Kangaroo Island resembles ***A. x variabilis*** which is a cross between *A. tessellata* or A. *cardiochila* and *A. patersonii* alliance species, but that taxon is paler with longer segments and longer osmophores.

Notes: Having been collected nearly 100 years ago it is surprising that this taxon has not previously been referred to. It appears to be a semi stabilised hybrid between *A.* aff. *reticulata* and A. *cardiochila* and is often found near one or both these parents.

Once reported in large numbers, *A.* sp. Kangaroo Island seems to be rare now, as its habitat has been cleared and grazed.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 2Eci.



BB, *A. sp.* Kangaroo Island, Vivonne Bay, KI

Other possible undescribed taxa include:

A. aff. *concolor* Kapunda based on *G Hazel* s.n, NL but extinct.

A. aff. *versicolo*r Nuriootpa based on *R Bates 312*, NL but extinct.

A. aff. *tensa* group, see below



RB, *Arachnorchis* sp. Limestone Hills, Hopkins Ck CP, NL



RB, *A. interanea*, (L) with *A. septuosa*, for comparison of size, Mt Granite

Gallery



KB, *A. ensigera*, August
*Note the obvious influence of *A. gladiolata* on this specimen and the abnormal calli on petal



BB, *A. formosa*, Langkoop, Vic, Sept



RB, variants of *A. colorata*, Milang



BB, *A. formosa*, Victor Harbor, SL



RB, colourful *A. stricta*, Brinkley with aberrant calli



KB, *A. ovata,* Kangaroo Island, Sept



BB, *A. macroclavia,* Port Vincent, Sept



RB, a red *A. septuosa,* Wanilla, EP



RB, *A. rigida*, in a patch of thousands, Mt Bold



RB, *A. venusta*, Nangwarry NFR, Oct



RB, aberrant *A. stricta* with no teeth on labellum, Brinkley



BB, *A. septuosa*, Carrapee Hill CP, EP



KB, *A.* sp. Desert, Hiltaba, Gawler Ranges



MH, *A. woolcockiorum*, Mt Remarkable NP, Aug



BB, *A. toxochila*, Carrapee Hill CP



KB, unusual variants of *A. toxochila*, Ngarkat CP, with pollinator

This highly endangered undescribed taxon related to *A. conferta* and *A. toxochila* has a different pollinator. In 'Wild Orchids of Victoria (2006) this species is illustrated as *Caladenia toxochila.*

Pollinator specificity is important in determining species of *Arachnorchis*



MH, *A. venusta*, SE, Sept



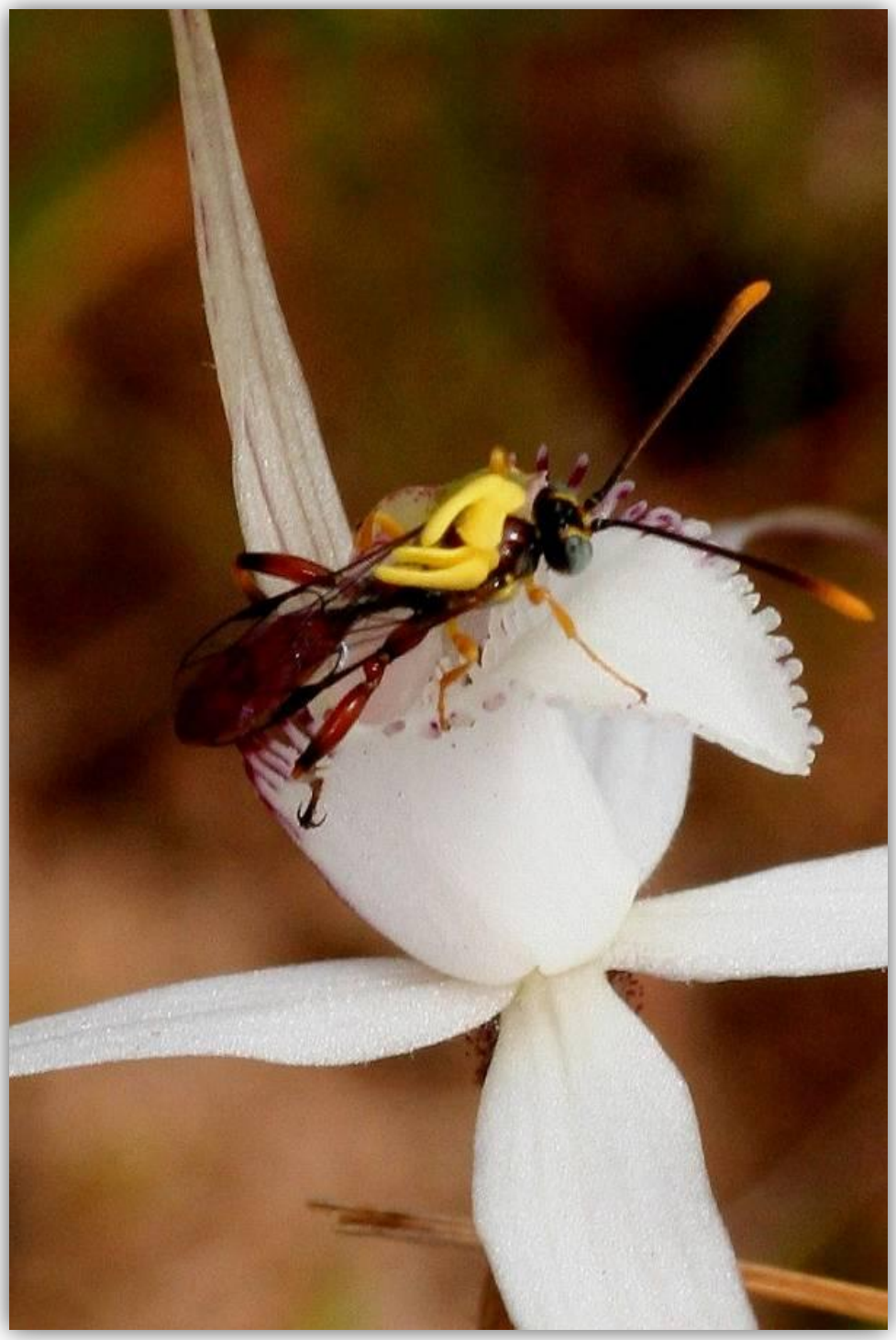
JN, albino *A. parva*, Penola CP



BB, *A. valida* from KI



BB, *A. macroclavia* x *A. conferta* hybrid, Ramsay Way CP, Sept



KB, *A. intuta* and unknown wasp pollinator, YP

Bunochilus D.L.Jones & M.A.Clem.
Urochilus D.L.Jones & M.A.Clem.

Banded Greenhoods



KB, *B. prasinus* with fungus gnat

South Australia's Native Orchids

Bunochilus D.L.Jones & M.A.Clem.
Urochilus D.L.Jones & M.A.Clem.

Banded Greenhoods

Etymology: *Bunochilus* from the Greek *bounos* a mound or knob and *cheilos* a lip is a reference to the basal mound on the labellum and *Urochilus* from *oura* a tail and *cheilos* as per the short tailed appendage on the labellum.

Taxonomy: Both genera were only recently (2003) described and most of the species named in the past 10 years. All South Australian species of *Bunochilus* were once lumped under the name *Pterostylis longifolia* R.Br. a species (as *B. longifolius*) now known to be endemic to New South Wales. We now recognise at least 6 South Australian taxa, the best known being *B. viriosus* which is the largest member of the genus and was once common in the Adelaide Hills.

The only *Urochilus* in South Australia was once called *Pterostylis vittata* and more recently *P. sanguinea.*

Description: These segregate genera from *Pterostylis* are easily recognised by their many flowers on tall stems with long cauline leaves, *Bunochilus* by its green flowers, *Urochilus* by maroon flowers; at least in South Australia. The flowers have deflexed lateral sepals exposing a highly mobile, sensitive labellum with minor ornamentation.



JN, pollinating gnat pseudo-copulating with *Bunochilus* sp., SE

Pollination: Most species are out-crossing and pollinated by fungus gnats (see frontispiece) which when they land on the sensitive labellum, trigger it so that they are flung back inside the hood and must flutter their way up through the column wings to escape, passing first the sticky stigma and gathering a dab of glue, then past the anther where the pollinia are stuck to their thorax. Upon repetition of this action on a second flower the pollinia are peeled off onto the stigmatic plate.

Two species *B. flavovirens* and *B. littoralis* are usually self pollinated.

Distribution and Habitat: *Bunochilus* is essentially a medium size genus of about 25 species from woodland and heath in the eastern states. *Urochilus,* as the Western Australian equivalent, has 6 species with just the one extending to the Eastern states.

Notes: For *Bunochilus* the centre for the genus appears to be the Eastern states, particularly eastern New South Wales with ten species. There is at least one species endemic to each state i.e. *B. vitreus* (Qld), *B. barringtonensis* (NSW), *B. diminutus* (Vic) and *B. williamsonii* (Tas). It is very likely that *B. diminutus* occurred near Bordertown in South Australia before land clearance.

South Australia's Native Orchids

Bunochilus chlorogrammus (D.L.Jones) D.L.Jones & M.A.Clem.

Verdant banded Greenhood

Etymology: From *chloro* green and *gramme* a mark, in reference to the deep green line on the labellum of the species.

Synonyms: *Pterostylis chlorogramma,* previously included under *P. longifolia.*

Description: **Rosette leaves** 3-6, in a slender rosette on a long or short stem, on non-flowering plants only, lanceolate, to 30 mm long, crenulate. **Flower stem** to 80 cm, slender; **cauline leaves** 5-10, lanceolate, to 40 mm long. **Flowers** 1-15, shiny green, erect; **galea** curved forward, to 15 mm long, narrow except for the swollen base, apex with a short blunt point, petals narrow; lateral sepals deflexed, narrow, straight, to 12 mm long, slightly concave; **labellum** to 4 mm long, green, oblong, papillose, with a bifid, upturned tip, very sensitive.

Flowering: May – June – July – Aug.

Similar Species: *B. longifolia, B. prasinus, B. smaragdynus, B. viriosus.*

Distribution: **SE; Vic**
Restricted in South Australia to the South East from Bangham southward, especially around Nangwarry and Glencoe, i.e. in Honan NFR.



JN, Nangwarry NFR, SE

Habitat: Grows in damp forest, in sand amongst bracken and mosses, often near swamps but not in them.

Distinguishing Features: This species is larger than ***B. smaragdynus***, flowering earlier and with as large or larger leaves and more distinctly dark green, striped flowers.

- It lacks the black labellum markings of ***B. melagrammus*** and usually has a dark green line down the middle of the labellum.

Notes: This species has not been well studied in South Australia and may prove to be more widespread. Some workers suggest that true *B. chlorogrammus* is restricted to Victoria and that the South Australian plants are undescribed.

Conservation Status:
Status in Legislation: Nationally vulnerable; endangered in South Australia.
Suggested Status: Unknown as the species limits are not well understood.



JN, *B. chlorogrammus*, Bangham CP

Bunochilus flavovirens D.L.Jones

Coastal banded Greenhood

Etymology: From the Latin *flavovirens* green stained with yellow, as for the pale yellow green labellum of the species.

Synonyms: It was previously included in *Pterostylis longifolia* R.Br., also as *P.* sp. Coastal (R.Bates 37621).

Description: A delicate self-pollinated species with slender, fragile **rosette leaves** set well off the ground; flowering plants 5-20 cm tall, with slender **cauline leaves** and 1-5 translucent glabrous **flowers** to 1.3 cm wide, the dorsal sepal with an acute apex, the **labellum** oblong, yellowish green with a slightly darker mid line, surface cells rounded and bead like, basal mound short and truncate, margins concave, lateral lobes well developed. Many plants have only a single flower. Flowers are short lived. Seed capsules swell rapidly after flowering and the capsules are strongly ribbed, see image in gallery.

Flowering: July – Aug – Sept – Oct.

Similar Species: Very close to *B. littoralis* from near Beachport in the lower South East.

Distribution: **EP, YP, SL, KI, SE.**
It is restricted to coastal districts from near Streaky Bay all around the coast, including Kangaroo Island, to the Coorong.

Habitat: The species is endemic to South Australia in calcareous sands or leaf litter over limestone mostly within hearing of the sea.



RB, small flower, Lincoln NP, EP

Distinguishing Features: It is recognised from the small, self-pollinated flowers, often single, the translucent nature of these and the pale yellow-green labellum.

Notes: This species was only described in 2007 even though recognised as distinct by NOSSA enthusiasts for some twenty years.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Widespread and secure.



RB, *B. flavovirens*, Little Sahara, KI
*Note the long point on the galea and tiny glabrous flowers

Bunochilus littoralis D.L.Jones

Lake Saint Clair banded Greenhood

Etymology: The Latin *littoralis*, pertaining to the seashore, reflects the fact that the ocean surf can be heard from all known populations.

Synonyms: Previously treated as a form of *Pterostylis longifolia* R.Br.

Description: A slender species to 30 cm tall with large, flaccid **cauline leaves**, the **rosette leaves** very variable. **Flowers** 1-7, small, green and translucent, to 12 mm across, short lived, dorsal sepal to 14mm long with a short blunt decurved tip, petals transparent, narrowest at base, lateral sepals pendulous, to 1cm long; **labellum** oblong to 5 mm long, wholly pale green, nearly flat except for upturned tip, basal callus not well developed. Flowers are self-pollinated and short lived.

Flowering: July – Aug.

Similar Species: Very similar to *B. flavovirens* which has a more northerly distribution in lower rainfall areas.

Distribution: **SE**
So far known only from the area between Robe and Beachport wholly in the sub-littoral zone between Lake Saint Clair and the sea.

Habitat: The species occurs in white sand under soap mallee (*E. diversifolia*) with *Lasiopetalum* spp. amongst other green-hoods and helmet orchids.

Distinguishing Features: It shares most of the features of ***B. flavovirens*** i.e. small, green, self-pollinating flowers but with larger softer leaves and the labellum not as pale. *B. flavovirens* has a more northerly distribution in lower rainfall areas.

Notes: The species occurs in large colonies up to 100 individuals and sometimes in tight clumps of up to 20 plants. It was previously thought by NOSSA enthusiasts to be no more than a southern form of the common coastal banded greenhood.

Due to its restricted habitat and range which it shares with the similarly restricted *Arachnorchis richardsiorum* and *Diplodium* sp. Nora Creina, it is nationally threatened.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 2V, nationally threatened.



KB, *B. littoralis*, Bog Road, Nora Creina, SE

Bunochilus melagrammus
(D.L.Jones) D.L.Jones & M.A.Clem.

Dark-lip banded Greenhood

Etymology: From *melan* black or dark and *gramme* a line, in reference to the dark insect-like stripe on the labellum in most forms of the species.

Synonyms: *Pterostylis melagramma* and previously included in *P. longifolia*

Description: **Rosette leaves** of non-flowering plants 3-20 in a loose rosette, usually on a stem to 3 cm tall, narrow-ovate, petiolate, to 5 cm long. **Flower stem** to 50 cm tall, slender with up to 10 lanceolate, **cauline leaves** to 4 cm long, often red tipped, **flowers** 2-12, yellow green, with indistinct stripes, nodding; **galea** narrow except at the swollen base, to 15 mm long, dorsal sepal with a short point, petals narrow with basal flanges not meeting; lateral sepals deflexed, narrow, joined for more than half their length, the points divergent, often red tipped; **labellum** to 6 mm long, highly irritable, oblong, papillose, usually with a black median stripe, tip upturned and notched.



ID, SE, Sept

Flowering: July – Aug – Sept – early Oct.

Similar Species: *B. chlorogrammus, B. viriosus, B. smaragdynus.*

Distribution: **SL, KI, SE; NSW, Vic, Tas.**
The species is rare on Kangaroo Island and the lower South East in areas of high rainfall. It is common in the Eastern states.

Habitat: This species grows in damp sandy soils near swamps or creek-lines, often in dense shade.

Distinguishing Features: Differs from other members of the complex by the numerous mid-sized flowers with a black stripe on the labellum and red tipped sepals. It is also later flowering.

- ***B. viriosus*** sometimes has a dark striped labellum but its flowers are larger with broad petals touching at the base and lateral sepals convex. The flexible stems can be bent right over and when released will spring back to the erect position.

Notes: *B. melagrammus* is probably extinct in the Adelaide area, and is very rare elsewhere in the State. Flowers can still be seen in October, long after the other South Australian *Bunochilus* are finished. It is surprising that *B. melagrammus* is not more common in South Australia as it is common in Western Victoria.

Conservation Status:
Status in Legislation: Not listed nationally, endangered in South Australia.
Suggested Status: Vulnerable in South Australia, common elsewhere.



BB, *B. melagrammus*, Kangaroo Island, Sept

Bunochilus prasinus D.L.Jones

Glossy or Limestone banded Greenhood

Etymology: The name *prasinus* Greek meaning 'grass green' reflects the flower and labellum colour while the common name indicates the favoured habitat, i.e. near limestone.

Synonyms: Previously treated as a form of *Pterostylis longifolia* R.Br.

Description: **Rosette leaves** in a raised rosette to 30 mm off the substrate; pale green, petiolate, ovate or lanceolate, crenulate, thin textured; of two forms the ovate leaved rosettes smaller and rounder, the lanceolate leaved ones larger and more acute. **Flower stem** slender to 30 cm tall but more frequently less than 10 cm, with several lanceolate or ovate stem **(cauline) leaves**. **Flowers** as many as 10 on well-developed specimens, shining, striped and verdant green; **galea** to 12 mm long, narrow; lateral sepals fragile, decurved, to 10 mm long, flat, conjoined for most of their length, striated, petals very narrow; the **labellum** about 4 mm long, sensitive, oblong, green, hardly papillose, apex upturned and bifid.

Flowering: July – Aug – early Sept.

Similar Species: *B. chlorogrammus, B. flavovirens, B. littoralis.*

Distribution: **EP?, MU, YP, SE; Vic**
Found from central Eyre Peninsula (?), the Murray, northern Yorke Peninsula and the upper South East as well as in western Victoria.

Habitat: Grows mostly in the mallee on limestone or terra rossa soils.

Distinguishing Features: It is most easily recognised from the inland distribution, the mid-sized shiny, verdant green, strongly striped flowers, very narrow petals, conjoined sepals and the bifid, hooked labellum apex. Flowers are usually outcrossing.

Notes: Long recognised as distinct but one of the last species in the complex to be named. The exact distribution of the species requires more study and possibly it is restricted to the area south-east of the Murray River in South Australia and western Victoria.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Secure.



KB, *B. prasinus,* Peake, MU

Bunochilus smaragdynus
(D.L.Jones) D.L.Jones & M.A.Clem.

Emerald banded Greenhood

Etymology: The Latin *smaragdinus* means emerald-green, reflecting the colour of the flower.

Synonyms: *Pterostylis smaragdyna* D.L.Jones & M.A.Clem. and previously listed as *P. longifolia.*



CH, Bangham SP, SE

Description: **Rosette leaves** 3 or 4 on non-flowering plants, petiolate, ovate, and acute, to 20 mm long, usually raised off the ground. **Flower stem** to 40 cm tall, slender with numerous dark green lanceolate **cauline leaves**. **Flowers** 1-16, green and shiny, to 20 mm long, sub erect; **galea** bent forward, narrow, ending in a short down-curved tip, petals transparent, straight; lateral sepals narrow, thin textured, convex, deflexed, to 20 mm long; **labellum** highly sensitive, to 8 mm long, greenish with a darker central stripe, papillose, tip upturned and notched.

Flowering: June – July – Aug.

Similar Species: *B. chlorogrammus, B. viriosus, B. melagrammus.*

Distribution: **SE; Vic.**
Rare in South Australia in woodlands on sandy or gravelly soils in South East but more common in Victoria, especially in the east.

Habitat: Mostly on sandy soils or in hard quartzitic clays in open forest, woodland and scrubs.

Distinguishing Features: This tallish species is distinguished by its early flowering, rigid leaves and large vaguely striped flowers. The labellum is usually a brilliant emerald green with some darker tints.

Notes: In any population there seem to be a variety of sizes from small single flowered plants to tall 40 cm tall specimens with several flowers all open at once.

Pollination is inefficient and seed capsules are rarely seen but when seed is formed hundreds of seedlings appear the following year, especially on disturbed ground.

There are many other similar species in the eastern states and some may have occurred in South Australia before land clearance, i.e. *B. diminutus, B. macrosepalus.*

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Probably 3Rc nationally but unsure due to confusion with other species.



CH, *B. smaragdynus*, Bangham SP, SE
*Note the rosettes of the non-flowering plants in this colony



CH, *B. smaragdynus* leaves, Bangham CP, SL

Bunochilus viriosus D.L.Jones

Adelaide Hills banded Greenhood or Tall Greenhood

Etymology: From the Latin *viriosus* meaning strong or virile, after the robust nature of this species.

Synonyms: Previously included in *B. (Pterostylis) smaragdynus* (D.L.Jones & M.A.Clem.) D.L.Jones & M.A.Clem. and perhaps only a form of it.



MP, Hale CP, SL

Description: **Rosette leaves** three to 3-6 in a loose rosette on non flowering plants, petiolate, ovate, acute, to 20 mm long, usually raised off the ground. **Flower stem** to 80 cm tall, slender with numerous dark green, rigid, lanceolate **cauline leaves**. **Flowers** 1-15, green and shiny, to 25 mm long, sub erect; **galea** bent forward, narrow, ending in a short straight tip, petals transparent, straight; lateral sepals narrow, thin textured, convex, deflexed and curved back, to 20 mm long often red-brown tipped; **labellum** oblong, highly sensitive, to 8 mm long, greenish with a darker central stripe in green or orange, even black, narrow ovate, papillose, tip upturned and notched.

Flowering: Late June – July – Aug – early Sept.

Similar Species: *B. smaragdynus.*

Distribution: **FR, EP, NL, MU, SL.**
Widespread in the hills and mountains of South Australia, the type form restricted to the Mount Lofty Ranges but a similar form extending to the Flinders Ranges and lower Eyre Peninsula.

Habitat: Found on a variety of soil types often hard clays on steep slopes in woodland or less often on sand.

Distinguishing Features: The labellum is usually yellowish-brown rather than the green of *B. smaragdynus* which is almost indistinguishable. Whereas the galea apex of ***B. smaragdynus*** is green and straight, the apex in *B. viriosus* is often down curved and coloured.

- The form from the Flinders Ranges is less robust and more insipid in colour and although Jones places some of these with ***B. prasinus*** they would be better treated as a subspecies of *B. viriosus.*

Notes: This South Australian endemic is the most robust member of the genus, to 80 cm tall, but as in other species of the genus, in any population there are always many diminutive individuals. Like all members of the genus large multi-flowered specimens are the most mature individuals, often those which did not produce seed the previous season.

The low rate of pollination may reflect that the usual pollinator has become rare in South Australia due to habitat destruction. The poor pollination rate has resulted in a gradual decline in most populations of *B. viriosus.*

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Nationally uncommon.



BB, *B. viriosus*, SL, July

Urochilus sanguineus
(D.L.Jones & M.A.Clem.) D.L.Jones & M.A.Clem.

Maroon banded Greenhood

Etymology: From the Latin *sanguinea* blood or red wine, referring to the wine red flowers.

Synonyms: *Pterostylis sanguinea* and was once included in *Pterostylis vittata* Lindl.



RB, Lobethal, SL

Description: **Rosette leaves** 3-10 in a ground hugging rosette on non flowering plants, ovate, smooth, grey-green, to 35 mm long. **Flower stem** to 40 cm tall in the type form, robust (shorter and slender in the mallee form), with 5-10 lanceolate, **cauline leaves** to 50 mm long, these often red-tipped. **Flowers** one to twenty, deep maroon, red-brown and greenish or orange-red usually with white stripes and markings, nodding; **galea** to 20 mm high, fleshy, ribbed, curved throughout with a short blunt point, petals flared; lateral sepals pendant, almost forming a circle, broader than the galea, with thickened margins, free only at the short blunt tips; **labellum** ovate, very sensitive, to 6 mm long, margins ciliate especially at the notched tip, with a small hooked basal appendage.

Flowering: May – June – July – Aug – Sept.

Similar Species: None.

Distribution: **NU, FR, EP, NL, MU, YP, SL, KI, SE; WA, Vic. Tas.**
The species is common from the Nullarbor, all around the coast and extending hundreds of kilometres inland in the Gawler and Flinders Ranges as far north as Wilpena Pound, throughout the wheat belt as well as high parts of the Mount Lofty Ranges also in Western Australia and the Eastern States.

Habitat: In forest clearings, woodland, scrub, heath, mallee, mallee heath and broombush; from rock outcrops inland to the littoral zone, in all soil types except saline.

Distinguishing Features: The nodding maroon flowers are distinct.

Notes: There are two forms but as they tend to intergrade these are best treated as subspecies.

- Short, slender, colourful mallee plants with few flowers
- Tall stocky type form with many maroon, green and white flowers
    - but the lines of distinction are somewhat blurred by the existence of dull coloured sandhill plants which don't fit with either.

U. sanguineus occurs as individual plants, small groups or clumps of plants, often curiously mixed with *B. smaragdynus* or B*. viriosus.*

Apparently the two genera *Bunochilus* and *Urochilus* are not as closely related as one might think; they certainly don't hybridise. There are no hybrids known.

Most *Urochilus* species are restricted to Western Australia so presumably the genus originated there in the south-west.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Both forms are widespread, common and secure.

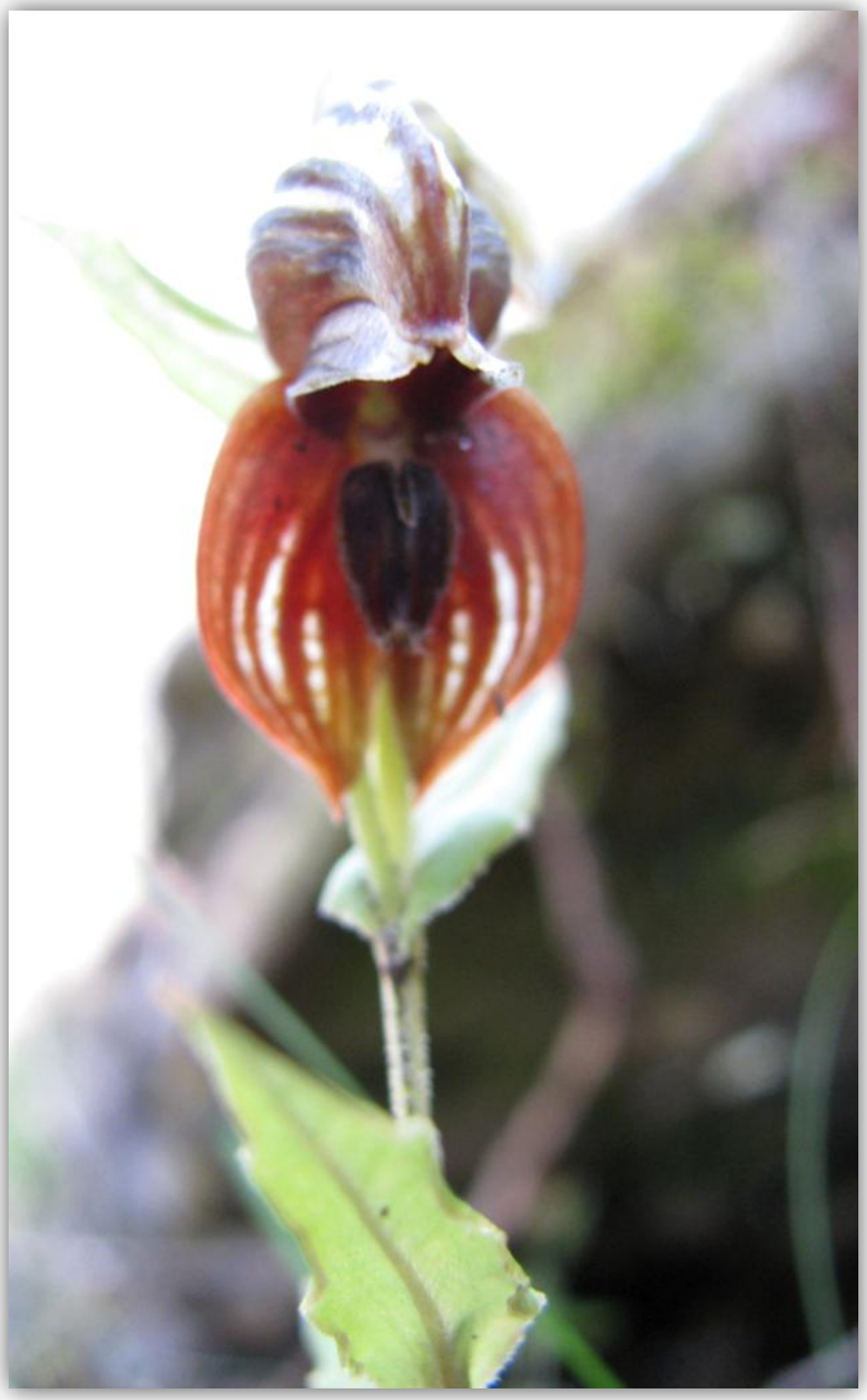


KB, dark flowers of *Urochilus*, Victor Harbor, SL

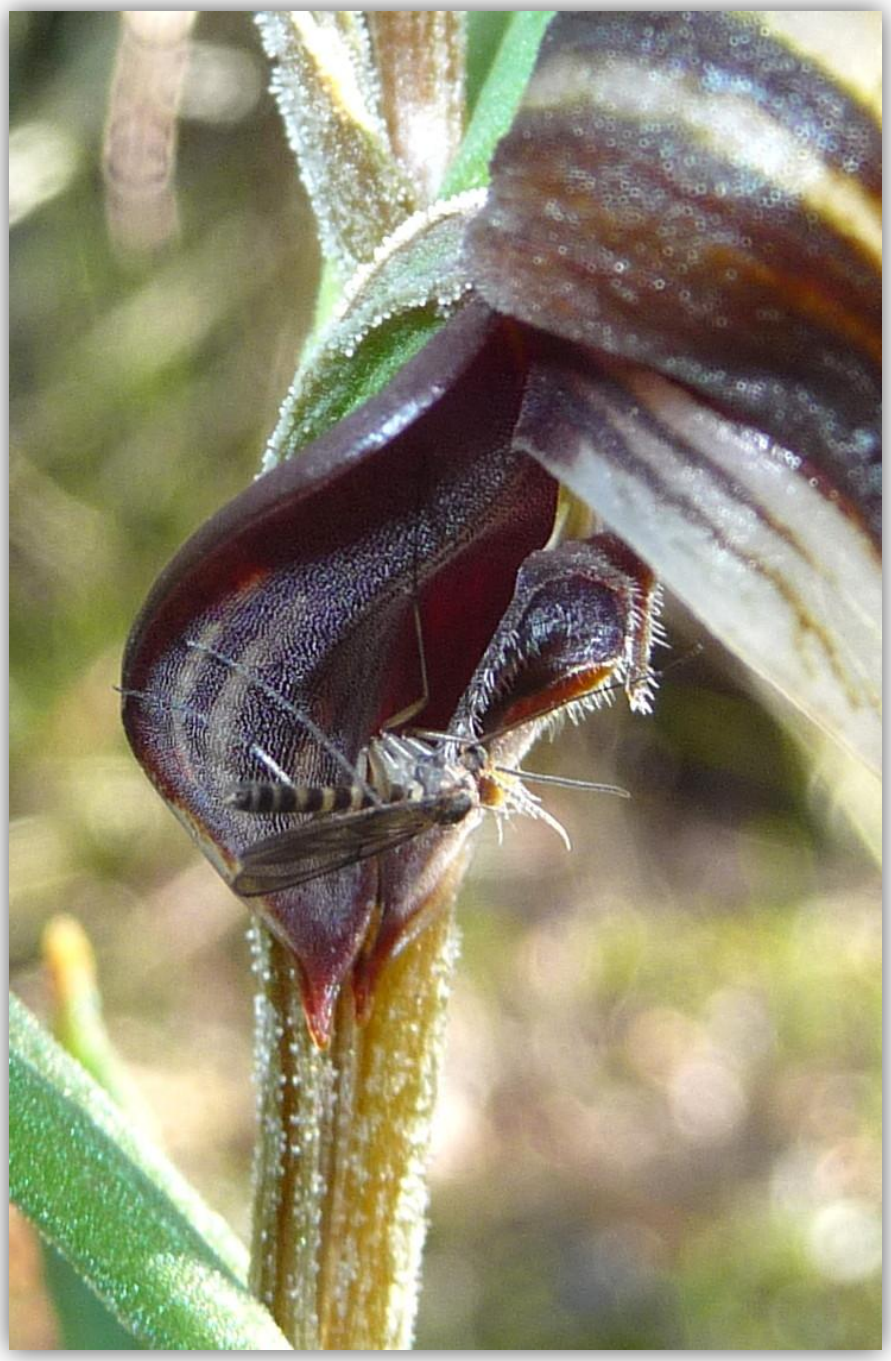
GALLERY



KB, *B.* sp. Dwarf viriosus, Tugwell Road, SL



RB, gorge variant of *U. sanguineus* with crinkled leaves, few flowers



BB, pollinator gnat about to set off *Urochilus* labellum, SL



*Note bead like cells



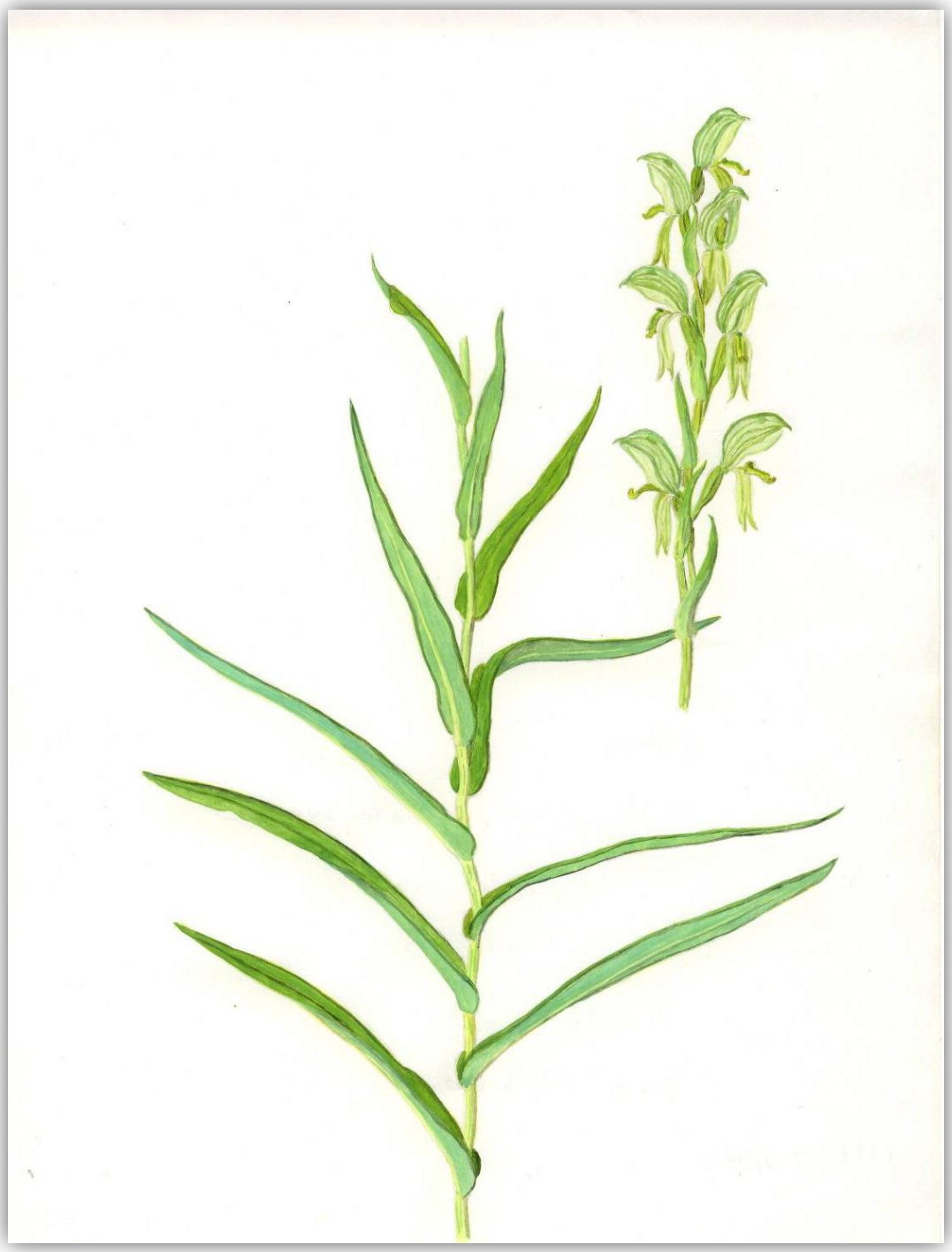
JN, *B. chlorogrammus* labellum variations, Telford Scrub CP



BB, rosette leaves of *B. viriosus*, SL



BB, rosette leaves of *B. prasinus*, SE



JN, *B. smaragdynus,* orchid art by Kath Alcock, SE



RB, *B. flavovirens*, all flowers produce seed capsules, YP, Aug



TJ, *B. viriosus*, Kersbrook, SL

South Australia's Native Orchids

Caladenia R.Br. sensu lato

Pink Fingers, Gremlin, Pink Fairies, Daddy Longlegs, Bluebeards & Spider Orchids



JN, *C. latifolia*, Potters Scrub
*Note the *C.* sp. Coorong in the background

South Australia's Native Orchids

Caladenia R.Br. sensu lato

Pink Fingers, Gremlin, Pink Fairies, Daddy Longlegs, Bluebeards & Spider Orchids

Taxonomy: Before 2001, the name *Caladenia* R.Br. was applied to a polymorphic group of plants which are now considered to constitute eight separate genera i.e. *Arachnorchis, Caladenia, Jonesiopsis, Cyanicula, Drakonorchis, Petalochilus* (in this DVD *Petalochilus* is treated under *Caladenia*), *Pheladenia* and *Stegostyla* (Jones & Clements 2001).

Hopper and Brown (2003) refuted the validity of several of these new genera and for this reason the State Herbarium of South Australia accepted in 2005 only *Caladenia* and *Pheladenia.*

In this electronic version of Orchids of South Australia we accept the segregate genera.

Description: The various species of supergenus *Caladenia* in South Australia flower from mid-winter to mid-summer. *Caladenia* species generally have hairy scapes and leaves although in some species hairiness is much reduced. The solitary, basal, leaf is linear to ovate-lanceolate. Flowers are usually one to three on an erect scape. The labellum is different from the other segments being a generally fringed curved labellum with decorative calli.

Distribution and Habitat: throughout temperate Australia and extending to New Zealand and Oceania.

Pollination: *Caladenia* have a whole range of pollination strategies but *Caladenia* sensu stricto are general floral mimics, attracting native bees with their bright colours, pseudo-stamens i.e. the labellum calli and perfume with a promise of food rewards which are not forthcoming.

Caladenia R.Br. sensu lato

Pink Fingers, Gremlin, Pink Fairies, Daddy Longlegs, Bluebeards & Spider Orchids

The genera at present lumped under *Caladenia* but treated separately in this work are:

1. **Caladenia R.Br. (synonym Petalochilus)**, species with generally small to medium sized flowers blooming predominantly in spring; flowers with an erect dorsal sepal and the other segments usually glandular underneath, widely spread in front of the flower. Leaves are usually long and narrow and sparsely hairy. There are about 40 species, with 14 species here treated as South Australian.
2. **Stegostyla D.L.Jones & M.A.Clem.**, a species with single, narrow, hairy leaf, the flower stem similar; flowers with the dorsal sepal hooding the column, segments glandular below; labellum narrow with clubbed calli. Flowering is in spring. Over 30 species and subspecies, with 5 in South Australia.
3. **Caladenia, sub-genus Elevatae, R.Br.**, species with a single hairy leaf, forming colonies with flowers in spring, colours of pink and white or yellow, the labellum with calli near the base. Six species in Australia but only one found in South Australia.
4. **Jonesiopsis Szlach.**, species often with clumping habit, flower stem and leaf are hairy, often with red markings at/near the base; flowers often with filamentous segments usually drooping and entangled but some are shorter and starry; labellum hinged, narrow with two rows of calli and small marginal teeth. Flowering is in winter-spring. There are about 15 species with 6 found in South Australia.
5. **Pheladenia D.L.Jones & M.A.Clem.**, a single taxa genus with a single smooth leaf and flower stem, the flower in a variety of shades of blue/mauve or white with crowded calli covering the labellum. Flowering commences in winter and continues into spring.
6. **Arachnorchis D.L.Jones & M.A.Clem.,** a large genus with densely hairy flower stems and leaf, often with reddish markings at/near the base; flower segments long and often elongated into filiform, drooping tips; labellum hinged, usually three lobed with toothed or entire margins, the tip recurved or rolled under with calli on the lamina and sometimes extending beyond onto the mid lobe. Flowering is through winter-spring and just into summer. There are more than 50 species in South Australia.

South Australia's Native Orchids

Caladenia R.Br. sensu lato

Pink Fingers, Gremlin, Pink Fairies, Daddy Longlegs, Bluebeards & Spiders



BB, *Petalochilus pusillus*



KB, *Stegostyla cucullata*



JN, *Caladenia latifolia*



RB, *Jonesiopsis flaccida*



RL, *Pheladenia deformis*



KB, *Arachnorchis valida*

South Australia's Native Orchids

Caladenia R.Br.
(synonym **Petalochilus** and subgenus **Elevatae**)

Pink Fingers and Pink Fairies

Etymology: From the Greek, *kalos*, beautiful and *aden*, a gland, referring to the golden club shaped or jewel like calli or glands on the labellum.

Taxonomy: It appears that Robert Brown based the genus on the pink or pink and white *C. carnea* complex with their largish flowers and jewel like labellum calli. These have recently been treated as *Petalochilu*s R.S.Rogers, based on a petaloid freak! *Caladenia* may or may not encompass the subgenus *Elevatae* as DNA testing indicates that the two are separate genera.

Description: An erect or incurved dorsal sepal set in opposition to the other four segments, spreading out like fingers in front of the labellum. The red bars on column and labellum of most species are another clue, and most species have pink or white flowers with short segments. Some have tiny self pollinated flowers only millimetres across. See section on subgenus *Elevatae* for notes on *C. latifolia*.

Pollination: This genus of pink, white or greenish flowered species has the larger forms pollinated by native bees while small species are mostly self pollinated or in the case of non-opening flowers, are cleistogamous. The outcrossing species are generalist mimics of native flowers and provide little if any reward for visiting insects. The often yellow calli on the labellum look like anthers and the red bars may be regarded as 'false nectary guide-lines.'



BB, *C. pusilla*, Tumby Bay

Distribution and Habitat: A large genus of about sixty species widespread in Australia and in New Zealand from the coast to well inland, from the plains to high mountains and from swamps to dry woodland. Most species of subgenus *Elevatae* are represented in Western Australia.

Notes: There are many very similar South Australian species from the coast to the wheat-belt, from plains to mountain tops from swamps to rock outcrops. Many are yet to be worked out and even the commonest may be un-described.

The species of *Caladenia* show a continuous range from strongly out-crossing species with very large, long lived flowers, through weakly out-crossing species with medium flowers to self-pollinated species with small, short lived flowers to cleistogamous species with flowers which do not open. It is not unusual for out-crossing species to hybridise, not only with each other to form hybrid swarms, but also with self-pollinating species and also, rarely with other genera. Out-crossing species can be highly variable especially if hybridising occurs but self-pollinating species show very little variation over a wide range. These self-pollinating species outnumber the others in South Australia and are even more frequent in New Zealand.

Caladenia carnea R.Br.

Pink Finger Orchid

Etymology: The Latin name, *carneus,* meaning flesh coloured, refers to the flower colour.

Synonyms: *Petalochilus carneus* (R.Br.) D.L.Jones & M.A.Clem. *C. catenata* (Sm.) Druce.



RL, Coromandel East, SL
*For size perspective, see image of the whole plant in the Gallery

Description: **Leaf** thin, linear, slender, to 10 cm long, sparsely hairy. **Flower stem** to 25 cm, green or reddish. **Flowers** 1 to 4, to 30 mm across, in various shades of pink or white, outside green or pink, the labellum and column striped with red transverse bars; the perianth segments are to 25 mm, ovate lanceolate, flat, shortly pointed; dorsal sepal erect; lateral sepals spreading forward and overlapped by the petals; **labellum** lobed, with two rows of yellow clubbed calli; the side lobes erect and entire, almost as high as the column, mid-lobe decurved, small with short marginal teeth and calli. Flowers are softly fragrant on warm days, strongly out-crossing and lasting up to four weeks.

Flowering: Late Aug – Sept – Oct.

Similar Species: *C. coactilis, C. fuscata, C. ornata, C. prolata, C. vulgaris.*

Distribution: **FR, EP, NL, MU, YP, SL, KI, SE; Qld, NSW, ACT, Vic, Tas.**
Mostly in the ranges from as far north as Melrose in the Flinders Ranges to Fleurieu Peninsula, Kangaroo Island and the lower South East. Common in the Adelaide Hills.

Habitat: In damper forest, woodland and scrubs, in predominantly on acid soils.

Distinguishing Features: Can be recognised by the large, generally more than one, thin-textured, uniformly coloured flowers, on slender stems, the narrow segments, labellum with two rows of calli and rounded side lobes.

There are several recognisable races

- the common form from the **Adelaide Hills** has very pale flowers which are somewhat flaccid,
- plants from the **Flinders Ranges** are smaller and with rigid, pinker flowers,
- a form from on limestone in the **South East** has varicoloured flowers.

Notes: Probably hybridises with *C. vulgaris* and *C. fuscata* as well as with *C. latifolia* and *Pheladenia deformis,* to form rare inter-generic hybrids. See photos in Gallery.

There is some degree of blurring in the distinction between *C. carnea* and *C. fuscata* in South Australia and either the two should be recognised as one variable species or both should be further divided, to recognise the various habitat specific races.

C. carnea is known for regenerating after disturbance.

C. carnea has been incorrectly identified as *C. catenata* (Sm.) Druce, which is a pink and white flowered species of the East Coast.

Conservation Status

Status in Legislation: Not listed.
Suggested Status: Still secure, although some restricted forms are likely to be threatened.



CH, *C. carnea,* Stansbury, YP

Caladenia sp. Coorong (R. Bates 77515)

Coorong Pink Fingers

Etymology: The phrase name indicates the main centre of this species' distribution.

Synonyms: Previously names such as *C. quadrifaria* D.L.Jones and *C. carnea* R.Br. have been applied.



BB, Jip Jip CP, Sept

Description: **Leaf** linear, to 10 cm long, scarcely hairy. **Flower stem** reddish, slender, to 23 cm. **Flowers** 1 to 4 rounded pink, medium sized, the lateral sepals often larger than other segments and mucronate; dorsal sepal somewhat incurved over the column; lateral sepals horizontal, overlapped by the spreading petals; **labellum** rather broad with few red transverse bars, side lobes erect, 2-4 rows of calli, tip strongly decurved; column is rather blunt.

Flowering: Sept.

Similar Species: *C. carnea, C. ornata.*

Distribution: **SE**
Scattered throughout coastal or near coastal areas of the upper South East. This species is endemic to South Australia.

Habitat: Found in leaf litter under low shrubs and sheoaks on limestone or calcareous sand.

Distinguishing Features: A multi-flowered species with bright pink, broad segment flowers.

- The similar ***C. fuscata*** has narrower segments and more pronounced side lobes on the labellum.
- It differs from ***C. carnea*** in its broad lateral sepals and brighter pink flowers. *C. carnea* is a species of acid rather than alkaline soils.

Notes: The species of *Caladenia* in South Australia need to be DNA tested to interpret their status and relationship to each other. Although most forms are easily recognised, the features used to separate each are rather vague and some populations of out-crossing species are extremely variable. *C.* sp. Coorong is just one species requiring further study.

Often more than one species of *Caladenia* will grow together, the comparison making it obvious that they are distinct species, e.g. clearly not crossing, different times etc.

Conservation Status

Status in Legislation: Not listed.
Suggested Status: 3Rc, nationally rare.



MH, *C.* sp. Coorong, Messent CP, SE

Caladenia coactilis D.L.Jones

Large Pink Fingers

Etymology: From the Latin, *coactilis,* made of felt, thick, in reference to the heavy texture of the flowers.

Synonyms: *Petalochilus coactilis* (D.L.Jones) D.L.Jones & M.A.Clem. Previously treated as a form of *C. carnea* R.Br, or even as *C. carnea* var. *gigantea* R.S.Rogers.



BB, *C. coactilis*, Wirrabara NFR, NL,

Description: **Leaf** broadly linear, thick textured, sub-glabrous, to 15 cm long, purple based. **Stem** to 20 cm tall, stout, hairy. **Flowers**, 1 or 2, large, to 3 cm across, light to bright pink inside, brownish glandular outside, heavy textured (in comparison to related species); segments all similar, ovate lanceolate, to 25 mm long, spreading; dorsal sepal erect and curved forward; lateral sepals spreading horizontally in front of the flower, petals spreading on either side; **labellum** up to 16 mm long, tri-lobed, pink with a white to orange tip, red bars and yellow calli; side lobes very erect and often embracing the column, entire, lamina with usually 4 rows of yellow and red calli; mid lobe small and curved under, with short rounded calli on the margins. Sweet scented.

Flowering: Late Aug – Sept – Oct.

Similar Species: *C. carnea, C. fuscata*.

Distribution: **FR, EP, NL.**
Endemic to the southern Flinders Ranges from Gladstone and the Tothill Ranges, north to Arden Vale and east to the Moockra Towers, Flinders Ranges, Eyre Peninsula (Dutchman's Stern), and Northern Lofty region.

Habitat: Mainly in exposed sites in woodland dominated by *Eucalyptus cladocalyx* (Sugar gum), and *Callitris glaucophylla.*

Distinguishing Features: The species is recognised by the thick stem, thick textured, large flowers and usually 4 rows of calli.

Notes: *C. coactilis* is the most common of the pink finger orchids in the Flinders Ranges, but may inter-grade with *C. carnea* near Wirrabara. Small plants could be confused with ***C. fuscata*** which occurs on the flats adjacent to the Ranges, but not in them.

A rare hybrid with *Pheladenia deformis* has been collected near Mambray Creek. Many flowers exhibit unusual features such as bright orange labellum apex, flat topped calli or white spotted sepals indicating a large 'fossil' gene pool exists.

The flowers are pollinated by native bees and rather large seed capsules are formed.

Conservation Status

Status in Legislation: Not listed.
Suggested Status: 3Rc, nationally rare.



BB, *C. coactilis*, clump, Wirrabara NFR, NL

Caladenia fuscata (Rchb.f.) M.A.Clem. & D.L.Jones

Dusky Pink Fingers

Etymology: From *fuscata* meaning brown, dusky, in reference to the dark glands outside the sepals.

Synonyms: *Petalochilus fuscatus* (Reichb.f.)D.L.Jones & M.A.Clem. Also previously included in *C. carnea* R.Br. as *C. carnea* var. *fuscata* Rchb.f.

Description: **Leaf** thin, slender, to 8 cm long and 2 mm wide, almost glabrous, green. **Flower stem** to 15 cm tall, wiry, green or reddish. **Flower** usually single, to 20 mm wide, sometimes faintly perfumed, usually deep pink and often shiny but some populations include pale pink or white blooms; labellum and column with red bars; segments to 12 mm, broad-lanceolate; dorsal sepal erect, lateral sepals and petals spreading almost horizontally; **labellum** distinctly trilobed with 2 rows of yellow, stalked calli extending to base of the mid-lobe; side lobes erect and embracing the column, margins entire; mid-lobe narrow, decurved with short marginal teeth.

Flowering: Aug –Sept – Oct.

Similar Species: *C. carnea, C. coactilis, C. ornata, C. vulgaris.* These, and other members of the *C. carnea* complex.



JN, Ngarkat CP, SE

Distribution: **FR, EP, NL, MU, YP, SL, KI, SE; Qld, NSW, ACT, Vic, Tas.**
The most widespread member of the complex in South Australia occurring from the West Coast to the South East; also in the Eastern states.

Habitat: *C. fuscata* is most common in the wheat-belt, in woodland, open forest, and mallee-heath in a variety of soil types.

Distinguishing Features: Most easily identifiable features include the often deep pink, sometimes shiny, delicate looking single flower and the high column side-lobes. These side lobes are often irregular and angular. In the eastern states these side lobes often include forward projecting extensions but this feature is rare in South Australian populations. The flowers often look too large for the size of the plant.

Notes: Despite the clearing of most of its habitat for farming the species is still common and sometimes forms spectacular displays of thousands of flowers over a small area, with each flower having a different intensity of pink and different positioning of the segments.

In reality there may be some cryptic sister species involved but DNA testing is required. It can be most difficult to work out the different members of the *C. carnea* complex, especially as there are several undescribed species, often from restricted habitats. In addition there are many local forms and even in a single population of each species there can be many colours.

Conservation Status

Status in Legislation: Not listed.
Suggested Status: Unknown as the species limits are not well understood.



JN, *C. fuscata*, Topperwein NFR
*Note dark glands on sepals and high side lobes on labellum

Caladenia mentiens D.L.Jones

Little Pink Fingers

Etymology: The epithet *mentiens*,from the Latin *mentior* meaning to lie, deceive, imitate, pretend, referring to its similarity to *C. minor*.

Synonyms: *Petalochilus mentiens* (D.L.Jones)D.L.Jones & M.A.Clem, previously included under *C. minor* (R.Br.) Rchb.f..

Description: **Leaf** narrow, linear, thin, to 5 cm long, with glandular hairs. **Stem** to 5 cm tall, wiry, few hairs. **Flower** single, to 10 mm across, pink and white inside, with red bars on the labellum, brownish or with red median stripe outside. Segments all similar, ovate-lanceolate, to 6 mm long, pink and white suffused; dorsal sepal erect; lateral sepals parallel in front of the flower, joined at the base, almost parallel, apex tapering; petals similar but smaller and more pointed; **labellum** tri-lobed, to 6 mm long, side-lobes erect, smooth-edged, white with red bars, high and rounded, lamina with two rows of bright yellow calli with globular tops; mid-lobe small, narrow triangular, cream-yellow, decurved, toothed. Not perfumed.

Flowering: Oct – Nov.

Similar Species: *C. pusilla, C. pygmaea.*

Distribution: **SL, KI, SE; NSW, ACT, Vic, Tas.**
Rare in Mount Lofty Ranges, on Kangaroo Island and in the lower South East; more common in Victoria and Tasmania.

Habitat: Restricted to a few sandy or gravelly sites, in heathy woodland, usually with bracken.

Distinguishing Features: This is one of a series of small, self-pollinated species all distinguished by, very thin stems, and short segments less than 10 mm long. *C. mentiens* is recognised by its deep pink and white, bi-coloured flowers, with tapering or slightly pointed apices.

- ***C. pusilla*** has uniformly pinkish flowers with rounded apices to segments.
- ***C.* sp. Tiny White** has white flowers.
- The non opening ***C.*aff *cleistantha*** has a striped ovary.

All four can sometimes be found in the same area but in quite different habitats.

Notes: There are probably several taxa included under this name in South Australia.

Conservation Status

Status in Legislation: Not listed.
Suggested Status: Rare in South Australia, national status unknown.



BB, *C. mentiens*, Topperwein NFR, SE

South Australia's Native Orchids

Caladenia sp. Selfing Coastal Dunes (R. Bates 79943)

Little Dune Fingers

Etymology: The phrase, and common name, reflect the small size, self pollination and habitat of this recently discovered species.

Synonyms: Not discovered until 2007, but may have been placed under *C. mentiens* D.L.Jones and first treated as a *Petalochilus.*

Description: **Leaf** taller than flower, very slender erect to 8 cm long. **Stem** to 5 cm tall, wiry with few hairs. **Flower** always single, to 15 mm across, soft pink; dorsal sepal hardly hooding, erect, not glandular outside; **labellum** oblong, short and broad with numerous red horizontal bands extending almost to the smooth, broad, curled under tip; the calli small, yellow. Flowers self pollinated and lasting only 2-3 days.

Flowering: Mid Sept.

Similar Species: Some of the Victorian forms of *C. mentiens* closely resemble this, but are not found on coastal dunes.

Distribution: **SE**
Known from a limited area along the Limestone Coast.



JN, Nora Creina, Sept, SE

Habitat: Restricted to sandhills between the coast and fresh water lakes, in soap mallee (*Eucalyptus diversifolia*) and scrub, in calcareous sands with other local endemics such as *Arachnorchis richardsiorum*, *Bunochilus littoralis* and *Diplodium* sp. Nora Creina.

Distinguishing Features:

- Although the flowers are similar *to* ***C. carnea***, that species often has several flowers on stems much taller than the leaf.
- The self-pollinating habit sets it apart from both ***C. carnea*** and ***P. fuscata***.
- It differs from ***C. pusilla*** in not being glandular and hairy. The erect, rather than hooding dorsal sepal, places it with *C. carnea* rather than *C. pusilla.*

Notes: Few Australian orchid species have such coordinated flowering. With Little Dune Fingers flowering tends to begin and end in the same week of September each year.

There are several thousand plants in the dunes where it was first found but as this country is difficult to access and hard to walk through there may be many more between Kingston and Nene Valley.

There may be as many as six orchid species restricted to this part of the Limestone Coast.

Conservation Status

Status in Legislation: Not listed.
Suggested Status: Not yet assessed.



KB, *C.* sp. Selfing Coastal Dunes, Bog Lane, SE



JN, Bog Lane, Sept, SE
*Note small plant size

Caladenia ornata (Nicholls) D.L.Jones

Ornate Pink Fingers

Etymology: From the Latin *ornata,* ornate, alluding to the variety of colours on this attractive species.

Synonyms: *Petalochilus ornatus* (Nicholls) D.L.Jones & M.A.Clem., *C. carnea* var. *ornata* Nicholls



MH, SE

Description: **Leaf** thin, linear, to 15 cm long, sparsely hairy. **Flower stem** to 25 cm tall, slender, green-red. **Flower** solitary, to 25 mm across, pink, red and white with yellow calli; segments to 15 mm, pink and white, ovate, flat, well textured, tips rounded to acute, dorsal sepal stiffly erect, often incurved; lateral sepals parallel, close together and forward; petals similar, thrust obliquely forward; **labellum** crimson, trilobed with two to four rows of stalked, clubbed, yellow calli; side lobes erect, rounded, rigid, thick and thrust forward; midlobe triangular, decurved, pink or white with strongly toothed margins.

Flowering: Sept – Oct.

Similar Species: *C. carnea, C. coactilis, C. fuscata, C. vulgaris.*

Distribution: **SE; Vic.**
Restricted to a few localities in the South East, near the Victorian border; also in Victoria.

Habitat: Low lying areas, in heathy woodland, in sand over clay.

Distinguishing Features: Easily recognised from the thick textured labellum which is more deeply coloured than the other segments, but there is much variation from flower to flower; some flowers have dark coloured veins, others have white bases to the segments, some are perfumed, some have narrow segments and sometimes the lateral sepals are fused at the base.

Notes: A poorly understood species, only recently accepted as present in South Australian. This doubtful species occurs as sparse individuals, and small clumps, in woodland.

Conservation Status

Status in Legislation: Nationally vulnerable, endangered in South Australia.
Suggested Status: Vulnerable in South Australia, nationally rare.



KB, *C. ornata*, The Heath NFR, SE

Caladenia prolata D.L.Jones

Slender White Fingers

Etymology: From the Latin *prolato ,* prolonged or elongated, in reference to the long stem and narrow ovary.

Synonyms: *Petalochilus prolatus* (D.L.Jones) D.L.Jones & M.A.Clem.. Previously treated as a form of *C. carnea* R.Br. or as *C. carnea* var. *attenuata* Brinsley.

Description: **Leaf** long and thin, to 27 cm long and 4 mm wide, almost glabrous, green with a red base. **Flower stem** to 30 cm tall, wiry, purple and green. **Flowers** 1 or 2, rarely 3, to 15 mm wide, on long narrow striped ovaries, only opening briefly, near white inside, greenish with dark brown mid stripe outside, column and labellum with indistinct red bars, calli yellow; segments to 14 mm long, oblong-lanceolate, flat, with rounded or apiculate tips; dorsal sepal incurved over the column, lateral sepals thrust forward, petals angled forward; ovary large in comparison with the flower, to 15 mm long; **labellum** trilobed, with 2 rows of yellow calli, not extending onto the midlobe; side lobes erect, entire, and clasping the column; midlobe curved forward, yellow with many short marginal calli.



KB, Scott CP, SL

Flowering: Sept – Oct.

Similar Species: *C. vulgaris.*

Distribution: **NL, SL, KI, SE; Vic, Tas.**
Widespread in the wetter districts, from the Barossa Valley, through the Mount Lofty Ranges, on Kangaroo Island and the South East, and also in the eastern states, where it is mostly coastal.

Habitat: Particularly common in leaf and bark litter under pink gum, cup gum and coastal mallee, in scrubs and woodland, in a variety of soil types.

Distinguishing Features: A common member of a large complex of self pollinated, small-flowered members of the *C. carnea* alliance, easily recognised from the long green or purplish leaf, tall slender stem, elongate ovary and pallid flower.

- The similar ***C. vulgaris*** has pink flowers, and is much later flowering.

Notes: It has been noted that even in the same population some flowers have rounded segments while others have acute tips.

Conservation Status

Status in Legislation: Not listed.
Suggested Status: Common and well conserved.



CH, *C. prolata,* Bangham CP, SE

Caladenia pusilla W.M.Curtis

Tiny Pink Fingers

Etymology: The name *pusilla*, meaning tiny or minature, is quite applicable to this small attractive orchid, however there are even smaller flowered species!



MH, Kuitpo NFR, Oct, SL

Synonyms: *Petalochilus pusillus* (W.M.Curtis) D.L.Jones & M.A.Clem., *C. carnea* var. *pygmaea* R.S.Rogers. The name of a New Zealand species, *C. minor* Hook.f., has at times been used to cover the whole complex of tiny species in South Australia.

Description: **Leaf**, thin, slender, short, i.e. less than 5 cm long and 3 mm wide, green. The plants are usually single. **Flower stem** to 6 cm tall, sparsely hairy, usually red or green. **Flower** single, to 12 mm wide, pink or purple inside, red brown and glandular outside, column and labellum with prominent, red transverse stripes; segments to 7 mm long, obovate, flat, tips rounded; dorsal sepal erect, or curved forward; lateral sepals thrust horizontally forward, petals spreading but angled; **labellum** trilobed, with 2 rows of stalked, clubbed, yellow calli, not extending to the mid-lobe; side lobes erect, entire, embracing the column; mid-lobe variable, yellow, curved forward and with/or without toothed margins.

Flowering: Late Sept – Oct – early Nov.

Similar Species: *C. mentiens, C. pygmaea* and *C. vulgaris.*

Distribution: **FR, EP, SL, KI, SE; Vic, Tas.**
Uncommon in South Australia, mostly in the Mount Lofty Ranges, Kangaroo Island and the South East, but also collected in the past from Eyre Peninsula and the Southern Flinders. More frequent in the Eastern States.

Habitat: In pebbly or sandy soils, in heath, scrub or heathy woodland. More frequently seen when bushfires or slashing open up the vegetation.

Distinguishing Features: *C. pusilla* can be recognised from the slender often reddish stem with single, tiny pink to purple flower, with darker red-brown in bud and on outside of sepals. All segmenst are rounded and usually glandular, often markedly so.

Notes: Plants from heathy areas in the lower South East are often much darker and more glandular and may be a separate subspecies from the more slender Southern Lofty Ranges region woodland plants.

Conservation Status

Status in Legislation: Not listed nationally, rare in South Australia.
Suggested Status: Rare in South Australia, common in the eastern states.



BB, *C. pusilla*, Nangwarry NFR, Oct
*Note the deep colours. Especially red on outside and the numerous dark glands on segments

Caladenia pygmaea R.S.Rogers (Powell)

Pale Pink Pigmy Finger Orchid

Etymology: Both the scientific and common name reflect the pigmy nature of this very short species.

Synonyms: Lumped for many years under *C. pusilla* W.M.Curtis or *Petalochilus pusillus* (W.M.Curtis) D.L.Jones & M.A.Clem.

Description: Dwarf pink finger orchid with **flower stem** to about 4 cm tall. **Flower** single, pale pink with broad segments to 6 mm long, all segments are greenish on the outside so buds are green; dorsal sepal erect and curved over the column, lateral sepals held obliquely forward, often united at the base, petals spreading forward; **labellum** strongly barred in red with a tiny mid-lobe. It often forms clumps.

Flowering: Sept. – Oct – Nov.

Similar Species: Most easily confused with *P. pusillus* and *P. mentiens*, based on material from Tasmania

Distribution: **MU, SL, KI.**
Mostly from the southern Mount Lofty Ranges and higher parts of Kangaroo Island, western Murray district.



RB, clump in Deep Creek CP, SL

Habitat: Prefers heavier often stony clay soils on ridges, flowering mostly after fire.

Distinguishing Features: Distinguished from all other dwarf pink fingers by its green or green and pink buds, the clumping habit, tiny column mid-lobe and delicate pink flowers.

Notes: The species has had a checkered history being lumped under *C. carnea*, then treated as a variety, later lumped under *C. minor*, from New Zealand, then *C. pusilla*. At last it is treated as a species in its own right, since about 2009.

Kuiter in *Victoria's Small Caladenias* January 2010 appears to have been the first to treat it as a species separate from *C. pusilla.*

Flowering occurs throughout the spring, being later in cooler years.

Conservation Status

Status in Legislation: Not listed.
Suggested Status: Vulnerable in South Australia, probably rare nationally.



RB, *C. pygmaea,* Filsell Hill, SL
*Note greenish pale buds and tiny mid-lobe to labellum.

Caladenia vulgaris D.L.Jones

Late Pink Fingers

Etymology: From the Latin *vulgaris,* common or ordinary, in reference to the rather unremarkable flowers.

Synonyms: *P. vulgaris* (D.L.Jones) D.L.Jones & M.A.Clem. Prior to naming in 1991, included in the broad concept of *C. carnea* R.Br.

Description: **Leaf** linear, to 25 cm long, semi erect to lax, sparsely hairy. **Flower stem** to 30 cm tall, wiry, sparsely hairy. **Flowers** 1 or 2, pink inside, reddish or greenish glandular without, to 15 mm across; segments all similar, thin textured, to 1 cm long, ovate-lanceolate; dorsal sepal erect and curved over the column; lateral sepals parallel and lose together in front of the flower, petals more distinctly 'petiolate', spreading laterally; **labellum** trilobed, red striped, with two rows of stalked yellow calli; lateral lobes erect, embracing the column, margins entire; mid-lobe yellowish, decurved with short marginal calli. Flowers hardly perfumed.

Flowering: Late Oct – Nov – early Dec.

Similar Species: *C. carnea, C. fuscata, C. prolata.*

Distribution: **SL, KI, SE; Vic, Tas.**
Restricted to high rainfall southern parts of the state, rare in the Mount Lofty Ranges and Kangaroo Island, more common in the lower South East; also occurs in some Eastern states.

Habitat: Damp heathy forest and woodland, often along creeks and around swamp margins, wherever the soil stays moist into the late spring.

Distinguishing Features: The long leaf, tall stem in proportion to the smallish pink, often pale, flower; the late flowering habit and the moist habitat preference are features of this species.

- Differs from ***P. fuscatus*** and ***P. carneus*** in having long slender stems, longer leaf, smaller flowers and late blooming.
- Differs from ***C. prolata*** in having pink, not white, flowers and a shorter ovary.

Notes: There is possibly a complex of similar as yet unresolved species, all with small pink flowers in South Australia, but generally they are confined to unusual habitats which have been largely destroyed. Although *C. vulgaris* was described from South Australian plants in 1991, it is far more widespread and common interstate.

Conservation Status

Status in Legislation: Not listed nationally, rare in South Australia.
Suggested Status: Rare in South Australia, common nationally.



CH, *P.vulgaris*, Topperwein NFR
*Note that this taxon has acute segments. It is sometimes treated as a separate species Caladenia subulata… see Kuiter 2010

Caladenia xantholeuca D.L.Jones

Telowie Gorge Finger Orchid

Etymology: From the Greek *xanthos,* yellow, and *leucos,* white, in reference to the white flowers with yellow calli.

Synonyms: *P. xantholeucus* (D.L.Jones)D.L.Jones & M.A.Clem. It was previously recorded under the name *C. carnea* var. *alba* (R.Br) Benth.

Description: **Leaf** narrow, with hairy margins, to 15 cm long. **Flower stem** to 20 cm, green, slightly hairy. **Flowers** 2 to 4, white, to 20 mm across, on slender glandular-hairy ovaries; segments ovate-lanceolate, to 15 mm long acute, spreading; dorsal sepal erect; lateral sepals spreading in front of the flower, petal similar but spreading horizontally; **labellum** three lobed, about 7 mm long, erect in the basal third then curved forward, lateral lobe to 2 mm high, rounded and entire, mid lobe, deltate, with rounded, decurved apex, margins with blunt yellow calli; lamina with two rows of yellow crowded papillate calli, extending onto the mid lobe.

Flowering: Aug – Sept.

Similar Species: *C. carnea, C. coactilis.*

Distribution: **FR, NL.**
Endemic to South Australia, in the southern Flinders Ranges in Mambray and Telowie Gorges.

Habitat: On ledges in moss, with a general cover of *Callitris glaucophylla*; much of its habitat inaccessible.

Distinguishing Features: There are certainly two species involved, as the type form from Telowie Gorge is a robust, rigid plant with, narrow pointed segments while the form from Mambray Gorge is a smaller plant with slender stems and soft rounded segments.

- The Telowie Gorge plants are similar to the pink flowered ***P. coactilis*** in habit.
- the Mambray plants closely resemble a form of ***C. carnea*** from Mount Remarkable, which normally has pink flowers.

Notes: Neither form had been seen since the 1980s, until plants were located in the Southern Flinders in 2010, which was a wet year. The Mambray Creek plants were particularly common in the wet years of 1974 and 1980 but have not been located since. The Telowie Gorge plants were only seen in the three years following the 1984 bushfire.

No hybrids are known.

Conservation Status

Status in Legislation: Nationally endangered, rare in South Australia.
Suggested Status: Probably endangered; thought to be extinct until plants were located and photographed in 2010.



RB, *C. xantholeuca*, Telowie Gorge, NL



KS, *C. xantholeuca*, Mt Remarkable,
*Photographed in 2010 after not been seen for many years

Undescribed Caladenia (or Petalochilus)

Other Caladenia (or Petalochilus) Species & hybrids

There are numerous populations which do not fit any of the above species, very narrow flowered forms from the Northern Lofty region, robust coastal limestone forms, delicate pink flowered forms from the Flinders Ranges and white flowered plants not similar to other *C. carnea*.



KB, *Caladenia* species Nangwarry NFR, SE



KB, intergeneric hybrid, Mt Monster CP, SE
(*C. carnea* x *C. latifolia*)



RB, *C.* aff. *xantholeuca*, Mambray Creek, FR



RB, intergeneric hybrid, Mambray Creek, FR
(*Caladenia* x *Pheladenia*)

Other Caladenia (or Petalochilus) species & hybrids

* Note that it is easy enough to work out species in the field when they set up large populations in which one can observe the local variation. But when populations are small and fragmented it is impossible to work out their relationships with other similar taxa.

See Gallery for more photographs



TJ, *Caladenia*, KI, Oct



RB, *Caladenia*, KI, Oct



JN, Another colourful *Caladenia*, SE



BB, *Caladenia,* Nangwarry NFR, SE

Caladenia sp. Glowing green (R. Bates 66286)

Ghost Finger Orchid

Etymology: The phrase name and common name, reflect the ghostly green colour of the flowers.

Synonyms: *Petalochilus* sp. Glowing green.

Description: **Leaf** long and slender to 10 cm. **Flower stem** slender, to 20 cm tall, the whole plant pale green. **Flowers** usually single, rarely two, to 2 cm across, segments spreading, narrow acute, greenish or green-white; **labellum** trilobed, side lobes smooth, mid lobe elongate turned under, apex with few yellow teeth, no red bars, lamina with two rows of tall yellow calli, column slender. The flowers are self-pollinating, lasting 3-4 days, capsule elongate.

Flowering: Late Oct – early Nov.

Similar Species: *C. prolata, C. vulgaris.*

Distribution: **SE; Vic**
Only known from the South East and adjacent western Victoria.

Habitat: Marshy river red gum flats.

Distinguishing Features: The colour is a certain give away, the scape and flowers being a thicker texture than **C. *vulgaris*,** and the flowers larger.



KB, Penola CP, SE

Notes: Only recently discovered (2003), by NOSSA members. Probably widespread before European settlement as marshy river red gum flats once covered thousands of square kilometres in South Australia but were much sought after for pasture and cultivation by farmers.

Conservation Status

Status in Legislation: Not listed.
Suggested Status: K, probably endangered due to loss of habitat.



JN, *C.* sp. Glowing Green, Topperwein NFR, Oct

Caladenia sp. Tiny White (R. Bates 41056)

Tiny White Fingers

Etymology: The phrase name reflects the colour and size of the flower.

Synonyms: Previously included under the all encompassing *C. minor* Hook.f., from New Zealand and more recently as *Petalochilus* sp Tiny white



RB, Chookarloo NFR, Oct

Description: **Leaf** linear, pale green, lax, to 5 cm long, almost glabrous. **Flower stem** filiform, pale to 6 cm tall, few hairs. **Flower** single, to 6 mm across, white or greenish-white inside, dull green outside, opening tardily, on long slender ovaries. Segments, thin textured, ovate-lanceolate, to 5 mm long, not opening flat; dorsal sepal erect and curved over the column; lateral sepals angled up in front of the flower; petals smaller and spreading loosely; **labellum** trilobed, the side lobes erect but not clasping the column, no red bars, laminar with red markings and two rows of pale yellow calli; mid-lobe triangular, decurved with serrated margins. The flowers self pollinate and are not fragrant.

Flowering: Oct – early Nov.

Similar Species: *C. mentiens, C. pusilla, C. prolatus.*



RB, Kyeema CP

Distribution: **SL, SE.**
Occurs over a limited area in the southern Adelaide Hills, and in the lower South East.

Habitat: Occurs in damp ferny gullies, gravelly washes over yellow clay in open woodland, shaded slopes and the edges of bogs.

Distinguishing Features: Plants can be recognised easily from the tiny pale flowers which seldom last more than one day.

- ***C. prolatus*** also has white flowers on long ovaries but it is a much taller plant, the flowers with more substance and twice as large.

Notes: Flowers more freely after fire. This species occurs in large scattered colonies. Although only collected in the southern Adelaide Hills and near Penola this species is likely to be more widespread. There may be other species not as yet collected, but even tinier since plants only 3 cm tall and with non opening greenish flowers, once grew on peaty mounds in swamps near Myponga; these have probably become extinct.

Conservation Status

Status in Legislation: Not listed.
Suggested Status: Unknown.



JN, *C.* sp. Tiny White, Scott CP, SL

South Australia's Native Orchids

Subgenus **Elevatae**

Fairy Orchids



***Caladenia* (*Elevatae*) hybrids in cultivation**

South Australia's Native Orchids

Subgenus **Elevatae**

Fairy Orchids

Etymology: The name *Elevatae* means lofty, raised up or elevated.

Taxonomy: Until 2002 the generic name *Caladenia* was at times applied to no less than a dozen different genera of today. *Elevatae* are well defined due to the large colourful, short segmented flowers with a distinct, usually triangular, plate at the base of the labellum. No other genera in the group have this plate.

Description: Species of this genus are recognised by a single hairy leaf, forming colonies with flowers in spring, colours of pink and white or yellow, the triangular labellum with calli near the base.

Pollination: The flowers are pollinated by several non specific insects, such as native bees, hover flies and beetles, suggesting that this is an archaic group.

Distribution and Habitat: This genus, in the narrow sense, as treated here, has many species in Western Australia, but only one, the abundant *C. latifolia* occurs in South Australia. The genus occurs from coastal sandhills to mountain tops and the edges of inland salt lakes to narrow gorges of the Flinders Ranges.

South Australia's Native Orchids

Caladenia latifolia R.Br. (sub-genus Elevatae)

Pink Fairies

Etymology: The name *latifolia* means broad leaf and is quite applicable.

Synonyms: There are none.



KB, Parsons Beach, SL

Description: **Leaf** broad-lanceolate to 20 cm long and 25 mm broad, (one of the largest in the genus), hairy, green, often somewhat ground hugging in open sites. **Flower stem** to 40 cm tall, green, hairy, often quite robust. **Flowers** 1-4 but usually one, in various shades of pink, rarely white, to 35 mm across, labellum calli yellow, in a semi-circle at the base; segments to 20 mm long, broad-lanceolate, blunt; top sepal erect and leaning back, lateral sepals spreading obliquely, petals wide spreading, often with irregular edges; **labellum** lobed, the lateral lobes small, erect and incurved, mid-lobe triangular, not recurved, margins with few long, clubbed teeth. The flowers are often tri-coloured, i.e. pink with white edges and contrasting yellow labellum calli.

Flowering: Aug –Sept – Oct.

Similar Species: None.

Distribution: **FR, EP, NL, MU, YP, SL, KI, SE; WA, Vic, Tas.**
Very widespread, particularly along the coast but extending hundreds of kilometres inland on northern Eyre Peninsula; common across southern Australia. Perhaps some of the ecotypic races are distinct at subspecies level.

Habitat: Occurs from the littoral zone, where it is particularly common in sand-hills, to mountain tops, deep gorges, the mallee, rock outcrops and about salt lakes inland. Soils range from calcareous beach sands, acid sands, alluvial soils along creeks, to heavy clay and on sheet limestone. In forest, woodland, grassland, heath, mallee-broombush and shrub-lands.

Distinguishing Features: The colony forming habit with often long, broad leaves are conspicuous features of the species. Pink, rarely white flowers with almost evenly spreading segments, the dorsal sepal erect and the elongated triangular mid lobe with its few long clubbed calli are features of the flowering plant.

Notes: This is the only member of the sub-genus in South Australia but there are many others in Western Australia including the brilliant yellow *C. flava*. There are several distinct races or forms. They include a self-pollinated form from on the coast, with small, dull, short lived flowers; a spectacular form occurs in gorges of the Flinders Ranges with plants up to 50 cm tall and up to three deeply coloured flowers; a dwarf coastal form, less than 10 cm tall, with a single short-lived self-pollinated flower. White forms are more uncommon.

C. latifolia forms extensive clonal colonies by vegetative reproduction which can form spectacular flower displays in good seasons. In dry country, colonies may exist for years without flowering. In dense bush, the plants may flower only after bushfires.

C. latifolia is mostly pollinated by native bees.

It forms hybrids with members of the *Arachnorchis patersonii* alliance, especially *A. brumalis,* on Yorke Peninsula and these resemble *C.* x *idiastes*. In Western Australia the species forms hybrids with at least ten other members of the *Caladenia* alliance.

Conservation Status

Status in Legislation: Not listed.
Suggested Status: Common and well conserved.



JN, sunlit *C. latifolia*, SE

Caladenia x idiastes Hopper & Brown

Hybrid Fairy Orchid

Etymology: The common name reflects the fact that this is a hybrid species with *C. latifolia* as one parent.

Synonyms: There are none.

Description: The hybrid is similar to *C. latifolia* but has longer more acute segments. **Flowers** pale pink, about 3 cm across with a few glands on the sepal tips; **labellum** white, elongated, with variable red stripes on side lobes, tip down curved or sometimes curled under.

Flowering: July – Aug – Sept – Oct.

Similar Species: *C. latifolia.*

Distribution: **EP?, YP; WA**
All South Australian collections have been from Yorke Peninsula but there are reports of it from southern Eyre Peninsula.

Habitat: It has only been seen in grassy open, disturbed sheoak woodland on rich spoils over limestone.

Distinguishing Features: The long, pink, tapering lateral sepals with a few glandular osmophores on the tips, the elongated, variable labellum, and more open appearance make this readily identifiable.



MH, Maitland, YP

Notes: The other parent in South Australia is usually *Arachnorchis brumalis* so a better name for this hybrid would be X*Arachnadenia idiastes.*

The South Australian forms resemble many of the pink Western Australian *Caladenia* and their hybrids.

Similar man made hybrids exist. One, ***Caladenia* 'Fairy Floss,'** was made in the 1990s, by NOSSA founder, Les Nesbitt, from *C. latifolia* and *Arachnorchis rigida.* There is even a white form of this hybrid.

Hybrid fairy orchids flower in late winter to early spring and the flowers last up to 4 weeks.

Conservation Status

Status in Legislation: Not listed.
Suggested Status: Unknown.



MH, *C. x idiastes,* Aug

Gallery



KB, *C. carnea* complex, Sevenhill, NL
a probable undescribed grassy woodland taxon

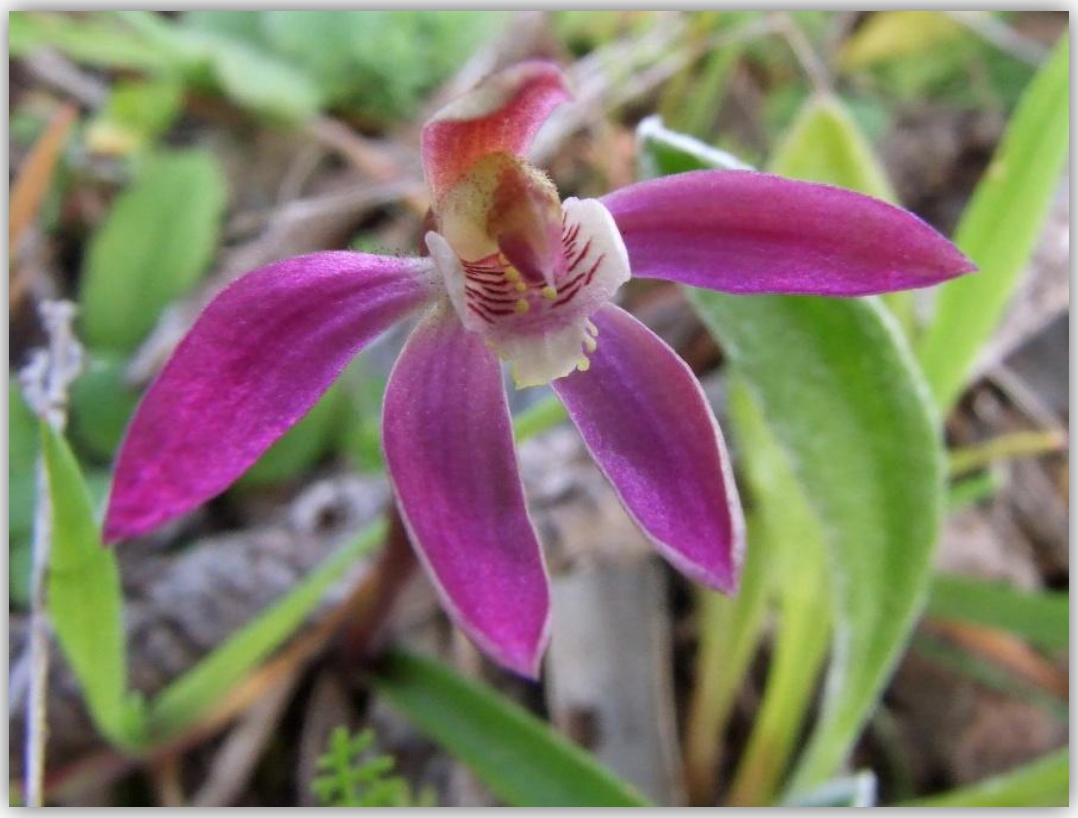


RB, *C. ornata* complex, Bagdad NFR, SE



RB, two *Caladenia* (*Petalochilus*) species from Mount Scott CP

*Note variation of sizes



CH, *C.* aff. *carnea*, Hardwicke Bay, YP



RL, *C. pusilla* SL



RB, *C. pusilla*, note red bud



MH, *C. pusilla,* Nangwarry NFR, SE
*Note dark outer surface and carmine flowers



BB, *C. pusilla*, Honan NFR, SE, Nov
*Note dark glands outside sepals and pale stalked calli on labellum mid-lobe



MH, *C. latifolia*, dwarf subspecies, Wirrabara NFR
Less than 8 cm tall



RB, Innes NP, YP



JN, *C. latifolia*, Potters Scrub



RB, pastel *C. latifolia*, Potters Scrub



KB, small *C. carnea*, Napperby, Aug



BB, *C. carnea*, YP



RL, *C. carnea*, Coromandel East, SL
*This is the whole plant of the flower shown in the *C. carnea* text.



RB, *C. carnea*, Filsell Hill, SL, top view



MH, A flush of flowering *C. latifolia,* YP



JN, *Caladenia* species, Alligator Gorge, FR



MH, *C.* x *idiastes*, YP



RB, *C.* aff *vulgaris*, Kangaroo Flat, SE, Nov
*Note that this taxon has acute segments. This form is sometimes treated as a separate species Caladenia subulata… see Kuiter 2010



KB, *C. prolata*, Mt Scott CP, SE, Sept



RB, *C.* X *idiastes*, Aug

Caleana R.Br.
Paracaleana Blaxell

Duck Orchids



BB, *C. major*, Nov

South Australia's Native Orchids

Caleana R.Br. and **Paracaleana** Blaxell

Duck Orchids

Etymology: *Caleana* commemorates George Caley (1770-1829), British botanist, friend of Robert Brown and collector in New South Wales. *Paracaleana* simply means 'similar' or 'near to' *Caleana*, and its derivation is obvious.



DB, *Caleana* with sawfly pollinator

Taxonomy: *Paracaleana* Blaxell has sometimes been included in *Caleana,* even after its erection in 1972 to cover species with a glandular warty labellum apex, and differentiated sections to the ovary.

Though sometimes treated as a single genus they are pollinated by insects from different families and it seems best to treat *Caleana* as a monotypic genus especially as *C. major* looks different from most duck orchids.

Paracaleana was only described as a genus in the 1970s, by Don Blaxell, who was aware of the earlier name *Sullivania* F.Muell., which he regarded as invalid. D.L.Jones and M.A.Clements (2005) attempted to resurrect the name *Sullivania* but it is unlikely to be accepted as the original description was ambiguous and soon rejected by Mueller himself. Certainly Hopper and Brown (2006) reject *Sullivania*. Jones in 2008 treated all duck orchids as *Caleana***.**

It is highly likely that further taxa of *Paracaleana* will be named and I would support, for example, the naming of the Pilliga plant, illustrated in the gallery below, as a separate sub-species of *P. minor.* Similarly, it is likely that an undescribed species previously occurred on Eyre Peninsula, in sandy seepages, west of Port Lincoln.

Description: Plants are slender, almost wiry, glabrous, and reddish, with a single linear to ovate leaf, arising annually from an ovoid tuber. The flowers are shiny, erect, with the labellum shaped like a duck's head with bill placed above the flower, perianth segments linear, column apressed to the ovary, large, winged, and bowl shaped. All species have a highly sensitive labellum on a movable claw. When touched the labellum springs back rapidly into the bowl shaped column, into which it fits snugly.

Pollination: The flower colour combination of maroon and green indicates sexual attraction of insects. Pollinators are sexually attracted; in the case of *Paracaleana* small black thynnid wasps*,* and large male sawflies *Pterygophorus*, in the case of *Caleana.*

Attracted by pheromones produced by the orchid flower, the insect lands on the labellum in the upright or set position, and is swung back into the deep bowl of the column. As it struggles to free itself, it removes the pollinia. When this action is repeated on a second flower the pollinia are smeared on the stigma. In about twenty minutes after being sprung the labellum returns to the set position, the length of time depending on weather conditions and the age of the flower.

In addition to this strategy of sexual attraction of pollinators, some forms of *Paracaleana* also resort to apomixy which is the setting of viable seed without fertilisation. These forms including, *Paracaleana sullivanii*, either have ovaries already swelling when the flowers are in bud or degenerate labella, or both.

Distribution and Habitat: The duck orchids comprise fifteen species, mostly in Western Australia, with all except one *(Caleana major)* placed in *Paracaleana. Caleana* is restricted to south eastern Australia as far as Adelaide. Just one species *P. minor*, extends to New Zealand.

Both frequently occur together in South Australia and prefer leached white sands under stringybark but are also found in gravelly quartzite rubble on Mount Lofty and at Mylor. The species are restricted to high rainfall areas in South Australia but interstate reach well into the wheat-belt i.e. north of Kalbarri in Western Australia and into the Pilliga scrubs of New South Wales.

Notes: Both *Caleana* and *Paracaleana* flower better after fire or slashing and have been noted in abundance in felled pine plantations.

Recent DNA studies suggest all duck orchids should be called *Caleana*.

Caleana major R.Br.

(Large) Duck Orchid or Flying Ducks

Etymology: The Latin epithet *major* indicates that this is the largest of the duck orchids.

Synonyms: There are none.



RL, Kuipto, SL

Description: **Leaf** slender, to 12 cm long and 8 mm wide, silvery green with red lines and spots above, or wholly red; purple-red below. **Flower stem** to 50 cm, red-brown or greenish, very slender. **Flowers** 1 to 5, usually 1 or 2 in South Australia, to 25 mm across, shiny red-brown and green resembling ducks in flight; segments to 16 mm long, rather narrow compared with the rest of the flower, dorsal sepal curved around the column, lateral sepals spreading, petals hugging the column wings; **labellum** a deeper red than the rest of the flower, about 10 mm long, shaped like a ducks head and bill, on a long, curved, greenish, sensitive hinge;column with greatly inflated maroon wings, forming a bowl shape 10 mm wide.

Flowering: Late Oct – Nov – Dec – Jan.

Similar Species: None.



KB, Cox Scrub CP, SL

Distribution: **SL, SE; Qld, NSW, ACT, Vic, Tas**. Restricted in South Australia to the Southern Lofty region and lower South East; widespread and common in the Eastern states.

Habitat: Restricted to leached acid sands (especially on the ancient dunes of old shorelines) and gravel patches in stringybark woodland with bracken and banksias.

Distinguishing Features: This is one of the most recognisable of our native orchids. Its uncanny resemblance to a duck in flight makes it instantly recognisable.

Notes: It is pollinated by sexually attracted male sawflies. Despite the flowers remaining open for up to 8 weeks, naturally pollinated flowers are rarely seen in South Australia.

It forms small colonies, often at the base of trees and is generally found with smaller duck orchid species.

It is more frequently seen after fires or about disturbed sites.

Conservation Status:

Conservation Status: Not listed nationally, vulnerable in South Australia.

Conservation Status: 3Vci but common in the Eastern states.



BB, *C. major*, Kuitpo, SL

Paracaleana disjuncta, D.L.Jones

Broad Leaf Duck Orchid

Etymology: The epithet *disjuncta,* refers to the disjunct or distinct populations, separated by up to 300 km.

Synonyms: *Caleana nigrita, P. nigrita, P.* aff*. triens.*

Description: **Leaf** ovate, to 20 mm long and 10 mm wide, green above and purplish below. **Flower stem** to 15 cm tall. **Flower** usually single, to 18 mm long; ovary differentiated into top and bottom sections, the lower part slender, bright green, the upper part without ovules, purple brown; perianth segments rusty red and green with almost black labellum apex; dorsal sepal narrow and curved around the column; lateral sepals linear, hooked and spreading beside the column; petals smaller and apressed to it; **labellum** projecting upward when set, on a short broad hinge, lamina to 9 mm long, flat on top, shaped like a duck's head and bill, surface minutely roughened in lower two thirds, apical third covered in dark shiny wart-like calli; the column has very broad, prominent wings from base to apex, forming a bowl below the flower.



GF, Cox Scrub CP, Ashbourne, SL

Flowering: Oct – Nov.

Similar Species: *P. minor.*

Distribution: **SL, KI; Vic**.
Known only from a few sites, one on the south coast of Kangaroo Island and the other near Ashbourne, on the Fleurieu Peninsula. It also occurs in Victoria's Grampians.



CH, Cox Scrub CP

Habitat: In leached peaty grey sands, near soaks, growing amid low sedges with shrubby stringybarks, *Eucalyptus baxteri.*

Distinguishing Features: The ovate, thick textured leaf is distinctive, and in flower the elongated labellum with only one third covered in wart-like calli and the "double" sectioned ovary make identification easy.

Notes: As *Caleana nigrita* R.Br. the species was collected near Ashbourne by Stan Finke in the 1960s. However, it was not generally recognised from South Australia as the plants did not reappear during the following years. It was not until a second collection was made on Kangaroo Island in the 1980s that the validity of the first collection was accepted. Further verification was given when *C.* aff*. nigrita* was re-collected at the original 'Finke' site in the 1990s by Rosemary Taplin and Denzel Murfet. Searching at both the Kangaroo Island and Southern Lofty region sites has only revealed signs of plants after fire, so it seems that flowers appear only after fire, or some other disturbance.

P. nigrita is now regarded as endemic to Western Australia.

At the Ashbourne site *P. disjuncta* occurs near populations of the other two South Australian duck orchids.

Conservation Status:

Conservation Status: Not listed nationally, endangered in South Australia.
Conservation Status: 3Eci in the eastern states, more common in Western Australia.



MH, *P. disjuncta*, SL

Paracaleana minor (R.Br.) Blaxell

Small Duck Orchid

Etymology: The Latin epithet *minor* indicates that this is the smaller of the two common eastern state duck orchids.

Synonyms: *Caleana minor* R.Br., and including *Caleana sullivanii* F. Muell. and *P. sullivanii.*

Description: **Leaf** narrow to 9 cm long and 3 mm wide, red brown. **Flower stem** to 18 cm tall, wiry. **Flowers** 1 to 7, about 15 mm long in tones of green, red and dark brown, on red ovaries with differentiated sections, the bottom section tumid, the top section without ovules and flattened; perianth segments to 10 mm long, linear with rounded tips, margins incurved; dorsal sepal bent under the column, petals hugging the column wings; lateral sepals spreading parallel above the column; **labellum** shaped like a wingless female thynnid wasp, to 6 mm long, projecting upward in the set position, covered with dark shiny wart-like calli, on a narrow green, sensitive, up-curved hinge; column with broad green bowl-shaped wings into which the labellum fits when triggered.



SR, Knott Hill NFR, SL

Flowering: Nov – Dec – Jan.

Similar Species: *P. disjuncta.*

Distribution: **SL, SE; Qld, NSW, ACT, Vic, Tas, NZ**.
Rather restricted, occurring in very few locations in the Southern Lofty region and the South East; much more frequent in the Eastern States and also in New Zealand.

Habitat: Occurs in the same habitats as the large duck orchid, i.e. sandy soils in woodland with bracken and banksias. The species forms small colonies which flower more freely in disturbed sites, i.e. around sand quarries and along old tracks.

Distinguishing Features: The upward pointing labellum with it's wasp-like mimickry covered in wart-like calli make this species distinct.

Notes: *P. minor* sometimes occurs in freak forms (*P. sullivanii* F. Muell) with a poorly formed, non sensitive labellum. This is an apomictic form rarely seen in South Australia. See photographs in the Gallery.

Actually all forms of the small duck orchid in South Australia are apomictic and set viable seed without the flowers being pollinated. This is indicated by the South Australian plants having ovaries swelling soon after the flowers open. In the eastern states it is the more delicate, out-crossing, slender ovary form which is common, indicating that the wasp pollinator of *P. minor* is either absent, rare or ineffectual in South Australia. The South Australian form may be considered a separate subspecies.

Conservation Status:

Conservation Status: Not listed nationally, vulnerable in South Australia.
Conservation Status: 3Vci but common in the eastern states.



KB, *P. minor*, Nangwarry NFR, SE
*Note, apomictic flowers

Gallery



BB, *P. minor,* Kuitpo, Dec



RL, *C. major*, emerging leaf (L) & spent flower (R)



BB, *P. minor*, Nangwarry NFR, SE



CH, *P. disjuncta*, SL



JN, *P. disjuncta*, Cox Scrub, SL



KB, apomictic *P. minor*, Kuitpo, SL







MH, *P. sullivanii* F. Muell., Bangham, SL
* including detail of poorly formed labellum (bottom left)
*See Notes in *P. minor*

Calochilus R.Br.

Bearded Orchids or Beardies



KB, *C. platychilus*, Adelaide Hills

South Australia's Native Orchids

Calochilus R.Br.

Bearded Orchids or Beardies

Etymology: From the Greek *kalos* meaning beautiful and *cheilos* a lip, referring to the ornamented labellum.

Taxonomy: The taxonomy of the genus had been relatively stable for South Australian species but taxonomists do not agree on the status of forms without beards. Some believe they should be named as species, others do not. None of these freak forms are recognised as species in South Australia although any names which have been attributed in the past may be referred to, i.e. *C. richiae*.

Recently the taxonomy has changed as two new species have been named i.e. *C. pruinosus* (2006) from the mallee and *C. platychilus* (2008) from the Adelaide Hills. Similarly with names within the complexes (*C. campestris* complex), *C. cupreus* is recognised as distinct on the basis of its long leaf and long-lived, freely opening flowers but it and the similar *C. pruinosus* may be better recognised at sub-species level. *C. campestris* is no longer recognised as occurring in South Australia.

Description: The genus is most closely related to *Thelymitra* and the leaves of some *Thelymitra* are difficult to distinguish from *Calochilus*. The seed capsules of *Calochilus* are more distinctly ribbed. Flowers of *Calochilus* are short lived and in some forms only open for a day or not at all.

Most species occasionally produce spectacular albino or semi albino forms with silvery green or silver-pink flowers. These are most sought after for orchid photographic portfolios.

Pollination: Pollination is affected by male scollid wasps of the genus *Campsomeris* which are sexually attracted to the flowers by both pheromones (as indicated by wasp baiting experiments) and visual stimuli. Wasps on the flowers appear to be attempting copulation (see image by Ken and Barb Bayley in Gallery). Interestingly, the female scollid is a hairy, wingless creature lacking the bright colours of the orchid labellum.

All South Australian species self-pollinate if not visited by the wasps and produce copious pale seeds in large ribbed capsules. Vegetative reproduction is rare so large colonies are not formed.



BB, scollid wasp pollinating *C. cupreus*

Distribution and Habitat: This is a genus containing an estimated 25 species occurring in all states of Australia including the tropics and extending to New Guinea, New Caledonia and New Zealand. Most of the Australian species complexes have only recently been resolved.

Only three broad species were recognised in South Australia in the 1990s but since 2006, a number of others have been recognised and are now treated separately in this DVD. Only one of the taxa in South Australia could be described as common i.e. *C. platychilus* and although the others occur from deep swamps on the coast to semi arid sand hills 100 km inland they are rarely seen.

Notes: There have been many poems written about bearded orchids and there is much folk lore regarding them.

Man-made *Calochilus-Thelymitra* hybrids have been produced and flowered even as far afield as Germany (by Heinrich Beyrle) and New Zealand. Of course the regular flowers of *Thelymitra* do not resemble *Calochilus*!

Calochilus species exhibit varying levels of dependency on their mycorrhizal associations with soil fungi. The leafless forms of the *C. campestris* complex may be totally dependent on soil fungi for the many years during which they exist solely as a large underground tuber and/or rhizoids without producing above ground parts. Species with large leaves such as *C. robertsonii* have smaller egg shaped tubers and are less dependent on soil fungi. Nevertheless all species are difficult to cultivate due this dependency.

Calochilus cupreus R.S.Rogers

Aldinga Bearded Orchid

Etymology: Latin *cupreus* copper, in reference to the coppery tints on the labellum.

Synonyms: Previously included in *C. campestris* R.Br. and *C. herbaceus* Lindley.



CH, Aldinga, Oct

Description: **Leaf** narrow, thick textured, up to 20 cm, channelled. **Flower stem** tall to 40 cm, slender, dull greenish to purplish with a bloom, with large dull purplish sterile bracts. **Flowers** green with red striping, 4-18, opening easily; dorsal sepal thin textured, openly hooding the column; petals wide around the column with heavy red streaking; lateral sepals broadly triangular, widely opening beside the labellum; prominent fertile bracts green at base rapidly becoming purple or sometimes pinkish. **Labellum** with purple shiny smooth plate at the base, mid part with purple hairs, outer hairs becoming green, tipped purple; column prominent with pale tip, conspicuous dark eye markings on column wings. Many flowers open together.

Flowering: Late Sep – Oct – early Nov.

Similar Species: *C. herbaceus, C. pruinosus*, *C. campestris*.

Distribution: **SL**
In the strict sense, restricted to dry coastal sands between McLaren Vale and Sellicks Beach but possibly more widespread.

Habitat: Found in woodlands and coastal heaths over sand.

Distinguishing Features: Best recognised from the long leaf, often tall, slender stems, the many flowers with coppery buds and labellum hairs, the smooth blue basal plate to the labellum and the eyes which are the most expressive of any species in the genus.

- Similar to ***C. campestris*** but the beard on the labellum is much sparser and less maroon, eyelike glands not on extreme tip of column swellings but inside the top.
- ***C. pruinosus*** is a similar species found in the mallee but it has a very much reduced leaf.
- ***C. herbaceus*** is a species found around swamps.

Notes: The species was for a time considered extinct due to clearing of its habitat for vines, but was rediscovered by Malcolm and Cathy Houston in 1995 at Aldinga. Occasionally *C. cupreus* is observed being pollinated by scollid wasp. The species is threatened by veldt grass which is over-running the Aldinga CP. South African weeds like veldt grass are threatening many of our native orchids.

Much further research is needed on the *C. campestris* complex in South Australia but unfortunately they are rarely encountered these days. Rogers described the species as locally common at McLaren Vale in 1918.

Many authors completely ignore this fascinating and rare South Australian endemic.

Conservation Status:
Status in Legislation: Not listed nationally, endangered status in South Australia.
Suggested Status: 3Eci, nationally critically endangered.



CH, *C. cupreus*, Aldinga, Oct

Calochilus herbaceus Lindl.

Swamp Bearded Orchid

Etymology: The name *herbaceus* in Latin means leafy and refers to the fact that the bracts on the stem are larger than the basal leaf.

Synonyms: Previously referred to *C. campestris* R.Br.; at times treated as *C. saprophyticus* R.S.Rogers

Description: **Leaf** very variable, usually short and fleshy, sometimes absent. The common form has a short (to 5 cm) fleshy leaf, widely V-shaped in cross section. **Flower stem** to 60 cm tall, often stout, with fleshy bracts attached. **Flowers** 2-12, to 18 mm wide; pale green with red veins; dorsal sepal ovate, erect and hooded over the column; lateral sepals triangular-ovate, spreading alongside the labellum; petals smaller, ovate, incurved; the segments opening more widely on warm humid days. **Labellum** to 16 mm long, the basal part a smooth purplish, glistening, hairless, short channelled plate; mid part covered with dense purple-red hairs but these hairs quite variable; the apex a delicate crinkled tail folded under and hardly visible; column with a pair of purple eye-like glands on the extreme tip of forward projecting wings; anther cap beak like.



RB, Honan NFR, SE

Flowering: Late Oct – Nov – Dec.

Similar Species: *C. campestris* complex including *C. pruinosus* and *C. cupreus*.

Distribution: **KI, SE; Vic, Tas.**
Highly localised in South Australia to the lower South East and the west end of Kangaroo Island; more common in Victoria and Tasmania.

Habitat: Only known from heathy sand swamps.

Distinguishing Features: The swampy habitat, the purple-red hairs, the smooth purple folded base to the labellum, the short tail and usually short leaf are features aiding identification.

- ***C. cupreus*** is found in coastal areas,
- ***C. pruinosus*** in the mallee.
- ***C. campestris*** is not considered to be in South Australia.

Notes: The different species in the *C. campestris* complex demonstrate differing degrees of self-pollination; *C. cupreus* seems to have out-crossing forms, *C. pruinosus* is usually self-pollinated while *C. herbaceus* frequently attracts scollid wasps yet self-pollinates too. These different forms may be better recognised as subspecies. Wasp pollinators have been observed on the flowers of freely opening forms on hot humid days.

Jones (2006) refers to South Australian plants as *C.* aff *saprophyticus*.

Most Swamp Bearded Orchid habitat has been destroyed and some forms are now extinct. The species tends to flower after disturbance which means that most collections have been made on land recently rolled and burned as the bush is converted to farmland. The best chance of seeing the species in South Australia is on mown fire breaks in swampy forest reserves of the South East.

Conservation Status:
Status in Legislation: Not listed nationally, rare in South Australia as *C. campestris*.
Suggested Status: 3Eci in South Australia, nationally rare.



JN, *C. herbaceus*, painting by Kath Alcock, SE

*Note the fleshy stem, large bracts and reduced leaf of this species

Calochilus paludosus R.Br.

Red-beard or Swamp Bearded Orchid

Etymology: The Latin epithet *paludosus* means 'of the swamp' and reflects the main habitat of the species in South Australia.

Synonyms: None.

Description: **Leaf** single, slender, to 18 cm long and 5 mm broad, ribbed, green with considerable amounts of red. **Flower stem** slender but rigid, to 30 cm tall, green or red tinted. **Flowers** 1-5, about 25 mm across, freely opening, yellow-green with red strips and suffusions, labellum with reddish or bronze hairs; dorsal sepal to 15 mm long, broad and hooded over the column; lateral sepals triangular to 15 mm, spreading alongside the labellum; petals smaller, ovate, curved, spreading alongside the column. **Labellum** to 3 cm long, basal part with short linear red calli; mid part broadly ovate and covered with long, glistening copper hairs, apex a long slender naked tail; column lacks the eye like glands at its base.



BB, Kangaroo Flat NFR, SE

Flowering: Oct – Nov.

Similar Species: *C. grandiflorus* from Qld.

Distribution: **SL, KI, SE; Qld, NSW, ACT, Vic, Tas.** Rare, and restricted in South Australia to swampy areas on Fleurieu Peninsula, Kangaroo Island and the lower South East; common and widespread in the Eastern states.

Habitat: Occurs on peaty, leached acid sands around swamp margins or on raised mounds of peat in more open swamps; usually seen on disturbed ground.

Distinguishing Features: The species is easily identified by the narrow red leaf, the coppery labellum hairs and lack of eye-like glands on column base.

Notes: Can be seen one year in good numbers then may be totally absent the next. As for most of our rare orchids it is not possible to be directed to locations where you will 'definitely see some'. Common to a large proportion of South Australian orchids, its decline is due to habitat clearance but fortunately this species is nationally common.

The South Australian forms often have fewer flowers, and a smaller leaf than interstate specimens but the flowers are the same. In warm humid weather the dorsal sepal may be seen erect above the column, no longer hooded over it.

All species of *Calochilus* may appear in strange semi-albino forms with remarkable silvery labellum hairs. Forms with modified hairless labella have also been noted.

Conservation Status:

Status in Legislation: Not listed nationally, vulnerable status in South Australia.

Suggested Status: 3Eci, nationally common.

long labellum tail - only species according to Reiner



MH, *C. paludosus*, Nangwarry NFR, SE

South Australia's Native Orchids

Calochilus platychilus D.L.Jones

Common Hills or Woodland Bearded Orchid

Etymology: The name *platychilus* means broad lip, referring to the broad base to the beard. The vernacular name reflects the common nature of this woodland species in the Adelaide Hills.

Synonyms: *C.* sp. Woodland, previously included under *C. robertsonii* Benth.

Description: A distinctly glaucous species to 40 cm tall. **Leaf** blue-green to 2 cm across usually has a green rather than a red base, is very erect to 30 cm tall with a deep 'v' cross section; sterile bracts 2-3 similar to the leaf. **Flowers** 1-8, large, dorsal sepal curved over the column; petals much incurved around the column, with red veins; lateral sepals green with few red veins; **labellum** long with a tangled maroon beard, the hairs paler, shorter and sparser toward the apex which has a naked tail; column basal glands small but bright red. Usually only one flower fully open at any time.

Flowering: Oct – Nov.

Similar Species: *C. robertsonii* sensu stricto, *C. gracillimus.*

Distribution: **NL, MU, SL, ?KI, SE; Qld, NSW, ACT, Vic, Tas.** Mostly confined to the Mount Lofty Ranges.



RB, Adelaide Hills, SL

Habitat: It occurs in open woodland, especially on ridges.

Distinguishing Features: Wholly glaucous plant with a green base, maroon beard and few red veins in the segments are features to set this species apart.

- ***C. robertsonii* sensu stricto** differs in having redder colouration and red stripes and veins on the sepals and particularly in the leaf being red based and is also a species from heaths, heathy woodland, scrubs and swamp margins.

Notes: Peloric forms with a simple petal instead of a bearded labellum are referred to as *C. imberbis*.

This species is widespread and locally common in woodlands, in fact it is the most common bearded orchid in South Australia.

The late flowering and variable *C. gracillimus* from the Eastern states is sometimes so similar that the South Australian plants may be a mere form.

Conservation Status:

Status in Legislation: Not listed.

Suggested Status: Widespread and locally common.



KB, *C. platychilus*, Fleurieu Peninsula, SL

Calochilus pruinosus D.L.Jones

Mallee Bearded Orchid

Etymology: The name *pruinosus* means frosted from the deep purple, prune colour of the labellum callus and cilia.



CH, Keith, SE

Synonyms: Previously included under *C. campestris* R.Br.

Description: Rarely seen saprophytic species; **leaf** often reduced, short stocky, deep purple, generally 5-25 mm; **stem** to 25 cm, with several prominent red-purple to pinkish sterile bracts, the lower one sometimes appearing more like a leaf. **Flowers** small dull 1-9, in colours of green or yellow-green with red markings and lines, 2 cm long, not expanding fully, fleshy, some or all segments including the labellum incurved; **labellum** short, with a prune coloured base and yellowish crinkled apical part, lamina and margin with short purple bristles, paler at the margins; column large, broad, with two dark eye-like spots, tipped yellow. Flowers only last a short time, are self-pollinating, opening one at a time or 2-3 together.

Flowering: Sept – Oct – Nov.

Similar Species: All members of the *C. campestris* complex *(C. cupreus, C. herbaceus* in South Australia).

Distribution: **EP, MU, SE; WA.**
From Eyre Peninsula through the mallee of the Murraylands and the South East.

Habitat: White sandhills across the wheat-belt and adjacent pastoral country. This and many other species of the *C. campestris* complex of about a dozen species have a very strong dependence on soil fungi and may have a mycorrhizal dependence all their life.

Distinguishing Features: The main distinguishing features include the mallee habitat, short fleshy leaf and small, briefly opening flowers. Other good features for separating *C. pruinosus* are the unusual flat fringe on the lower half of the labellum compared to the actual hair-like fringe of other *C. campestris* look-a-likes. This fringe is a pale plum colour.

- The incurved labellum margins and often globular flowers help to separate it from the similar ***C. campestris***.

Notes: Some authors treat this as a form of *C. cupreus* but both are poorly understood due to few small surviving populations in South Australia for comparison!

Before settlement this species must have been widespread across the wheat belt and adjacent pastoral country wherever there were white sandhills with broombush cover. This taxon is probably more common in South Australia than in Western Australia from where the Type comes.

In many very poor soils the plants may stay below ground for up to fifty years before a fire stimulates flowering. In better soils such as terra rossa over limestone, the plants may flower every five years or so. In very dry years after fire most growth takes place in winter and the flower spike sits for weeks waiting for the first warm spring days before taking off. Flowering occurs mostly after fires but nowadays it is never common.

C. pruinosus may be self-pollinating but it is sometimes visited by a red and black scollid wasp.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3Eci, nationally rare.



JN, Growth details of *C. pruinosus*

Composite of five images showing how the same plant developed over 4 weeks in spring.

June Njielke's composite picture of four images is taken a week apart.

- leaf stops growing when only 2 cm tall;
- flower spike emerges a week later
- and the first flower opens after that.

Each flower lasts up to three days and in hot weather as many as three may be open at once.

*Note very short red leaf, fast developing spike and strange labellum.

Calochilus robertsonii Benth.

Southern Bearded Orchid

Etymology: The name *robertsonii* honours Robertson, the original collector of the species.

Synonyms: *C. imberbis* R.S.Rogers. This is a peloric form with the labellum reduced to a naked petal.



RB, Whennan NFR, SE

Description: **Leaf** stout, fleshy, to 30 cm long and up to 14 mm wide, red based in the type form. **Flower stem** to 30 cm, rigid, with variable stem bracts which can be up to 3 cm long. **Flowers** 1 to 9, about 3 cm long, with red veins and stripes on the segments, and largely maroon labellum. Top sepal ovate to 25 mm long, erect or curved forward over the rather narrow pointed column; lateral sepals triangular with a broad base and acute tip to 25 mm long, spreading alongside labellum; petals ovate, much shorter and spreading alongside the column. **Labellum** to 35 mm long, oblong, base covered with shiny purple glands, gradually being replaced by course purple hairs in the broad mid part, the apex a long tail also with hairs which gradually become paler, or mottled purple and straw-coloured; column with two, purple, eye-like glands at the base.

Flowering: Oct – Nov – Dec.

Similar Species: *C. platychilus; C. gracillimus* is a late flowered species from the Eastern states which may occur here.

Distribution: **SL, KI, SE; Qld, NSW, Vic, Tas.**
Restricted to the wetter districts of the Mount Lofty Ranges south from Meadows to Kangaroo Island and in the South East; also in Victoria and Tasmania.

Habitat: Locally common in heath-land, lateritic soils in forest and around swamp margins.

Distinguishing Features: A species of heathland and forests with red leaf base, red veining and lines in segments and maroon labellum.

- The similar but glaucous ***C. platychilus*** occurs in a different habitat and lacks most of the red markings, lines and veins on the sepals.

Notes:

- The type form with a dull green leaf which is red-based, occurs in heath country and around swamps.
- A form on Kangaroo Island is restricted to laterite based woodlands and is close to *C. stramenicola* of Western Australia.

In addition to the peloric *C. imberbis* without any beard, semi-peloric forms with the labellum hairs reduced to short calli have also been collected in South Australia. These forms are similar to *C. richiae* of Victoria which itself may be a semi-peloric form (see pictures in Gallery).

Conservation Status:
Status in Legislation: Not listed.
Suggested Status: Widespread but localised throughout its range, 3Rc nationally.



BB, *C. robertsonii*, Kangaroo Flat NFR, SE

Gallery



RB, Spring Mount CP, SL
C. imberbis* a petaloid form of *C. platychilus



JN, deep red *C. robertsonii*, Bangham, SE



KB, *C. imberbis*, Spring Mount CP, Oct



RB, *C. robertsonii*, Kangaroo Island



***C. paludosus* including a teratological freak, art by Kath Alcock**
Courtesy JN



BB, *C. cupreus* with pollinating wasp, SL, Oct



BB, wallpaper of scollid wasps pollinating *C. cupreus*



RB, Semi albino bearded orchid, *C. paludosus*



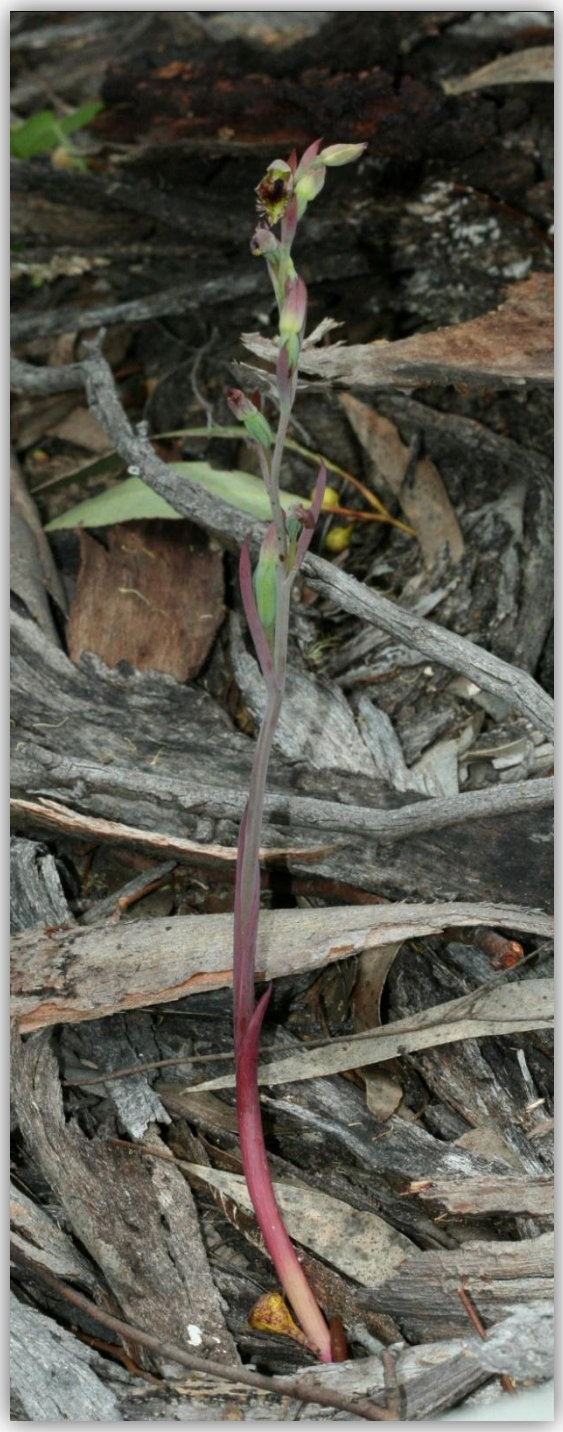
MH, partial beard on *C. cupreus*, SL



JN, *C. pruinosus*



JN, *C. paludosus*



CH, *C. pruinosus*, SE
*Note leaf at base smaller than gum nut



CH, *C. pruinosus*
*Note sterile bract at base of stem looking more like a leaf



KB, C. paludosus, Willow Creek, Vic
*Note defects in the column structure

Chiloglottis R.Br.
Myrmechila Szlach
Simpliglottis D.L.Jones & M.A.Clem.

Bird, Ant and Frog Orchids



BB, *M. trapeziformis*, Comaum Forest, SE

South Australia's Native Orchids

Chiloglottis R.Br.
Myrmechila Szlach
Simpliglottis D.L.Jones & M.A.Clem.

Bird Orchids

Etymology: From the Greek *cheilos* a lip and *glottis* the tongue.

Taxonomy: Recently the genus Chiloglottis has been divided by several authors into three segregate genera (sub genera), *Chiloglottis*, *Simpliglottis* Szlach and *Myrmechila* Jones & Clem. With the segregate genera, *Chiloglottis* does not appear to occur in South Australia.

The species fall into two groups, the autumn flowered species or true *Chiloglottis* and the spring/summer flowered *Simpliglottis* and *Myrmechila*.

No autumn flowered species have been collected in South Australia but one, *C. reflexa* occurs in western Victoria near our border and probably grew in the Mt Gambier forests before settlement, and is perhaps still present.

Description: The genus is easy to identify from its paired, ovate, basal leaves, dull green and brown flowers with their conspicuous, mimicking labellum calli.

Pollination: The flowers emit volatile aromatic substances or allomones which are copies of the sex pheromones of female thynnid wasps. Each *Chiloglottis* species has a different and highly specific male wasp pollinator. These pollinators grasp the often insectiform calli on the orchid labellum and as they attempt to copulate. As they do so the orchid pollinia are transferred, either from the anther to the insect or from the insect to the stigma. In South Australia the most common species is self-pollinating. After pollination the flower pedicel may elongate so the seed capsule is eventually well above ground level.

Distribution and Habitat: *Chiloglottis* is a supergenus of about 30 species in three segregate genera, occurring mostly in Australia with a few extending to New Zealand. The genus is restricted to high rainfall areas in forest and the South Australian plants are likely to be best regarded as visitors, the only common species being *S. cornuta*.

All species reproduce vegetatively as well as from seed, thus it is that a single seed blown from the Eastern states which germinates here may eventually form quite a large colony without the need for pollination of its flowers.

Notes: The genus is easy to cultivate providing the plants are protected from desiccation and heat in the warmer months and from excessive rain in the winter.

Not closely related to any other South Australian orchids.

Myrmechila trapeziformis Fitzg.

Dainty Ant Orchid

Etymology: The name *trapeziformis* meaning like a trapezium refers to the labellum shape.

Synonyms: *S. trapeziformis, C. trapeziformis.*

Description: **Leaves** two, basal, ovate about 5 cm long and 2 cm wide, with crisped, undulate margins. **Flower stem** to 8 cm tall, slender, greenish. **Flower** single to 20 mm wide, held obliquely erect; brownish or green and pinkish-brown suffused, with purple-black labellum calli; segments up to 15 mm long; dorsal sepal ovate, erect over the column; lateral sepals slender, down-curved below the labellum; petals broad based and deflexed beside the ovary; **labellum** about 1 cm long, held erect, trapeziform, with a mass of small, sessile, ant-like calli in the centre, a rather rounded apex to the labellum.



BB, Comaum Forest, SE

Flowering: Sept – Oct – Nov.

Similar Species: None.

Distribution: **SE; Qld, NSW, Vic.**
Known in South Australia only from the lower South East near the Victorian border, in the Comaum Forest. It is common in the Eastern states.

Habitat: In South Australia known native only from *Pinus radiata* plantations in sandy loams. Interstate and where introduced in Southern Lofty region the species grows in forest, woodland and scrub.

Distinguishing Features: The dark 'ant-like' calli are a distinctive feature of this slender species.

Notes: Known to hybridise with *S. valida* to produce X *Myrmeglottis pescottiana,* an orchid which is frequently cultivated by Adelaide orchid enthusiasts because of its robust nature. Introduced into the Adelaide Hills at Cherry Gardens.

M. trapeziformis is pollinated by a wasp *Zaspilothynnus* sp.

The South Australian population was discovered by Kath Alcock of Comaum in the 1960s and since that time she and others have tried to ensure the colony's survival by protecting it from rabbits, clear-felling of pines and herbicide use.

This species forms colonies through vegetative increase and the current populations have been translocated prior to clear-felling.

Conservation Status:
Status in Legislation: Not listed nationally, endangered in South Australia.
Suggested Status: 1E, critically endangered in South Australia but common in the Eastern states.



JN, *M. trapeziformis*, Comaum Forest, SE
*Insert shows close up of calli on the labellum

Simpliglottis cornuta (Hook.f.) Szlach.

Green Frog Orchid

Etymology: The name *cornuta* means horned, a reference to the curved, erect dorsal sepal.

Synonyms: *Chiloglottis cornuta.*

Description: **Leaves** paired, appressed to the substrate, broadly ovate, to 4 cm long and 2 cm wide, bright green. **Flower stem** to 40 mm tall, green, stout. **Flower** single, to 30 mm wide, wholly pale green or sometimes with red markings; labellum calli green (rarely red) on the South Australian specimens but dark red in Eastern states plants; segments to 20 mm long; dorsal sepal erect and curved over the column; lateral sepals tapering from a broad base to long points in front of the labellum; petals larger than lateral sepals, shaped like wings spreading horizontally at right angles to the labellum; **labellum** to 2 cm long triangular, hinged, with 4 to 8 irregular calli.



JN, *S. cornuta,* The Marshes NFR, SE

Flowering: Sept – Oct.

Similar Species: None.

Distribution: **SE; NSW, Vic, Tas; NZ.** Restricted to the Mount Gambier area between Mount Burr and Caroline Forest and around Nangwarry in the lower South East; common in the Eastern states and extending to New Zealand.

Habitat: Recently (2009) this species has been found in a range of shaded habitats, from sphagnum bogs, sandy bracken flats under black-woods, around swamps in tea-tree and even in mature pine plantations in deep pine needles.

Distinguishing Features: The all green flowers on short thick stems arising from twin leaves make this a distinguishable species.

Notes: The species was first located in South Australia near Nangwarry by the late Kevin Johnson in the 1960s. Kevin later successfully cultivated the ghostly green form in living sphagnum in his fern house. Much later many growers have had similar success with difficult to grow species by growing them in pure sphagnum.

The South Australian plants are self pollinated and pure green flowers are as common as red and green ones.

Sometimes found mixed with the very rare *S. valida*

Conservation Status:

Status in Legislation: Not listed nationally, but as *C. cornuta* Hook. f., endangered in South Australia.

Suggested Status: Vulnerable in South Australia but common elsewhere.



BB, *S. cornuta*, Kangaroo Flat NFR, SE

Simpliglottis valida (D.L.Jones) Szlach.

Large Bird Orchid or Frog Orchid

Etymology: From the Latin *validus* meaning bold, well developed, in reference to the robust flowers. The common name relates to the fact that the flower resembles a baby bird waiting to be fed.



TW, Caroline Forest, SE

Synonyms: *Chiloglottis valida, Chiloglottis gunnii* Lindl.

Description: **Leaves** 2, blue-green, smooth, basal, petiolate, ovate to 8 cm long and 2 cm wide. **Flower stem** short and stout, to 5 cm tall. **Flower** single, deep reddish brown and green, to 3 cm wide, with shiny black labellum calli; segments to 20 mm long; dorsal sepal ovate, much hooded over the column; lateral sepals narrow, deflexed below the labellum; petals ovate, spreading at right angles to the labellum; **labellum** heart shaped, to 12 mm wide, hinged and mobile, with several prominent calli, both sessile and stalked, with one tall example near the base; column prominent, thick and curved.

Flowering: Oct – Nov.

Similar Species: None in South Australia.

Distribution: **?SL, SE; NSW, Vic**
There is a single 1932 collection from 'Near Cape Jervis' on Fleurieu Peninsula. A probable introduced colony was observed near Mount Burr in the South East in the 1980s in pine forest. Recently (2007) a wild population was discovered under mature *Pinus radiata* in the Caroline Forest by Troy Horn and Trevor Wynniatt.

Habitat: Occurs in tall, moist, closed forest, shaded places in drier open forest and in sphagnum bogs in the eastern states and in mature pine plantations in our Southeast. Damp native forest habitat was common in the South East before settlement and still occurs on Fleurieu Peninsula. It is possible that *S. valida* still occurs on the Fleurieu Peninsula.

Distinguishing Features: Easily recognised from its large, squat deep reddish-brown flowers, heart shaped labellum and large, paired, smooth, blue-green leaves.

Notes: *Simpliglottis* form small colonies by vegetative increase. Large bird orchid hybridises with *Myrmechila trapeziformis* to produce X *Myrmeglottis pescottiana*.

Bird orchids are widespread and common in the Eastern states and may once have been common in parts of South Australia. The Caroline population may have been destroyed by pine felling and herbicide in 2009.

There are several similar, recently described species in the eastern states and Jeanes *et al* suggest that the South East plants from South Australia are *S.* aff. *valida* 'Lowland'.

The species should be looked for near Mount Hayfield east of Cape Jervis as suitable habitat occurs there before 1990 this species had been incorrectly referred to as *Chiloglottis gunnii,* a Tasmanian endemic.

Conservation Status:

Status in Legislation: Not Listed
Suggested Status: 3Eci in South Australia but common in the Eastern states



KB, *S. valida,* Western Victoria



TW, *S. valida*, Caroline Forest, SE, side view

Gallery



RB, *S. cornuta*, elongating stem with green capsule, SE



BB, green *S. cornuta*, Kangaroo Flat NFR, SE



C. reflexa, art by Kath Alcock of Naracoorte

Corunastylis Fitzg.

Midge Orchids



HL, *Corunastylis* species, SL

South Australia's Native Orchids

Corunastylis Fitzg.

Midge Orchids

Etymology: From the Greek *koryne* a club and *stylos* a column referring to the thickened top to the column of the type species *C. apostoides.*

Taxonomy: Until 1989 the genus was included in *Prasophyllum* as section '*Genoplesium'* but as the two sections differ in numerous ways such as pollination strategy, mycorrhizal association, flowering time, plant and flower size and labellum and column features, they were clearly better treated as separate genera (see D.L.Jones & M.A.Clements in *Lindleyana* 4: 139-145).

More recently D.L.Jones & M.A.Clements have resurrected Fitzgerald's old name *Corunastylis* for the South Australian species leaving just *Genoplesium bauerii* from New South Wales in what is now the monotypic genus G*enoplesium*.

Description: Most species nationally, and indeed all in South Australia, are autumn flowering, the scape emerging directly from the soil within the hollow cylindrical leaf. From emergence to flowering can happen very rapidly or can take as long as four weeks. Emergence depends to some small degree on rainfall but there are always some plants which flower even in totally rainless periods. As the flower spikes emerge from a slit near the top of the leaf there is usually a very small free part of the leaf directly below or within the flower spike. The tiny flowers are few to many, in sombre tones of green, brown, black and purple-red. Some species have insectiform flowers with a quivering labellum, fringed with hairs. However, most of the South Australian species have very simple flowers which therefore have few features for identification unless examined under a microscope. The non-resupinate flowers have short, often narrow perianth segments sometimes tipped with a small beady gland. The labellum is different for each species so identifying details can include the presence or absence of, and type of hairs or cilia, the presence or absence of, and size or shape of the labellum callus, or labellum shape. In some species colour scheme allows ready identification but other species come in such a range of colour patterns that no two individuals are identical. Some species have a floral odour.



PM, *Corunostylis* sp. Adelaide Hills with pollinator, SL

Pollination: As expected from such combination of features, pollination is by small vinegar flies, attracted by the floral odour which is not always obvious to humans. The movable labellum which shivers in the breeze acts as a secondary attractant. The pollinating flies hang upside down inside the labellum, presumably getting some reward as they often remain for some time and are frequently attracted in large numbers. In fact pollination events are more frequently observed in *Corunastylis* than in any other genus of South Australian orchids. One rare South Australian species is self pollinated.

Distribution and Habitat: A large genus of at least fifty species, mostly endemic in Australia but with two extending to New Caledonia and New Zealand. There are only six named South Australian species but several un-described taxa have been recently recognised, many of them rather cryptic. These occupy a wide range of habitats in South Australia, from sea-spray lashed headlands to swamp margins and heath, to poor mallee soils and even semi arid pastoral lands.

Notes: Within South Australia the *C. rufa* complex is well represented and receives mention on a number of occasions throughout this genus. *C. rufa* as such is considered to be a New South Wales endemic. The representatives of this complex in South Australia are all un-described species and will be found after the described species (in the latter half of this genus). *C. tasmanica* is another similar species which has sometimes been considered to more resemble our *C.* sp. Adelaide Hills than *C. rufa.*

Hybrids do occur but due to small size, variable features and similar colours to either parent, they are not as readily recognisable as for say *Thelymitra,* the sun orchids.

South Australia's Native Orchids

Corunastylis ciliata
(Ewart & B.Rees) D.L.Jones & M.A.Clem.

Fringed Midge Orchid

Etymology: The epithet *cilia* Latin refers to the pale sparse cilia on the labellum margins and column wings.

Synonyms: *Genoplesium ciliatum*. Until recently the South Australian plants were included under the name *Genoplesium archeri* (Hook.f.) M.A.Clem. & D.L.Jones and before that as *Prasophyllum archeri,* Hook f.



JN, Honan NFR, SE

Description: **Plant** to 10 cm tall, the **leaf** apex just below the flower spike. The **flowers** are 3-10, to 7 mm wide, in a short crowded spike, perianth segments yellowish, dorsal sepal to 6 mm long, ovate, acute, concave and curved below the flower; lateral sepals to 7 mm, divergent and upswept; petals to 5 mm long, elongate, acuminate; **labellum** red, to 6 mm long, oblong, tremulous, deflexed with an upturned tip, margins sparsely covered with short, sparse, pale hairs; column wings are hairy. The flowers have a faint sour odour.

Flowering: Feb – Mar – Apr.

Similar Species: None in South Australia, but *C. archeri* from the Eastern states is similar.

Distribution: **SL, KI, SE; NSW, Vic**.
Until recently could be found in swamps near Mount Compass on the Fleurieu Peninsula, and before settlement probably in the Adelaide Hills. Still occurs in the South East from Bool Lagoon south-ward, and probably on Kangaroo Island; also in Victoria.

Habitat: Sandy or gravelly swamp margins, under tea-tree, *Leptospermum continentale* and swamp gum. The species is very difficult to see except when on mown fire-breaks.

Distinguishing Features: The outward facing, yellow-green flowers with red appointments, the sparse hairs on labellum and column wings set this species apart.

Notes: The last known colony of *C. ciliata* in the Mount Lofty Ranges was destroyed in 2001 by cattle de-pastured in a council reserve near Mount Compass. The species is more secure in the South East where it occurs in native forest reserves.

Like most midge orchids the species is not easily seen even when looking directly at a flower spike. The flower segments match the colour, size and shape of the lowest leaves on the *Leptospermum continentale* bushes under which they grow so that they are well camouflaged. Usually grows with other midge orchids nearby.

Hybrids have been recorded with *C. despectans* in the South East.

The pollinating flies of *C. ciliata* are paler bodied and larger than those which pollinate other South Australian species.

Conservation Status:
Status in Legislation: Not listed nationally, endangered in South Australia.
Suggested Status: 3Eci in South Australia and perhaps vulnerable Australia wide.



RB, *C. ciliata*, Glencoe, SE, Mar

Corunastylis despectans
(Hook. f.) D.L.Jones & M.A.Clem.

Sharp Midge Orchid

Etymology: The Latin *despectans* meaning looking down, refers to the downward facing flowers.

Synonyms: *Prasophyllum despectans* Hook.f., and *Genoplesium despectans*.



KB, Honan NFR, SE

Description: **Plant** slender, filiform; **leaf** and scape red and green, to 25 cm, the leaf sheathing the stem to just below the flower spike. The **flowers** range from few to many, in a narrow, pyramidal spike, and are tiny, nodding, purplish or green and maroon, about 2 mm across; **segments** with long acute apices, dorsal sepal the broadest, curved under the flower; lateral sepals narrow, up to 3 mm long, petals shorter. **Labellum** on a slender curved purple claw, lanceolate, acuminate, to 3 mm long, with a slim central callus which is minutely papillose. Flowers not scented.

Flowering: Dec – Jan – Feb – Mar.

Similar Species: None.

Distribution: **SE; Qld, NSW, Vic, Tas.**
In South Australia restricted to the lower South East in the Glencoe area; very widespread in the Eastern States.

Habitat: Grows in heathy stringy-bark woodland in grey sands adjacent peaty swamps. Usually found in bare patches adjacent the bases of grass trees *Xanthorrhoea australis.*

Distinguishing Features: Easily recognised by the tiny, narrow, sharp labellum and dull, narrow, nodding flowers.

Notes: *C. despectans* is the most slender species of *Corunastylis* in South Australia. It has only recently (2005) been rediscovered in South Australia in forest reserves north of Mount Gambier. The area where it grows represents the most westerly distribution of no less than ten orchid species.

The species is very difficult to locate unless fires have opened up the undergrowth but once must have been quite common in the lower South East.

The species grows with the quite different *C. ciliata* and as so often happens at the very limits of an orchid's range the two have formed hybrids.

Conservation Status:
Status in Legislation: Not listed nationally, vulnerable in South Australia.
Suggested Status: 2Eci in South Australia; more common interstate.



JN, *C. despectans*, Jan

Corunastylis morrisii
(Nicholls) D.L.Jones & M.A.Clem.

Hairy Midge Orchid

Etymology: The name honours Russell Morris, collector of the Types. The common name emphasises the hairy nature of the labellum.

Synonyms: *Prasophyllum morrisii* Nicholls, and *Genoplesium morrisii*.

Description: **Plant** to 20 cm, wholly purplish, the **leaf** reaching to base of flower spike, free point to 10 mm long. **Flowers** 5 - 15, to 8 mm across, arranged in an open spike, purplish, dorsal sepal to 5 mm long, curved down under the ovary, margins hairy, lateral sepals to 6 mm, elongate, curved and divergent; petals similar, smaller and with hairy edges; **labellum** to 5 mm, oblong, tremulous, margins densely fringed with long hairs, callus of two shortly hairy plates.



KB, South-west Victoria

Flowering: Mar – Apr.

Similar Species: *C. morrisii* var. *contortum.*

Distribution: **SE; NSW, Vic, Tas.**
Known only from a single collection near the east bank of the Glenelg River opposite Donovan's Landing, SE. More common in Victoria's Glenelg River National Park adjacent the South Australia border, the nearby Grampians and extending through Victoria to New South Wales and Tasmania.

Habitat: Damp grey sand over moisture retentive red clay in open woodland. There was much similar habitat in the South East prior to settlement so it is safe to assume that *C. morrisii* was once more widespread in South Australia.

Distinguishing Features: The densely hairy fringed labellum and outward looking flowers make this distinctive, at least in South Australia.

Notes: A similar form with shorter twisted segments *C. morrisii* var. *contortum* occurs in Western Victoria and may have extended to South Australia.

Hybrids with *C. despectans* have been reported from the Glenelg River area but there are no collections and one might suspect these plants to have been undersized *G. morrisii.*

The very sensitive labellum of *G. morrisii* is set quivering by the lightest breeze and no doubt this is part of the pollination strategy of the species which also has a faint seminal odour.

This is yet another example of a largely Eastern States species with its most westerly distribution extending less than 50 km into South Australia. There are some 30 examples of such orchids just making it into South Australia.

More frequently seen when its habitat is opened up following fires or disturbance.

Conservation Status:
Status in Legislation: Not listed nationally, endangered in South Australia.
Suggested Status: 1E in South Australia; common in the Eastern states.



JN, *C. morrisii* South-west Victoria, Mar

Corunastylis nigricans
(R.Br.) D.L.Jones & M.A.Clem.

Port Lincoln Midge Orchid

Etymology: The epithet n*igricans* Latin meaning dark, refers to the flowers which are often dark coloured and tend to dry black.

Synonyms: *Prasophyllum nigricans* R.Br., *Genoplesium nigricans.*

Description: **Plant** short and stocky to 8 cm tall, **leaf** short. **Flowers** numerous, tiny, to 2.5 mm across, crowded in a short pyramidal spike, mostly dark colours, usually untidy; lateral sepals brown, sometimes pale edged, much divergent, gland tipped; dorsal sepal very short and cupped; petals lanceolate, shorter than sepals, wholly brown or with a yellow edge; **labellum** oblong to 1.5 mm long, very dark brown to black, margins crisped, turned up only near the apex; ovaries short, green. The flowers have a sour odour.



RB, Kilkerran, YP

Flowering: Feb – Mar.

Similar Species: Most closely related to *C.* sp. Intermediate and *C. tepperi* but also similar to some members of the *C. rufa* complex.

Distribution: **EP, YP, KI.**
Often with *C. tepperi* and probably endemic to South Australia.

Habitat: Found on coastal limestone, usually within sight of the sea.

Distinguishing Features: The untidy, early blooming, dark flowers help to distinguish it from the similar but much more attractive ***C. tepperi*** which flowers a month or two later.

Notes: The true identity of this species has long been confused, but the fact that Robert Brown collected it at Port Lincoln in early March and named it *nigricans* meaning dark or almost black showed that it was not *C. tepperi* which does not even dry dark, nor was it *C. rufa* which is endemic to New South Wales.

I am indebted to Bill O'Connell for the image below of a plant he found on the coast near Port Lincoln in February 2006. This was indeed the species I had suspected of being *C. nigricans* and which I had collected on coastal limestone on Kangaroo Island and Yorke Peninsula.

The Kangaroo Island plants were very dark and dried black.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3Rci, nationally rare.



BO, *C. nigricans*, Port Lincoln, EP, Mar
*Note leaf apex visible below flower spike.

Corunastylis nuda
(Hook. F.) D.L.Jones & M.A.Clem.

Tiny Midge Orchid or Summer Midge Orchid

Etymology: From the Latin *nudum* naked, referring to the smooth, labellum margins.

Synonyms: *Prasophyllum nudum* Hook.f., *Prasophyllum beaugleholei* Nicholls, *Genoplesium nudum.*

Description: **Plant** to 20 cm tall, **leaf** green with a reddish base. **Flowers** several to many, to 2.5 mm across, nodding, glabrous, purple-red with green tones, not widely opening, deflexed on long slender arched ovaries; dorsal sepal short and dished below the labellum, gland tipped; lateral sepals to 4 mm long, divergent, gland tipped; petals only 2 mm curved around the labellum and also gland tipped; **labellum** ovate, about 3 mm long, margins serrated or shortly ciliate.

Flowering: Jan – Feb.

Similar Species: None.

Distribution: **SEx; NSW, ACT, Vic, Tas; NZ.**
Reported from the lower South East near Glencoe. The nearest collection is from Red Gum Swamp in the Glenelg River National Park, Victoria, which adjoins the South Australian border. *C. nuda* is widespread in the Eastern States and New Zealand.

Habitat: Moist, grassy areas and around swamp margins in heathy forests.

Distinguishing Features: The very early flowering period, the self-pollinated red flowers with their large pale ovaries standing well out from the scape and white glands on sepals all serve to make it easily identifiable.

Notes: It is very likely that *C. nuda* was present in the lower South East before settlement growing in areas that were once described as 'similar to alpine herb-fields' by J.B.Cleland. These areas had numerous other plants associated with alpine areas i.e. *Gentianella* and *Oreomyrrhis.*

The only self-pollinated taxon reported in South Australia, although there may be an un-described species on Kangaroo Island which is also self-pollinated.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Extinct in South Australia, rare nationally.



RB, *C. nuda*, Red Gum Swamp, Vic, near SA border, Feb.

Corunastylis tepperi
(F. Muell. ex Tepper) D.L.Jones & M.A.Clem.

Mallee Midge Orchid

Etymology: The name honours Otto Tepper, German naturalist and teacher in South Australia in the mid 1800s and one of the first people in South Australia to cultivate native orchids.



JN, Pinnaroo, MU

Synonyms: *Prasophyllum fuscoviride* Reader, *Genoplesium nigricans, C. nigricans.*

Description: **Plant** to 30 cm tall but usually less than 10 cm, purplish and green, from a large globose tuber; the **leaf** apex reaching to about 1 cm below the flower spike. **Flowers** many in a dense pyramidal spike, spreading and opening widely in contrasting colours of green and maroon, to 4 mm wide; **segments** bright green; the dorsal sepal curved beneath the ovary and up against the rhachis; lateral sepals joined at the base then divergent, lanceolate, to 4 mm, often with a tiny glandular mucronate tip; petals linear lanceolate, white with a dark median stripe, with a deciduous pale gland at the apex; **labellum**, deep maroon, obovate, to 3 mm long, rather flat, with a blunt apex and smooth, entire margins.

Flowering: Feb – Mar – Apr – May.

Similar Species: The most recognisable of a complex of similar dryland species in South Australia including *C. nigricans, C.* sp. Intermediate; also three other taxa in the *C. rufa* complex.

Distribution: **FR, EP, EA?, NL, MU, YP, KI, SE; WA, Vic.**
This is the most widespread species of *Corunastylis* in South Australia (and Australia), from as far west as the edges of the Nullarbor Plain, abundant across Eyre Peninsula where it extends outside the wheat belt into the pastoral country in and around the Gawler Ranges, rare in the Flinders and Mt Lofty Ranges and Kangaroo Island but common in the Murray districts mostly south of the Murray River and the upper South East; also in Western Australia, and Victoria.

Habitat: Found mostly on dry alkaline soils, (i.e. 'non wettable' calcareous sands) and on sheet limestone in mallee, mallee broom-bush, dry heath and scrubs from coastal areas to hundreds of kilometres inland.

Distinguishing Features: Easily separated from most of the ***C. rufa* complex** species by its bright green segments and contrasting deep maroon labellum with its flat smooth edges, and glands on petal tips.

Notes: This species has surprising drought tolerance, thriving in areas where long rainless periods are common, with the large tuber just below the soil surface. This tuber becomes quite flaccid in dry times but swells rapidly after even light rains. The species will even flower independent of rainfall. At flowering the scape may be quite short but following good rains may elongate rapidly to 30 cm, especially after flowering has finished.

An alternative name is *C. fuscoviride* Reader, which as *Prasophyllum fuscoviride* Reader is a validly published name. *C. tepperi* was published as *Prasophyllum tepperi* and there is still some doubt as to its validity. The synonyms *Genoplesium nigricans* and *C. nigricans* are a different species which has been misinterpreted for decades.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Common and well conserved.



KB, *C. tepperi*, Minlacowie CP, YP

Undescribed Corunostylis rufa
(R.Br.) D.L.Jones & M.A.Clem.

Corunastylis sp. Adelaide Hills (R.H. Edge s.n. AD 99104294)

Common or variable Midge Orchid

Etymology: The phrase name indicates that this is the common midge orchid in the Adelaide Hills.

Synonyms: *Prasophyllum rufum, Genoplesium rufum, Genoplesium* aff. *rufum, C. rufa* but D.L.Jones states that species is endemic to the Sydney area, *C.* aff. *rufa, C.* aff. *tasmanica.*

Description: A mostly dull flowered but variable species, the **plant** to 10 cm tall. **Flowers** tiny brown and green, only 2 mm across and without distinctive features such as cilia, large floral bracts or appendages. **Segments** – the dorsal sepal is tucked in under the flower; the lateral sepals widely spreading green, yellow, brown or reddish, usually dull; petals sometimes gland tipped but these glands are deciduous and not seen at all in many clones; **labellum** ovate with a turned up, acute point and marginal teeth of paler hue, callus plate shiny. The flowers have no odour.

Flowering: late Feb – Mar – Apr – May.

Similar Species: *C. tasmanica* and several undescribed taxa *(C.* sp. Dark Midge, *C.* sp. Large Bracts, *C.* sp. Mount Billy) in South Australia are similar.

Distribution: **FR, EP, NL, MU, YP, SL, KI, SE.**
This species is very widespread in the agricultural regions of South Australia from central Eyre Peninsula to the Southern Flinders, common in the Mount Lofty Ranges and adjacent plains and on Kangaroo Island and upper South East.

Habitat: Found in woodland, heath and scrubs of many kinds especially pink gum, native pine and wattle. Frequently found about rock outcrops and about old mine workings.

Distinguishing Features: Basically if one finds a woodland species in the Mount Lofty Ranges it will be this taxon.

- Can be confused with ***C. tepperi*** but that green and maroon flowered species has a smooth edged, rounded labellum and grows on the plains or in limestone hills.
- ***C. nigricans*** is also a plains species and it too has a smooth edged labellum.
- Two other species, ***C.* sp. Mount Billy** and ***C.* sp. Large Bracts** differ in having a narrow labellum or large floral bracts which are not features of *C.* sp. Adelaide Hills.

Notes: This species probably more closely resembles *C. tasmanica* than *C. rufa*.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Common and well conserved.



BB, *C.* sp. Adelaide Hills, Scott CP

Corunastylis sp. Dark Midge (R. Bates 60714)

Simple Midge Orchid

Etymology: As suggested by the phrase name the flowers of this species are rather dark.

Synonyms: One of several species previously lumped under *C. rufa* or *Genoplesium rufum* R.Br. which is now considered endemic in New South Wales.



KB, Talisker CP, SL

Description: **Plant** to 15 cm tall, **leaf** largely greenish, the free part about 1 cm long and ending just below the flower spike. **Flowers** few to about 15, to 4 mm across, nodding and in a loose spike, green or pinkish with red-brown and paler markings; **segments** all narrow, simple with acuminate apices; **labellum** narrow, wedge shaped at first but becoming ovate, no cilia or calli; segments are without glands. The flowers have no fragrance.

Flowering: Feb – Mar – Apr.

Similar Species: *C.* sp. Adelaide Hills, *C.* sp. Mount Billy, *C.* sp. Large Bracts, *C. rufa, C. tasmanica.*

Distribution: **SL, SE; Vic.**
In South Australia it is found mainly in the South East; rare in the Mount Lofty Ranges, i.e. throughout the higher rainfall districts of South Australia but mostly in the South East; also in western Victoria.

Habitat: Found mostly in sandy soils in heathy understorey of woodlands, sometimes about rock outcrops or gravelly soils.

Distinguishing Features: The slender segmented flowers, the narrow, smooth-edged labellum and southern distribution help to identify it.

Notes: This species has a very simply designed flower with no outstanding features to help with identification. This is what makes the *C. rufa* complex so difficult to sort out.

Often grows with other midge orchids or in the company of *Eriochilus* species.

*See Wild Orchids of Victoria 2006 for a discussion on this species (p. 283).

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3Rc in South Australia; more common in Victoria.



JN, *C.* sp. Dark Midge, Pinnaroo, MU, Apr

Corunastylis sp. Intermediate (R. Bates 60741)

Halbury Midge Orchid

Etymology: This taxon is intermediate between *C. nigricans* and *C. tepperi.*

Synonyms: Has been listed as *Genoplesium linearis.*



KB, Halbury, NL

Description: **Plant** slender to 10 cm. **Flowers** often numerous, dark brown, or purplish, white edged, nodding to 3 mm across in a moderately crowded spike, out-crossing; lateral sepals to 3 mm long, pale edged, humped at their conjoined bases, dorsal sepal shorter and more concave, apressed to the ovary; petals very slender, gland tipped, to 3 mm long, white with a purple-brown median stripe; **labellum** purple-brown, to 3 mm long, oblong, obtuse, margins curved upward, entire or minutely denticulate, callus bifid, anther red, the ovary much bent. Flowers have a faint sour fragrance.

Flowering: Late Mar – Apr – May.

Similar Species: *C. nigricans, C. tepperi*.

Distribution: **NU, EP, YP, NL, MU, KI, and SE.**
Widespread and locally common in the mallee right across South Australia, from as far west as the Nullarbor, to Kangaroo Island, the mid north and Murray districts.

Habitat: Usually found with other midge orchids in calcareous soils, especially over limestone or in calcium dust.

Distinguishing Features: The most obvious features are the purplish flowers with pale, even white-edged petals which are very fine. It exhibits the colours of the *C. rufa* complex and flower shape of *C. tepperi*.

- Unlike ***C. tepperi*** this species does not have dense contrasting green and maroon flowers.

Notes: This species may be more common than realised and because it grows in rich soils of the wheat-belt it must once have been abundant.

DNA testing is required to show that this is not a stabilized hybrid. Because it grows in areas where *C. nigricans* is absent it is certainly not a hybrid with that species.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Locally common and secure.



RB, *Corunostylis* sp. Intermediate, Yalata Reserve, NU, May

Corunastylis sp. Large Bracts (R. Bates 25380)

Bracted Midge Orchid

Etymology: The phrase name is suggested by the distinctive subtending floral bracts.

Synonyms: Previously treated under *Genoplesium rufum*.

Description: **Plant** robust, with a pale appearance, to 20 cm tall and the **leaf** having a long, thick, free apex. **Flowers** numerous, red and yellow with acuminate floral bracts to 3 mm long which enclose the flower buds. The flowers are to 5 mm across and rigid, hardly nodding; dorsal sepal ovate and very concave above; lateral sepals spreading and upturned with dark tips; petals broad and red; **labellum** red with a broad, angular, upturned apex and denticulate or fringed margins; no glands present on segments.

Flowering: Mar – Apr – May.

Similar Species: Any member of the *C. rufa* complex.

Distribution: **FR, ?NL.**
Known only from rocky ridges of the southern Flinders Ranges but probably once present in the *Triodia* dominated grasslands of the northern Mount Lofty Ranges.

Habitat: Found in the protection of *Triodia* hummocks with scattered gum trees and shrubs.

Distinguishing Features: This species is notable for the long acuminate floral bracts which are most obvious when plants are in bud. The robust nature of the species and the angular labellum with papillose callus plate are all indicators of this species.

Notes: Some forms from the Flinders Ranges closely resemble *C. clivicola* from the Australian Capital Territory.

It is sometimes found with the Flinders Ranges form of *C. tepperi.*

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Largely unknown.



RB, *Corunostylis* sp. Large Bracts, Mambray Creek, FR
*Note long leaf

Corunastylis sp. Mount Billy (R. Bates 52404)

Mount Billy Midge Orchid

Etymology: As the name suggests it is best known from Mount Billy Conservation Park.

Synonyms: Previously listed as *Genoplesium* sp. Mt Billy.

Description: **Plant** usually very small, to 10 cm tall. **Flowers** 1-10, reddish, in a short dense spike, **segments** to 3 mm long, lateral sepals gland tipped, petals linear, pale edged; **labellum** unadorned, margin hardly crenulate, tip turned up and with a rounded or acute apex; ovary strongly curved. The flowers have a sour milk fragrance.

Flowering: Mar – Apr.

Similar Species: *C.* sp. Adelaide Hills, *C.* sp. Dark Midge, *C. tasmanica*, *C. nigricans*.

Distribution: **SL.**
Found only on Fleurieu Peninsula in South Australia.

Habitat: Occurs in poor leached sands over water retentive clays in low open heath. The species should be looked for in any relict, open boggy heath lands, especially in Deep Creek Conservation Park.

Distinguishing Features: This is another species with a simple design and mostly reddish flowers; the labellum lacks a ridge on the plate.

Notes: Another member of the *C. rufa* complex which needs more study to determine its taxonomic status.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Probably 2Eci, nationally endangered.



KB, Mt Billy CP, SL



RB, *Corunostylis* sp. Mt Billy, SL

Gallery



KB, close up of *Corunostylis* sp. Adelaide Hills with pollinators, SL
*Note top fly with legs raised attempting to remove pollinia from back



KB, *C. archeri*, SW Vic



KB, *C. pumila*, SW Vic



RL, *Corunostylis* sp. Mt Billy, SL
*Note the sense of smallness of the plant



JN, varieties of *C. tepperi* complex, SE
*Note the leaf hard up against the stem, in each of the pictures



BB, various midge orchids from SL



KB, *Corunastylis* species, Newland Head, Feb



JN, *Corunastylis* species, Sherlock

South Australia's Native Orchids

Supergenus **Corybas** Salisb.

Helmet Orchids



HL, *C. diemenicus*, Hardy ScrubCP, SL
This sunlit group were almost all facing south

South Australia's Native Orchids

Supergenus **Corybas** Salisb.

Helmet Orchids

Etymology: The most commonly thought derivative name for *Corybas* is from either the Latin, *corybany*, one of the dancing priests of the goddess Cybele in Phrygia, or Greek *korybas,* a drunken man, (Stearn via davesgarden.com) but A.B.Martin 'The Vocabulary of Orchids: An Amateur Perspective' 2005 whilst documenting the above, has the following additional entry:

> '*Corybas*: Salisb.1807: ref. *korys*: a helmet, or cap +-*bas,* ref. *basis*: low. Simply: a low helmet and is an allusion to the flower (likened to a helmet). The plants are small terrestrials and the -*bas*: of the ground; "low". eg. *Corybas aconitifolius* Salisb. Noted as endemic to eastn. Aust.'

Taxonomy: There are at least four segregate genera.

1. **Corysanthes** R.Br.**:** a species with orbicular leaves, flowers flared, with small lateral sepals and petals; mostly an Australian species.
2. **Anzybas** D.L.Jones & M.A.Clem.**:** a species with leaves caudate, green above, red below, flowers rather tubular; includes several Australian species.
3. **Corybas** sensu stricto**:** a species such as *Corybas aconitiflorus* of the eastern states; none in South Australia.
4. **Nematoceras** Hook. f.: a species with variable leaves and flowers, long spidery lateral sepals and petals. There are only two 'Australian' species, from Macquarie Island, but many in New Zealand.

Distribution and Habitat: This large conglomerate genus, of over 100 species, ranges from the sub-Antarctic Macquarie Island, through New Zealand, Oceania, New Guinea and South East Asia as far as the Himalayas. There are at least 20 Australian species.

Corysanthes R.Br.
Anzybas D.L.Jones & M.A.Clem.

Helmet and Pelican Orchids

Etymology: *Corysanthes* from *korys* meaning helmet or cap and *anthes* flower. *Anzybas* is derived from *ANZ* for Australia and New Zealand plus *–ysbas* from the Genus *Corybas.*

Taxonomy: See comments under Supergenus *Corybas*.

Description: All South Australian helmet orchids are dwarf, glabrous plants, with a single leaf pressed to the ground. The flowers are single, unscented, purplish, hardly raised above the leaf. Despite their small size they do appear large in comparison with the rest of the plant. The petals and sepals are dimorphic, the top sepal and labellum large and coloured, the lateral sepals and petals tiny and colourless. After flowering, the peduncle elongates rapidly, to 30 cm tall, to assist in seed dispersal.

Pollination: Helmet orchids are 'sapro-myophilous' and are pollinated by fungus flies, the flowers being possible fungus mimics. They do look rather like small toadstools, to the extent of some species having the labellum veined in a gill-like effect and like fungi, grow in cool moist places, flowering in winter when most fungi fruit. There is occasionally a fungus-like odour to the flowers. The pollinating flies can sometimes be seen looking like tiny fireflies, with the bright yellow orchid pollinia attached to their heads like miniature headlights, as they flit about in the dark places where the helmet orchids grow. Fungus flies have been observed to actually lay eggs on the flowers. In most species pollination is effected in only about 10% of flowers but this is much higher in self-pollinated forms. As for most plants with low pollination rates, vegetative increase is often abundant and large colonies may be formed.

Distribution and Habitat: This large conglomerate genus, of over 100 species, ranges from the sub-Antarctic Macquarie Island, through New Zealand, Oceania, New Guinea and South East Asia as far as the Himalayas. There are at least 20 Australian species.

Notes: Helmet orchids are lovers of humid, well shaded habitat. Some helmet orchids colonise pine plantations, where conditions are much to their liking and larger than usual flowers are produced, often to be dusted with the gold of pine pollen. The flowers are frequently eaten by slugs and snails, possums and birds; the latter also dig up the tubers.

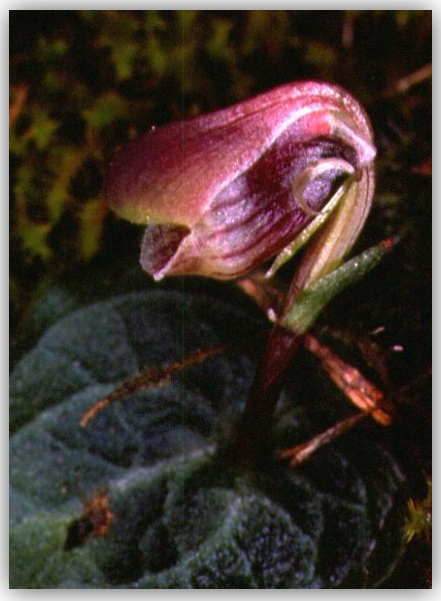
South Australia's Native Orchids

Anzybas fordhamii (Rupp) D.L.Jones & M.A.Clem.

Swamp Helmet Orchid or Pelicans

Etymology: Named after F. Fordham who collected the types in New South Wales, about 1930.

Synonyms: *Corybas fordhamii* (Rupp) Rupp.



RB, Yundi swamp, SL

Description: **Leaf** ovate-cordate, to 15 mm long, blue-green above with immersed veins, grey-green or occasionally pink below. **Flower** single, tubular, horizontal, maroon and white, on a short purple pedicel; dorsal sepal to 10 mm long, narrow elongate-obovate, hooded and gradually contracted into a long claw at the base; easily separated from the labellum with which it forms a tube. The **labellum** is maroon with white striations, shorter than the sepal, deeply concave with a tuft of short cilia at the apex. Lateral sepals and petals translucent, white, apressed to the labellum, column hidden in the tube.

Flowering: Aug – Sept.

Similar Species: *A. unguiculatus* in South Australia, *A. abdita* in Western Australia, *A. carsei* etc. in NZ.

Distribution: **SL; Qld$_x$, NSW, Vic, Tas.**
Restricted to a small area on the northern Fleurieu Peninsula, near Mount Compass and also in the Eastern states, with very similar species in Western Australia and New Zealand.

Habitat: Only known from raised peaty mounds in deep swamps under *Melaleuca* and *Leptospermum* and extremely rare. All known populations are grazed by cattle. When such areas are fenced they quickly become overgrown with myrtaceous plants and reeds, and the orchids disappear. Before European settlement swamps were self managed by the numerous marsupials which grazed there.

Distinguishing Features: The peat bog habitat, spring flowering, long narrow hood and dull flowers easily separate this from ***A. unguiculatus***.

Notes: The segregate genus *Anzybas* has several taxa throughout southern Australia and New Zealand. There are a number of rather cryptic species and South Australian plants do not match with true *A. fordhamii* from New South Wales in several features, such as the shorter claw on the dorsal sepal. For this reason, the South Australian plants are likely to be named as distinct; similarly with the southern Victorian form.

Draining of swamps and loss of native mammals in South Australia, has reduced populations below recovery level. It is unfortunate indeed that the swamp helmet-orchid was not discovered until it was too late to save its habitat. Possibly it will be found in some of the peat bogs, in forest reserves of the lower South East, where it will have a greater chance of survival, but that seems unlikely. The species is now critically endangered, if not extinct, in South Australia.

Conservation Status:
Status in Legislation: Not listed nationally, endangered in South Australia.
Suggested Status: 1E critically endangered in South Australia, rare nationally.



RB, *A. fordhamii*, Yundi swamp, SL, Sept

South Australia's Native Orchids

Anzybas unguiculatus
(R.Br.) D.L.Jones & M.A.Clem.

Cherry Helmet Orchid or Little Pelicans

Etymology: From Latin, *unguiculatus,* meaning small clawed and refers to the dorsal sepal which narrows basally to a long claw.

Synonyms: *Corybas unguiculatus* R.Br.

Description: **Leaf** ovate-cordate to oblong-cordate, usually about 1 cm long but sometimes 3-4 cm long, strongly veined, blue-green above, purplish below, ground hugging. **Flower** solitary, nodding, shiny purple-red, to 15 mm long, held clear of the leaf on a slender reddish stalk; dorsal sepal to 15 mm, narrow at the base (clawed) then much expanded into a deep inverted bowl pressed over the labellum; lateral sepals to 10 mm long, pinkish or white, filiform, parallel with labellum; petals similar smaller and pressed to the labellum. The **labellum** to 20 mm long, extended beyond the dorsal hood and forming a tube with it, apex broad and open with a row of finger like calli inside the tube; auricles short and tubular.



JN, Myponga, SL

Flowering: Jun – Jul.

Similar Species: *A. fordhamii* in South Australia, *A. abdita* in Western Australia.

Distribution: **SL, KI, SE; NSW, Vic, Tas; NZ**
Rare in the Mount Lofty Ranges, from Lyndoch southward. Equally rare on Kangaroo Island, but more frequent in the South East; also in the Eastern states.

Habitat: Forms small colonies of sparse individuals, in leaf litter on damp grey sands, under bracken in heath-woodland.

Distinguishing Features: A most distinctive little orchid which can be identified from the nodding, shiny, purple-red tubular flower as well as from the leaf.

- Differs from ***A. fordhamii*** in the leaf being purple below, not grey-green, the flower much larger and wholly maroon, the dorsal sepal suddenly and greatly inflated past the middle and the labellum with a long line of cilia.
- A **form** from peat bogs in the South East, which flowers only after fires, has more erect, purplish flowers with spathulate petals and may represent a separate species.

Notes: Sometimes found as remarkably dwarfed plants with a leaf less than 1 cm long and flower half the usual size. Occasional colonies occur in the South East, where the flowers lack labellum and dorsal sepal. These plants are self pollinated. The peduncle of pollinated flowers elongates rapidly, to over 10 cm, and appears exceedingly fragile. Flowers are very attractive to slugs and snails.

Pelican orchids are becoming increasingly rare through loss of habitat but are still found in good numbers in some forest reserves of the South East.

This is the earliest of the South Australian helmet orchids to flower.

Conservation Status:
Status in Legislation: Not listed nationally, rare in South Australia.
Suggested Status: Rc in South Australia and uncommon nationally.



CH, *A. unguiculatus*
*Note spent flowers and developing capsules

Corysanthes dentata
(D.L.Jones) D.L.Jones & M.A.Clem.

Toothed Helmet Orchid

Etymology: Latin *dentata* toothed, in reference to the small, sharp, outward pointing white teeth on the labellum margins.

Synonyms: *Corybas dentatus* D.L.Jones, *C. abditus* Jones.

Description: **Leaf** orbicular, sometimes lobed, to 4 cm across, green above pellucid below, ground hugging. **Flower** solitary, erect or decumbent, on short peduncle, 2-3 cm across, purplish and green; dorsal sepal 20 mm by 10 mm, spathulate-oblong, grey-green, with dark purple spots and striations, cucullate, with a short decurved apex; lateral sepals and petals filiform, vestigial. **Labellum** conspicuous, dark purplish except for the boss; labellum tube about 6 mm long then expanding into a flared lamina about 12 mm across, with spreading to incurved dentate margins, purple or white; central **boss** flat purplish, green or white, usually not conspicuous; auricles short, directed downward with small openings.



JN Sandy Creek CP, SL

Flowering: Jul – Aug.

Similar Species: *C. incurva.*

Distribution: **SL, SE.**
Endemic to South Australia, in the Mount Lofty Ranges, from Lyndoch southwards; and possibly in the Southern Flinders near Wirrabara, Northern Lofty region.

Habitat: This rare helmet orchid grows in damp, grey, sandy soils under *Callistemon*, or under bracken in woodland of *Eucalyptus baxteri*, and native pines, or in shaded gorges.

Distinguishing Features: Toothed helmet orchid is easily recognised by the white edged teeth on the labellum margin and the habit the flower has of leaning backward.

Notes: The largest population of this species, in Sandy Creek CP, was destroyed by careless use of herbicide when a large infestation of bridal creeper was sprayed in the 1990s. Other colonies are threatened by road widening, weeds and subdivision.

The rarity of populations and their occurrence in disturbed sites would suggest that *C. dentata* at least in some forms is of hybrid origin, perhaps *C. incurva* crossed with a flared labellum form of *C. despectans.* Certainly both species are present near most known populations. Each colony exhibits a different set of morphological characters and at one stage the southern populations were considered a different species.

The species was first recorded near Nangwarry in the South East in August 2008, during a NOSSA survey.

Many years ago plants apparently attributed to this species were in cultivation in a number of collections, the origin of the plants apparently being from Telowie Gorge.

Conservation Status:
Status in Legislation: Nationally vulnerable, endangered in South Australia.
Suggested Status: 3E, nationally critically endangered.



MH, *C. dentata*, SL
*Note translucent/white teeth



CH, *C. dentata*, Scott CP, SL
*Note large green dorsal sepal

South Australia's Native Orchids

Corysanthes despectans
(D.L.Jones & R.C.Nash) D.L.Jones & M.A.Clem.

Shy Helmet Orchid

Etymology: The Latin name, *despectare*, means looking down upon, and refers to the flower, which faces down into the leaf. The common name also reflects this feature.



RB, Aldgate, SL

Synonyms: *Corybas despectans* D.L.Jones & R.C.Nash.

Description: **Leaf** orbicular, to 30 mm x 20 mm, green on both surfaces, pellucid below, ground hugging. **Flower** single, to 10 mm long, mostly nodding, dark purple or reddish with greenish and translucent markings but variable; dorsal sepal to 10 mm, very narrow and curved over the labellum; lateral sepals and petals to 3 mm long, filiform, vestigial. **Labellum** variable, in the common form purplish and green, not expanding widely but thrust forward and down, margins shallowly toothed, the **boss** yellow-green, but some forms have flared margins, the lamina white with red veins. Flowers are self pollinated.

Flowering: Late July – Aug.

Similar Species: *C. expansa.*

Distribution: **EP, NL, YP, SL, KI, SE; WA, Vic.**
Widespread around the coast, from Venus Bay in the west, to the Victorian border and including Kangaroo Island; also in Western Australia, as well as Victoria.

Habitat: Shy helmet is common on light sand, but also in leaf litter on limestone. From the high tide line, over coastal sandhills covered with shrubs and low mallee to limestone flats and rises but extending inland under native pine (*Callitris*) forest, on old shorelines. Shy helmet-orchid is largely absent from the ranges but is locally common near the Barossa. It was recently (2009) found by Judith Jones in the higher parts of the Adelaide Hills, growing under Oyster Bay pines at Aldgate.

Distinguishing Features: The smallest in the genus, this species is readily identified from its tiny, short-lived, dirty looking flowers and much reduced dorsal sepal, an insignificant feature.

- ***C. expansa*** has widely opening flowers held well above the leaf and a large white centre to the labellum.

Notes: As it is self pollinated, the large colonies will produce many seed capsules. This species has the shortest growing period of any South Australian orchid, as the leaves normally emerge in mid June, flowering occurs in August and the leaves are senescing by late September.

The flowers are short lived and soon collapse. In dry winters the flowers frequently abort without opening. Flower form is very variable and some plants closely approach the larger, widely opening *C. expansa.*

Apparent hybrids are formed wherever *C. despectans* is sympatric with *C. diemenica*, *C. expansa* and *C. incurva*.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Common and well conserved.



KB, *C. despectans*, Newland Head CP, YP

Corysanthes diemenica Lindl.

Veined Helmet Orchid

Etymology: The name, *diemenica*, refers to Van Diemen's Land, the old name for Tasmania, from where the plant was originally collected.

Synonyms: *Corybas diemenicus, C. dilatata.*



CH, Sandy Creek CP, SL

Description: **Leaf** rounded to cordate, to 25 mm by 20 mm, green both sides, pellucid below, ground hugging. **Flower** single, to 20 mm high, erect, well exserted from the leaf, the **dorsal sepal** maroon, to 25 mm long, ovate and hooding the flower; lateral sepals and petals filiform, vestigial, colourless; the **labellum** translucent, with maroon veins and a variable rounded yellowish or red tinted central **boss**, to 20 mm across, variously flared, margins with many short to long teeth; auricles prominent, tubular, open at the apex.

Flowering: Mostly Jul – Aug.

Similar Species: *C.* sp. Silky Tea-tree Swamps.

Distribution: **NL, MU, SL, KI, SE; ?WA, NSW, ACT, Vic, Tas.**
Mostly in high rainfall districts, from as far north as Wirrabara Forest (rare), south to the South East and Kangaroo Island; also common in the eastern states.

Habitat: Particularly on shaded slopes in woodland, but also in heath and scrub, in a variety of soil types. Mostly found on cool south facing slopes in the Adelaide Hills.

Distinguishing Features: The large erect, maroon and cream flowers, with flared labellum having long or short teeth, the rounded pale boss, very broad flattish dorsal hood (helmet) set it apart.

- ***C.* sp. Silky Tea-tree Swamps** grows only in swamp habitat.

Notes: In these times of climate drying and heating, flowers only last a few days or abort without opening.

C. dilatata and *C. grumula* are now treated as forms of this species. The former is considered distinct by some authors. The various forms of *C. diemenica* are quite plastic and often occur together with intermediates; there may be subspecies involved but they are hard to separate.

This species is the one most often seen in the Adelaide Hills.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Common and well conserved.



JN, *C. diemenica*, McArthur Park, SE

Corysanthes expansa
(D.L.Jones) D.L.Jones & M.A.Clem.

Sandhill Helmet Orchid

Etymology: From the Latin, *expandare,* expanded or spread out; a reference to the prominently flared labellum.

Synonyms: This is the *Corybas species B* in Orchids of SA 1990, plate 85. *Corybas expansus* D.L.Jones.



RB, Innes National Park, YP

Description: **Leaf** orbicular often lobed, to 25 mm across, ground hugging, with a small apiculus, bright green above, pellucid green below. **Flower** solitary, on a short pedicel, flattened in cross section, to 2 cm across, erect or slightly recumbent, maroon, white and green; dorsal sepal pale green, about 1 cm high and 8 mm wide, hooding, not reaching beyond the labellum apex; lateral sepals and petals to 3 mm long, filiform, vestigial. **Labellum** to 2 cm across flared into an almost flat dish shape, red with maroon veins, a large white centre with a mounded and channeled creamy **boss** dominant, margins crenulate or shallowly dentate.

Flowering: Late July – Aug – early Sept.

Similar Species: *C. despectans, C.* sp. Fat Dwarf; *C. limpidus* in Western Australia.

Distribution: **EP, YP, SL, KI, SE.**
Strictly coastal, at the tip of Eyre, Yorke and Fleurieu Peninsulas, and on Kangaroo Island, also the South East.

Habitat: Occurs on the lee side of coastal dunes, in the shelter of trees, particularly *Eucalyptus diversifolia.*

Distinguishing Features: The widely expanding flowers with a crystaline white centre to the labellum make this a distinctive species.

- ***C. despectans*** differs in having its tiny flowers hugging the leaf, the labellum almost tubular, not widely flaring. The two are sometimes sympatric and may intergrade.
- ***C.* sp. Fat Dwarf** is a late flowering species found in similar habitats, but does not have the widely expanding habit.
- ***C. limpida*** from Western Australia looks similar, occupies the same habitats and also appears to be an out-crossing, later flowering development of *C. despectans.*

Notes: As mentioned above, *C. expansa* may represent an out-crossing form of *C. despectans.* It forms small to quite extensive colonies in loose sand and leaf litter and unlike *C. despectans,* it does not extend into harsher environments, such as wind blown headlands.

This species is not well known due to its specialised and limited habitat well away from settlement.

Conservation Status:
Status in Legislation: Not listed nationally, vulnerable in South Australia.
Suggested Status: 3Rc.



JN, *C. expansa*, first collected in the South East in 2008

Corysanthes incurva
(D.L.Jones & M.A.Clem) D.L.Jones & M.A.Clem.

Slaty Helmet Orchid

Etymology: The Latin epithet, *incurva,* applies to the rigid, strongly incurved labellum margins.

Synonyms: Until the 1980s referred incorrectly to as *Corybas diemenicus.* Also *Corybas incurvus* D.L.Jones & M.A.Clem.

Description: **Leaf** rounded to cordate, to 30 mm by 25 mm, or larger in very shaded sites, sometimes lobed, fleshy and depressed into the substrate, wholly green. **Flower** solitary, to 15 mm wide, hugging the leaf, dark purple-green or maroon, with a prominent white labellum boss; dorsal sepal to 20 mm long, narrow at the base but expanded into a rigid obovate hood over the labellum, varied in colour from cherry red to green or grayish; lateral sepals and petals to 3 mm long, vestigial, filiform. **Labellum** maroon, oblong, base attenuated and thrust well forward to about 15 mm long, flared at the end with rigid incurved, sharp-toothed margins; **boss** a prominent dome, white or greenish, channelled at the top and with a scabrid surface.



JN, southern form, Nangwarry NFR, SE
*Note strongly hispid and bloodied labellum boss.

Flowering: Late Jul – Aug – early Sept.

Similar Species: *C. diemenica*, *C. dilatata*.

Distribution: **FR, EP, NL, MU, SL, KI, SE; NSW, ACT, Vic, Tas.**
Widespread and locally common in South Australia from southern Eyre Peninsula (where rare), the Flinders Ranges only as far north as Melrose, the Mount Lofty Ranges, Kangaroo Island and the South East where common; also in the Eastern States.

Habitat: Found in cool to cold, shaded spots in fertile soils of forest, closed woodland and scrub, and sandy heath-land. The slaty helmet-orchid occurs from sea level to the highest peaks, often in dense shade. Extends further inland than other helmet orchids and thrives in the coldest valleys of the Mount Lofty Ranges, valleys that are often under heavy frost at flowering time.

Distinguishing Features: The species is much more rigid in all its parts than other *Corysanthes.* The flowers are sessile and leaf hugging, the labellum margins rigidly incurved, labellum boss channelled and scabrid below.

- Often found with ***C. diemenica*** which begins flowering earlier than *C. incurva.*

Notes: Forms small discrete colonies, often with many leaves overlapping. Flowering is sparse and in dry winters most flowers abort. The leaves of this species often do not appear until July when they emerge already with developing buds.

Ghostly green flowered forms sometimes occur in mixed colonies with contrasting wholly red forms.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Common and well conserved.



BB, *C. incurva*, Flinders Ranges, Sept

Corysanthes x miscella
(D.L.Jones) D.L.Jones & M.A.Clem.

Hybrid Helmet Orchid

Etymology: From *miscella*, Latin mixed, referring to the mixed parentage i.e. *C. diemenica* and *C. incurva.*

Synonyms: *Corybas x miscellus* D.L.Jones.

Description: Somewhat intermediate in appearance between the parent species. **Leaf** rounded to cordate, green above and below, ground hugging. **Flower** single, to 15 mm tall, red-purple, exserted from the leaf; dorsal sepal narrow at the base then expanded obovate and hooded over the labellum; lateral sepals and petals vestigial, filiform. **Labellum** red-purple, not markedly thrust forward, somewhat flaccid, margin coarsely toothed; **boss** prominent, mounded, white, usually more similar to *C. incurva* but not channelled.



KB, Cromer CP, SL

Flowering: Aug.

Similar Species: *C. diemenica*, *C. incurva*.

Distribution: **NL, SL, SE; ?Vic.**
Like most hybrids it is uncommon, ranging from near Clare in the north through to Victor Harbor and in the South East near Naracoorte; probably in Vic. Found in disturbed areas where both parents occur.

Habitat: Particularly in old pine plantations and regenerating bush, mostly in sandy soils, sometimes along old logging tracks and especially in protected damp places such as valley floors and creek-sides.

Distinguishing Features: This natural hybrid shows features of both parents to varying degrees, i.e. labellum neither flared nor incurved markedly, margins toothed and more.

- Easily confused with ***C. diemenica*** and ***C. incurva*** which are, of course, much more common.

Notes: Like most hybrids it is very variable, probably back crossing with either parent but rarely. There are many other suspected helmet-orchid hybrids in South Austalia particularly with *C. incurva* as a parent i.e. *C despectans* x *C. incurva* (Sandy Creek CP, SL and Little Dip CP, SE); *C. expansa* x *C. incurva* (SE) as well as the frequent hybrid *C. despectans* x *C. expansa* some forms of which are self perpetuating and have at times been considered different species. Some forms seem closer to *C. grumula* from the Eastern States. There are also collections of what could be either relict species or unusual hybrid forms i.e. one from Kangaroo Island, another from the Flinders Ranges and several from the Southern Mount Lofty region.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Not threatened



BB, *C.* x *miscella*, Scott CP, July

Undescribed Corysanthes

Corysanthes sp. Fat Dwarf

Fat Dwarf Helmet Orchid

Etymology: The phrase name indicates that this is one of the smallest of the helmet orchids and quite rounded in shape.

Synonyms: There are none, as the species was not collected until recently.

Description: This is a tiny flowered species with a fleshy **leaf**, pale green, orbicular to 3 cm across. **Flower** greenish, singular, less than 1 cm across, sub-globular, sessile or on very short peduncle; dorsal sepal green, shortly spatulate to 6 mm by 5 mm wide, hooding the labellum; lateral sepals and petals white, vestigial; **labellum** broader than long on a short claw, margins incurved, red, dentate; the **boss** green or greenish-white, has an orange-red pot-like orifice; the large white auricles visible behind the labellum. Flowers largely out-crossing.



RB, Newland Head CP, SL, mid Aug

Flowering: Mid Aug.

Similar Species: *C. despectans, C. incurva.*

Distribution: **YP, SL, KI.**
Known from Southern Yorke Peninsula, the Fleurieu Peninsula and also on Kangaroo Island.

Habitat: Grows on lightly coloured sands on coastal headlands under coastal mallee and honey myrtle thickets in sand swales, particularly in sites well protected from desiccating winds, which are the bane of all helmet orchids.

Distinguishing Features: The small flower size, the orange-red horseshoe shaped platform rimming the labellum orifice above the boss are distinctive.

- Reminiscent of ***C. incurva***, but about one quarter the size of it.
- Similar to ***C. despectans*** in size, but that species has a very narrow non-hooding dorsal sepal, flowers facing into the leaf, and an extended tubular base to the labellum, i.e. quite different flower shape.

Notes: The species was discovered during a survey instigated by the Threatened Plant Action Group, in 2009, and was first photographed by NOSSA members Malcolm and Cathy Houston. This is the last of the mallee helmet orchids to flower, beginning when other species are beginning to seed.

This recently identified species is probably threatened due to loss of habitat, climate drying and its limited range.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Probably vulnerable nationally.



CH, *C.* sp. Fat Dwarf, Aug
*Note white auricles

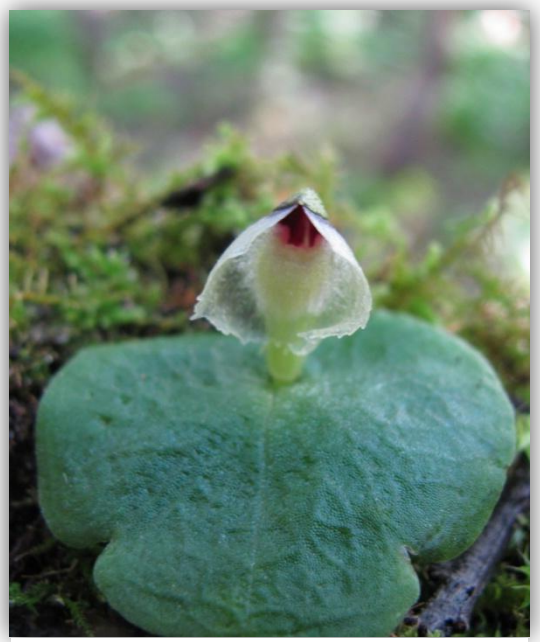
Corysanthes sp. Red-eyed Ghost

Cyclops Helmet Orchid

Etymology: The names reflect the ghostly appearance of the flowers, with their single red eye.

Synonyms: Previously included under *C. despectans.*

Description: This is one of the smallest *Corysanthes* in the world. **Leaf** blue-green, soft textured and about 1 cm wide. **Flowers** single, 2-3 mm across, always white or palest green, standing erect from the leaf; dorsal sepal much reduced, narrow oblong, green; petals and sepals minute and hidden behind the labellum; **labellum** white or pale green, of flimsy texture, to 3 mm wide, with irregular incurved margins which are smooth in the upper half and toothed below; **boss** pale green with a bright red column (as in the eye of a Cyclops). The flowers are self pollinated; the seed capsule on a fine translucent elongating pedicel to 10 cm tall.



RB, Newland Head CP, Waitpinga, SL

Flowering: Aug.

Similar Species: This taxon is likely to be a form of *C. despectans*.

Distribution: **YP, SL, KI.**
Occurs on Kangaroo Island, the tip of Yorke peninsula, Fleurieu Peninsula and Barossa Valley.

Habitat: Restricted to loose calcareous sands in coastal mallee and pine, usually growing with many other orchids.

Distinguishing Features: This species is easily recognised by its greenish white labellum and bright red column, the very narrow dorsal hood and erect flowers.

Notes: Each flower lasts just a few days.

Corysanthes species are generally variable, prone to hybridising and often produce freak forms. DNA studies are expected to show that all species are closely related and some best regarded as forms or subspecies.

There were probably other species present in South Australia before clearing of swamps, grassland and fern gullies which began with European arrival.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Rare.



RB, *C.* sp. Red-eyed Ghost, Aug

Corysanthes sp. Silky Tea-tree Swamps

Late Helmet Orchid or Silky Tea-tree Helmet

Etymology: The phrase name given indicates that the species is found only under Silky tea-tree *Leptospermum lanigerum.*

Synonyms: *Corybas* sp. aff. *dilatatus* Late Helmet Orchid in Orchids of Victoria 1995, pg.143.

Description: **Leaf** orbicular to slightly caudate, flaccid to 3 cm across but usually rather smaller, green above, pellucid below. The **flowers** are infrequent, usually very dark maroon and white, to 16 mm across, held well above and leaning away from the leaf and somewhat similar in appearance to C*. diemenica* except that *C.* sp. Silky Tea-tree Swamps has a deep red **boss** on the labellum whilst the *C. diemenica* has a pale boss in the centre of the labellum.

Flowering: Sept – Oct.

Similar Species: The South Australian plants are similar to those from south western Victoria (*Corybas* sp. aff. *dilatatus)* and may represent a separate subspecies from those at Wilsons Promontory.

Distribution: **SE; Vic, Tas.**
Occurs in coastal far southern South Australia; also Victoria and northern Tasmania.

Habitat: One of several orchid species restricted to alkaline soils associated with limestone swamps dominated by silky tea-tree, *Leptospermum lanigerum.* It often grows with *Diplodium tenuissimum* and *Pterostylis lucida* both, endangered in South Australia. The author has seen a colony of this species growing on a floating mat of moss-covered debris in Piccaninnie Ponds, where it also grows up the moss covered lower trunks of the tea-trees.

Distinguishing Features: The flower of this un-described species leans away from the leaf, has a deep red boss and has a dark hood to match the shade in which it grows.

- Somewhat similar in appearance to **C*. diemenica*** but that species has a pale boss in the centre of the labellum.

Notes: In South Australia it rarely flowers and large colonies are observed most years without a single flower indicating that its habitat is poorly managed, perhaps through loss of small marsupials which used to burrow through the swamps.

First collections were made in 2008, by South Australian ecologist, Cath Dickson. It is very likely that before massive land clearance, and construction of drainage channels over most of the South East, there were several other un-described species of helmet orchid in the South East. The same is true of parts of Kangaroo Island which have now been totally modified for agriculture.

The author has seen isolated colonies of helmet orchid leaves in restricted habit such as sphagnum bogs, peaty mounds and the like, none of which have ever shown sign of flowers.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 2 Eci in South Australia, nationally threatened.



CD, *C.* sp. Silky Tea-tree Swamps, Sept

Gallery



MH, *A. unguiculatus*, Joanna CP, SE



RL, *A. unguiculatus*, Mt Burr, SE
*Note how it blends in with the surrounding; size and colour make them difficult to spot. Note underside of leaf is a reddish colour.



BB, *A. unguiculatus*, Nixon Skinner CP, June
*Note the windows in the labellum tube



RL, *C.* x *miscella* with a solitary *C. diemenica,* one of the parent, Little Mt Crawford, SL



RL, *C. incurva*, Little Mt Crawford, SL
*Note the millipede for size of plants

South Australia's Native Orchids



KB, *C. diemenica*
*Note widely flared labellum



RB, *C. incurva*, Flinders Ranges



KB, *C. diemenica*, green, Macclesfield



RB, *C. dentata*, Lyndoch



RB, *C.* sp. Red-eyed Ghost, Innes National Park, YP



RB, *C. expansa* x *C. despectans*, Potters Scrub



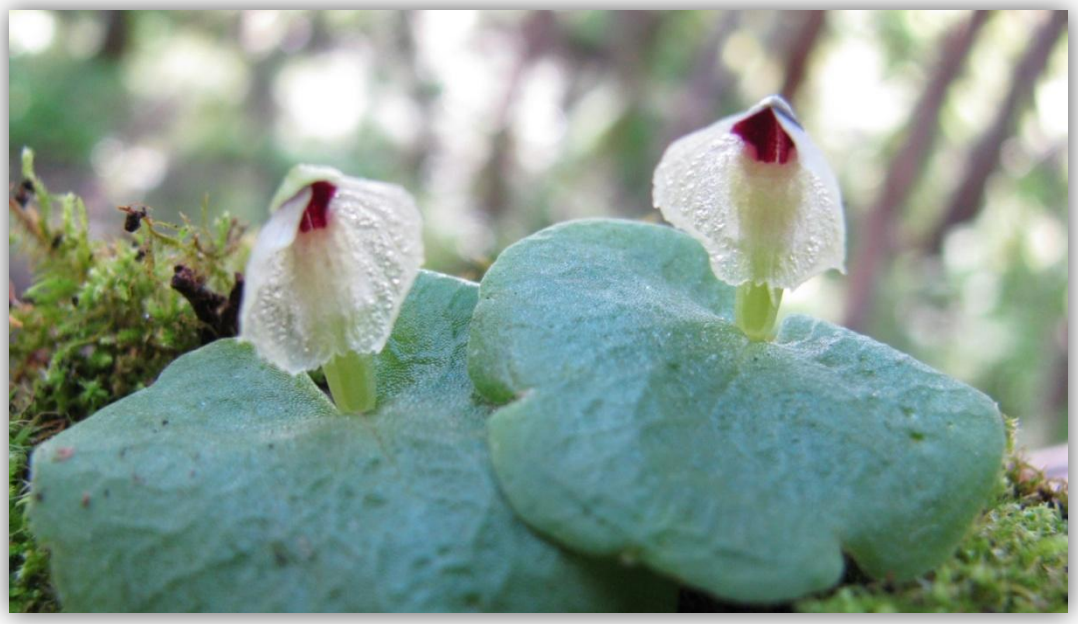
RB, *C. expansa* x *C.* sp. Fat Dwarf, Newland Head CP



HL, *C. diemenica*, Hardy's Scrub, SL
A typical flowering colony, where all the flowers are facing south.



RB, *C. despectans* with spherical rabbit dropping (far right of picture)



RB, *C.* sp. Red-eyed Ghost, in a coastal dell



JN, *C. diemenica*, SE



JN, crazy variety in *C. incurva*, SE



RB, Contrasting colour of *C. incurva*, Mt Crawford NFR



RB, weird *C. despectans*, Parsons Beach, SL



RB, *C. despectans*, Newland Head CP
*Note 10c coin to show scale



Artwork by Kath Alcock showing flowers and elongated seed stalks of *Anzybas* and *Corysanthes*



CH, *C. expansa*, Warooka, YP



MH, *C. dentata,* Nangwarry, SE



RB, *C. diemenica*, Sandy Creek



KB, *C. diemenica*, Scott CP, SL



RB, *C. diemenica* ssp. Kangaroo Island, July
*Note conical boss and reduced petals on this subspecies



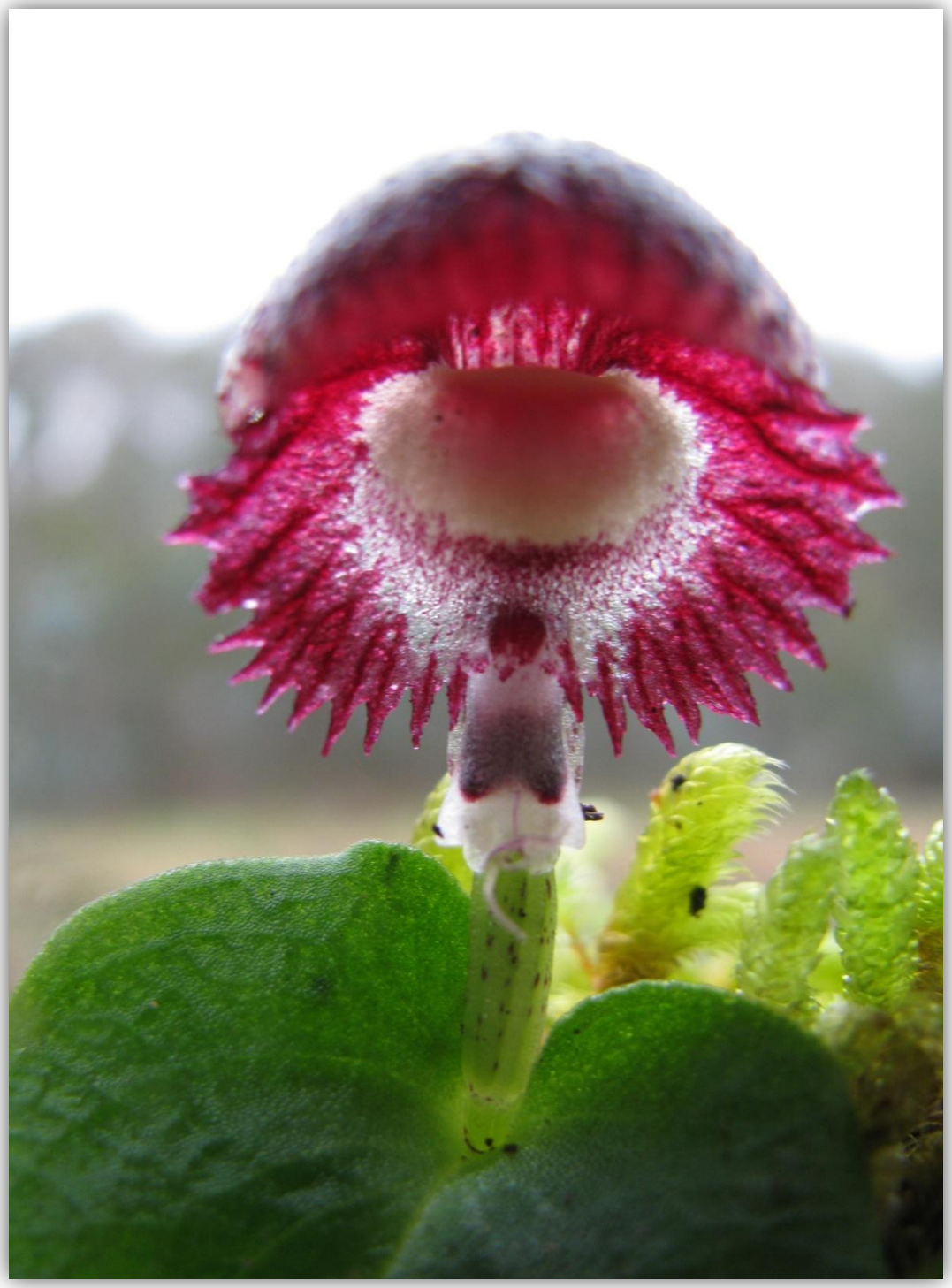
JN, *C. despectans*, Nora Creina, SE
*Front view; the labellum is not often twisted like this



CH, *C. expansa*, Southern YP
*Note full expansion of labellum



MH, *Corysanthes* hybrid, SE
*Inset showing view from above suggesting *C. despectans* influence



RB, *C. diemenica*, Millbrook, early Aug
This backlit shot shows the view fungus gnats have before entering the 'gilled' flower, fooled into laying their eggs and pollinating the flower by perceiving it as a toadstool



CH, *C. expansa,* YP



MH, *Corysanthes* in seed pod, SE
*Note extension of pedicel

South Australia's Native Orchids



Orchid art by KB



JL, *C. diemenica*, Little Mt Crawford, SL
*Note size – often it is necessary to get down on your hands & knees to photograph these delightful orchids!



RB, *C. despectans* x *C. incurva*, Lyndoch



RB, *C.* sp. Fat Dwarf, late August
*Note long petals and striped ovary

Cryptostylis R.Br.

Tongue Orchids



KB, *C. subulata*, Tooperang, SL

South Australia's Native Orchids

Cryptostylis R.Br.

Tongue Orchids

Etymology: The name *cryptos* hidden, *stylos* style, derived from the Greek, referring to the recessed column. The name 'tongue orchid' refers to the large labellum with tongue-like appearance.

Taxonomy: The taxonomy of this genus is quite stable, as are the species themselves, which vary little from place to place and do not form hybrids, indicating that *Cryptostylis* is an ancient genus, probably of tropical origin. Although there is only one South Australian species, Victoria has four, reflecting the requirement for summer rainfall.

Description: The evergreen leaves are thick, erect and lanceolate, arising from thick roots without tubers; the scape is robust with up to 30 flowers opening successively over many months. The labellum which represents a female *Ichneumon* wasp decoy is the largest segment and is in the usual 'wasp attracting' colours of red and green. Australia has at least one leafless saprophytic species.

Pollination: All species attract male *Ichneumon* wasps by releasing a allomone or copy of the female wasp sexual attractant pheromone. This can attract male wasps from up to a kilometre away. The orchid labellum is similar in colour to the female wasp and the male *Lissopimpla* sp. wasp attempts to copulate with the flower, probing the column with their 'tail' and thereby transferring pollinia from flower to flower (see image).



RB, *Lissopimpla* wasp mating with *Cryptostylis* flower.

Distribution and Habitat: This genus of about 20 species is found through South-east Asia including Taiwan, Malaysia, Oceania, New Zealand and Australia. With five species in Australian *Cryptostylis* is represented in all states. Most species require permanently damp situations as the plants are evergreen. In South Australia the genus is confined to swamps and creek margins.

Notes: All except the leafless species are easy to cultivate in sphagnum or cymbidium mix and all except *C. hunteriana* have been cultivated in Adelaide.

Cryptostylis subulata (Labill.) Rchb.f.

Moose Orchid Larger or Tongue Orchid

Etymology: The name, *subulata*, means awl-shaped, the labellum being angled down toward its apex. The name moose orchid reflects the moose-like appearance, complete with big nose & beard and the erect petals and sepals like horns.

Synonyms: *C. longifolia* R.Br.

Description: **Leaves** long, leathery, erect, lanceolate. **Flower stem** to 110 cm but usually less than 40 cm. **Flowers** few to 20; lateral sepals and petals linear, green, and swept back, the dorsal sepal reflexed against the slender ovary; **labellum** yellow-green with a red apex, to 4 cm long, the margins rolled back, sparsely hairy below, with two dark ridges ending in a bilobed callus. Flowers open sequentially.

Flowering: Nov – Dec – Jan –Feb – Mar – Apr.

Similar Species: None.

Distribution: **SL**, **KI**, **SE**; **Qld**, **NSW**, **Vic**, **Tas**; **NZ**.
Found from south of about Adelaide on the Fleurieu Peninsula, Lake Alexandrina, western Kangaroo Island and the South East; also the eastern states and New Zealand.

Habitat: Found in swamps, marshes, peat bogs and creek margins.



JN, The Marshes NFR, Dec

Distinguishing Features: The large red and yellow-green labellum with its rolled margins is distinctive, as are the evergreen leaves in swampy habitat.

Notes: Some plants may flower over a whole year. Flowering rates are quite low with colonies of leaves often found without flowering plants. Lack of fauna to keep swampy habitats open as they would have been before colonisation has meant overgrowth of some plants. This in turn means less light to encourage flowering response from orchids.

At least four species have been cultivated in Adelaide and all have been observed to attract the same wasp *Lissopimpla semipunctata,* which successfully pollinates each.

Conservation Status:
Conservation Status: Not listed nationally, vulnerable in South Australia.
Conservation Status: Endangered in South Australia but common in the Eastern states.



HL, *C. subulata,* Stipiturus CP, SL



JN, hundreds of young *Cryptostylis* plants in a swamp in the SE, March

Gallery



MH, *C. subulata* showing underside of labellum



RB, *C. subulata,* Mt Compass, SL



HL, *C. subulata*, Stipiturus CP, SL



KB, *C. subulata,* Yundi, SL



***C. subulata* showing leaves, SE,**
Artwork by Kath Alcock

Cyrtostylis R.Br.

Gnat Orchids



JN, *C. reniformis*, SE

South Australia's Native Orchids

Cyrtostylis R.Br.

Gnat Orchid

Etymology: The generic name is derived from the Greek *kyrtos* arched and *stylis* column, in reference to the curved column of the genus. This is a feature shared by *Acianthus* with which *Cyrtostylis* was long included! However the column of *Cyrtostylis* is winged while that of *Acianthus* is not. The common name of gnat orchid refers to the insect like flowers.

Taxonomy: The genus was described by Robert Brown at the same time as he named the closely allied *Acianthus* being separated on leaf differences, labellum shape and the presence of column wings. Later authors treated them as one genus until recent cytological and biological work confirmed their separateness. The two genera are associated with quite different soil fungi and DNA studies indicate they became separate in ancient times.

Description: Plants with orbicular to oblong, ground hugging leaf, buds appearing soon after the leaves. Up to ten small, insectiforme, brownish or maroon flowers are produced with the column top set well above the labellum.



CB, Orange, NSW
pollinating fly sips nectar

Pollination: As would be expected of shade loving, cool season plants with flowers of these colours they are pollinated by long-legged fungus gnats (*diptera*) which may feed on the ribbon of nectar on the orchid labellum. Hence the column top is set well above the labellum to accommodate these long legged beasties, see photo!

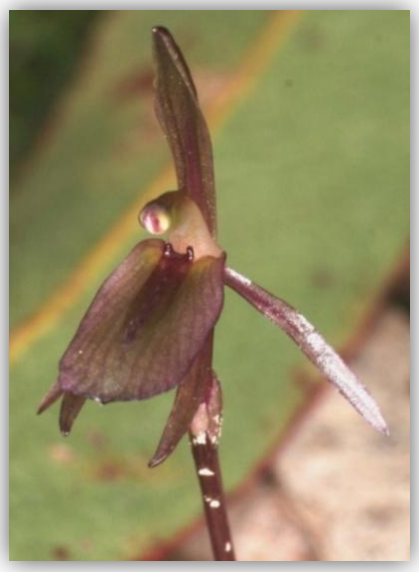
Distribution and Habitat: This is a small genus of five species in Australia and New Zealand. The bizarre New Caledonian species have been transferred to other genera. Only the two most common and widespread species extend to South Australia but both are abundant here, from the seashore to the tops of mountains in a wide variety of habitats but mostly in well shaded sites. Both species are very similar and were until recently treated as one, but as they have different habitat preferences, geographical range and flowering times it is not surprising that field naturalists had long regarded them as distinct.

Notes: Small to quite extensive colonies are produced through vegetative reproduction. Plant growth begins after the first soaking autumn rains. The buds of one species develop rapidly and flower at the beginning of winter; the buds of the other develop slowly and do not open until the end of winter. When the soil dries out in spring the leaves die off but the scape with seed pods will continue to develop. Plants over-summer as tiny tubers often shallowly buried in leaf litter so that severe bushfires may destroy entire populations.

Cyrtostylis reniformis R.Br.

Small Gnat Orchid

Etymology: *Reniformis* meaning kidney-shaped, in reference to the leaf which is vaguely kidney shaped and glistens with a surface layer of transparent cells, especially below.



BB, The Heath NFR, SE

Synonyms: *Acianthus reniformis* (R.Br) Schltdl.

Description: **Leaf** rounded, ground hugging to 30 mm wide, blue-green above with a network of paler veins, pellucid green below. **Flower stem** to 12 cm tall, wiry, purple-brown to green. **Flowers** 1 to 6, small to 10 mm long, usually dark purple-brown in colour; perianth segments to 8 mm long, all similar, linear-lanceolate; dorsal sepal erect; lateral sepals thrust forward or spreading; petals smaller, spreading downward; **labellum** to 8 mm long, oblong, horizontal, with a rounded finely toothed to ragged tip; lamina with two prominent basal glands and two parallel nectary ridges almost to the apex, the surface shiny with nectar; column bent forward at the centre with prominent wings.

Flowering: Aug – Sept – early Oct.

Similar Species: *C. robusta, C. huegelii* (WA).

Distribution: **FR, NL, MU, SL, KI, SE; WA, Qld, NSW, ACT, Vic, Tas; NZ**
Widespread in the eastern half of the state from the Southern Flinders Ranges to the South East; common in the Eastern states.

Habitat: *C. reniformis* favours, shaded, rocky, well wooded or forested sites in stony, skeletal clay of gullies in the ranges but also at lower altitudes in scrublands and heath on sandy soils especially in the Adelaide Hills. Often forming large colonies; in ideal habitat such as under native cherries *Exocarpos cupressiformis* the colonies may be so dense, as to form a carpet of overlapping leaves.

Distinguishing features: Can be distinguished by the heavily veined blue-green leaves with very dark buds, the later flowering time, the labellum more or less rounded at the apex and the generally finer plant and flower.

- ***C. robusta*** is early flowered, has pale usually larger leaves and pale reddish buds.

Notes: The two species grow together at many sites in the Adelaide Hills but surprisingly *C. reniformis* does not grow west of Adelaide even though there are plenty of suitable habitats. By comparison *C. robusta* is abundant west of Adelaide on Yorke and Eyre Peninsulas as well as Kangaroo Island.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Common and well conserved.



KB *C. reniformis*, Inman Valley, SL, Oct

South Australia's Native Orchids

Cyrtostylis robusta D.L.Jones & M.A.Clem.

Winter Gnat Orchid

Etymology: *Robusta* meaning robust or sturdy which the plants are, but only in comparison to the small gnat orchid! The name winter gnat-orchid reflects the early flowering.



JN, Coorong, SE

Synonyms: *Acianthus reniformis, C. reniformis.*

Description: **Leaf** rounded, ground hugging to 50 mm wide in exceptional specimens, green above with paler veins, silvery pellucid below. **Flower stem** to 25 cm tall, slender, green or brownish. **Flowers** 1 to 8, to 14 mm long, mostly pale reddish brown, occasionally a luminous pale green; perianth segments to 12 mm long, all similar, slender and shortly pointed; dorsal sepal erect, curved forward; lateral sepals thrust forward and often stuck to the lower side of the labellum; petals smaller spreading; **labellum** to 15 mm long, oblong, horizontal, apex rounded, crenulate, but with a fine pointed extension; column curved forward, winged above.

Flowering: Late May – June – July – Aug.

Similar Species: *C. reniformis.*

Distribution: **EP, NL, MU, YP, SL, KI, SE; WA, Vic, Tas.**
Very widespread but chiefly coastal, from Venus Bay in the west, all along the southern coast and Kangaroo Island; it extends inland on limestone or calcareous sands especially on Eyre Peninsula; absent from the Flinders Ranges; also in Western Australia and the Eastern states.

Habitat: Abundant near the sea from the high-tide mark, under shrubs in the sand-hills and on headlands to rough scrub on calcareous sands and limestone to 100km inland. Often found in the dense shade of shrubs, native pines and coastal mallee where it flowers freely but also in the Mount Lofty Ranges on dry ridges under sheoak and native cherry. Sometimes found in tussock grassland on sheet limestone.

Distinguishing Features: *C. robusta* can be distinguished by the early flowering, the pale usually larger leaves and pale reddish buds, in flower by the larger stature and labellum.

- ***C. reniformis*** differs in having heavily veined blue-green leaves with very dark buds.
- The leaves of ***Corysanthes* species** are similar in shape but have a thinner texture and more glistening appearance.

Notes: *C. robusta* was described in 1987. It forms large colonies even in exposed areas away from shelter but these plants rarely flower. Similarly, following dry autumns flowering may be much reduced with as few as 1% of plants flowering, but in good seasons flowering can be quite spectacular as colonies of thousands of plants occur. Flowering is much reduced in the season following a fire.

One of the few orchids to occur on the many tiny offshore islets and larger islands, especially along fairy penguin trails. Rapidly colonises old piles of sea-grass washed above the high tide level after storms.

C. robusta probably occurred in the lower Flinders Ranges on the (now overgrazed) limestone slopes near Port Augusta before settlement.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Common and well conserved.



KB, *C. robusta*, MU

Gallery



KB, *C. reniformis*, SL



BB, insect moving into position while sipping



KB, *C. robusta*, YP
albino form



JN, *C. reniformis,*
*Note veined leaves, a distinguishing feature



BB, *C. robusta*, Parsons Beach, June

Diplodium Sw.

Shell Orchids



MS, *D. robustum*, Scott Creek CP

South Australia's Native Orchids

Diplodium Sw.

Shell Orchids

Etymology: The name is from the Greek *diplous* double or *di* two referring to the two lateral sepals which are combined at the base.

Taxonomy: Although this is an old genus it has only recently been re-instated. It is somewhat unfortunate that the name is so similar to the unrelated *Dipodium*!

The many similar South Australian species as yet un-described are proving difficult to sort but the more obvious ones are treated here with phrase names as they are likely to be named in the near future.

Description: This is a segregate genus from *Pterostylis*, easily recognised from the sterile plants having a ground hugging rosette while fertile plants have a single flower with leaves up the stem, referred to as cauline leaves.

Flowers of some species are very similar to each other. There are several complexes such as the *D. obtusum* complex with its thickened sinus margins represented by *D. bryophilum* in South Australia. The *D. alatum* complex with shell like flowers, hence the common name 'shell orchids', is very complicated in South Australia and best known through the widespread *D. robustum*, the large green shell orchid.

In reality *Diplodium* is very close to *Pterostylis* and indeed some authors regard it as a subgenus of *Pterostylis*.

Pollination: All species are pollinated by small-sized fungus gnats (see picture right) and the attractant is as yet unknown.

Distribution and Habitat: This is a large greenhood genus of some fifty species throughout Australia and New Zealand occurring from sea level to the alpine zone, from the coast to well inland, from rainforest edges and deep swamps to desert rock outcrops, from forest, heath and grassland, in acid soils or alkaline. Most species seem to prefer cool damp conditions at flowering and for this reason the South Australia species mostly flower in winter; the one which does not flower in winter occurs in cool deep swamps.

Notes: In this genus flowering plants have no basal rosette, instead having cauline or stem leaves while sterile or non-flowering plants have a flat basal rosette of 5-10 leaves







1. Leaves on flower stem.
2. Non flowering rosette
3. Small fungus gnat



JN, five taxa of *Diplodium* from the lower South East, From left to right: (not to scale) *D.* sp. Chunky, *D.* sp. Newland Head, *D.* sp. Tall purple, *D. dolichochilum*, *D.* sp. Nora Creina

Diplodium alata (Labill.) Sw.

Diplodium sp. Adelaide Hills (R.J. Bates 47923)

Small Shell Orchid

Etymology: The common name reflects the delicate, shell-like flower shape; the phrase name indicates the distribution of the species.

Synonyms: Previously included in *Pterostylis alata* which does not occur in South Australia according to D.L. Jones.

Description: **Leaves** 4-10 in a rosette flat on the ground, small, ovate, petiolate, dark green, not crenulate, on sterile plants only. **Flower stem** to 22 cm tall, slender, with narrow, cauline leaves. **Flower** usually single, to 30 mm long, white with bold green stripes, rarely reddish tinted in older flowers. **Flower** upright, **galea** bulbous only near the base, erect and curved forward at the top, the petals blunt and rounded, with a short down-curved apiculus on the dorsal sepal; lateral sepals erect and embracing the galea, free points to 25 mm long, curving forward at the top; sinus broad, notched and protruding. **Labellum** to 9 mm long, lanceolate, not reaching the sinus.

Flowering: Late May – June – July.

Similar Species: *D. robustum, D. alatum, D. striatum, D.* aff. *striatum, D.* sp. Tall Purple.

Distribution: **?MU, SL, ?KI.**
Endemic to South Australia where it is confined to the higher parts of the southern Mount Lofty Ranges, mostly in the Adelaide Hills, and possibly on Kangaroo Island.

Habitat: In fertile shallow, acid soils of steep gullies and rocky ridges in scrubby woodland, often under *Callitris rhomboidea* and *Eucalyptus fasciculosa.* This taxon is often sympatric with *D. robustum* but rarely hybridising with it.

Distinguishing Features: Because of its restricted distribution really only likely to be confused with the variable ***D. robustum*** but easily recognised by the earlier finish to flowering, smaller rosettes, smaller, narrower, more delicate, neatly striped flowers on taller stems and the short rounded petals and small galea apiculus.

- This species is similar also to ***D. striatum*** of the South East but not as narrow, slender and without the narrow brown edged sinus and sepal tips.

Notes: Locally common and forming numerous small colonies, but with a very low flowering rate of about 1%.

Hybrids with *D. robustum* have flowers the size of *D. robustum* but on tall stems and very neatly striped. The flowers are sensitive to warm drying winds and collapse quickly.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3Rc.



RB, *D.* sp. Adelaide Hills, Warren CP, SL

Diplodium sp. Chunky

Chunky Shell Orchid

Etymology: The phrase name indicates that this is a species that has fatter flowers than *D. alatum*.

Synonyms: None.

Description: **Leaves** 4-7 in a flat basal rosette to 5 cm across, blue-green, petiolate, entire, on non flowering plants only. **Flower stem** to 20 cm, with 3-5 broad-lanceolate stem (cauline) leaves. **Flower** single, appearing large for the short stem, grey-green and translucent white, erect; **galea** to 30 mm long by 20 mm broad, swollen, curved forward in the upper half, with a neatly cut off white stripe, free point of dorsal sepal less than 2 mm long, petals broad; Lateral sepals erect and closely embracing the galea, the free points exceeding it by up to 20 mm, their tops curved forward; sinus broad and high up; **labellum** short, ovate, blunt, green and white, to 4mm long, visible but not protruding from the flower.

Flowering: Late May – June – July

Similar Species: *D.* sp. Adelaide Hills, *D.* sp. Newland Head.

Distribution: **SE; Vic.**
Restricted in South Australia to the coastline from Kingston southward; also in south-west Victoria as far east as Portland.

Habitat: Grows under closed coastal scrubs, in pale sand and leaf litter especially under soap mallee, *E. diversifolia* usually in the company of *D.* sp. Tall purple and *D.* aff. *alatum* Nora Creina.

Distinguishing Features: This species is distinguished by the plump flowers and neatly veined petals quite different from species with which it grows. The non crenulate rosette leaves also serve to set it apart.

Notes: This species occurs as small tight colonies of often overlapping plants but rarely seen in flower.

No hybrids known.

This recently discovered species has not been well studied.

Conservation Status:
Status in Legislation: Not Listed
Suggested Status: Unknown but probably threatened by clearing and rising sea levels.



JN, *D.* sp. Chunky, Sunlands, SE

Diplodium sp. Newland Head (C. Houston 73)

Gaping Shell Orchid

Etymology: The phrase name indicates the location where the species was first recognized.

Synonyms: Previously lumped under the all-purpose name *Pterostylis alata,* that is now regarded as a Tasmanian endemic.

Description: As for *D. dolichochilum* but the **flowers** greenish with a shorter **labellum** just pushing out of the flower and with green, crenulate **rosette leaves** not blue-green and smooth as in *D. dolichochilum*.

Flowering: Late May – June – July – Aug.

Similar Species: *D. alatum* (Tasmania), *D.* sp. Adelaide Hills*, D. dolichochilum*.

Distribution: **SL,KI. SE.**
Particularly common on Kangaroo Island but also extending to Fleurieu Peninsula, Narrung Peninsula and Coorong area.

Habitat: Confined to coastal limestone, calcareous sands.

Distinguishing Features: This is one of those ' bits and pieces' species without any outstanding features but rather recognisable only by the combination of features mentioned above i.e. green, crenulate rosette leaves, simple greyish-green flowers and plain labellum neither long nor short; many forms have a gaping, 'frogmouth' with sinus thrust forward. They may not all represent the same species.

Notes: Reasonably well conserved around the coast from Cape Jervis to the Coorong and on eastern KI. There are several similar forms in the South East which may require DNA testing to evaluate their status. This species is at the centre of a whole assemblage of forms.

Blooms in winter like other members of the *D. dolichochilum* complex.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3Rc.



BB, *D.* sp. Newland Head, Newland Head CP, SL

Diplodium bryophilum
(D.L.Jones) D.L.Jones & M.A.Clem.

Mossy Shell Orchid

Etymology: The name derived from *bryophilus* means moss loving, refers to the mossy sites where the species grows.

Synonyms: *Pterostylis bryophila*. Was previously included with *P. obtusa* R. Br. and *P. alveata*.

Description: **Leaf** rosettes separate from flowering plants, bright green and smooth, petiolate. **Flower stem** to 20 cm, very slender with several narrow-lanceolate cauline leaves. **Flower** single, erect, green, with white stripes dorsally; **galea** to 2 cm high, hardly swollen, apex of dorsal sepal with a short decurved acuminate apex; petals blunt; lateral sepals erect, the long filiform points embracing the galea, the sinus thickened and thrust forward. **Labellum** blunt green, just poking through the sinus.



JN, Mt Billy CP, SL, May

Flowering: Late Apr – May – June – early July.

Similar Species: *D. alveatum* (Victoria), *D. obtusum* (New South Wales).

Distribution: **SL**
Endemic to coastal Fleurieu Peninsula, mostly in the Hindmarsh Valley district.

Habitat: Grassy woodland in mossy gullies along drainage lines in natural lawns of weeping rice grass *Microlaena* and on steep slopes and ridges near creeks, usually with mosquito orchids *Acianthus*.

Distinguishing Features: The thickened protruding sinus with the labellum just above it and the early flowering habit make this a distinctive species.

Notes: Although previously included in *Pterostylis obtusa* R.Br., a New South Wales species with larger flowers, it has long been recognised as distinct. It is much closer to *D. alveatum* of coastal Victoria and probably a geographical variant of it.

D. bryophilum occurs in large extensive colonies in fertile loams and was probably common before settlement. The last of its habitat has been conserved in the Mount Billy Conservation Park where weeds will be a continuing threat. A large population at Hindmarsh Falls has declined to just a handful of plants in the last few years due to competition from weeds.

Although first collected over 130 years ago by Miss Jessica Hussey, *D. bryophilum* was only described recently (1997). Reports of *P. obtusa* from the South East since the 1920s would appear to be due to confusion with other species such as *D. tenuissimum* and *D. striatum,* neither of which is closely related.

Conservation Status:
Status in Legislation: Nationally critically endangered; endangered in South Australia.
Suggested Status: 2Eci nationally threatened.



BB, *D. bryophilum*, Back Valley, May

South Australia's Native Orchids

Diplodium dolichochilum
(D.L.Jones & M.A.Clem.) D.L.Jones & M.A.Clem.

Slim tongue Shell Orchid or Common Mallee Shell Orchid

Etymology: The Greek name *dolichos* long and *chilus* lip, refers to the labellum which is longer than several related taxa and protrudes from the flower.

Synonyms: *Pterostylis dolichochila, P. primulata* Nash ms.

Description: **Leaves** of non flowering plants 5-9, in a rosette about 30 mm across, flat on the ground, ovate on long petioles, bluish green, entire. **Flower stem** slender to 15 cm tall, with several narrow lanceolate cauline or stem leaves. **Flower** single, erect, purplish or red-brown with some grey-greenish infusions, and white stripes. **Galea** to 30 mm high, with a very short apex; lateral sepals erect, with long filiform reddish tips some 30 mm long, only curved forward at the very top; sinus not jutting forward, set near the middle of the galea. **Labellum** narrow-lanceolate, dark coloured, longer than the column and bent forward out of the flower at the top.



BB, Tailem Bend, June

Flowering: Late May – June – July – early Aug.

Similar Species: Other members of the *D. dolichochilum* complex (*D.* aff. *dolichochilum* High sinus; *D.* aff. *dolichochilum* Green), *D. erythroconchum, D. robustum.*

Distribution: **EP, MU, YP, SL, SE; Vic.**
Very widespread throughout the wheat-belt from the West coast near Venus Bay, all around the coast and inland almost to the Gawler Ranges, absent from the Flinders Ranges and Kangaroo Island, rare on the plains near the Mount Lofty Ranges, common on Yorke Peninsula and throughout the Murray mallee and upper South East. Also found in western Victoria.

Habitat: Found in sand or on limestone in poor mallee, mallee-broombush, *Callitris* woodland and scrubs. Often in places too poor for most other orchids. Frequently occurs in mixed or adjacent colonies with related species.

Distinguishing Features: Can be recognised from the small blue-green, smooth-edged rosettes, the maroon and white striped flowers, the hardly protruding sinus of the lateral sepals and the long narrow protruding curved labellum apex.

- ***D. erythroconchum*** is later flowering with a thick reddish labellum.
- ***D. robustum*** is green flowered with a short labellum.
- ***D.* aff. *dolichochilum*** High sinus has a high protruding sinus.

Notes: Less than 1% of plants flower most years. Colonies can be very large and number tens of thousands of plants, averaging up to fifty per square metre.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3Rc.



KB, *D. dolichochilum*, Potters Scrub, SE
*Note long dorsal sepal and long, slim, dark labellum

Diplodium erythroconchum
(M.A.Clem. & D.L.Jones) D.L.Jones & M.A.Clem.

Red Shell Orchid

Etymology: The Greek name *erythro,* red, and *konchos,* mussel shell, refers to the red colouring of the shell-like hood or galea.

Synonyms: *Pterostylis erythroconcha*, *P. crassulata* ms. Nash and *previously* treated as a form of the Western Australian *D. hamiltonii.*

Description: **Leaves** of non flowering plants in a ground hugging rosette about 40 mm across, of 4-10 petiolate, pale green leaves with crenulate margins. **Flower stem** reddish to 10 cm tall, with a few lanceolate stem leaves about 2 cm long. **Flower** single, large, striped with red, green and white. **Galea** erect to 4 cm, swollen at the base, curved at the summit, dorsal sepal and petals acute to acuminate; lateral sepals erect, loosely clasping the galea, red and white striped, jutting forward at the sinus, the filiform red apices, lax and drooping outwardly forward. **Labellum** longer than the column, red, broad, curving forward out of the flower with the apex suddenly contracted to a solid point.



KB, Muloowurtie, YP

Flowering: Late July – Aug – early Sept.

Similar Species: *D. dolichochilum*.

Distribution: **EP, MU, YP, KI, SE.**
Endemic to South Australia where it is very widespread from the coast throughout the southern wheat-belt but only on the plains and also on Kangaroo Island, from the west coast near Streaky Bay almost to the Victorian border, absent from the Flinders and Mount Lofty Ranges.

Habitat: Strictly on limestone or calcareous sands, from coastal dunes under low shrubs, through mallee-heathland, to open mallee and woodland. Usually found with other shell orchids. Usually on non wettable soils which may be powdery even in mid winter.

Distinguishing Features: *D. erythroconchum* is easily separated from other members of the complex by its late flowering, distinctly tricolored flowers, heavy textured, broad red labellum curving out of the flower and the drooping forward pointing tips to the lateral sepals.

- Non flowering plants can be distinguished from the sympatric ***D. dolichochilum*** by their crenulate leaf margins, thinner texture and different colour.

Notes: Covers extensive areas with small clonal colonies. In poorer areas non flowering rosettes make up over 90% of the population.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Secure.



KB, *D. erythroconchum*, Potters Scrub, Aug
*Note twist in labellum which is not normal for this species

South Australia's Native Orchids

Diplodium robustum (R.S.Rogers) D.L.Jones & M.A.Clem.

Common Green Shell Orchid

Etymology: The Latin name *robusta* indicates the robust flowers, which are rather large for the plant.

Synonyms: *Pterostylis robusta, P. alata* var. *robusta, P. scabra* var. *robusta.*

Description: **Leaves** 4-10, ovate, petiolate, to 30mm long, blade almost round, margins smooth in a ground hugging rosette, on non flowering plants. **Flower stem** usually less than 10 cm tall but on exceptional specimens to 20 cm, with several broad lanceolate, serrulate cauline or stem leaves. **Flower** single, green with white striped and often with brownish suffusions. **Galea** to 35 mm high, swollen at the base, erect with a broad hood, the dorsal sepal with a 5 mm long decurved point; lateral sepals erect and embracing the galea, to 25 mm across at the widest; sinus wide, free points to 30 mm long, divergent and with curved tips. **Labellum** to 15 mm long, narrow lanceolate, dark green, sub-acute, not protruding from the flower.

Flowering: May – June – July – Aug – Sept. (Flowers long-lived; lasting up to 12 weeks)

Similar Species: *D. alatum* complex, *D. dolichochilum.*

Distribution: **FR, EA, EP, NL, MU, YP, SL; NSW, Vic.**
The most widespread member of the genus in South Australia, from the West Coast uncommonly across Eyre Peninsula, common into the Flinders Ranges as far north as Blinman, throughout the Mount Lofty Ranges and arid land outliers such as the Pualco Ranges, around the coast to the South East but absent from Kangaroo Island. Found from sea level to the highest peaks and also in Victoria and western New South Wales.

Habitat: In woodland, shrub-land and scrubs especially on rocky ridges and slopes, and in gorges, but also on sand-hills, limestone and clay flats.

Distinguishing Features: The various forms of ***D. robustum*** all have large, mostly green flowers with an apiculate tip to the dorsal sepal. The common form has a very short labellum, not visible from outside the hood, but mallee and dryland forms have the labellum apex narrowed and exserted slightly. Most forms have a very short stem and many have distinctly serrulate margins to the cauline leaves.

There are four forms of *D. robustum* (see images)

- The **common** or **Hills** form has flowers on very short stems so that the chunky green flower may almost sit on the ground. This form has a short apex to the dorsal sepal.
- The **mallee** form has taller stems, narrower flowers and longer more curved tip to the dorsal sepal.
- The **dryland** form is similar to this but has a longer labellum.
- The **gorges** form has red flowers with long sepals. (see additional information under Notes)

***D.* sp. Adelaide Hills** is another species that has tall slender stems and occasionally colonies of *D. robustum* with long stems may be interpreted as hybrids between the two.

Notes: *D. robustum* generally forms large scattered colonies of thousands of plants with a low flowering rate, and in drought sometimes none at all.

They are very frost, cold and drought tolerant, occurring in frost hollows or even mountain sites where snow falls most years during flowering, as well as far inland where rainfall is light and erratic.

Some forms especially the desert form may place their flowers on or near ground level. See (adjacent) image.

The Gorges subspecies is only known from a few sheltered gorges in the Flinders and Mount Lofty Ranges. The flowers are usually quite red with a very long dorsal sepal, more closely related to mallee *D. robustum* than true *D. robustum*. This is the latest of the shell orchids to flower with flowers often blooming well into spring. The stems are taller than either true *D. robustum* or desert *D. robustum*.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Secure but some rare forms. Species more common in South Australia than interstate.



RB, *D. robustum* ssp. Gorges, Warren CP, Oct



JQ, Desert variety, Caroona Ck CP, MU



MS, rosette, Scott Creek CP



RB, Mallee variety, Moonta, YP



KB, common variety, Clare, NL

Diplodium striatum
(Fitzg.) D.L.Jones & M.A.Clem.

Striated Shell Orchid

Etymology: The name *striata* meaning striped or flutes, derives from the strongly striped flowers.

Synonyms: *Pterostylis striata.* Until recently this was included under *Pterostylis alata,* a Tasmanian species.

Description: **Leaves** 4-10 ovate, to 20 mm long, on long slender petioles, margins crenulate, in a ground hugging rosette on non flowering plants only. **Flower stem** to 25 cm tall, slender, with 2-6 lanceolate, cauline leaves, 15 mm long. **Flower** single, white with dark green and brown stripes, shading to almost black, particularly on the lateral sepals. **Galea** upright to 20 mm high, slender, hardly swollen at the base, the hooded part small, apex of dorsal sepal dark brown, decurved, to 5 mm long; petals pale edged; lateral sepals strictly erect and embracing the galea, very narrow, the free points parallel and dark tipped, exceeding the galea by up to 20 mm, sinus not protruding. **Labellum** to 10 mm long, narrow lanceolate, not protruding from the flower, the tip just visible from the front.



JN, Bordertown, SE

Flowering: May – June – July.

Similar Species: *D. alatum* complex*, D. dolichochilum.*

Distribution: **SE; Eastern states.**
Very restricted in South Australia where known from a handful of sites in the South East; more common in the Eastern states.

Habitat: In sandy woodland, often with Callitris or *Eucalyptus diversifolia* and usually with other *D. alata* complex species.

Distinguishing Features: A species which prefers dry woodland and has dark tipped segments, very narrow flowers (especially in front view) and rather small stem leaves.

Notes: Only recently recognised for South Australia. It occurs in small loose colonies.

No hybrids known in South Australia but crosses with *Taurantha concinna* in Victoria to give X *Taurodium toveyanum* and this hybrid probably occurred in South Australia before settlement.

The flexible stems allow the plants to be bent right over and when released spring erect again.

Conservation Status:
Status in Legislation: Not listed nationally, rare in South Australia.
Suggested Status: 2Eci in South Australia, common in the Eastern states.



KB, *D. striatum*, Padthaway CP, July

South Australia's Native Orchids

Diplodium sp. Joanna (R.J. Bates 72520)

Delicate Shell Orchid

Etymology: The phrase name indicates the best known location of the species.

Synonyms: Previously included in *D. striatum.*



JN, Joanna, SE

Description: **Leaves** of non flowering plants are rosettes, small pale and crenulate. **Flower stem** slender to 25 cm tall with narrow and sub-erect cauline leaves**. Flower** delicate, pale, narrow in front view, very erect, green, brown and white. **Galea** with a curved filiform apex, lateral sepals long antenna like; **labellum** very short and acute, not reaching the sinus. The flowers are long lasting.

Flowering: Late May – June – early July.

Similar Species: This is the most delicate member of the *D. striatum* complex of several mostly undescribed species and mostly in the eastern states.

Distribution: **SE; ?Vic.**
So far only known from a small area around Joanna in the South East near the Victorian border; likely also in western Victoria.

Habitat: Occurs mostly in sandy gullies with bracken, maiden hair fern, banksias, pink gums and *Acacia mearnsii.* This habitat is often frosty during the flowering season.

Distinguishing Features: The delicate, elongate, slender, pale flowers are without the strong dark markings of ***D. striatum***. The very short labellum is not visible in this species.

Notes: The species probably occurs in Big Heath Conservation Park nearby but winter orchid collections are lacking from this park. Some of the *D. striatum* complex in South Australia may be of hybrid origin perhaps stabilized crosses with other *Diplodium* which are common in the South East.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 2Eci, nationally threatened.



JN, *D.* sp. Joanna, Naracoorte Caves NP, July

Diplodium sp. Nora Creina (R.J. Bates 72500)

Nora Creina Shell Orchid

Etymology: The phrase name indicates the area where the species was first found.

Synonyms: Previously included under *Pterostylis alata* and *D. striatum.*

Description: **Leaves** pale green, petiolate, ovate, and crenulate, 5-10 in a flat, ground hugging rosette to 8 cm across, on non flowering plants only. **Flower stem** slender to 15 cm tall, pinkish or red, with several lanceolate, cauline leaves to 40 mm long, often red tipped. **Flower** single, translucent white with green and red stripes, narrow in front view, thin textured. **Galea** erect to 35 mm, swollen at the very base then neatly curved forward, dorsal sepal with a 14 mm fine decurved red point, exceeding the long, slender, white petals; lateral sepals erect, to 45 mm slender, with a definite gap between them and the galea; sinus narrow, the free points very fine, divergent and arched forward. **Labellum** to 6 mm long, red narrow lanceolate, not protruding, but visible through the sinus.

Flowering: Late May – June – July – Aug.

Similar Species: *D. alatum* complex, *D. dolichochilum* complex.

Distribution: **SE; Vic.**
Coastal areas of the lower South East – SE; also near Portland in Victoria.

Habitat: Under closed coastal or soap mallee growing on stabilized sand, usually with other *D. alatum* complex species.

Distinguishing Features: It can easily be recognised by the large pale green, crenulate leaf rosettes and by the gap between the lateral sepals and the galea, as well as the tricolored flowers on very slender stems. The long fine point on the dorsal sepal is also distinctive.

Notes: Only recently discovered, this attractive species forms large colonies in the leaf litter overlying white sands.

At one site it occurs with *D. striatum* and *D.* sp. Chunky. It is not unusual to find three and even four members of this complex growing together.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3 Eci nationally endangered.



JN, *D.* sp. Nora Creina, Sunlands, July
*Note gap between lateral sepals and galea

South Australia's Native Orchids

Diplodium sp. Tall purple (R.J. Bates 62866)

Tall coastal Shell Orchid

Etymology: The phrase name indicates the species height and general colouration.

Synonyms: Not known until 2002

Description: **Leaves** multiple, pale, crenulate, petiolate on ground hugging rosettes up to 70mm across in non-flowering plants. **Flower stem** slender to 25 cm, with slender cauline leaves. **Flower** single, maroon or purple-brown with white stripes. **Galea** upright, slender and thin-textured, apex of dorsal sepal dark; petals paler edged; lateral sepals erect and embracing the galea, narrow, the free points divergent with curved tips, exceeding the galea by up to 20 mm, sinus dark, not protruding. **Labellum** narrow lanceolate, dark, not, or only just reaching the sinus of the lateral sepals.



KB, Parsons Beach, SL

Flowering: Late May – June – July.

Similar Species: *D.* sp. Adelaide Hills, D. *alatum* (Sw) Labill. from Tasmania.

Distribution: **SL, ?KI, SE**
Restricted to the coast from Cape Jervis to the Coorong and probably on Kangaroo Island.

Habitat: Favours sandy soils under sheoak and coastal soap mallee, mostly in shade and in protected sites.



KB, pale leaf rosette, Potters Scrub

Distinguishing Features: The tallish, slender stems and purplish colouring as well as the narrow, short labellum set this species apart.

Notes: This species needs further research to assess its distribution and status. It appears to flower before other species with which it grows but only by a week or so.

Much of its soap mallee habitat is threatened by the climbing weed known as Bridal creeper.

It is possible that the southern form from near Beachport in the South East growing with *D.* sp. Nora Creina represents a separate subspecies.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Well conserved, particularly along the Coorong but rare elsewhere.



KB, *D.* sp. Tall purple, June

Diplodium tenuissimum
(Nicholls) D.L.Jones & M.A.Clem.

Tea-tree Swamp Greenhood

Etymology: The name *tenuissima* very slender, aptly describes this, the slenderest of all green-hoods.

Synonyms: *Pterostylis tenuissima*.

Description: **Leaves** 3-8 in a ground hugging rosette on non flowering plants; to 20 mm long, nearly circular, smooth, on long slender petioles. **Flower stem** to 30 cm tall wiry, with several narrow cauline leaves. **Flower** single, translucent white with green stripes and suffusions. **Galea** sloped forward, to 18 mm high, swollen at the base, narrower in front view, hooded at the top; dorsal sepal extended into a long filiform, deflexed point as long as the galea itself; petals also attenuated at their tips; lateral sepals erect, closely embracing the galea, sinus low, deeply notched, protruding. **Labellum** to 10mm long, green or brown, narrow lanceolate, curved and protruding well out of the flower.



KB, Piccaninnie Ponds CP, SE

Flowering: Mostly Oct – Nov – Dec – Jan – Feb – Mar, but any time of year.

Similar Species: None

Distribution: **SE; Vic.**
Restricted to a few disjunct locations in the South East, mostly coastal and as far north as Kingston; also in Victoria.

Habitat: Confined to closed silky tea-tree swamps (*Leptospermum lanigerum*) on perennially damp alkaline soils, mostly in black mud, in deep leaf litter or along swamp rat runways; sometimes in moss on the tea-tree bases.

Distinguishing Features: It is easily recognised as it has the longest galea apex of any South Australian species.

Notes: Recently its distribution was well mapped and several new locations discovered. Several of these sites are to be given conservation status which will help the survival of this highly habitat-specific species. Drainage of swamps and intensive grazing has led to 90% of its habitat being destroyed. At the main site at Piccaninnie Ponds Conservation Park where many thousand plants grew in the 1970s its habitat has become overgrown probably due to increased nutrient run off from farming practices and due to loss of small mammals which previously kept the swamp more open. Where its habitat is not disturbed it can form large clonal colonies.

No hybrids known.

Conservation Status:
Status in Legislation: Not listed nationally, vulnerable in South Australia.
Suggested Status: 3Eci in South Australia nationally threatened.



JN, *D. tenuissimum*, Piccaninnie Ponds CP

Gallery



***D. tenuissimum*, art by Kath Alcock**
Courtesy JN



JN, two versions of *D.* sp. Mallee *robustum,* Pinnaroo, MU
Possible hybrid influence with *D. dolichochilum*



JN, possible *D. dolichochilum* x *D. erythroconchum*, Monarto CP



Composite Images by BB



BB, *D.* sp. Newland Head, Fleurieu Peninsula, SL, July



BB, *D.* sp. Tall purple, Parsons Beach, SL, June



BB, *D. dolichochilum*, Monarto CP, MU, June



BB, *D. erythroconchum*, Sherlock Rd, MU, Sept



BB, *D. robustum* Mallee variety, Sherlock, MU



BB, *D. striatum*, Padthaway CP, SE, June



BB, *D. robustum*, Tugwell Road, SL



BB, *Diplodium* species or hybrid, Desert Camp CR, SE



KB, *D. erythroconchum*, Sherlock, August
*Note tricoloured flower and broad maroon labellum



RB, *D. robustum* ssp. Gorges
*Note red coloration, long sepal tip, and visible labellum
Inset – rosette with a ten cent coin

Dipodium R.Br.

Summer Hyacinth Orchids



RB, *D. roseum,* Kuitpo, Jan

South Australia's Native Orchids

Dipodium R.Br.

Hyacinth Orchids

Etymology: The name is derived from the Greek *di* meaning two and *podion* a small foot, referring to the two prominent stalks to the pollinia. The common name reflects the many flowered erect spikes of the orchids which in some way reminded the nostalgic early settlers of the European hyacinth.

Taxonomy: Until 1990 there was thought to be a single variable South Australian species *D. punctatum* but since then at least four species have been recognised here and true *D. punctatum* is the rarest of these, with *D. roseum* the most common.

Description: All the southern species including the South Australian ones are leafless saprophytes, mycophytes or hemiparasites with many flowered erect spikes. Flowers are fairly regular with flower parts somewhat fleshy, not fragrant, carried on tall stems.

Pollination: *Dipodium* are believed to be general mimics of nectariferous flowers. Although the flowers themselves provide no nectar a shiny yellow patch of tissue on the column could represent pseudo-pollen or nectar. At the base of the labellum is also what could be a vestigial nectar spur. Using the furry surface of the labellum as an aid, bees push into the flower, removing the pollinarium as they withdraw. Upon contact with the stigma of the next flower visited it is pulled away. Pollination rates vary but in a good season may exceed 25% of flowers on some spikes. The seed pod of a single pollinated flower contains in excess 1,000 seeds – a pretty good return.

The large shiny seed pods split vertically months after flowering and as they shake in the breeze the fine white seeds are released as in a miniature snowstorm.

Away from the flowers, at the base of each floral bract is an 'extra-floral' nectar gland. Many orchids possess these curious extra-floral nectaries which are thought to lead ants away from the flowers and thus prevent them entering and stealing pollinia. The ants may also serve to make the flowers less accessible to other insect pests. In any case ants are commonly seen feeding on the scape but rarely enter the flowers.

Distribution and Habitat: *Dipodium* is a genus of over 30 species widely distributed in South East Asia, Australia and the Pacific with at least a dozen species in Australia including leafy tropical species. All the southern species including the South Australian ones are found in association with decaying stumps and trees especially stringy barks, although they have been seen in orchards and under *Rhododendron.*

Notes: Being the only common orchid flowering during South Australia's midsummer, especially near Adelaide, it helps to prevent withdrawal symptoms for native orchid enthusiasts. The leafless species are not cultivated, although they are common enough 'wild' in bush gardens of the Adelaide Hills, especially around Stirling and Crafers.

It is suspected that *Dipodium* species are dependent on soil fungi which are in turn dependent on the roots of trees. If this is the case they may be termed *epiparasites*. Because of their summer growing season and *Dendrobium*-like flowers it seems likely that the genus is of tropical origin.

Plants spend the cooler months dormant as underground, fleshy, branched, tuberous roots. These begin to shoot in response to higher temperatures in spring, the young spikes in bud looking like stalks of asparagus. Flowering peaks in midsummer. Flower spikes are tall and stout, a favourite food of kangaroos, with numerous flowers opening sequentially, although in hot humid weather as many as 20 flowers may be open at once. Propagation is by seed but larger plants may divide into several and attractive displays occur with as many as 10 flower spikes from a single cluster of plants. Flower spikes of the previous season are often seen as persistent stalks adjacent the new spikes. Spectacular flowering episodes may follow very wet springs.

Bushfires increase flowering in dense bush but have little effect on open woodland populations where they lead to increased predation by kangaroos. Although the flowers can tolerate temperatures of 40˚C, severe heat-waves will cause mass flower abortion.

South Australia's Native Orchids

Dipodium campanulatum D.L.Jones

Bell Hyacinth Orchid

Etymology: From Latin *campanulatus,* bell shaped, in reference to the prevailing flower shape.

Synonyms: Until it was named in 1991 included under *D. punctatum.*

Description: Plant **leafless**. **Flower stem** to 70 cm tall, stout fleshy, greenish. **Flowers** numerous to as many as 30, fleshy, campanulate, each 20 mm across; arranged in a short, quite crowded spike; white with large deep-pink spots and blotches. Perianth segments all similar, to 15 mm long, ovate with rounded tips, remaining incurved. **Labellum** to 12 mm long, thrust forward, spotted like the other segments; tri-lobed, lateral lobes short and narrow; mid-lobe broadly elliptical to oblong, with a broad band of dense mauve and white hairs.



KB, Naracoorte, SE

Flowering: Late Dec – Jan – Feb.

Similar Species: *D. punctatum.*

Distribution: **SE; Vic.**
Restricted to the ancient shoreline extending parallel to and 10-20 km from the Victorian border; from near Padthaway south to the Glenelg River. The species was once common around Naracoorte; also in western Victoria.

Habitat: In deep grey sands or on limestone in *Eucalyptus baxteri* woodland with bracken understorey and with *Acacia* species. This species can sometimes be found with *E. leucoxylon, E. fasciculosa* associations.

Distinguishing Features: Easily recognised from the fleshy, bell shaped flowers, with dark pink blotches of colour on a white background, and the spoon shaped labellum.

- ***D. punctatum*** flowers have a pink not white background and are not bell shaped.

Notes: With a linear distribution of about 100 km from north to south and serious loss of habitat the species was already becoming rare by the time it was named.

It was first recognised as a distinct species by well known Naracoorte orchid expert, field naturalist, and artist Kath Alcock, in the 1970s.

The species is popular with orchid photographers because of its bright colour. *D. campanulatum* is often seen with its native bee pollinator in attendance or with colourful spiders on the flowers. Normally found with other *Dipodium* species in the same vicinity.

Searches for this orchid species in the Southern Mount Lofty Ranges have so far proved fruitless.

Conservation Status:
Status in Legislation: Not listed nationally, vulnerable in South Australia.
Suggested Status: Vulnerable in South Australia, nationally rare.



KB, *D. campanulatum*, Dec

South Australia's Native Orchids

Dipodium pardalinum D.L.Jones

Small Spotted Hyacinth Orchid

Etymology: The name *pardalinum* spotted, refers to the many small, well spaced spots of colour on the flowers, as in the common Australian birds, the pardalotes.

Synonyms: None.

Description: Plant **leafless**. **Flower stem** to 80 cm tall, greenish to dark purplish, stout, tough. **Flowers** 20 to 40, about 20 mm across, arranged in an open spike; white with numerous small, well defined, pink spots or dots. Perianth segments all similar, to 20 mm long, narrowly ovate, with blunt pointed tips; wide spreading and strongly recurved at tips. **Labellum** 15 mm long, spathulate, projected forward and slightly upward, trilobed, the basal lobes small; mid-lobe oblong, spotted like the other segments, with a central band of white hairs to the apex.



KB, Carey Gully, SL

Flowering: Late Nov – Dec – Jan – Feb.

Similar species: Pale flowered *D. roseum.*

Distribution: **SL, SE; Vic.**
In the Mount Lofty Ranges south from about Adelaide and in the South East. Extends further west than other hyacinth orchids at least as far as Fleurieu Peninsula also in Victoria.

Habitat: It occurs in varied habitats from clay/sand in closed *Eucalypt* forest amongst deep bark and leaf litter, to exposed sites on ridges in lateritic soil, to deep grey sands in stringy bark woodland with bracken under-storey.

Distinguishing features: Easily recognised from the numerous flowers with their dozens of pink dots on a white background, the dots even covering the labellum. Floral segments may have yellow stained tips.

- ***D. roseum*** by contrast has a striped labellum and no staining.

Notes: Although recognised as a distinct taxon in the South East since the 1980s by Kath Alcock of Naracoorte it was not named until the 1990s. No sooner was it named than populations were found as far north as Mount Lofty where it had previously been regarded as a form of *D. roseum.*

D. pardalinum is actually a very constant taxon. Photographs taken of flowers at the extreme eastern and western limits of its distribution, and from quite different habitats show almost no variation. *D. pardalinum* rarely forms hybrids with *D. roseum*.

Usually found with other *Dipodium* except in the extreme west of its range. Apparently it has been reported from Yorke Peninsula.

Conservation Status:
Status in Legislation: Not listed nationally, vulnerable in South Australia.
Conservation Status: Rare in South Australia.



KB, *D. pardalinum*, Kuitpo, SL, Jan
*Note the white flowers with lots of small distinct dots, including on the labellum

Dipodium punctatum (Sm.) R.Br.

Dark Spotted Hyacinth Orchid

Etymology: The epithet *punctatum* Latin, means spotted and refers to the discrete but irregular spots or blotches of colour on the flowers.

Synonyms: *Wailesia punctata*

Description: Plant **leafless**. **Flower stem** to 80 cm tall, stout, fleshy, dark brownish and rarely green. **Flowers** 20 to 60, to 25 mm wide, arranged in an open to quite crowded spike; pale pink to mid pink with very dark blotches of colour. Perianth segments all similar, to 20 mm long, ovate with rounded tips, widely spreading but never recurved at the tips. The **labellum** to 15 mm long, somewhat horizontal, uniformly coloured or striated, not spotted, trilobed, often darker than the other segments, lateral lobes short and narrow; the mid-lobe ovate, with a sparse central band of pink hairs extending to the apex. Rarely is this species fragrant.



KB, Naracoorte Caves NP, SE

Flowering: Dec – Jan – Feb.

Similar Species: *D. campanulatum.*

Distribution: **SE; Eastern States**
Very restricted in South Australia where known only from the Naracoorte Range close to the Victorian border but possibly more widespread as the species has not been well defined in the literature. *D. punctatum* is very widespread in the Eastern states.

Habitat: So far only found in well drained grey sands over limestone in woodland with a bracken under-storey.

Distinguishing Features: Recognised by the near straight pink flowers with darker spots and blotches and the similarly coloured labellum, uniformly coloured or striated.

- Closest in flower shape to ***D. campanulatum***, but that species has distinctly bell shaped flowers with broad white segments.

Notes: The name *D. punctatum* was until 1991 applied to all the South Australian forms. When the name *D. roseum* appeared it was assumed there were no true *D. punctatum* in the state as no one here knew what true *D. punctatum* looked like. It was not until January 2000 that Les McHugh of Naracoorte sent flowers to Canberra Botanic Gardens and its existence here was verified. Judging from photographs in various orchid publications *D. punctatum* is a variable, poorly defined taxon over its total range.

Only known from three locations in South Australia where it occurs with each of the other South Australian species. Backhouse and Jeanes (1995) wrote "surveys need to be undertaken to assess the conservation requirements of this species." This is equally true in South Australia.

Conservation Status:
Status in Legislation: Not listed nationally, endangered in South Australia.
Suggested Status: Probably 2Eci in South Australia and rare in Victoria.



KB, *D. punctatum*, Naracoorte, SE
*Note pink hairs on labellum of this species

Dipodium roseum D.L.Jones & M.A.Clem.

Common Hyacinth Orchid

Etymology: From the Latin *roseum*, rose-pink, in reference to the flower colour.

Synonyms: Until 1991 included under *D. punctatum* (Sm.) R.Br.



RL, Southern Lofty

Description: Plant **leafless**. **Flower stem** to 100 cm tall, stout, fleshy, tough, variously green, yellow-green, brownish, purple-red, or almost black. **Flower** number ranges from 15 to 50, to 25 mm across, in a loose open spike; pale pink to carmine, occasionally white, with faint, suffused dots or spots of darker colour. Perianth segments all similar, to 20 mm long, narrow ovate with bluntly pointed tips, widely spreading, the tips much recurved to roll back. **Labellum** to 15 mm long, thrust horizontally forward, tri-lobed, side lobes short and narrow; mid-lobe narrowly ovate to oblong, with variable, usually decurved margins, striated not spotted in the common form, with a sparse central band of pink hairs. Rarely flowers are perfumed.

Flowering: Nov – Dec – Jan – Feb – Mar – Apr.

Similar Species: *D. pardalinum.*

Distribution: **MU, SL, SE; Eastern states.**
Extending further north than other hyacinth orchids in South Australia, from the Barossa Valley to Cape Jervis and in the South East as far north as Bordertown and common in the eastern states too.

Habitat: Grows in forest, woodland and heath-scrubs from the coastal plains of the South-east to the tops of mountains in the Mt Lofty Ranges; in sandy acid soils to heavy, gravelly clays; includes leached poor-soil podsols and fertile humus-rich loams; from shallow soil on exposed ridge tops to deep soils in gullies and along creeks. The species even persists in old gardens containing exotic plants.

Distinguishing Features: Most easily recognised from the striped labellum, strongly recurved sepals on flowers pink or whitish with suffused rather than clear spots.

- ***D. pardalinum*** differs in having a spotted labellum, white flowers and distinct spots.

Notes: This is the best known and most familiar Hyacinth Orchid in South Australia especially in the Adelaide Hills where it forms spectacular displays, especially in the summer after a fire, when most of the under-storey is removed. Flowering can be erratic and sometimes massed blooming occurs where flowers have rarely before appeared.

Secondary flower spikes can appear occasionally as late flowering spikes at the base of an earlier flower spike.

There is a fascinating lack of correlation between the colour of plant stems and flower colour as plants with pale coloured stems may have deep carmine flowers and yet other plants with almost black stems will produce very pale flowers.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Common.



RB*, D. roseum*, Kuitpo, Jan

Gallery



JN, *D. campanulatum*, SE, Jan



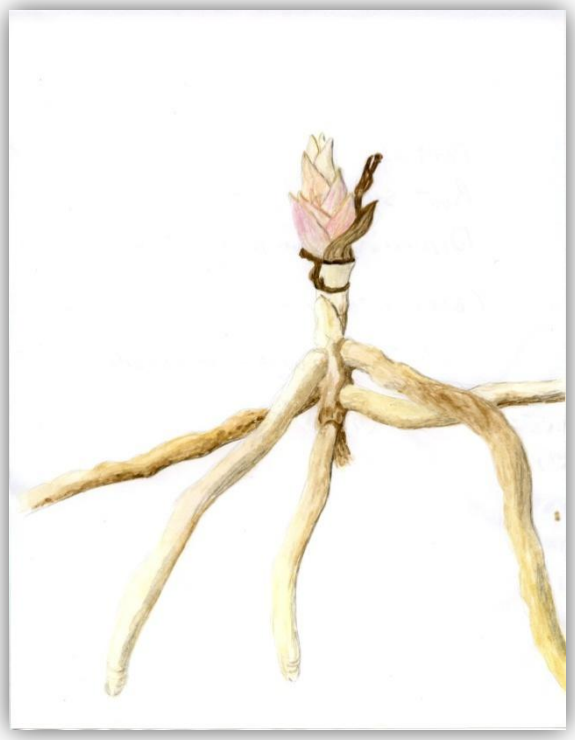
RL, *D. roseum*, SL



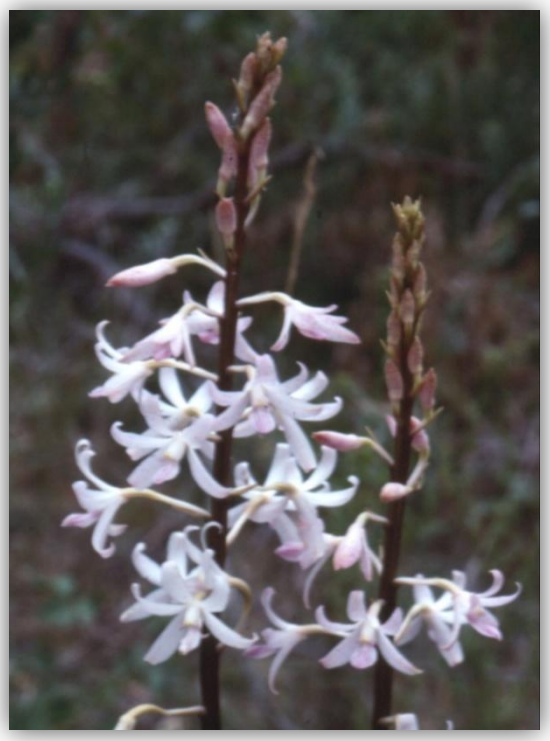
RL, *D. roseum*, SL



RB, emerging flower spikes, Scott Creek CP



KA, *D. campanulatum* in bud



RB, *D. roseum,*
*Pale flowers, dark stem! SL



RB, *D. roseum*, ripe pods, SL



RL, *D. pardalinum*, Talisker, with lines on labellum



RB, stripes, spots and yellow pollinia of *D. roseum*



RB, *D. punctatum*, Caroline NFR, Jan



JN, *D. punctatum* (top L), ***D. campanulatum* x *D. pardalinum*** (top R), ***D. pardalinum*** (bottom L), ***D. roseum*** (bottom R)



RB, *D. punctatum*, *D. roseum*, *D. hamiltonianum*



***D. pardalinum* and hybrid**
Art work by Kath Alcock courtesy JN



RB, *D. roseum*, well striped, Wirrabenda, SL



RL, *D. pardalinum* with bee pollinator, Talisker CP, SL
*Note the pollinia missing from the flower but now on the bee

(Hint for taking photographs of pollinators – turn the shutter sound off on digital cameras, so that you don't scare the pollinator away!)



RB, albino *Dipodium*, Mt Lofty, SL



RB, *Dipodium* amongst the agapanthus, Adelaide Hills

Diuris Sm.

Donkey Orchids



HL, *D. pardina*, Mt Lofty Botanic Garden, Sept

South Australia's Native Orchids

Diuris Sm.

Donkey Orchids

Etymology: The name, derived from Greek *di* two and *oura* tail, refers to the pendulous lateral sepals resembling tails on some species i.e. *D. punctata.*

Taxonomy: A large genus with many recently named species, taking the number of taxa to about sixty. Probably most closely related to the more ancient genus *Orthoceras.* There has been some instability in species names. *D. orientis,* for example, recently named, had previously been known as *D. longifolia* and then *D. corymbosa*. *D. pardina*, previously known as *D. maculata*, won't change, as the type is from the Adelaide Hills, but there may be cryptic species within the current concept. It might be useful to name the more common hybrids such, as *D. orientis x pardina*. Hybrids are frequent at disturbed sites wherever two or more species are sympatric and flower together.

Description: *Diuris* are glabrous plants with tubers ranging from ovoid to palmate to snakelike. There are two to several narrow-linear, radical, erect leaves. Flowers rarely one, usually several, relatively large resupinate flowers in tones of yellow and brown or purplish, often spotted or blotched, particularly on outer surfaces; dorsal sepal erect, base clasping the column; lateral sepals narrow-linear, tail like, parallel or crossed; petals longer than the dorsal sepal, ear-like. The labellum is the largest segment, 3-lobed, column short, stigma and stamen arising separately from the base, anther behind the stigma, mealy pollinia attached to the rostellum by a distinct viscidium.

Pollination: Native bees are the only observed pollinators. The highly coloured and sometimes scented flowers, which lack any nectar, are thought to be floral mimics of bush peas, *Platylobium, Pultenea, Daviesia*, or in the case of the cowslip orchid adjacent, lilies, which they resemble, especially in colour. The peas are a food resource for the bees and the orchid labellum may well be mimicking the keel, while the dorsal sepal makes a good copy of the standard of the pea flower. Like most floral mimics, the orchid flowers are usually conspicuous, larger and brighter than the flowers they emulate. Pollination usually occurs in less than 50% of flowers but the out-crossing achieved usually more than compensates for this.



***D. behrii* and yellow lily**

Distribution and Habitat: *Diuris* is almost confined to Australia apart from perhaps one species in Timor. Predominantly in the Eastern states with about twenty species in Western Australia but surprisingly few (about ten) in South Australia. All South Australian species are confined to the higher rainfall districts and do not extend much into the wheat belt.

Notes: One species *D. punctata (D. daltonii)* a purple flowered species has not been seen in South Australia for over 100 years and is surely extinct here in the wild, although occasionally cultivated. A similar species *(D.* aff. *dendrobioides)* was collected near Naracoorte in 2001, but nothing more is known of the details.

Diuris behrii Schltdl.

Cowslip Orchid or Golden Moths

Etymology: The name honours Hans Herman Behr, field naturalist in South Australia in the 1840s, who first collected the species.

Synonyms: *D. lanceolata* Lindl.

Description: **Leaves** 3-6, linear, to 20 cm tall, in a grass-like tussock. **Flower stem** to 40 cm tall. **Flowers** 1-4, to 40 mm wide, bright yellow, often with some delicate brownish striations inside the dorsal sepal and on the labellum, erect or nodding on long slender pedicels. Dorsal sepal ovate, to 20 mm, obliquely erect; lateral sepals linear, spreading below the labellum, greenish, about 25 mm long, with inrolled margins; petals to 23 mm, stalked, elliptical, spreading and drooping. **Labellum** to 25 mm, obliquely deflexed, tri-lobed; side lobes narrow, elongate with toothed apex; mid-lobe broadly wedge shaped, callus ridge very distinct and extending to the apex.



RB, Mokota CP, NL

Flowering: Sept – Oct.

Similar Species: *D. chryseopsis*, and also *D. lanceolata*. *D. monticola* and *D. pedunculata* which do not occur in South Australia.

Distribution: **FR, EPx, NL, MU, SL, SE; NSW, Vic, Tas.**
Once very widespread in South Australia, from near Port Lincoln in the west and Quorn in the north, through the Mount Lofty Ranges, the Murray foothills and South East.

Habitat: Mostly in native grassland, open woodland and grassy forest clearings in more fertile soils, especially amongst kangaroo grass and *Triodia* on gentle slopes and flats. More rarely found on the granite aprons of isolated tors.

Distinguishing Features: Recognised by the bright yellow flowers with drooping petals, small toothed side lobes and prominent callus ridge.

- ***D.* aff. *chryseopsis*** is a similar but smaller species with paler flowers and a shorter labellum with reduced callus ridge. They once occurred in similar habitats in the Adelaide Hills with *D. chryseopsis* preferring moister sites along creeks.
- The even rarer **sub-alpine grassland form** from the mid North of South Australia may prove to be a separate subspecies. It has longer stems and flowers with red or purplish tints or lines.

Notes: This species has suffered one of the most massive declines of any South Australian orchid. Older country folk tell of collecting basketfuls of the blooms every spring but with its habitat mostly ploughed up and degraded by overgrazing and weeds it is now rare indeed.

Flowers are often seen on cold days with a cluster of native bees asleep on the labellum base. Native bees do pollinate the flowers but on these occasions there must be some other reason for their presence, perhaps the flowers trap some of the sun's warmth.

With the disturbance of its habitat after settlement, *D. behrii* began to hybridise abundantly with any species with which it was sympatric, sometimes setting up hybrid swarms. One of these hybrids, a cross with *D. pardina,* often became more common than the parent species, and was named as *Diuris* x *palachila.*

Conservation Status:
Status in Legislation: Not listed nationally, vulnerable in South Australia.
Suggested Status: Vulnerable in South Australia.



RB, *D. behrii,* Millbrook, SL, Oct

Diuris brevifolia R.S.Rogers

Late Donkey Orchid

Etymology: The name *brevifolia,* Latin, means short-leaved. The leaves are all short and twisted.

Synonyms: *D. sulphurea* var. *brevifolia* (R.S.Rogers) J.Z.Weber & R.J.Bates

Description: **Leaves** 2-8, short, narrow and twisted, erect. Tubers are short and comma shaped. The **stem** is slender, almost wiry to 40 cm tall. **Flowers** 2-5, relatively large, buttercup yellow, with two brown spots on the back of the dorsal sepal; lateral sepals linear, green to brown, 1.2-2 cm long; petals 15 mm long, on a distinct brown stalk. **Labellum** side-lobes triangular, less than half as long as the spade shaped mid-lobe. Flowers are hardly scented.

Flowering: Late Oct – Nov – Dec.

Similar Species: *D. sulphurea.*

Distribution: **SL, KI**
Endemic to South Australia where restricted to the southern Mount Lofty Ranges, south of Adelaide and on Kangaroo Island (western end).

Habitat: It grows in poor sandy or gravelly soils which are often mixed with yellow clays, in damp heathy woodland sites or dense scrubby heath.



KB, Kuitpo NFR, Nov

Distinguishing Features: Bright buttercup yellow flowers with upright petals on brown stalks, labellum mid-lobe without brown stripe across lower half.

- The larger flowered ***D. sulphurea*** has only two, much longer leaves and is restricted to the South East.

Notes: Flowers more freely after fires when sometimes large congested spectacular colonies can be seen; otherwise generally only a small proportion of plants flower.

The species has suffered a massive decline in recent years. In cultivation *D. brevifolia* has proven itself a disease resistant species, gradually increasing. It has been used in man-made hybrids with several species including, *D. punctata* and *D. emarginata.*

A natural hybrid with *D. orientis* is occasionally seen but as their flowering times hardly overlap such crosses are not common. *D. brevifolia* is more closely related to several Western Australian species than to any Eastern States species.

Conservation Status:
Status in Legislation: Endangered in South Australia (not listed nationally).
Suggested Status: Rare in South Australia. 3Eci, threatened nationally.



CH, *D. brevifolia*, SL

Diuris chryseopsis D.L.Jones

Diuris sp. Red-gum waterholes (M. Houston 69)

Swamp Golden Moths or Snake Orchids

Etymology: Greek *chrysos* golden *and opsis* appearance *Chryseopsis*, meaning golden yellow, reflects the flower colour.

Synonyms: It was previously known by several different names i.e. *D. pedunculata* R.Br., now considered endemic in the eastern states and *D. lanceolata* Lindl., now considered endemic in Tasmania.

Description: **Leaves** 3-9, linear, slender, to 15 cm, erect, in a loose tussock, from ovoid tubers. **Flower stem** to 30 cm tall, slender, brown to green. **Flowers** 1-4, to 25 mm across, pale yellow with few brown streaks; dorsal sepal to 15 mm, ovate, depressed over the labellum base, margins incurved; lateral sepals green, to 18 mm long, linear, parallel beneath the labellum. Petals to 20 mm, stalked, elliptical, spreading with inner face upward. **Labellum** to 15 mm, almost horizontal, trilobed; side lobes toothed; mid-lobe broadly ovate, dished, with two blunt callus ridges, with no brown lines.



BB, Topperwein NFR, SE

Flowering: Aug – Sept – Oct.

Similar Species: *D. behrii*.

Distribution: **SLx, SE;**
It is now extinct in the Mount Lofty Ranges where it once grew from about Adelaide southward to Victor Harbor and it is extremely rare in the South East.

Habitat: It grows in damper grassy patches in woodland around waterholes along creeks, or on cooler slopes, only in rich, moisture retentive soils.

Distinguishing Features: A shorter, pale yellow flowered species with depressed dorsal sepal, widely spreading petals and few brown streaks.

- The much more widespread ***D. behrii*** is a tall plant with more nodding flowers, a less flattened dorsal sepal and longer labellum with longer callus ridge.

Notes: Known from very few, mostly early collections.

The last plants in the Adelaide area grew at Scott Creek but disappeared under dense re-growth after a fire in the early 1990s. It grew on the rich creek-side flats near Meadows in the 1950s where it was found as scattered short, pale flowered plants amid thousands of *D. behrii*. The reason for its disappearance is the total clearance of its major habitat, a few plants persisting in less suitable habitat but eventually succumbing to weeds and low viability.

It is still found at a handful of sites in river red gum woodland in the South East. The South East plants may be better regarded as *D.* aff. *chryseopsis*.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Endangered in South Australia, 3Eci, but more common in the Eastern states.



***D.* aff. *chryseopsis*, SE, art work by Kath Alcock Courtesy JN**
*Note the grass-like leaves

Diuris sp. Sandhills

Sandhill Golden Moths

Etymology: The common name indicates the preferred habitat of this species.

Synonyms: Not previously recognised.



BB, Native Wells NFR, SE

Description: **Leaves** are grass-like. **Flower stem** short; **flowers** few, slender, pale yellow. Dorsal sepal hooded over the labellum, strong black lined at the base; lateral sepals green, linear, incurved; petals short stalked, narrow ovate, spreading and drooping. **Labellum** elongate, trilobed, midlobe lanceolate, with raised callus.

Flowering: Sept – Oct.

Similar Species: Any of the numerous cryptic species of the *D. behrii* complex especially *D.* aff. *chryseopsis.*

Distribution: **SE; Vic.**
Known only from a small area of the lower South East from Caroline Forest NFR to Robe; also in western Victoria.

Habitat: Grows with bracken and sheoak on low sand hills and rises of the plains. Some of this habitat represents old shorelines.

Distinguishing Features: The species is best recognised from its short stature, few narrow pale flowers and hooded dorsal sepal with strong black lines on the base.

- ***D. behrii*** has longer but fewer leaves.
- ***D. chryseopsis*** has longer lateral sepals.

Notes: Recognised as different from *D. behrii* many years ago but this was from plants in western Victoria. It was only recently (2008) located in South Australia, by Bryan Haywood, of Forestry SA.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3Vci nationally threatened.



JN, *D.* sp. Sandhills, Oct
*Note striped ovary

Diuris daltonii (C.Walter) D.L.Jones

Purple Doubletails

Etymology: The epithet honours the D'alton family of the Grampians who collected the species although it had probably been collected earlier near Mount Gambier, South Australia.

Synonyms: *D. punctata* Sm., *D. punctata* var. *daltonii* C.Walter.

Description: **Leaves** two, linear, erect, channelled, somewhat lax, and arising from large palmate tubers. **Flower stem** to 30 cm tall, robust. The **flowers** are few to several, purple to 3 cm across with long pendulous lateral sepals. Dorsal sepal to 1.5 cm, ovate, undulate, erect; lateral sepals up to 10 cm long, green or pale brown to purple; petals ovate, erect, to 2 cm long, on 1 cm long claws. The **labellum** is about 2 cm long, deeply trilobed, side lobes small, and mid-lobe ovate-cuneate. There is no fragrance.

Flowering: Oct – Nov.

Similar Species: There are many forms of purple flowered *Diuris* in the Eastern States.

Distribution: **SE?x; Qld, NSW, Vic.**
It was restricted to the lower South East from about Penola southward and especially around Mount Gambier, but seemed to have disappeared with the first wave of land clearance.

Habitat: It probably grew in fertile volcanic loams in open forest and on River Red-gum flats i.e. the first areas to be cultivated by European settlers.



JN, west Vic, Nov

Distinguishing Features: A strongly purple flowered species with yellow spot on the callus and long lateral sepals.

Notes: Possibly extinct in the South East. The nearest population of purple *Diuris* still surviving in Western Victoria is near the Black Range west of the Grampians. These plants are probably similar to those which grew in South Australia.

D. daltonii is a popular species in cultivation in Adelaide; there are suitable locations for re-introduction.

Natural hybrids with *D. punctata* as a parent are widespread in the Eastern states.

It appears that the only South Australian collection was made by naturalist and orchid fancier Dr. Wehl of Mount Gambier, who sent material to Mueller. The location of this collection has not been established. A recent (2001) collection from Naracoorte by Kath Alcock has been identified as closer to *D. dendrobioides*.

Conservation Status:

Status in Legislation: As *Diuris punctata* Sm. var. *punctata,* endangered in South Australia (not listed nationally).

Suggested Status: Endangered in South Australia. It is possibly extinct in South Australia.



JN, *D. daltonii*, Nov

Diuris x fastidiosa R.S.Rogers

Proud Doubletails

Etymology: Both the scientific and common names mean the same and refer to the semi erect labellum thrust haughtily into the air.

Synonyms: First described as *D. fastidiosa* R.S.Rogers without its recognition as a hybrid.

Description: **Leaves** 3-8, linear, to 10 cm, in a small erect tussock. **Flower stem** to 20 cm, slender. **Flowers** 1-3, to 20 mm wide, light yellow with dark brown markings; dorsal sepal to 10 mm, ovate to wedge shaped, leaning back; lateral sepals linear, about 17 mm long, parallel, green; petals erect, small, ovate, on long claws, marked with brown on the back; **Labellum** angled upwards, side lobes small, mid-lobe spade shaped, about 1 cm long, with irregular brown blotches.

Flowering: Aug – Sept.

Similar Species: None, although other *D. behrii* hybrids may approach it.

Distribution: **FR, NL**
Recorded for the southern Flinders Ranges near Quorn and Wilmington and from near Clare in the Mount Lofty Ranges but is likely to occur wherever the parent species are sympatric.

Habitat: Found in habitat of the two parents, i.e. native grassland, open woodland and dry grassy woodland.

Distinguishing Features: A distinctive hybrid identified by its small size and upturned labellum tip.

Notes: The South Australian plants are mostly a cross between *D. behrii* and *D. palustris* but, in view of the extreme similarity of the Moth Orchid parents, either cross would show the same characters and variation.

The chances of finding further plants of this taxon in South Australia are remote as there are no large sympatric populations of the parent species in existence.

It is certainly a quaint and distinctive plant especially the way the flower sits with its 'nose in the air' in a proud or haughty fashion.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: This hybrid has not been seen for many years, but there are many similar 'golden moth' hybrids.



RB, *D.* x *fastidiosa*, Alligator Gorge, FR

Diuris orientis D.L.Jones

Wallflower Orchid or Bulldogs

Etymology: From Latin *orientis,* eastern, a reference to the distribution of this species, the only eastern representative of a large complex of otherwise Western Australian donkey orchids.

Synonyms: It was previously known as either *D. longifolia* R.Br. or *D. corymbosa* Lindley, both now considered to be purely Western Australian species.

Description: **Leaves** 1-3, to 30 cm long but usually much shorter, linear, robust, channelled, erect or procumbent, from long snaky tubers**. Flower stem** to 45 cm tall, slender to robust. The **flowers** are 1-8, to 50 mm across, yellow with red-brown and or purplish markings, especially on dorsal sepal and labellum. Dorsal sepal to 13 mm high but very much wider, without a peak; lateral sepals linear, parallel; petals obliquely erect with dark stalks. **Labellum** trilobed, side lobes as long as the mid-lobe, spreading widely; mid-lobe folded, callus small.

Flowering: Sept – Oct – Nov.

Similar Species: None in South Australia although there are numerous similar species in Western Australia.



JN, Cox Scrub CP, SL

Distribution: **EP, NL, MU, YP, SL, KI, SE; WA, NSW, Vic, Tas.**
Widespread across the southern parts of the state from near Elliston in the west, across Eyre Peninsula and its coastal islands, Yorke Peninsula, Kangaroo Island, the Mount Lofty Ranges including Clare, Murray, Kangaroo Island and South East but absent from the Flinders and rarely found far inland. It is also found in the Eastern States.

Habitat: Common in forest, woodland, scrubs and heath from the high tide line to the tops of mountains, valleys, slopes and ridges, from hot dry sites to cold damp ones in all soil types, from sheet limestone to acid sands.

Distinguishing Features: The yellow flowers with diffused colour markings of red-brown to purple make this an easily recognisable species.

Notes: The species forms large colonies by vegetative reproduction and flowering can be quite spectacular after fires. In some areas each clone has differently marked flowers; in other areas all flowers are similar.

The diverse range of habitats and soil types suggests there may be several different biological races, but these are not well differentiated.

D. orientis hybridizes freely with *D. pardina* and D. *behrii* but rarely with *D. palustris, D. brevifolia* and *D. sulphurea.* Not surprisingly, the areas with greatest diversity of floral features are those where hybrids are most often found. There are at least a dozen man made hybrids recorded, many of which have been registered as cultivars.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Common and well conserved.



RL, *D. orientis*, Dorset Vale, SL

Diuris x palachila R.S.Rogers

Broad Lip or Hybrid Doubletails

Etymology: The name *palachila* is Greek for spade-shaped lip and refers to the shape of the mid-lobe of the labellum.

Synonyms: *D. palachila* R.S.Rogers, *D. behrii x D. pardina*

Description: **Leaves** several, grass-like, narrow-lanceolate to 20 cm, in an erect tussock from ovoid tubers. **Flower stem** to 40 cm tall, green or purplish. **Flowers** several, rarely one, on long slender pedicels, bright yellow, marked with spots and blotches of brown, very variable in any population; dorsal sepal about 1 cm long, blotched on the back; lateral sepals linear, parallel; petals elliptic to ovate, on a short claw, yellow above, dotted of striated below, **labellum** about 1 cm long, side lobes more than half as long as the spade shaped mid-lobe.

Flowering: Aug – Sept – early Oct.

Similar Species: Perhaps due to back crossing, some specimens are so similar to either parent *(D. behrii, D. pardina)* that one can't always be sure if a specimen is a hybrid.

Distribution: **NL, MU, SL, SE; Vic.**
Has been seen in all the areas where both parents occur, from near Clare in the north of the Mount Lofty Ranges, becoming most frequent in the Adelaide Hills, uncommon in the Murray and South East; also in Victoria.

Habitat: As for most hybrids, largely restricted to disturbed sites, from roadsides and lightly grazed areas to old quarries and especially in logged areas of grassy woodland.

Distinguishing Features: Flowers with the bright yellow of *D. behrii* and the spotted/blotched brownish markings of *D. pardina;* petals often held horizontal.

Notes: This was certainly the most frequently encountered hybrid *Diuris* in the 1960s but since then has become increasingly rare, while the hybrid *D. pardina x D. orientis* has increased. This is because there was so little grassy woodland left to be disturbed but still plenty of disturbance going on in the better conserved, heavily forested habitat of *D. pardina* and *D. orientis*.

The type of habit suitable for this hybrid is becoming rare these days as most areas of the State have either become totally degraded and support no orchids or are fenced off and disturbance prevented. This situation not only prevents the development of hybrids it also leads to lower diversity of orchid species in general.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Not relevant.



RB, *D.* x *palachila,* Millbrook, SL

Diuris palustris Lindl.

Little Donkey Orchid or Cinnamon Donkey Orchid

Etymology: From the Latin *palustre*, swampy, referring to the habitat where the species was first found but it is not in this habitat in South Australia.

Synonyms: There are none.

Description: **Leaves** 3-10, slender, linear, erect and twisted, to 10 cm long, in a loose tussock, from an ovoid tuber. **Flower stem** to 15 cm, brownish green. The **flowers** are 1-4, to 20 mm across, yellow with brown spots, blotches and striping, especially on the outer surfaces (rarely wholly yellow). Dorsal sepal rounded, erect with a recurved tip; lateral sepals brown or green, linear, down-swept, to 20 mm long; petals erect and reflexed, on long purple brown claws, the lamina oval to 8 mm long, yellow inside with two dark brown vertical stripe outside. **Labellum** relatively small, to 1 cm, deeply trilobed, side lobes narrow, as long as the folded, spade-shaped mid-lobe, peaked at the apex. Flowers are cinnamon scented.



KB, Brentwood, YP

Flowering: Aug – Sept.

Similar Species: There are none.

Distribution: **FR, EP, NL, MU, YP, SL, SE; Vic, Tas.** Widespread especially in the wheat-belt, uncommon in the western end of its Range on central Eyre Peninsula but becoming increasingly common as one moves east and once abundant on the Yorke Peninsula and Murray Districts. Occurs at least as far north as Quorn in the Flinders Ranges and probably once as far as Hawker. The species is rare now near Adelaide and in the Mount Lofty Ranges due to over-clearing.

Habitat: *D. palustris* prefers more open terrain such as shrub steppe, grassland and dry grassy woodland, mallee and mallee-broombush associations. It was once particularly common in shallow terra rossa soils over limestone, a soil type now converted to farmland. Despite the epithet *palustris* meaning swampy, the species does not occur in swamps in South Australia.

Distinguishing Features: *D. palustris* is a very distinctive species with no close allies. It is easily recognised by its tuft of many narrow, twisted leaves, the small flowers, the cinnamon fragrance and the distinctively striped back to the petals.

Notes: The delightful cinnamon fragrance is most noticeable in large populations.

D. palustris is tolerant of some grazing and plants frequently form small clumps of up to ten plants.

It forms hybrids with *D. pardina, D.* aff. *brevissima* and rarely with *D. orientis*, especially in the Murray region. These are in addition to *D. x fastidiosa.*

Conservation Status:

Status in Legislation: Not Listed

Suggested Status: It is reasonably common and well conserved.



CH, *D.* palustris, Maitland, YP

Diuris pardina Lindl.

Leopard Orchid

Etymology: The epithet *pardina* Latin spotted, refers to the dark spots or blotches of brown on the flowers, hence the common name Leopard Orchid.

Synonyms: *D. maculata* Sm. was a previously applied name, but that species is now considered a New South Wales endemic.

Description: **Leaves** 1-3, slender, linear, red based, to 20 cm long, channelled. **Flower stem** to 30 cm tall. The **flowers** are 1-8, to 30 mm across, yellow or cream with brown blotches, especially on outer surfaces. Dorsal sepal to 10 mm, variable, often peaked; lateral sepals to 20 mm long, linear-oblong, usually crossed and or curled back under the flower, brownish; petals on slender brown stalks, erect or reflexed, ovate, 1 cm long. **Labellum** short, side lobes upturned, butterfly like and larger than the mid-lobe which usually has a transverse blotch toward its apex.

Flowering: Late July – Aug – Sept.

Similar Species: *D. brevissima* Fitzg. ex Nicholls or possible similar but un-described South Australia species (see *D*. sp. Short tailed).



HL, Mt Lofty Botanic Garden

Distribution: **EP, NL, MU, YP, SL, SE**
Widespread from about Elliston on the West coast, across Eyre Peninsula, one record only from Yorke Peninsula, common in the Mount Lofty Ranges, Murray and the South East but surprisingly absent from the Flinders Ranges and Kangaroo Island.

Habitat: *D. pardina* is found in a range of habitats and soil types, from woodland, forest, heath and mallee heath, especially in open or disturbed sites but more obvious in dense bush after fires. It is also seen about rock outcrops and can quickly colonize roadsides.

Distinguishing Features: A rather distinctive species with animal like features especially the ear-like petals on long stalks which have given rise to a whole host of local names like 'Donkey Ears' and 'Leaping Leopards' but usually known just as Donkey Orchids.

Notes: Wherever *D. pardina* grows with other species hybrids may be found following disturbance. Such crosses occur with *D. orientis* (frequently), *D. behrii* (locally frequent), *D. palustris* and *D. brevifolia* (rarely).

Quite clearly there is more than one taxon under this name in South Australia as there is a smaller wheat-belt form which frequently has a single leaf, much brighter yellow flowers, orbicular petals and pointed labellum side-lobes (see following species).

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Common and well conserved.



RL, *D. pardina*, Coromandel, SL

Diuris sp. Short-tailed (R. Bates 66289)

Southern Leopard Orchid

Etymology: The phrase name is a reference to the short lateral sepals.

Synonyms: Previously placed either in *D. maculata*, *D. pardina* or *D. brevissima* sensu stricto.



RB, Tolmer Rocks, SE

Description: Often a more delicate plant than *D. pardina*, to 20 cm tall although the southerly populations are up to 30 cm tall. The **leaves** are 1-2, linear, slender, and erect to 20 cm, often with some purple tints. **Flowers** 1-4 bright yellow with mid brown or red-brown spots and blotches, dorsal sepal mostly yellow with two eye-like spots at base, lateral sepals very short and crossed, often mostly hidden under labellum, petals orbicular on long slender stalks, **labellum** side lobes smaller than the mid lobe and wing-like, mid-lobe with transverse reddish bar near apex.

Flowering: Sept – Oct.

Similar Species: *D. pardina* in South Australia, *D. maculata* in New South Wales.

Distribution: **MU, SE; Vic.**
Restricted to the South East and southern Murray where it replaces *D. pardina* and also in Victoria.

Habitat: The species grows best in woodland, heath and mallee broom-bush in a variety of soil types but especially on calcareous soils.

Distinguishing Features: The more distinctly yellow flowers, the fewer, slimmer leaves, the later flowering, petals without marks on front, smaller or differently shaped side lobes to labellum and finer, redder overall spotting, all serve to separate it from its close congener ***D. pardina***.

Notes: Both species are often found with G*lossodia* but *D. pardina* flowers before *Glossodia*, whereas *D.* sp. Short-tailed flowers after *Glossodia* wherever they grow together.

Backhouse & Jeanes in Wild Orchids of Victoria (2006, pg 231) show a very similar species from western Victoria which they label *D.* sp. aff. *pardina.*

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Uncommon and poorly conserved, 3Rci



RB, *D.* sp. Short-tailed, Penola CP, Oct

Diuris sulphurea R.Br.

Tiger Orchid

Etymology: The Latin name *sulphurea,* sulphur coloured, reflects the brilliant yellow colour of the flowers.

Synonyms: *D. oculata* F. Muell ex Lindley.

Description: **Leaves** usually two, linear lanceolate, lax, flattened and channelled, to 20 cm long, arising from 'finger shaped' tubers, (flowering plants) or ovoid ones (leaves only). **Flower stems** can be very robust but in South Australia are usually short and slender. **Flowers** few in South Australia, yellow with few brown markings, variable in size i.e. up to 4 cm diameter but usually much less. Dorsal sepal to 2 cm tall, ovate with two conspicuous eye-like brown blotches near the base; lateral sepals more than 2 cm long , brownish, parallel or crossed; petals erect or laid back, on short brown claws, wholly yellow. **Labellum** shorter than the other segments, with side lobes very short, mid-lobe spade shaped with decurved margins, a transverse brown blotch near the apex on a high ridge. Flowers are usually unscented.



KB, Padthaway CP, SE

Flowering: Late Sept – Oct – Nov – early Dec.

Similar Species: *D. brevifolia,* but distributions do not overlap.

Distribution: **SE**
Restricted to the South East from Bordertown southward and locally common; widespread in the Eastern states.

Habitat: Damper sandy flats, in lightly forested areas, where it occurs singly or in small colonies. Flowering is more frequent after fires.

Distinguishing Features: The species is easily separated from the closely related ***D. brevifolia*** by virtue of its fewer, lax leaves which are not twisted.

- The flowers of *D. brevifolia* are smaller, glossier, and with a broad labellum, lacking the transverse brown bar.

Notes: Common in cultivation and frequently used in hybridizing as it produces tall, sturdy, vegetatively increasing, yet free-flowering progeny.

The species forms colonies through vegetative increase. The new season's tuber is finger-like and formed at the base of the plant adjacent the old one but in good years new tubers are also formed at the end of each root. Surprisingly these tubers are ovoid in shape.

Conservation Status:
Status in Legislation: Not listed nationally, rare in South Australia.
Suggested Status: Rare in South Australia. 2Vci but common in the Eastern states.



KB, *D. sulphurea*, Mary Seymour CP, Nov

Gallery



RB, *D.* aff. *behrii* Mokota CP, underside markings



RL, *D. orientis*, Belair Recreational Park, SL
*Note the unusual colouring



KB, *D. orientis,* Scott Creek CP, SL



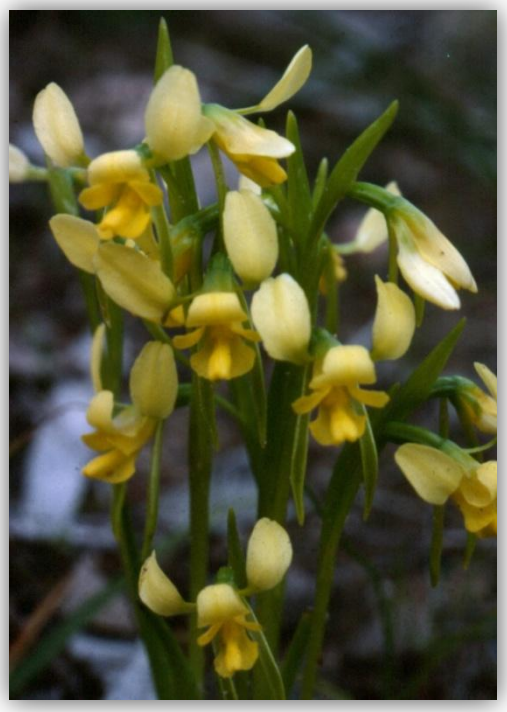
RL, a large patch of *D. orientis*, Mt Bold, SL



RB, *D. behrii* x *D. orientis*



RB, pale *D. pardina*, Bridgewater, SL



RB, *D. palustris*, Alligator Gorge, FR



RB, *D. orientis*



JN, *D. pardina* seed capsule, Oct



JN, *D. brevifolia*, Cox Scrub, SL



RB, *D. brevifolia* x *D. orientis*, Mt Billy, SL



MH, *D. sulphurea* x *D. behrii,* Padthaway, SE



HL, *D. orientis x D. pardina*, with crowned sepal, Mt Lofty, SL



MH, *D. palustris*. plant, Pt Vincent, YP

South Australia's Native Orchids

Eriochilus R.Br.

Parson's Bands or Autumn Bunnies



RL, *E.* sp. Hills woodland, Cromer CP, SL

South Australia's Native Orchids

Eriochilus R.Br.

Parson's Bands or Autumn Bunnies

Etymology: The name is derived from the Greek *erion* wool and *cheilos* a lip, in reference to the woolly texture of the labellum lamina.

Taxonomy: With the description of new Western Australian and eastern states taxa things have begun to change in the taxonomy of the genus. The name *E. cucullatus* was applied to all the eastern species until recently. The Western Australia species have been revised by Hopper and Brown (2006), with the number of taxa quadrupled. The more cryptic eastern species are still under review but I believe we will have six taxa recognised, three of them in South Australia.

True *E. cucullatus* is a large pink flowered species with smooth leaf and occurs in Tasmania.

Description: The plants arise from a single globular tuber, forming a single ovate leaf and for the South Australian species usually a single flower which emerges straight from the ground in autumn before leaf formation. Some Western Australia species are multi-flowered while others bloom in spring. The flower is easily recognised from the large flat white or pink lateral sepals spreading in front, the felt textured curved labellum without calli and the short spreading petals.

Flower appearance, especially in the east, hardly varies from species to species (apart from colour and size) and it is the leaf appearance which must be used to separate the taxa, although habitat and flowering time are very good clues for identifying species.

The leaf develops during and after flowering, the filiform flower stem elongates and the seed capsule ripens quickly to release seed early. The scape then shrivels away.

Pollination: Pollination is affected by native bees which are attracted by flower colour, scent and nectar provided in a channel at the base of the labellum. The genus is unusual in having a deeply recessed stigma with a constricted but elastic border. When a bee bearing pollinia pushes into the tube formed by juxtaposition of column and labellum base, its head will force down the elastic, just as if untying the drawstring on a tiny bag, thus exposing the stigma. The pollinia on the bee's head are at this stage in contact with the sticky stigmatic surface and are pulled away from its head as the insect withdraws, while the elastic fringe returns to its former shape thus holding the pollinia inside. As the bee withdraws further it contacts the overhanging anther flap and catches against the twin viscid discs sitting in two small notches or rostellum, in the upper part of the stigma. These stick to the bee's head and are removed with all or sometimes one half of the pollinia which are soon deflexed from an upright position to a horizontal one. Thus out-crossing is ensured in this genus.

Distribution and Habitat: Endemic to Australia, it is widespread, found in all states except the Northern Territory, being particularly well represented in Western Australia. Found in a variety of habitats from the coast inland to grasslands and swamps through to mountains; it grows on wide range of soils from rich fertile soils to poor rocky outcrops.

South Australia's Native Orchids

Eriochilus cucullatus (Labill.) Rchb.f.

Eriochilus sp. Hills woodland

Parson's Bands

Etymology: The phrase name indicates the favoured habitat of the species while the common name is suggested by the similarity of the flower to the preacher's neck wear or bib of the Anglican ministers in the 1800s.

Synonyms: Previously referred to *E. cucullatus* (Labill.) Rchb.f., a larger Tasmanian species with a smooth leaf.

Description: Plants small to robust, **leaf** often large, dark green, leathery, 1-2 cm across, flat on the ground with several hispid or bristly, parallel ridges above, smooth and purple below. **Flower stem** filiform, hairy, 2-20 cm tall with usually one, sometimes 2 or 3 white **flowers** up to 10 mm across, the lateral sepals large, thin textured and spreading in front of the flower, hairy edged, dorsal sepal erect, red with a white tip and hooding the column, petals linear red with a white tip; **labellum** fleshy, yellow-green with red dots, much curled under and with a woolly surface. The flowers are slightly fragrant.



KB, Mt Billy CP, SL

Flowering: Late Mar – Apr – May.

Similar species: *E.* sp. Smooth-leaf plains, *E.* sp. Swamp

Distribution: **FR, EP, NL, MU, SL, KI.**
From Eyre Peninsula across to the Flinders and Mount Lofty Ranges, the Murraylands and Kangaroo Island but not in the South East.

Habitat: Occurs mostly in the ranges or hilly parts of the state in woodland or clearings in scrubby heath-land often along old tracks and in low vegetation.

Distinguishing features: It is difficult to separate from ***E.* sp. Smooth-leaf plains** and ***E.* sp. Swamp** at flowering when one must use flowering time and habitat as a clue, but easy enough to recognise plants later in the year as the dark green leaf enlarges to be rounded, leathery, bristled and ribbed above but smooth and purple below. The flower stem and short segments are also lightly hairy.



RB, Mylor, SL
leaf below & above

Notes: Plants from rock outcrops, with small leaves and short stems may be a separate subspecies. The flowers have wide-spreading petals and lateral sepals glistening white above, with a few marginal hairs and a coloured median line below.

An interesting feature of the flowers is their tendency to follow the sun so that they may be facing east in the morning, north at noon and west in the afternoon.

Conservation status:
Status in Legislation: Not Listed.
Suggested status: Common and well conserved.



JB, *E.* sp. Hills woodland, Onkaparinga, May

*Note the hairiness of this species

Eriochilus sp. Smooth-leaf plains

Parson's Bands

Etymology: The phrase name is suggested by the smooth leaf of this plains dwelling taxon.

Synonyms: *E. cucullatus* (Labill.) Rchb.f.

Description: Arising from a large globular tuber, **leaf** large usually wider than 1 cm, the upper lamina mid green occasionally with some red dots, smooth, largely without ridges or hairs, green or slightly tinted below. **Flower stem** slender, almost filiform, emerging directly from the ground in autumn before leaf formation. **Flower** usually single or less often two, mid-sized, the lateral sepals white or pink and spreading, their apices rounded or depressed, a pink median line below, dorsal sepal red-brown, erect or curved over column, petals similar but narrow hairy and white tipped, often pressed to the dorsal sepal, **labellum** as for the other species, fleshy yellow-green with red spots and the surface woolly or with short stiff hairs.



BB, Keith, SE
*Note papillose stems

Flowering: Mar – Apr – early May.

Similar species: *E.* sp. Hills woodland, *E.* sp. Swamp

Distribution: **EP, YP, MU, KI, SE; Qld, NSW, Vic, Tas.**
From Eyre Peninsula where it extends well inland, across the wheat-belt to the South East; also in the Eastern states.

Habitat: This is perhaps the most widespread of the Eastern states' species, found in woodland and heath, shrub-land and on rock outcrops.



RB, smooth leaves

Distinguishing features: Although the flowers are hardly different from ***E.* sp. Hills woodland** and ***E.* sp. Swamp**, the petals are hairy and more inclined to be upright and stick to the dorsal sepal; the lateral sepals have a longer stalk. The taxon can be recognised by the smooth, often broad leaf, although this is only fully developed well after flowering.

- The papillose scapes separate it from the smooth stemmed ***E.* sp. Swamps**.

Notes: Small native bees are frequently observed on the strongly out-crossing flowers on sunny days.

The flower stem continues to elongate during the flowering season. The flower bud is usually well developed upon its emergence from the ground or leaf litter in which the plants grow.

Conservation status:
Status in Legislation: Not Listed.
Suggested status: Common and well conserved.



***E.* sp. Smooth-leaf, whole plant at flowering, art by Kath Alcock**
*Note pink tints

Eriochilus sp. Swamp (DE Murfet 1950b)

Swamp Bunnies

Etymology: The phrase name and common name reflect the swampy habitat of the species.

Synonyms: *E. cucullatus* (Labill.) Rchb.f..

Description: Plants small and slender arising from a tiny globular tuber, **leaf** smooth and green above and below, apart from some slight blushing, rather small and pointed, somewhat buried in the moss. **Flower stem** filiform and smooth. **Flowers** with narrow often pallid segments, lateral sepals white, slender and spreading in front of the flower, sometimes almost parallel; dorsal sepal as for other species, petals more spreading than previous species, green or red, with decurved tips; **labellum** less fleshy and longer than the two previous species. No fragrance noted.

Flowering: Jan – Feb – early Mar.

Similar species: *E.* sp. Hills woodland, *E.* sp. Smooth-leaf plains.

Distribution: **SL; Tas.**
Restricted to a few peaty swamps on Fleurieu Peninsula; also in Tasmania in similar habitat.

Habitat: It grows on mossy-sedgy mounds in tea-tree thickets.

Distinguishing features: Difficult to separate from ***E.* sp. Hills woodland** and ***E.* sp. Smooth-leaf plains** unless the habitat is known.

- The smaller, smoother leaf and pallid flowers help but the late summer flowering is the best indicator. The smooth pale stem is another feature.



RB, leaf

Notes: This is the only swamp *Eriochilus* in South Australia, sharing its ever decreasing habitat with such critically endangered summer-autumn flowering orchids as *Speculantha uliginosa*, *Corunastylis ciliata* and *Spiranthes* sp. Selfing white.

Conservation status:
Status in Legislation: Not listed nationally, endangered in South Australia.
Suggested status: 2E in South Australia; critically endangered but possibly more common in Tasmania.



RB, *E.* sp. Swamp, Yundi, Feb
*Note smooth stems and sepals.

Gallery



JN, four variations of *Eriochilus* from SE region, March



RL, *E.* sp. Hills woodland, Mylor, SL
*Note the comparative size of plant with a SLR lens



RAL, *E.* sp. Hills woodland, Talisker CP, SL
*This species is commonly found associated with mats of *Schoenus breviculmis* growing in the shallow soil, as in this image.



KB, *Eriochilus* species, Mt Monster CP, April
*Note the spreading petals



RB, *E.* sp. Swamp leaf (L), *E.* sp. Hills woodland (R)



KB, leaf and stem of *Eriochilsus* species, Jip Jip CP, growing among rock outcrops, April
*Note rows of bristles on the leaf and on stem



RB, *E.* sp. Hills woodland, FR
*Note the bristly, strongly ribbed apiculate leaf



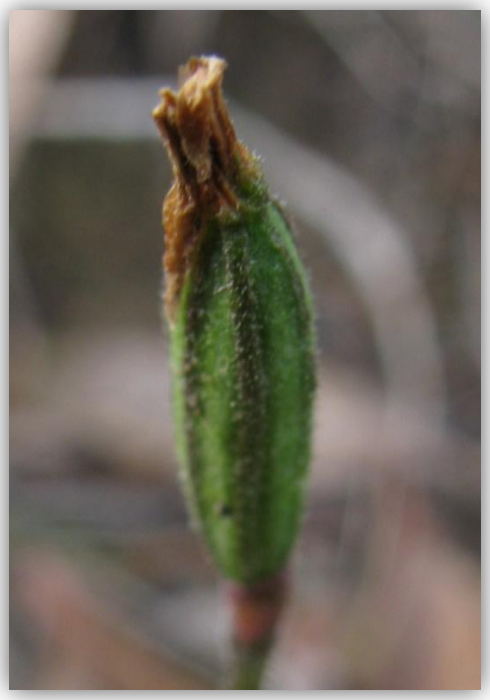
JN, *Eriochilus* species, Penola CP, SE



JN, leaves of two different *Eriochilus* species in SE, April
Left Honan NFR; right Piccaninnie Ponds CP



JN, *E.* Sp. Smooth-leaf plains, Topperwein NFR, SE



E. sp. Hills woodland capsule, May



JN, a cluster of leaves of *Eriochilus* sp. Smooth-leaf plains, Nangwarry NFR, SE

Gastrodia R.Br.

Potato Orchids



KB, *G. sesamoides*, Meadows, SL
*Note clumping habit

South Australia's Native Orchids

Gastrodia R.Br.

Potato Orchids

Etymology: The name is derived from Greek, *gastrodes*, pot-bellied, and refers to the swollen, sometimes bulbous flowers. The common name probably refers to the potato like tubers.

Taxonomy: Named by botanist Robert Brown in the early 1800s. A stable genus with two new South Australian species named in the 1990s.

Description: Saprophytic mycetophilous plants, without chlorophyll or leaves, the scape arising from starchy rhizomes, the nodes carrying remnant leaf scales and slender branchlets which swell to become new tubers, thus plants may form large clumps under ideal conditions. The flowers are few to many, not resupinate, the perianth a fused tube of 5 fleshy lobes, split on the upper side between the lateral sepals. The labellum is enclosed in the swollen base of the tube.

Pollination: Several genera of native bees have been observed transferring pollinia. The flowers have an attractive spicy fragrance which becomes most obvious when the temperature is above 20˚Celcius. Rewards are provided in the form of a fine sugary, pseudo-pollen produced from the labellum callus. There is no nectar. Each flower lasts for 2-3 days and in some forms only a few are open at any one time, so that large plants may flower over several weeks, in cooler weather. Pollination rates are close to 100% in large colonies.

Distribution and Habitat: There are 30 odd species through Asia, New Guinea and New Zealand with seven endemic species in Australia. Three of these extend to South Australia where they are restricted to high rainfall districts in damp forest or heathland.

Notes: Western Australia has only *G. lacista* but the Eastern states have at least 5 species, including the common *G. procera* which is the largest Australian species.

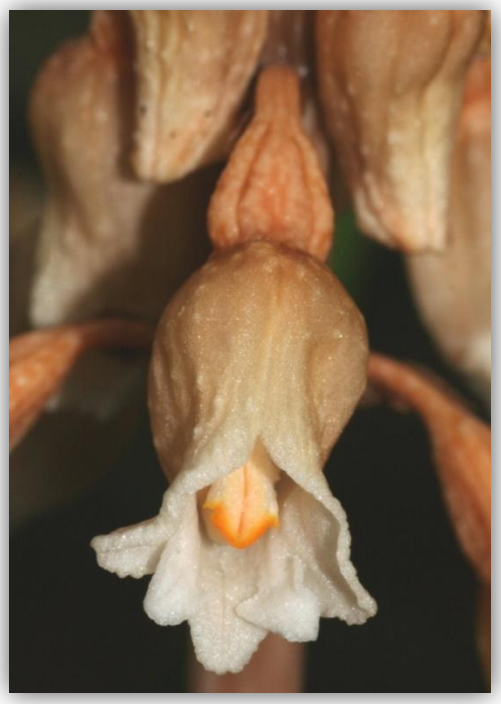
***** Note: plants from riparian habitat on Western Kangaroo Island are at this stage identified as *G. sesamoides,* however, they actually fit better in *G. lacista*. Images are required.

Gastrodia procera G.W.Carr

Tall Potato Orchid

Etymology: The name, *procera*, means tall, as in the buds of this species.

Synonyms: Previously included under *G. sesamoides.*



BB, *G. procera* close-up

Description: **Leaf** none. **Flower stem** brown, robust, up to 1 metre tall in South Australia. **Flowers** few to numerous, crowded, cinnamon brown and white, warty, up to 3 cm long, tubular with basal swelling, flared at the apex, perianth segments ending in five short lobes; **labellum** within the floral tube, white with orange margins, 3-lobed. The top of the spike in bud is quite erect.

Flowering: Late Nov – mid Dec.

Similar Species: *G. sesamoides*.

Distribution: **SE**; **NSW**, **Vic**, **Tas**.
Confined to the lower South East in the Mount Gambier area and further south.

Habitat: It grows in high rainfall black-wood (*Acacia melanoxylon*) flats and rises, with other *Gastrodia* species.

Distinguishing Features: It is most easily recognised when in early flower, when the buds are still crowded and erect. The column is longer in *C. procera* than in the other South Australian species.

- Flowers do not have a cinnamon fragrance as in the Cinnamon Bells, ***G. sesamoides***, and their texture is thicker and more crenulate and warty.

Notes: This species does not begin flowering until late November, i.e. when most *G. sesamoides* have finished, and by mid December flowering is complete.

The species has long been expected to occur in South Australia, but was only located in 2008 by June Niejalke and Dianne Richman, in an area where *G. vescula* also grows.

Conservation Status

Status in Legislation: Not listed nationally, endangered in South Australia.
Suggested Status: Endangered in South Australia, perhaps critically.

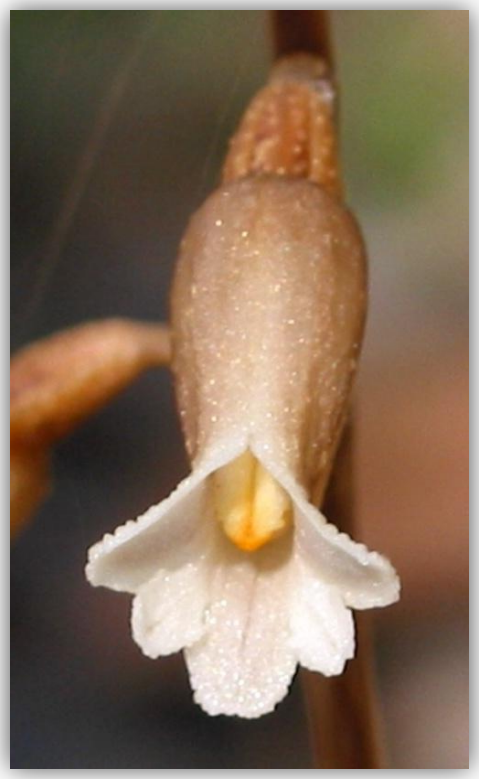


BB, *G. procera*, Telford Scrub CP, Dec

Gastrodia sesamoides R.Br.

Cinnamon Bells or Common Potato Orchid

Etymology: The name *sesamoides*, sesame like, refers to the tubular corolla, which is gibbous at the base as in the flowers of *Sesamum indicum*, the sesame. The common name alludes to the sweet spicy odour of the flowers.



KB, Chookarloo NFR, SL

Synonyms: *Epiblema sesamoides*

Description: **Leaf** none. **Flower stem** slender to moderately robust, sometimes to a metre high, pale to dark brown, arising from an underground rhizome, decurved at the apex before the flowers open, then becoming erect. **Flowers** few to numerous, brown and white, to 2 cm long, tubular, with a basal swelling, flared at the apex, the fused perianth segments ending in 5 short lobes which are slightly thickened with crenulate margins; **labellum** within the floral tube and almost as long as it, white, tinged yellow, ridged, 3-lobed, margins crenate and undulate. The flowers have a sweet spicy fragrance resembling cinnamon.

Flowering: Oct – Nov – early Dec.

Similar Species: *G. procera*, *G. vescula*.

Distribution: **SL**, **KI**, **SE**; **NSW**, **ACT**, **Vic**, **Tas; NZ**.
In the Adelaide Hills, from near Mount Lofty southward, through Fleurieu Peninsula, western Kangaroo Island and the South East, to as far north as Robe; also in the Eastern States and New Zealand.

Habitat: Usually in shady, well forested places in high rainfall areas (more than 800 mm per year), chiefly near decaying tree stumps, especially along creeks where large clumps of plants may appear in good seasons. Also recorded in pine plantations, coastal sandhills and heathland.

Distinguishing Features: The plant structure with its down-turned buds is a most useful feature to this somewhat variable species.

- Depauperate forms may easily be confused with ***G. vescula***, but that species is restricted to sand-scrubs of the South East and Victoria, and differs in its erect buds, few, shorter, non fragrant flowers and short labellum.
- Recently (1993) described species, ***G. procera*** Carr found in our South East (2008), differs in its crowded spike which does not have a nodding apex when in bud.

Notes: This is a rare species in South Australia.

There is confusing variation in flower structure, even in the same colony. Plants from shaded areas of Flinders Chase National Park on Kangaroo Island are closer to the Western Australia's *G. lacista,* with its broader labellum, and lacerated margins on the lateral lobes.

Conservation Status

Status in Legislation: Not listed nationally, rare in South Australia.
Suggested Status: 3Rc in South Australia; common interstate.



BB, *G. sesamoides*, Nangwarry, SE, late Oct

Gastrodia vescula D.L.Jones

Limp Potato Orchid

Etymology: From the Latin, *vescum,* little, weak or thin, describing several aspects of the plant.

Synonyms: None.

Description: **Leafless**, dwarfed plant. **Flower stem** weak, often twisted, to 20 cm tall, brittle, light brown and shiny, with many bracts at the base. **Flowers** one to four, not fragrant, on short pedicels, about 10 mm across, erect or nodding, light brown, tubular, shiny, rarely opening but much swollen when they do; perianth tips white; **labellum** 10 mm by 3 mm, white, within the floral tube; lateral lobes 2 mm long, oblong, main lobe to 4 mm, crenulate, the apical margins irregular. **Column** to 9 mm long, linear, conspicuously wrinkled; anther cap verrucose.



BB, north of Mt Gambier, SE

Flowering: Nov – Dec.

Similar Species: *G. sesamoides, G. minor* from New Zealand.

Distribution: **SE**; **Vic**.

Restricted to the far South East, from Glencoe to Mount Gambier area; also in South West Victoria.

Habitat: Occurs under dense *Leptospermum* or in open black-wood (*Acacia melanoxylon*) woodland, forest and scrubs; in leaf litter over damp, grey, acid sands.

Distinguishing Features: The smallest of the South Australian species with a short, weak stem and very few flowers.

- Previously confused with ***G. sesamoides,*** which is a much larger species, with fragrant flowers, on a less fragile scape, with long flowers and with broader labellum and column not wrinkled.

Notes: A poorly known species described in 1991. *G. vescula* may turn out to be more widespread but its small size makes it hard to see, let alone discern as different from *G. sesamoides*. Fully developed flowers indicate it may be more closely related to *G. procera* G. Carr. Rediscovered in South Australia in 2008 by J. Niejalke and D. Richman.

The flowers spikes appear in early November, flowers may or may not open, often abort, and seed is set by mid December.

A rarely seen species, and so far only known from two sites in South Australia.

Conservation Status

Status in Legislation: Not listed nationally, vulnerable in South Australia.
Suggested Status: 2Eci, nationally endangered.



JN, typical *G. vescula*, Telford Scrub CP, SE

Gallery



JN, buds of *G. procera*, (L) and *G. sesamoides*, (R)



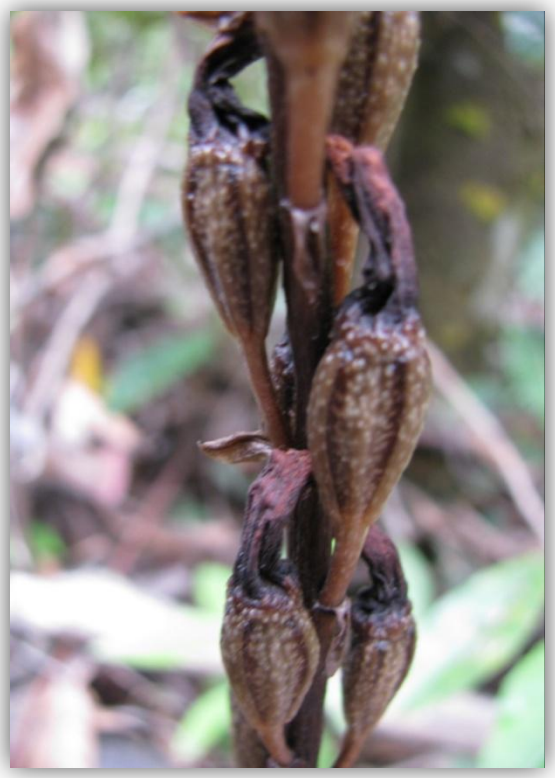
JN, *G. procera*, Telford Scrub CP, SE,



JN, long column of *G. procera* shown facing into orange stained labellum



RB, *G. sesamoides* seedpods, Jan



RB, *G. procera* seedpods, Jan



BB, *G. sesamoides*, seedpods, Kangaroo Flat NFR



RB, *G.* aff. *cunninghamii*, NZ Alps



KB, *G. sesamoides*, Chookarloo NFR, Oct



***Gastrodia* sp. whole plant, art by Kath Alcock, SE; Courtesy JN**



MH, *G. procera*, SE
*Note erect buds and robust stem



KB, *G. sesamoides*, Topperwein NFR, SE



RB, *G. sesamoides*, Lobethal



JN, *Gastrodia* with orchid weevil; eats orchids



CH, Clumping habit of *G. sesamoides,* Kuitpo, SL





CH, Sweat bee emerging from *G. sesamoides,* SL





RB, *G. sesamoides,* Blackfellow Creek, SL

Glossodia R.Br.

Waxlip Orchids



RL, *G. major*, Inman Valley, SL
*Note the typical variations in colouring.

South Australia's Native Orchids

Glossodia R.Br.

Waxlip Orchids

Etymology: The generic name is derived from the Greek *glossa,* a tongue, and *odes,* similar to, referring to the tongue shaped appendage at the labellum base.

Taxonomy: There have been no changes to the taxonomy of this genus since it was named by Robert Brown. There are, however, recognisable subspecies of the two species involved. The genus is closely related to its sister genus *Elythranthera* from Western Australia which was once included in *Glossodia*. Both genera are in turn allied to *Caladenia* through the linking genus *Cyanicula.* The genus is likely to be retained in the future.

Description: A single leaf arises each year in late autumn, from a distinctive spindle-shaped tuber enclosed in a fibrous sheath. Plants may be solitary, in small clumps or extensive colonies, formed not by vegetative increase but from seed recruitment. The leaf may be erect or procumbent, broad lanceolate and with curious hairs which are tipped with black, somewhat deciduous glands. The large, colourful, sometimes glossy, flowers are long lasting if not pollinated, but very quickly wilt in dry weather and plants can go from early flower to total desiccation after just three or four hot days.



KB, Kybybolite, SE, Oct

Pollination: Flowers are pollinated by small native bees of several genera. The orchid exhibits floral mimicry; the bright flowers, light perfume, bee guidelines and the false anthers, (the yellow forked callus at the base of the labellum), are all bee attractants but the flowers provide no obvious reward for the bees. The bees land on the flower segments and crawl to the centre, grasping the yellow labellum appendages, push forward to gain grip on the pubescence of the labellum base and are lifted up by the forked appendage to contact the stigma and anther. The pollinia are powdery and cream coloured or white.

Distribution and Habitat: *Glossodia* is a genus of two species, both confined to Eastern Australia. Only one species of *Glossodia* occurs in South Australia where two races can be recognised, one on sand plains and the other a mountain form. Both occur in a wide range of well drained soils in higher rainfall areas.

Notes: Plants seem to be short lived but each spring large numbers of tiny seedlings can usually be seen near parent plants. Unlike many of our native orchids in which the flower bud appears early in the season, buds of *Glossodia* begin to show only a few weeks before flowering. The scape elongates rapidly with warm weather.

Glossodia major R.Br.

Waxlip or Purple Cockatoo Orchid

Etymology: The epithet *major*, meaning larger, is a comparison between this species and the smaller *G. minor* R.Br. of the East Coast. The name waxlip refers to the waxy white base to the labellum, while cockatoo orchid is a fanciful allusion to the beak-like labellum.



BB, *G. major*, Nangwarry NFR, SE

Synomyms: None

Description: **Leaf** single, oblique or decumbent, broadly lanceolate, 2-8 cm long, green with black tipped glandular hair. **Stem** slightly hairy to 30 cm tall. **Flower** single, less often two and rarely three, large purple, lilac or white; segments lanceolate, all similar and spreading, to 4 cm long, often glossy. **Labellum** without calli, half as long as the other segments, ovate, purple with a white pubescent base and a yellow tipped, forked appendage directly below the column which is coloured as for the sepals. Perfume faint and sweet, noticeable only on warm days.

Flowering: Late Aug– Sept – Oct – early Nov.

Similar Species: None.

Distribution: **FR, NL, MU, SL, KI, SE; Eastern states.**
Very rare in the Flinders Ranges but common in the Mount Lofty Ranges south from about Clare, becoming very common towards Adelaide, infrequent in the eastern and western foothills, more abundant in higher parts; occasional single plants recorded on Kangaroo Island; rare in the Murray-mallee but reappearing as one heads south toward the wetter parts of the South East as well as in all eastern states.

Habitat: Found in open forest, woodland, heath-land and scrubs in most soil types, but rarely on limestone. Waxlips occur from coastal dunes in the South East to mountain tops, usually in well drained sites. The species is extremely rare on Kangaroo Island and in the Flinders Ranges.

Distinguishing Features: The early flowered **ssp**. **from the South East** has more flaccid, paler flowers of consistent colour and a more decumbent leaf.

- The later flowering **Hills form** has more rigid, varied flowers, which open later on average, and a firm textured oblique leaf.

Notes: This species is one of the best known orchids of the Adelaide Hills where it occurs in a spectacular array of colours and textures, from pale, matt-finish lilac, to a glossy royal purple, with white or almost white flowers being plentiful at times. The most attractive forms have white nectar guidelines or spots near the base of each segment.

Flowering commences in August on the plains and in the mountains can extend through to November.

It rarely crosses with *P. deformis* to form X*G. tutelata*.

Conservation status:
Conservation status: Not Listed.
Conservation status: Common and well conserved.



BB, *G. major,* common double header

X Glossadenia Kavulak

Purple Hybrid Orchids

Etymology: The name *gloss-adenia* is derived from the first part of *Glossodia* and the last part of *Pheladenia* (originally *Caladenia*!) and is given the prefix '×' to indicate it is a cross or hybrid between the two.

Taxonomy: One may note the progression from Dr. Rogers' belief that *C. tutelata* was an aberrant *Caladenia* through the understanding a few years later that it was indeed a hybrid, to its original naming by Kavulak as *× Glossadenia* and later its superfluous re-naming by Clements as *× Calassodia*. Fortunately the placing of *Caladenia deformis* in the monotypic *Pheladenia* does not alter the validity or sense of *Glossadenia*. One might believe that this was considered when D.L.Jones coined the name *Pheladenia*.

Description: The flowers in this hybrid genus are intermediate in appearance between flowers of the parent species and are sterile. There have been less than half a dozen collections made in South Australia.

Pollination: The hybrids are sterile, the sharing of native bee pollinators by both *Glossodia* and *Pheladenia* is the main reason why such hybrids occur but man's interference has been another influence.

Distribution and Habitat: Rarely seen but can occur in any disturbed habitat where both parents are sympatric and flower together, which would be mostly in the upper South East. The two parents flower at different times in the Mount Lofty Ranges and despite the Type being from this region it must be considered highly unlikely to re-appear there.

Notes: The even rarer *G. minor* x *Pheladenia* has also been recorded and has also been man-made and once exhibited at an Adelaide orchid show.

X Glossadenia tutelata (R.S.Rogers) Kavulak

Sentinel Spider Orchid or Purple Hybrid Fairy Orchid

Etymology: The name *tutelata* derives from the Latin for the protected one, a reference to the tall calli 'guarding' the base of the labellum.

Synonyms: *Caladenia tutelata* R.S.Rogers, *Caladenia x tutelata, × Calassodia tutelata*R.S.Rogers (M.A.Clem.), *Caladenia deformis × Glossodia major, × Calassodia* M.A.Clem.

Description: Slender delicate hybrid with a linear sem-erect **leaf**, hairy **stem** to 20 cm but usually much less and a single, thin textured, indigo or purple **flower**, about 2-4 cm across with a highly variable triangular **labellum**. Some specimens noted to be fragrant.

Flowering: Late Aug – Sept.

Similar Species: *G. major, Pheladenia deformis.*

Distribution: **SL, SE; Vic.**
In South Australia only collected in the Adelaide Hills and South East, along tracks or by old stone quarries. Also once collected in Victoria. Clements says that records for New South Wales probably refer to *G. minor* x *Pheladenia* or *Cyanicula deformis*.



RB, X *Glossadenia*, Penola, SE

Habitat: With native pines or broom-bush in fertile soils.

Distinguishing Features: Deep blue to purple flower with sparse calli on a triangular labellum. Somewhat intermediate between ***Glossadenia major*** and ***Pheladenia***.

Notes: One has more hope of seeing it as a man-made hybrid in cultivation than in the bush.

Pheladenia is known to cross with no less than 7 genera of orchids including *Caladenia, Cyanicula, Ericksoniella, Glossodia, Elythranthera, Jonesiopsis* and *Petalochilus;* mostly as single highly isolated plants. Probable collections and or hybrids from South Australia include *Pheladenia x Jonesiopsis capillata, Pheladenia x Caladenia latifolia* and *Pheladenia x Petalochilus coactilis.* Most plants of these hybrids disappear after 2-3 seasons. This hybrid was rediscovered near Coonalpyn in the upper South East in 2008.

Conservation status:
Status in Legislation: Not Listed.
Suggested status: Not applicable.



JN, X *G. tutelata*, Coonalpyn, SE

South Australia's Native Orchids

Pheladenia D.L.Jones & M.A.Clem.

Bluebeard Orchids or Blue Fairy Orchids



RB, *P. deformis* colour forms, YP

South Australia's Native Orchids

Pheladenia D.L.Jones & M.A.Clem.

Bluebeard Orchids or Blue Fairy Orchids

Etymology: The name *pheladenia* derives from the Greek *phelos*, false and *aden*, a gland, from the strange papillose calli on the labellum.

Taxonomy: Known for nearly two centuries as *Caladenia deformis*. The name *Pheladenia* has only recently been applied; during the 1990s it was included in the genus *Cyanicula*. *Pheladenia* is a monotypic genus verified by DNA testing as being a stable and archaic genus based on the Type of Robert Brown's *Caladenia deformis*.

Description: Most plants have deep blue flowers with a navy blue labellum. Other forms include pure albinos with all segments white, white flowers with blue, pink or navy labellum, silver flowers with violet labellum, pale blue flowers with blue labellum, pale pink flowers with pink labellum or the rarest of all, pale yellow flowers with golden labellum. Western Australian forms are more indigo coloured.

Pollination: The flowers are very attractive to a range of small native bees. Pollination is frequently observed, and as the bees prefer freshly opened flowers, many of these therefore tend to be short lived. However, if pollinia are removed, without pollination being effected, an individual flower may remain open for several weeks. The pale pollinia are rather friable, which is the norm for bee pollinated species, as the insects tend to 'buzz' the flowers, shaking the pollen grains out onto their hairy undersides.

Distribution and Habitat: Throughout southern Australia, most common in the wheat-belts of Western Australia, South Australia and Victoria. They are found in open dry woodland. The genus flowers freely but in forest, dense heath and scrubs fire is required to induce flowering.

Notes: Although most flowers are blue, there is a surprising array of randomly coloured individuals which may be white, pink or pale grey.

Pheladenia deformis (R.Br.) D.L.Jones & M.A.Clem.

Blue Beard or Blue Fairy-orchid

Etymology: The name *deformis* means misshapen and refers to the crowded labellum calli with their fine irregular protuberances.

Synonyms: *Caladenia deformis* R.Br. *Cyanicula deformis* (R.Br.) Hopper & Brown, *Caladenia deformis* var. *alba*.



RL, Millbrook, SL

Description: Plants often in clumps; **leaf** small slender lanceolate to 10 cm by 5 mm with sparse glandular hairs. **Flower stem** to 15 cm, green. **Flower** usually single to 40 mm wide, blue, labellum calli dark purple-black. Segments to 25 mm, broad-lanceolate, with blunt points, dorsal sepal erect or leaning back, lateral sepals and petals spreading. **Labellum** obscurely lobed with crowded rows of curved calli throughout, side lobes erect and embracing the column, the margins with fine teeth.

Flowering: July – Aug – Sept – Oct.

Similar Species: None.

Distribution: **FR, EP, NL, MU, YP, SL, KI, SE.** One of the most widespread of South Australian orchids extending abundantly from the West Coast, into the Gawler Ranges, southern Flinders Ranges, the mallee and into colder damper areas where it becomes less common. (There is even a supposed collection from the Lake Eyre region but this is likely to have been a misplaced specimen.)

Habitat: Numerous habitats, from the littoral zone to rock outcrops inland, and the tops of high peaks in the Flinders and Mount Lofty Ranges. Especially common in mallee-broombush associations. In forest, dense scrub and heathlands it may flower profusely only after fire.

Distinguishing Features: The dense rows of crowded calli on the labellum are distinctive on the generally blue flowers. Dense clumps of up to twenty plants can be quite spectacular in flower.

Notes: Flowering occurs later at higher altitudes or in years with a late season break. Open flowers tend to close again when wet, especially in winter.

P. deformis hybridizes with *Caladenia* sens. lat. and *Glossodia* species, indicating the close relationship of all three genera. *Glossodia major* x *P. deformis* gives *Glossadenia tutelata* which is infrequently encountered in South Australia. Hybrids have also been collected with *Caladenia coactilis* (FR) and *Caladenia carnea* as well as *Jonesiopsis* spp. A hybrid with *Caladenia latifolia* has been recorded on YP. See also Hybrids chapter.

Conservation status:

Status in Legislation: Not Listed.

Suggested status: Secure.



MP, *P. deformis,* Hartley, MU

Gallery



MH, *P. deformis* x *Caladenia latifolia*, Foul bay, YP
A hybrid first found in 2008



KB, *G. major*, Scott CP, SL



RB, Cluster of *Glossodia* leaves



BB, *G. major*, Kybybolite, Oct



JS, *G. major*, Belair NP, SL



KB, *G. major*, Scott CP, SL



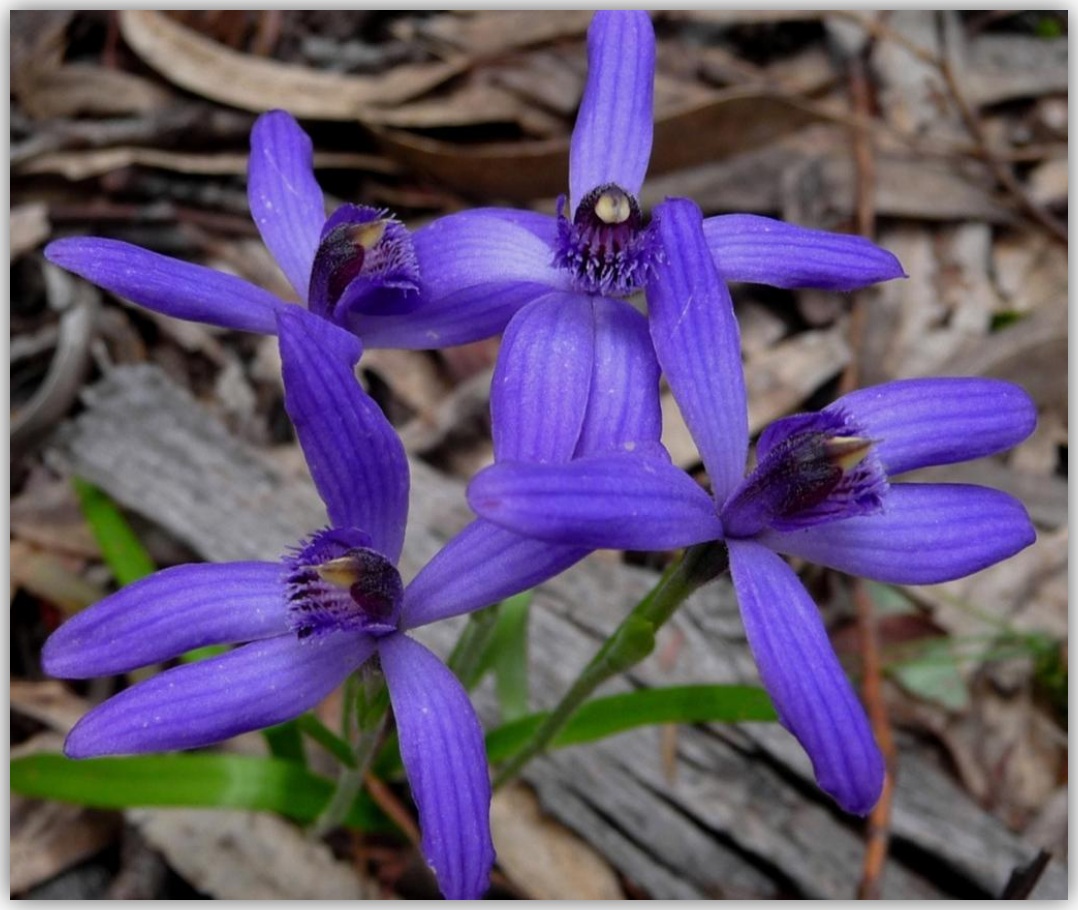
KB, *G. major*, albino, SL



KB, *P. deformis* var. 'alba', Geegeela CP, SE



JN, *P. deformis,* composite, Aug



BB, veined *P. deformis*, Wirrabara NFR, NL



RB, *P. deformis*, Maitland, YP



RL, *G. major*, Wongalere, SL



JW, *P. deformis* x *Jonesiopsis capillata*, Hartley, MU

Hymenochilus D.L.Jones & M.A.Clem.

Tiny Shell Orchids



KB, *H. calcicolus*, Hartley, MU

South Australia's Native Orchids

Hymenochilus D.L.Jones & M.A.Clem.

Tiny Shell Orchid

Etymology: From the Greek *hymen* a small membrane and *cheilos* a lip, in reference to the small, thin labellum lamina.

Taxonomy: Although all species were previously placed in *Pterostylis* they form a very neat group, do not cross with other greenhoods and are best treated as a separate genus. The taxonomy of the species is not yet untangled but David Jones (2006) notes that *H. cycnocephalus* does not occur in South Australia. Therefore the 6 common South Australian forms which are habitat specific and constant are best treated as separate species.

Description: The genus can be recognised by its basal rosette of many leaves, the many flowers which are green (in Australia at least) less than 1 cm across with short segments forming a tight hood, the labellum small, irritable, without setae, but with a green smooth appendage. *Hymenochilus* does not increase vegetatively but rather forms colonies through seedling recruitment.

Pollination: This genus is pollinated by small dark flies which circle the flowers before landing on the sensitive labellum which then hurls them into the galea. Upon escaping with pollinia attached the flies clamber about the flower regaining composure before flying off to apparently repeat the procedure.

Distribution and Habitat: This is a medium sized genus of 15 small, multi-flowered green-hoods from Australia and New Zealand. They occur from the alpine zone to the deserts, mostly in open situations, especially in grassland or grassy woodland

Notes: Note these names have not been published at the time of this compilation!

In South Australia there are two *Hymenochilus* complexes represented, viz. *H. muticus* complex and *H. cycnocephalus* complex.

The two main South Australian members of the *H. muticus* complex (*H. pagophilus, H. pisinnus*) have long been recognised as distinct biological entities. David Jones in his book on Australian Orchids (2006) records *H. muticus* only from the Eastern states.

The *H. cycnocephalus* complex had, for a hundred years, been regarded as a single species, or even as a form of *Pterostylis mutica.* Recently, better understanding has revealed numerous species extending as far as the west coast of Australia, the Snowy Mountains and the New Zealand Alps. Many of these have now been named. David Jones has suggested that true *H. cycnocephalus* is endemic to the Eastern states.

Habitats are usually mountain grassland but South Australia also has species on limestone pavements under mallee, near sea level and on rock outcrops far inland.

Hymenochilus cycnophelus
(Fitzg.) D.L.Jones & M.A.Clem.

Hymenochilus anemophilus D.L.Jones

Mokota Shell Orchid

Etymology: From the Greek via the Latin, *anemos* meaning wind and *philo* meaning love hence *wind lover.* The common name reflects the high montane grassland habitat.


RB, Mokota CP, NL

Synonyms: Previously included under *Pterostylis cycnocephala.*

Description: **Leaves**, 5 to 10, broadly ovate, dark shiny green, strongly veined, crowded in a small, fleshy, ground-hugging rosette about 4 cm across. **Flower stem** short and fleshy, so that the first flowers are tucked down in the rosette leaves, elongating in late flower, with leaf bracts at the base. **Flowers** small, 2 to 12, deep green, not striped; **galea** to 1 cm high, blunt; lateral sepals reflexed against the ovary, conjoined, cupped and enclosing the blunt oblong 4 mm long labellum with its dark green, forward facing somewhat amorphous basal appendage.

Flowering: Aug – Sept.

Similar Species: *H. cycnocephalus, H. calcicolus.*

Distribution: **NL.**
Endemic in South Australia to small areas of subalpine grassland near Mount Bryan and Spalding.

Habitat: On high windswept hills, in grass and herb-land; the soil a heavy moisture retentive red loam. It grows with *Diuris behrii* and a form of *Prasophyllum occidentale.* This habitat has been grazed by sheep for 150 years.

Distinguishing Features: It is easily separated from other South Australian species by its fleshy leaves and hardly striped flowers and montane grassland habitat preference.

Notes: This is South Australia's most cold tolerant orchid species, as the bare hills near Mount Bryan have snowfalls most winters when the species begins to flower and average wind speeds at the known sites are some of the highest in the State.

The species is very similar to *H. clivicola* from New South Wales.

Conservation Status:
Status in Legislation: Not listed.
Suggested Status: 2Eci.



RB, *H. anemophilus,* Mokota CP, NL

Hymenochilus calcicolus D.L.Jones

Limestone Tiny Shell Orchid

Etymology: The phrase name means *growing on limestone* and refers to the required habitat of this species.

Synonyms: Previously included in *Pterostylis cycnocephala* and *H. cycnocephalus.*

Description: **Leaves** 4 to 12, ovate, green, in a ground hugging rosette to 5 cm across. **Flower stem** at first dwarfed, so that the flowers nestle down in the leaf, but eventually elongating to about 5 cm, fleshy and with leaf bracts only at the base. **Flowers** few to numerous, densely crowded at first, green striped; **galea** to 1 cm high, swollen with a blunt decurved apex; lateral sepals deflexed, conjoined, obtuse, cupped; labellum quadrate, with a plump, dark green, pointed, swan head appendage, thrust well forward.

Flowering: Jul – Aug – Sept.

Similar Species: *H. cycnocephalus, H. anemophilus*, *H. nemoralis.*

Distribution: **MU, YP.**
Endemic in South Australia, mostly in the Murray-mallee and on Yorke Peninsula.

Habitat: In shallow fertile soil pockets on limestone pavements in mallee woodland, amid sedges and annual herbs, occasionally extending on to adjacent sand dunes.



JN, Peake, Aug

Distinguishing Features: Differs from other members of the ***H. cycnocephalus*** **complex** in the very dark striped flowers and thick, well shaped beak to the swan's head appendage on the labellum.

Notes: The first flowers open while still hidden in the leaf bracts tucked down in the somewhat dished rosette. There may be as many as five flowers open before the scape begins to elongate, and even by the end of flowering the scape is still only a few centimetres tallBefore fragmentation of its habitat the species formed very extensive populations often over a kilometre across.

There are possible hybrids with *H. nemoralis* near Wellington.

The species is surprisingly similar to the New Zealand *H. tanypoda*. See gallery for image comparison.

Conservation Status:
Status in Legislation: Not listed.
Suggested Status: 3Rc.



KB, *H. calcicolus*, Hartley, MU

Hymenochilus cymbellus D.L.Jones

Eyre Peninsula Tiny Shell Orchid

Etymology: From the Greek, *Cymbelline*, in reference to the dainty flowers that are only 5 mm wide.

Synonyms: Previously included in *Pterostylis cycnocephala* and *H. cycnocephalus.*

Description: **Leaves** thin textured in a basal rosette to 2 cm across. The **flower stem** slender to 6 cm tall, bracts are often crenulate. The **flowers** are less than 7 mm across, somewhat erect, dull green, with very small, deeply cupped lateral sepals. The **labellum** is small with a dull green, irregular but basically swan headed appendage facing out of the flower.

Flowering: Aug – Sept.

Similar Species: *H. calcicolus*, *H. nemoralis*, and *H. cycnocephalus.*

Distribution: **EP, YP (rare).**
Endemic in South Australia on central and northern Eyre Peninsula and, rarely, on Yorke Peninsula.

Habitat: Largely found on or around rock outcrops, where water runs off, particularly on granite, but also sandstone and limestone, always in fertile brown loams.



KB, Carrapee Hill CP, EP

Distinguishing Features: This small slender-stemmed species with tiny rather dull green flowers and the habitat preference help to identify *H. cymbellus.*

- ***H. calcicolus*** is brighter, larger and grows on limestone.
- ***H. nemoralis*** from grassy woodland is taller.

Notes: The flowers are short lived. The species is becoming rare due to rabbits and weeds invading its limited habitat.

It is probably a relict species as its preferred habitat was always limited.

Conservation Status:
Status in Legislation: Not listed.
Suggested Status: 3 Vci, nationally threatened.



JN, *H. cymbellus*, Aug
*Note crenulate bracts and long appendage stem

Hymenochilus nemoralis D.L.Jones

Swan Headed Tiny Shell Orchid

Etymology: *Nemoralis* means of woods or groves referring to the preferred habitat of this species.

Synonyms: Previously included in *Pterostylis cycnocephala* and *H. cycnocephalus.*



KB, Coonalpyn, MU

Description: **Leaves** ovate, 5 to 15, in a flat basal rosette to 10 cm across, grey-green. **Flower stem** slender, to 25 cm, with only a single basal leaf bract. **Flowers** 4 to 20, green with lighter stripes; **galea** hunched forward, to 8 mm long, in a long often loose spike; dorsal sepal blunt; lateral sepals deflexed, united for most of their length, forming a cup; **labellum** to 3 mm, oblong with a blunt apex, basal appendage very dark green, conical with a sharp down-pointed tip. The flowers open consecutively over several weeks.

Flowering: Aug – Sept – Oct.

Similar Species: *H.* aff. *cycnocephalus* 'subalpine', *H. calcicolus*.

Distribution: **FR, EP, NL, YP, SL, SE; Vic.**
Widespread, but rare, from the West coast near Elliston, across Eyre Peninsula, north to the Gawler Ranges, the southern Flinders, the Mount Lofty Ranges and upper South East; also in western Victoria.

Habitat: In fertile soils in open woodland often with blue-gum and *Callitris,* or mallee-broombush, from sea level to mountain tops.

Distinguishing Features: This species, the commonest of the South Australian *H. cycnocephalus* complex, can be recognised by its large rosettes, distinctly striped flowers, tall stems with well spaced flowers, and well shaped but not narrow column appendage.

Notes: This taxon forms small compact colonies.

Like any orchid confined to fertile loamy soils this one has lost much of its habitat.

Conservation Status:
Status in Legislation: Not listed.
Suggested Status: 3Rci.



JN, *H. nemoralis*, Wirrabara NFR, NL, Sept

Hymenochilus muticus
(R.Br.) D.L.Jones & M.A.Clem.

Hymenochilus pagophilus D.L.Jones

Mountain Shell Orchid

Etymology: The common name reflects this taxon's preference for hills and mountains, especially in the Flinders Ranges.

Synonyms: Previously referred to *Pterostylis mutica* R.Br. and more recently *H. muticus* (R.Br.) D.L.Jones.

Description: **Leaves** 4-10, large, rounded, fleshy, in a basal rosette to 4 cm across. The **flower stem** may be only 1-2 cm tall when flowering starts but will elongate to 5-10 cm by seed set. The floral bracts are acute. **Flowers** 1-10, in a pyramidal spike, the **galea** to 1 cm long, fleshy, hardly striped, horizontal, the tiny point decurved; lateral sepals cupped with free pointed apices; **labellum** fragile, quadrate, pale with an unadorned erect basal appendage pointing backwards.

Flowering: Late Jul – Aug – Sept.

Similar Species: *H. muticus* from NSW, *H. pisinnus*.

Distribution: **GT, FR, EA, EP, NL, MU.**
A South Australian endemic, mostly in the Flinders Ranges, but extending to the Mount Lofty Ranges and Olary Spur, as well as granite hills such as the Gawler Ranges on Eyre Peninsula.

Habitat: On hills, dry mountains or rock outcrops, especially on steep south facing slopes in shrubland, native pine forest but also along creeks, on cliff ledges. Especially associated with rocks but sometimes on heavy clay in well watered grassy woodlands.



CH, Ferries McDonald CP, MU, Aug

Distinguishing Features: The fleshy rounded leaves, stocky flower spike, pyramidal or conical flower spike, free pointed ends to lateral sepals, and pale unadorned backswept labellum appendage all help to set it apart.

- Small, few flowered plants are easily confused with ***H. nemoralis***.

Notes: D.L.Jones (2006) does not regard any South Australian material as being true *H. muticus.*

Conservation Status:
Status in Legislation: Not listed.
Suggested Status: Widespread and secure.



RB, *H. pagophilus*, Black Rock Mountain, FR

South Australia's Native Orchids

Hymenochilus pisinnus D.L.Jones

Tiny Shell Orchid

Etymology: The name *pisinnus* is Latin for small or little, referring to the size of the flower.

Synonyms: *Pterostylis mutica* R.Br., *H. muticus.*



JN, Monarto CP, MU

Description: **Leaves** 5 to 12, in a ground hugging rosette, to 30 mm across, yellow-green, sessile, ovate, overlapping, smooth margined. **Flower stem** to 25 cm tall, slender, with small stem bracts. **Flowers** few to many, in a one-sided or spiral spike depending on the form; small, pale green; **galea** short, blunt, and swollen, leaning forward, to 8 mm long; lateral sepals, deflexed, conjoined, orbicular to oblong, cupped; **labellum** oblong, dished, thin, the basal appendage not much darker than the lamina, simple, recurved, erect. The flowers open consecutively over several weeks.

Flowering: Jul – Aug – Sept.

Similar Species: *H. pagophilus, H. muticus* from Eastern states.

Distribution: **GT, NL, EP, NL, MU, YP, SL (rare), SE.**
Very widespread, from the Western Australian border across the southern edge of the Nullarbor Plain, throughout Eyre and Yorke Peninsulas, from the coast to well inland, Murray Mallee and plains, the Adelaide Plains and in the upper South East. The species is found mostly on the plains from the coast to well inland.

Habitat: Found in all kinds of dry calcareous habitats from woodland and shrub-land, to mallee, rock outcrops, blue bush plains and scrubs.

Distinguishing Features: A slender, yellow-green to pale green species with one-sided or spiral flower spikes with basal appendage not much darker than the labellum.

- The similar ***H. pagophilus*** is a stocky species of the hills especially dry rocky mountainous areas.
- The less similar ***H. bicolor,*** an Eastern states species, has been reported from grassland of the Mid-north. It differs in the very dark green thickened labellum appendage.

Notes: This small, slender orchid with small rosettes which occurs on limestone and general calcareous soils was probably South Australia's most common orchid before European settlement.

It can occur at the rate of 10,000 plants per square kilometre in poor mallee with few other orchids present.

Hybrids are not known.

H. pisinnus is the only orchid to have had a more or less continuous distribution across the state, from eastern to western borders and is one of only two species recorded on the Nullarbor Plain.

Conservation Status:
Status in Legislation: Not listed.
Suggested Status: Common and secure.

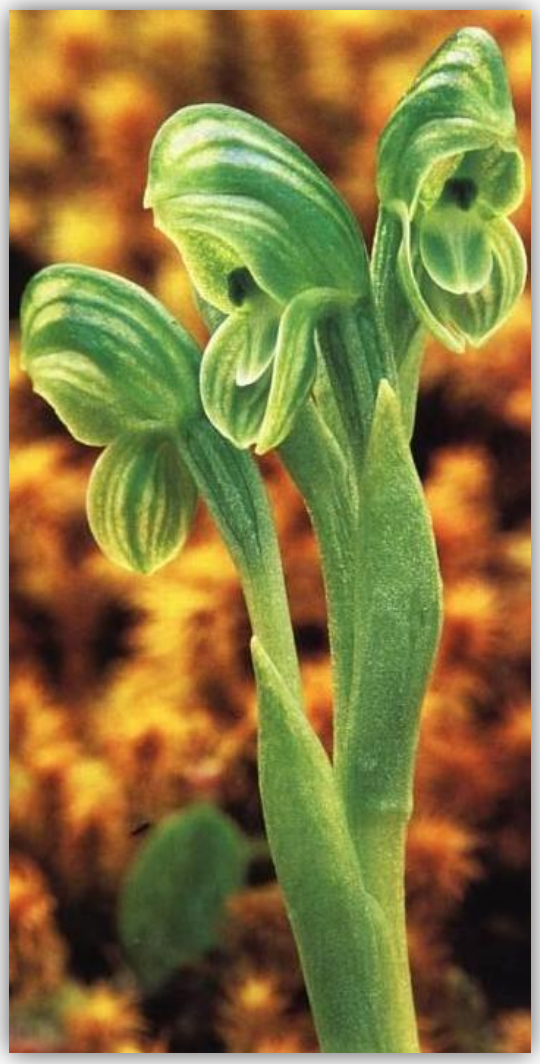


KB, *H. pisinnus*, Carrapee Hill CP, Sept

Gallery



KB, *H. pisinnus*, Muloowurtie Reserve, YP
Typical colony



KJ, *H. tanypoda*, NZ



JN, *H. calcicolus*, SA

*Note the similarity between the two species



RB, *Hymenochilus* species, Sevenhill, NL



JN, *Hymenochilus* species, YP

South Australia's Native Orchids

Jonesiopsis Szlach.

Wispy Spider Orchids or Daddy-longlegs



RB, *J. capillata*, Hallelujah Hills, Aug

South Australia's Native Orchids

Jonesiopsis Szlach.

Wispy Spider Orchids or Daddy-longlegs

Etymology: The name *Jonesiopsis* Szlach. honours David Jones a prominent Australian orchidologists, while the previous name *Calonemorchis* means 'thread orchid' from the Greek *kalos* beautiful, *nema* a thread and *orchis* an orchid. That and the common name refer to the slender thread-like sepals on most species.

Taxonomy: Many names have been applied to this group in more recent times, viz. the illegitimate *Calonema* Morgan (illegitimate because the name already applies to a genus of fungi) as well as *Calonemorchis* Szlach., *Jonesiella* Rydb. and *Jonesiopsis* Szlach.

Description: Easily recognised in most cases from the wispy floral segments and the two rows of small pale calli on the labellum. All species have a filiform leaf, in most of the western species hairy but not so much with the South Australian species.

Pollination: Pollinated by small, largely non thynnid-wasps, the method of attraction not being understood. Several wasps are often seen climbing on a single flower.

Distribution and Habitat: Predominantly a Western Australian genus but extending to all states in woodland and heath with some species about inland rock outcrops. The genus is widespread in South Australia but not in the Adelaide Hills.



RB, pollinating wasp on *J. flaccida*

Jonesiopsis bicalliata
(R.S.Rogers) D.L.Jones & M.A.Clem.

Limestone Spider Orchid

Etymology: From the Greek *bi* two and *calliata* calli, referring to the two rows of pale calli on the labellum.

Synonyms: *Caladenia bicalliata* R.S.Rogers, *Calonema bicalliata* R.S.Rogers, *Calonemorchis bicalliata* (R.S.Rogers) Szlach.



KB, Desert Camp CR, SE

Description: **Leaf** narrow, upright, hairy, to 6 cm long, the **flower stem** generally less than 10 cm tall, but occasionally taller. **Flowers** one or two, off-white with a few maroon markings; the sepals and petals to 2 cm long with shortly attenuate darkly glandular tips; dorsal sepal curved forward above the column; **labellum** tiny with maroon veins, shortly toothed margins and 2 rows of calli. The flowers are short lived and sometimes do not open at all as they are self pollinated.

Flowering: Mid Aug – early Sept.

Similar species: *J. capillata*.

Distribution: **EP, YP, SL, KI, SE; WA, Vic.**
Occurs throughout southern South Australia and extends into Western Australia. Absent from mountainous areas. Recently in 2011, there has been a confirmed record for Victoria (Backhouse pers. com.).

Habitat: Always on limestone or calcareous sands, mostly coastal, although it has been seen over 100 kilometres inland on Eyre Peninsula and in the South East.

Distinguishing Features: The short stature, single (or rarely two) self-pollinated flower and the short, thicker segments all serve to set it apart.

- ***J. capillata*** and other members of the ***J. filamentosa*** complex have longer, filamentous segments.

Notes: Like most limestone loving orchids it does not need disturbance to flower and often forms small clumps by vegetative increase.

Some forms open freely while others are cleistogamous and closely resemble the subspecies cleistogama of Western Australia.

It is difficult to locate due to its small size and short lived flowers. It has a short flowering season from mid August to early September although it may flower later on the edges of moist depressions in the South East. After good autumn rains followed by poor winters the flower stem may be shorter than the leaf.

Conservation status:
Status in Legislation: Not listed nationally, rare in South Australia.
Suggested status: 3Rc in South Australia.



JN, *J. bicalliata*, Minlaton, Sept
*Note long leaf, short stem!

Jonesiopsis capillata
(D.L.Jones) D.L.Jones & M.A.Clem.

Pale Wispy Spider Orchid

Etymology: The name *capillata* means with fine hair and refers to the long filiform tips to sepals and petals.

Synonyms: *Calonema capillatum* (D.L.Jones) D.L.Jones & M.A.Clem., *Caladenia capillata* D.L.Jones, *Caladenia filamentosa* var. *tentaculata* R.S.Rogers; *Caladenia tentaculata* Tate(1889), non Schltdl.(1847), *Calonemorchis capillata* (D.L.Jones)D.L.Jones & M.A.Clem.

Description: **Leaf** narrow, to 20 cm by 4 mm, hairiness varying but quite hairy in the type form from well inland. **Flower stem** to 40 cm, hairy, very slender. **Flowers** are usually 1 or 2 occasionally three or four, to 80 mm when stretched out, grey-white inside, often red striped outside, or with faint red veins; segments to 70 mm, very slender, almost wispy and pendulous, covered with glandular hairs; dorsal sepal erect, but incurved, lateral sepals and petals similar but spreading with drooping tips; **labellum** small, with apex curled under, lamina with two rows of short white calli, basal margins smooth and upturned apical margins with short regular teeth.



BB, Ferries McDonald CP

Flowering: July – Aug – Sept.

Similar species: *J. flaccida, J. sanguinea, J.* sp. Monarto South.

Distribution: **GT, FR, EP, NL, MU, YP, SL (rare), KI, SE; NSW, Vic.**
Widespread throughout the wheat-belt, mallee and pastoral zone from the edge of the Nullarbor Plain, inland and coastal, extending to the northern Flinders Ranges as far as the Gammon Range, Kangaroo Island, the Murray and upper South East but absent from high rainfall areas; also found in Victoria and New South Wales.

Habitat: Found in any well drained soils in mallee, shrub-land, dry woodland, scrubs and rock outcrops.

Distinguishing features: The fine, filamentous, drooping segments that are frequently tangled if there is more than one plant and the grey-white upper surface of the flowers with variable amount of red veining set the species apart.

- ***J. sanguinea*** is a deep red species from Kangaroo Island.
- ***J. flaccida*** is found in different habitats.
- ***J.* sp. Monarto South** is a smaller species with a broader labellum and more varied flowers.

Notes: It seems likely that there are several taxa included under this name.

- Coastal forms occur in limestone country and have much longer, flaccid sepals which tangle together. These plants have leaves hardly hairy.
- Inland plants form small clumps and have hairy leaves and shorter segments which are spreading, drooping only at the tips.

J. capillata forms rare hybrids with such diverse species as *Caladenia fuscata*, *Pheladenia deformis*, *Arachnorchis toxochila* and *A. brumalis*.

Conservation status:
Status in Legislation: Not listed.
Suggested status: Secure.



RB, *J. capillata*, Melrose, FR, Aug

Jonesiopsis filamentosa (R.Br.) Szlach.

Daddy-longlegs Orchid

Etymology: From Latin *filamenta* fibrous, filament, threads, hence filamentous, from the long slender floral segments.

Synonyms: *Caladenia filamentosa* R.Br., *Calonema filamentosa* (R.Br.) Szlach., *Calonemorchis filamentosa* (R.Br.) Szlach.

Description: **Leaf** linear, hairy, erect to 15 cm long, and green with a red base. **Flower stem** to 35 cm, very slender and hairy. **Flowers** wholly crimson or with few pale markings, segments all similar, filiform, to 6 cm long; dorsal sepal hooding column at its base with a lax apex; lateral sepals at first thrust forward then pendulous; petals spreading behind and usually upswept; **labellum** to 5 mm across, crimson or with minor paler colouring, narrow ovate, slightly trilobed, apex curled below, margins with regular quadrangular teeth, lamina with two rows of red or white calli with clubbed tops. No fragrance.



MH, *J. filamentosa*, Bangham, SE

Flowering: Sept – Oct – Nov.

Similar species: *J. flaccida*, *J. capillata*, *J. sanguinea*.

Distribution: **SE; Qld, NSW, ACT, Vic, Tas.**
Only known from one location near Bangham in the South East but possibly near the River Murray too; extending to the Eastern states, common in Victoria.

Habitat: Sandy *Callitris* woodland with reliable spring rain.

Distinguishing features: A species with wholly crimson-red flowers very much restricted in South Australia.

- ***J. capillata*** is always a pale flowered species
- ***J. sanguinea*** is confined to Kangaroo Island
- ***J. flaccida*** is confined to the Flinders Ranges.

Notes: The flowers are long lived.

There is much difficulty in telling the daddy-longleg spider orchids apart and some workers suggest true *J. filamentosa* is restricted to Tasmania while others would include all the Eastern sates forms as one species. The latter view is not acceptable as in South Australia this would include species of mountains, plains, calcareous coastal dunes, damp woodland on acid sands, loams, limestone and desert rock outcrops.

Conservation status:
Status in Legislation: Not Listed.
Suggested status: Rare and restricted in South Australia, probably 2Eci, uncommon interstate.



BB, *J. filamentosa*, Bangham CP, Sept

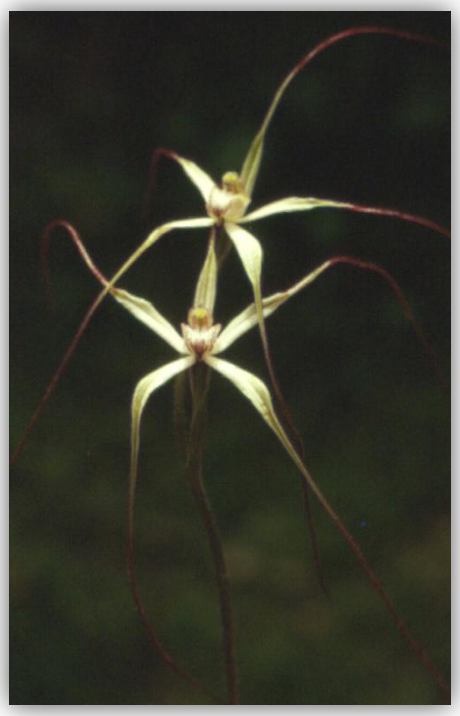
Jonesiopsis sp. Monarto South (H. Goldsack 163)

Monarto Wispy Spider Orchid

Etymology: The phrase name indicates that the species has only been found on the plains west of the Murray River, especially near Monarto.

Synonyms: Previously included under *Caladenia filamentosa* R.Br.

Description: **Leaf** linear, hairy, erect, short, to 4 cm long. Plants single or in clumps; **flower stem** to 10 cm, wiry, green with very fine hairs. **Flowers** are 1 or 2, about 4 cm across, cream or yellow and red or white with red striping, or wholly red, often glossy; segments to 30 mm, linear, tapered, for most of their length with glandular fimbriate margins; dorsal sepal erect, lateral sepals arched at the base then drooping; petals at first erect behind the flower; **labellum** triangular, to 8 mm long white or yellow with red veins or wholly red, apex often attenuate and curled under, margins with fine rectangular teeth; lamina with two rows of short white rectangular calli with red flat tops; column short with glandular hairs. Flowers have a burnt metal odour, out-crossing.



RB, Milang, MU

Flowering: Aug – early Sept.

Similar species: *J. capillata*, *J. bicalliata*, *J. filamentosa*

Distribution: **MU, SL.**
Endemic to South Australia, mostly near the coast and west of the River Murray.

Habitat: Associated with fertile, shallow soils over sheet limestone under native pines and mallee, usually in low sedges or patches of grass.

Distinguishing features: Plants of small stature with varied flowers, shorter segments and broader labellum.

- ***J. filamentosa*** is a wholly crimson-red flower with a restricted range in South Australia.

Notes: Probably common before settlement but has suffered a severe decline due to overgrazing. It has been found growing with *J. capillata* without intermediates. Perhaps it may be best treated as a subspecies of ***J. filamentosa.***

Not known to hybridise with any other species.

The heritage area where the best known population occurs near Hartley has been recently subdivided and is under extreme threat.

Conservation status:
Status in Legislation: Not listed nationally, endangered in South Australia.
Suggested status: 3E in South Australia, nationally endangered



JN, *J.* sp. Monarto South, Aug

Jonesiopsis flaccida
(D.L.Jones) D.L.Jones & M.A.Clem.

Telowie Spider Orchid

Etymology: From the Latin *flaccidus*, weak or floppy, in reference to the long floppy perianth segments.

Synonyms: *Calonema flaccida* D.L.Jones, *Caladenia flaccida* D.L.Jones, *Caladenia filamentosa* R.Br.

Description: **Leaf** almost glabrous, linear, erect, to 10 cm long, green above purplish below. **Flower stem** to 30 cm, wiry, reddish, slightly hairy. **Flowers** crimson with white striping; segments all similar, filiform, to 7 cm long, glandular hairy on the apical two thirds; dorsal sepal erect, usually floppy; lateral sepals longer, pendulous; petals spreading behind, either upswept or drooping; **labellum** broad, crimson and white, narrow-ovate, hardly lobed, the dark apex curled under, the margins with small lobed teeth, lamina with two close rows of short clubbed calli, flowers with a light musky smell.



RB, Telowie Gorge, NL

Flowering: Aug – Sept.

Similar species: *J. filamentosa*, *J. sanguinea.*

Distribution: **FR, NL, ?MU; NSW.**
Restricted in South Australia to a few small areas of the Southern Flinders Ranges, near Telowie and Mambray Gorge, and perhaps in the Murray mallee; also in New South Wales.

Habitat: In woodland and low scrub, in gorges of the Flinders Ranges including rocky soils; and perhaps near the River Murray.

Distinguishing features: *J. flaccida* as treated here differs from other South Australian forms in it's often bicoloured flowers, the thick textured sub-glabrous leaf and the rather longer lateral sepals.

Notes: *J. flaccida* was included under *Caladenia filamentosa* R.Br. of which it may be a local form.

It is part of a complex group of similar forms in South Australia. The type description is of plants with hirsute leaves and large labellum but the South Australian plants have almost glabrous leaves and a small labellum.

Flowers are usually seen to harbor small flower wasps, these do not exhibit the usual frenetic behaviour of sexually attracted wasps but rather crawl about the sepals or rest on the labellum for long periods, yet these wasps do have pollinia attached and can be seen at times in a pollinating position.

No hybrids are known.

Conservation status:
Status in Legislation: Not listed nationally, vulnerable in South Australia.
Suggested status: 3Vci in South Australia, nationally rare.



RB, *J. flaccida*, Wirrabara Forest, Go-cart Track, Sept
*Note flaccid, elongate, painted segments and rocky habitat

Jonesiopsis sanguinea
(D.L.Jones) D.L.Jones & M.A.Clem.

Kangaroo Island Daddy-longlegs or Bloody Spider Orchid

Etymology: From the Latin *sanguinea* blood red, in reference to the shiny blood-red flowers.

Synonyms: *Calonema sanguinea* D.L.Jones, *Calonemorchis sanguinea*, *Caladenia sanguinea* D.L.Jones and previously included under *Caladenia filamentosa* R.Br.

Description: **Leaf** linear, sub-glabrous, to 10 cm long, red based, erect. **Flower stem** to 30 cm, slightly hairy. **Flowers** 1 to 3, blood red, shiny, to 8 cm across; the segments are all similar, linear, to 5 cm long, glandular hairy; dorsal sepal erect, apex lax; lateral sepals and petals pendulous; **labellum** small, red or red and white, with white or yellow calli in two rows, margins evenly toothed, apex turned under. The flowers are not scented.

Flowering: Sept – Oct.

Similar species: *J. filamentosa, J. capillata, J. flaccida*

Distribution: **EP, YP, KI**
Endemic to South Australia, mostly on Kangaroo Island with a single collection each from the adjacent tips of Eyre and Yorke Peninsulas.

Habitat: In scrubs, woodland and wooded heaths in laterite or in shallow soil pockets over limestone.



BB, Kangaroo Island, Sept

Distinguishing features: Easily separated from ***J. capillata***, with which it is often sympatric, by the shiny red flowers, thicker leaf and less wispy segments.

- It differs from ***J. filamentosa*** in the almost hairless leaf and smaller flowers.
- Very similar to the South Australian forms of ***J. flaccida*** which also has a sub-glabrous leaf and red flowers, but longer floppier segments which are usually white edged and occurs in different localities.

Notes: Only recently described (1999), but long recognised as distinct from other South Australian forms.

The species occurs as single individuals or small populations of less than a hundred plants and is pollinated by small wasps and native bees.

No hybrids known.

Conservation status:
Status in Legistlation: Not listed nationally, rare in South Australia.
Suggested status: 3Rc, nationally rare.



BB, *J. sanguinea*, Kangaroo Island, Sept

Gallery



BB, *J. flaccida*, Wirrabara NFR, NL, Sept



BB, *J. sanguinea* with pollinating wasp



BB, *J. flaccida*, Telowie Gorge, NL



KB, *J. sanguinea*, SE, Oct
*Note monochrome segments



RB, *J. capillata* x *Pheladenia*, Monarto



RB, *J. capillata*, Dutchman's Stern CP



KB, *J. capillata*, less wispy form, Carappee Hill CP, EP



MH, *J. capillata*, Monarto CP



JN, *J. sanguinea*, Kangaroo Island, Sept



BB, pollinating wasp on *J. sanguinea*, KI



JN, *J.* sp. Monarto South, Aug



BB, pale *J. sanguinea*, Kangaroo Island



JN, *J. bicalliata*, Minlaton, Sept



KB, *J. bicalliata*, odd albino form, YP



BB, *J. bicalliata*, Muloowurtie Reserve, YP, clump in bud

Leporella A.S.George

Fringed Hare Orchid



JN, variation in *L. fimbriata* flowers

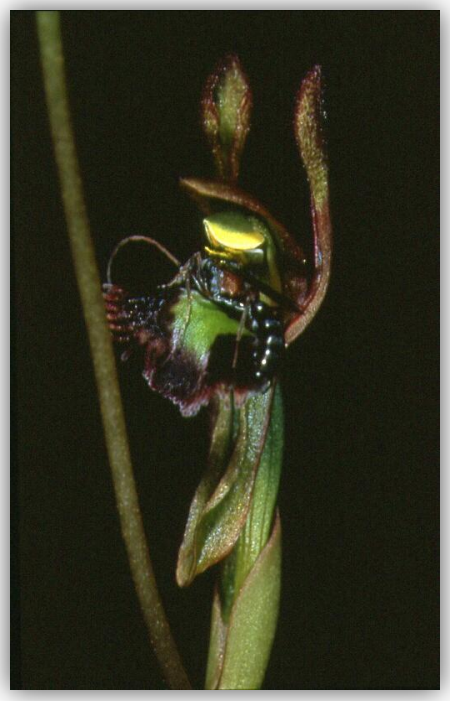
South Australia's Native Orchids

Leporella A.S.George

Fringed Hare Orchid

Etymology: The epithet *leporella* means a little hare, which the flowers may resemble; hence the common name of hare orchid.

Taxonomy: This is a monotypic genus, endemic to Australia and widespread across the southern parts of the continent. It seems to be an ancient and very stable species as plants from the East and West coasts do not appear to differ. Long ago *Leporella* was included in either *Leptoceras* or *Caladenia* but the taxonomy is unlikely to change now.



RB, flower with pollinator

Description: Following the first autumn rains, flower stems emerge directly from the ovoid tubers and grow rapidly, enclosed at the base by the beginnings of paired, glabrous, green leaves which develop red lines with age. The genus is characterised by the erect spathulate, glandular petals and broad velvety labellum with fringed margins.

Pollination: This is effected by winged male ants of the genus *Myrmecia* the stinging jumper ants, which are sexually attracted to the flowers by sex pheromones (allomones) produced by glands (trichomes) on the petal tips. The ants fly to the flowers from downwind, crawling onto the labellum, straddling it longitudinally and probing with their abdomen as if copulating. The broad velvety labellum apparently represents the female ant. While the male ant is fooling about on the labellum it tips back against the column and must then twist free to escape, thereby achieving pollination as it does. The ants appear to be sexually active for a short time each year, usually just before thunderstorms. Most years these nuptial flights coincide with the orchid's flowering but some years pollination does not occur as the sexual activity of the ants may be completed before the orchids flower.

Distribution and Habitat: The monotypic genus is widespread across the southern parts of the continent. It is largely confined to sandy or gravelly soils in woodland and heath.

Notes: The species can form extensive colonies which flower freely in fertile sandy soils but need fire to stimulate flowering in poor gravelly soils.

Leporella fimbriata (Lindl.) A.S.George

Fringed Hare orchid

Etymology: The epithet *fimbriat*a Latin fringed in reference to the fringe on the labellum.

Synonyms: *Leptoceras fimbriatum* Lindl.

Description: **Leaves** 1-2, ground hugging, ovate, to 30 mm long, glabrous, dark grey-green with distinct red stripes. **Flower stem** to 25 cm slender, greenish. **Flowers** 1-3, to 15 mm wide; segments greenish-brown, often with red tones when freshly opened, labellum green with purple markings. Dorsal sepal to 10 mm long, ovate and hooded over the column; lateral sepals to 15 mm, deflexed and spathulate; petals to 15 mm, erect and spreading, the tips covered with small dark glands. **Labellum** broader than long, fan shaped, to 15 mm wide, hinged at base and horizontal with deeply fringed outer margins which are purple.



KB, Honan NFR, SE

Flowering: Mar – Apr – May.

Similar species: None.

Distribution: **EP, NL, MU, YP, SL, KI, SE; WA, Vic.** Widespread across the south of the state from Southern Eyre Peninsula, Yorke Peninsula, Kangaroo Island, the Mount Lofty Ranges southward from the Barossa Valley and the South East but absent from the Flinders Ranges. It is also found in Western Australia and Victoria.

Habitat: It occurs mostly on sandy flats and rises in woodland, heath and scrub but also in gravelly soils on ridges in the higher parts of the Adelaide Hills.

Distinguishing features: Easily readily identified from the 'dancing-ballerina type' flowers with the distinctive green and purple fringed labellum; flowers emerging before the leaves, and leaves which are glabrous, red striped and often paired.

Notes: Forms expansive colonies on the sand flats through vegetative reproduction as each root is capable of producing a new globose tuber each season. Prefers the more open sites. On gravely ridges and some scrubby areas only flowers freely after fires.

The flowers retain their shape, but not their colour, long after anthesis. These spent flowers often lead novices to believe they have found some new orchid species as they do not match the illustrations in books.

This is such a constant species that it is not possible to discern any differences between populations in Western Australian and the Eastern states.

Conservation status:

Status inLegislation: Not Listed.

Suggested Status: Well conserved in South Australia.



KB, *L. fimbriata,* Scott CP, SL

Leptoceras (R.Br.) Lindl.

Rabbit Ears



KB, *L. menziesii*, KI

South Australia's Native Orchids

Leptoceras (R.Br.) Lindl.

Rabbit Ears

Etymology: From the Greek *leptos*, slender, and *keras*, a horn, in reference to the narrow horn-like petals.

Taxonomy: Previously included in the large composite genus *Caladenia* from which it differs in its glabrous leaf, pellucid below and distinct rigidly erect petals. *Leptoceras* is actually a monotypic genus endemic to Australia, sort of a sister genus to *Leporella* which was once placed in the same genus. Both have flowers of a similar appearance and similar distribution but they are poles apart in other ways, one flowering in the autumn the other in spring, both having different pollination strategies and mycorrhizal associations and certainly very different vegetative features. The name *Leptoceras* is here to stay as it is in no way a '*Caladenia*'.

Description: The flower stem arises from a single glabrous green leaf; buds tend to sit within a small ligule at ground level until late winter then produce a growth spurt in spring. The flowers, usually one or two, are in 'strawberries and cream' tones of rich red and white. As in *Leporella* it is the red petals which stand erect and are glandular, while the sepals are broad and glistening white. Plants die back to small spherical, pubescent tubers in late spring, summer.

Pollination: *Leptoceras* flowers are pollinated by native bees but at this time the pollination strategy can only be guessed at. Certainly colour and perfume must be attractants, while the yellow tipped labellum calli probably represent pseudo-stamens and help to position the bees in a pollinating position, but the function of the glandular petals is not known. Perhaps they are part of an ancestral pollination strategy.

Distribution and Habitat: *Leptoceras* extends across southern Australia from Western Australia to Tasmania and is clearly an ancient and stable genus as plants from opposite ends of its range cannot be separated on any feature. *Leptoceras* is a shade loving plant found in most soil types and habitats inside the 600 mm isohyet, from sea level to the highest peaks. Where it does grow, it forms large, scattered or dense colonies, with up to a thousand plants per square metre. Spectacular floral displays are provided after bushfires.

Notes: In cultivation, although plants increase vegetatively, enabling a few plants to become hundreds within 5 years, it is always difficult to initiate flowering. Some growers have placed tubers in a box with banana skins as the ethylene gas produced by ripening fruit stimulates flower production. Do not add mineral fertilizers to the soil mix and do not let the mix become soggy as tubers are prone to rot. The plants do not like mains water

South Australia's Native Orchids

Leptoceras menziesii (R.Br.) Lindl.

Hare Orchid, Rabbit Ears

Etymology: Named by Robert Brown (1810), English explorer and botanist, in honour of Archibald Menzies, British physician, zoologist, botanist and gardener, who collected on Vancouver's *Discovery*, King George Sound (present day Albany) Western Australia, in 1791.



KB, Inman Valley, SL

Synonyms: *Caladenia menziesii* R.Br.

Description: **Leaf** glabrous, ovate-lanceolate, usually to 6 cm long but sometimes to 12 cm. The **flower stem** can reach 30 cm but is usually much less, mostly glabrous. **Flowers** usually one or two, rarely more; segments 10-15 mm long; dorsal sepal red, glandular-hairy on the back, hooded over the column; lateral sepals white, ovate, curved, spreading horizontally. The petals are purple-red, erect, linear-oblanceolate, clavate, and closely glandular above. The **labellum** is about 7 mm long, curved, white with red stripes; calli in two rows, yellow, slender, with large rounded heads. Flowers sometimes lightly scented.

Flowering: Sept – Oct – Nov.

Similar species: None.

Distribution: **EP, NL, MU, YP, SL, KI, SE; WA, NSW, Vic, Tas.** From coastal dunes to mountain tops, it is found mostly in the Mount Lofty Ranges, Kangaroo Island and the South East but with isolated colonies on southern Eyre Peninsula (near Port Lincoln), extreme southern Flinders Ranges (Wirrabara to Murraytown) and the tip of Yorke Peninsula. It is also found in Western Australia, and the Eastern states.

Habitat: Prefers damper, often well shaded sites in closed coastal scrub, heath, woodland and forest especially in moist gullies, although in areas inside the 800 mm isohyet may occur on dry mountain ridges of the Adelaide Hills, or the south side of dunes on the plains of the South East. Soil types include sand, loams or clay loam, gravel and on limestone.

Distinguishing features: Readily identified by the stiff, bright green, glabrous leaf, often in large colonies. If flowers are present the upright deep red petals contrasted with the white lateral sepals.

Notes: Some clones, especially on limestone, flower freely without fire, but usually fire is required to initiate flowering, although there may be an occasional insipid flowers in un-burned areas. Vegetative reproduction helps to set up huge colonies in ideal conditions and following a fire massed flowerings are a spectacular sight. It is usually only in massed flowerings on warm days that the sweet floral fragrance of the flowers is noticeable. Like many colony-forming, shade tolerant orchids, *Leptoceras* also invades pine plantations, but flowers in pine forests are as rare as one plant in 10,000. Rarely albino, or semi albino flowers occur, but otherwise flower colour is very constant.

In cultivation flowering is initiated by flooding the tubers with ethylene gas from ripening fruit or smoked water.

This species is the emblem of the Native Orchid Society of South Australia.

Conservation status:

Status inLegislation: Not Listed.

Suggested Status:Common and well conserved.



RL, *L. menziesii*, Mt Bold, SL, Sept

Gallery



RL, *L. fimbriata* buds, Mt Billy CP, SL, Mar



RL, *L. fimbriata*, Mt Billy, SL, April
*Note there are four flowering plants plus one in bud, in this picture.



RL, *L fimbriata*, Scott CP, SL, July
*Note the *Pyrorchis* leaf with them.



RL, *L. menziesii*, Mt Bold, SL, Sept



RL, *L. menziesii leaves*, Mt Bold, SL, June



KB, *Leporella* triplets, Scott CP, SL



KB, *L. menziesii*, Belair NP, SL



RL, *L. menziesii,* part of a large colony after fire, **Mt Bold, SL, Oct**

Linguella D.L.Jones & M.A.Clem.

Little Greenhoods



KB, *L.* sp. Hale, Ferries McDonald CP

South Australia's Native Orchids

Linguella D.L.Jones & M.A.Clem.

Little Greenhoods

Etymology: *Linguella* is the diminutive of the Latin *lingua* a tongue, a reference to the tiny hidden labellum in this genus.

Taxonomy: Part of the super genus *Pterostylis,* the genus is based upon *Pterostylis nana* R.Br. as the type species. This well marked genus with its own set of pollinators appears to be of ancient lineage. Long recognised as a specific group i.e. 'the nana complex' they became *Linguella* in 2001. We may have to wait some time before the species limits are resolved but there are at least six, possibly as many as ten, different taxa in South Australia, none of which can be placed confidently in any named species yet! All are similar in appearance but habitat specific and often appear in close proximity, without intermediates, indicating species specificity of pollinators.



KB, pollinator on *Linguella*, SL

Description: Most have a basal rosette and varying numbers of stem leaves. There is a single tiny greenish flower with an inflexed tooth in the sinus of the lateral sepals and a small simple labellum. Leaf and rosette shapes are some of the best identifying features. Some species have smooth rounded fleshy leaves, others have crinkled, thin textured pointed leaves, some have distinctly veined leaves while others have the veins not apparent. Another identifying feature is the degree of 'hairiness' of the scape.

Pollination: *Linguella* are all out-crossing, attracting tiny, short bodied but long legged flies. These enter the hood, setting off the irritable labellum which forces the fly to exit through the column wings past a sticky stigma and then to squeeze past the pollinia which are glued to the mesothorax of the insect. The attractant is unknown, neither food reward, perfume, sexual attraction nor any other are factor, but pollination events are sometimes observed (see above).

Distribution and Habitat: The greatest diversity and majority of species occur in Western Australia with just a few in the Eastern states. The species occur in a wide variety of habitats from the littoral zone to the desert fringes, in most soil types but particularly in alkaline soils and from swamps to rock outcrops and sandhills of semi arid zone and edge of deserts, in heath, woodland or scrub.

Notes: The many undescribed South Australian species have long been referred to the *Pterostylis nana* complex or simply as '*nanas'.* There are an estimated thirty species in this genus, the majority undescribed.

The genus is being revised by David L Jones and it may be some time before the South Australian species are resolved. He has several South Australian species in manuscript. The last species named (2007) by DL Jones was a Western Australian species similar to South Australia's *L.* sp. Veined leaf and named by Jones as *L. timothyi* after his son.

Further research is likely to show that Western Australia has as many as 20 taxa and South Australia as many as ten. Included among the possible undescribed *Linguella* in South Australia is *L. s*p. Tod (R. Bates 61015), known only from the Koppio area on Eyre Peninsula.

South Australia's Native Orchids

Linguella nana (R.Br.) D.L.Jones & M.A.Clem.

Linguella sp. Coastal nana (R. Bates 15008)

Coastal nana

Etymology: The phrase name indicates the favoured habitat of the species.

Synonyms: Previously included in *Pterostylis nana* or *L. nana*. *L. paractites* D.L. Jones, ms.

Description: **Leaves** suberect, petiolate, ovate, crenulate, to 30 mm long, dull green, in a basal rosette to 5 cm across. **Flower stem** to 20 cm, with two leafy stem bracts. **Flower** single, large for the complex, greenish brown and white; **galea** erect, to 20 mm high, the top of the hood, turning brown with age, curved forward, dorsal sepal about as long as the petals; lateral sepals erect, embracing the galea, the free points to 20 mm long, divergent; inflexed tooth of the sinus, rigid, to 3 mm long; **labellum** is brownish and white, ovate.

Flowering: Late July – Aug – Sept.

Similar species: *L.* nana complex species.

Distribution: **EP, YP, SL (rare), KI, SE.**
A coastal species, occurring from about as far west as Streaky Bay to Port Lincoln, the southern tip of Yorke Peninsula, Newland Head on the Fleurieu Peninsula, Kangaroo Island and the lower South East from Kingston southward.

Habitat: On calcareous sand of coastal sandhills, under low shrubs, native pine and coastal mallee, extending to about 5 km inland, on sheet limestone in mallee and *Melaleuca* scrubs.



BK, Seal Bay, KI

Distinguishing features: Distinguished by the large crinkled basal leaves (which are not flat on the ground) and the large yellow green and white flowers steeped in orange-brown as they age.

Notes: The species forms small, discrete, clonal colonies in poor non wetting soils. Sometimes occurs in variegated leaf forms. The flowers are long lived and may stay open for up to six weeks. Seed capsules are rare, indicating poor pollinator effectiveness.

Conservation status:
Status in Legislation: Not Listed.
Suggested status: 3Rc



BB, *L.* sp.Coastal nana front view, Nora Creina, SE

Linguella sp. Hale (R Bates 33950)

Veined-leaf nana

Etymology: The phrase name refers to an area of occurrance, the common name refers to the strongly veined leaf structure.

Synonyms: Previously included in *Pterostylis nana, L. nana* or *Pterostylis* sp. Hale, and *L.* sp. Veined leaf.

Description: **Leaves** 3-6, small, blue-green or grey, heavily veined, sagittate, to 15 mm long, rigid, in a basal rosette flat on the ground, to 30 mm across. **Flower stem** short, smooth, to 10 cm, slender with one or no stem bracts. The **flower** is single, green and brown; **galea** erect, green with rusty tints especially as the flowers age, to 15 mm high, apex thrust forward, with a short point and broad thin textured petals; lateral sepals erect, divergent, the free points to about 10 mm, often with brownish indistinct clubs; the inflexed tooth of the sinus absent, vestigial or contorted; **labellum** red-brown and greenish-white, ovate, to 4 mm long.



KB, Ferries McDonald CP, MU

Flowering: Aug – Sept.

Similar species: *L.* nana complex species.

Distribution: **EP, ?NL, MU, SL**
Endemic in South Australia with a patchy distribution across the southern agricultural regions from central western Eyre Peninsula, two or three locations in the Mount Lofty Ranges and in the Murray Mallee. There are similar taxa in Western Australia and Victoria.

Habitat: Usually in loose white sands under Mallee broombush but in the ranges recorded from shallow gravels on ridge tops in *E. goniocalyx /Callitris* woodland.



RB, Hale CP, rosette, SL

Distinguishing features: *L.* sp. Hale is easily recognised by the veined, ground hugging leaves and red tints on flowers.

Notes: It is likely that mallee plants should be regarded as a separate subspecies from those of the Hills. Like other members of the genus usually occurs as small, discrete, clonal colonies. The species exhibits all the features of a relict, i.e. distinctive features, few widespread locations and few seed capsules set.

Conservation status:
Status in Legislation: Not listed nationally, vulnerable in South Australia.
Suggested status: Rare South Australian endemic, suggest Vci.



KB, *L.* sp. Hale, Ferries McDonald CP, July, MU

Linguella sp. Hills nana (RH Edge s.n.)

White haired Little-greenhood

Etymology: The common name refers to the crystalline white hairs on the peduncle or scape.

Synonyms: Previously included under *Pterostylis nana* or *L. nana, L. longiseta* D.L.Jones, ms.

Description: **Leaves** 4-8, grey-green, thick textured, shortly petiolate, ovate to 20 mm long; smoothed edged, in a basal rosette, either flat on the ground or sub-erect. **Flower stem** slender, to 20 cm tall, with one to three small stem clasping leaves in some forms, and stem leaves absent in most inland forms; stem hairs pellucid, white, thick and short. **Flower** single (rarely two), white or greenish with several darker green stripes; **galea** upright except for the hood suddenly bent forward, or even decurved; dorsal sepal blunt hardly exceeding the broad apex of the petals; lateral sepals erect, embracing the galea; free points upright, to 20 mm long, sometimes slightly clubbed and or glandular; the sinus tooth very distinct, reflexed; **labellum** to 5 mm long, oblong, blunt.



KB, Scott CP, SL

Flowering: July – Aug – Sept – Oct.

Similar species: *L.* nana complex species.

Distribution: **GT, FR, EP, NL, MU, YP, SL, KI, SE; NSW, Vic, Tas.**
Very widespread (in its three forms) from the coast to hundreds of kilometres inland and to the tops of our higher mountains, from the edge of the Nullarbor Plain, to the middle Flinders Ranges, and south; all southern states.

Habitat:

- **Form 'a', Hills nana**, is restricted to higher rainfall areas in forest, woodland and heath in acid soils ranging from pure sand to clay where it sets up quite large colonies.
- **Form 'b', Wheatbelt nana** is common in the wheat belt in mallee, mallee-heath and dry scrubs and woodland especially on calcareous soils.
- **Form 'c', Desert nana** occurs about rock outcrops in the pastoral zone, extending to desert fringes.

Distinguishing features: All forms have white stem hairs and smooth ovate leaves.

- **Form 'a'** has the basal rosette with leaves often sub erect, not flat to the ground and with several stem bracts.
- **Form 'b'** has the rosette flat on the ground and without stem bracts other than the distant floral bract**,** the leaves and flowers of very rigid texture.
- **Form 'c'** also has the rosette flat on the ground but with thin textured leaves and flowers.

Notes: It may be useful to treat each as subspecies as each has a discrete geographical range and habitat. Pollinators are small short legged flies (See image in Genus page). These are often observed on the flowers and pollination rates are high. It is not known what attracts the flies but it may be the warmth inside the flower hood which acts as a greenhouse. All *Linguella* species in South Australia occur as discrete clonal colonies.

Conservation status:
Status in Legislation: Not Listed.
Suggested status: Common.



RB, Hills nana showing white hairs



RB, typical colony of *L.* sp. Hills nana



KB, Rosettes of Desert nana



RB, Desert nana, Nonning, EP



JN, Rosette of Wheatbelt nana, Karte, showing toothed or setulose leaf edges



JN, Wheatbelt nana, August



KK, *L.* sp. Hills nana, SL

Linguella sp. Mallee nana (E.N.S. Jackson 5627)

Little Mallee Greenhood

Etymology: The phrase name and the common name show that this is a dwarf species found mostly in the mallee.

Synonyms: Previously included in *Pterostylis nana* or *L. nana, L. tenius* D.L.Jones, ms.

Description: **Leaves** 5-10, all small, petiolate, ovate, acute, margins crenulate, in a basal rosette. **Flower stem** very slender, to 15 cm tall, with few small leaf bracts. **Flower** usually single, greenish and brown, laterally compressed so that it is very narrow from the front view; **galea** erect, to 5-8 mm tall, the hood facing forward and down at the apex, sepal as long as the narrow petals; lateral sepals very erect with the free points variable in length, mostly only 5 mm, often glandular or clubbed at the apex; inflexed tooth in the sinus thin textured; **labellum** small, ovate, and brown, to 2 mm long.



JN, Sandy Creek CP, three views.

Flowering: Late July – Aug – Sept.

Similar species: *L.* nana complex species.

Distribution: **EP, MU, YP, SL, KI, SE.**
Mostly in the eastern half of the state with an outlier on central Eyre Peninsula, absent from the Flinders and Northern Lofty Ranges, most abundant on the plains especially in the Murray-mallee and upper South East.

Habitat: Mostly in sandy soils or on gravelly slopes; in heath, mallee heath, woodland and scrubs.

Distinguishing features: The leaf rosettes are important in determining the many ***Linguella*** species. Thus it is easily recognised from the small crenulate leaves and tiny compressed marbled flowers with short dark lateral sepals.



JN, rosette, Monarto, MU

Notes: It is possible that there are several taxa included under this phrase name. The plains plants and mountain plants should probably be treated as separate subspecies and there may be other species involved. The species form small discrete clonal colonies. Often occurs with other members of the complex, which is one of the reasons these species have gone so long unrecognised. The species do not appear to form hybrids. *L.* sp. Mallee nana is common in the many reserves of the upper South East and in the mallee.

This tiny species forms closely packed colonies of up to a thousand plants. The tiny short bodied flies which pollinate this species are a delight to watch as they enter flower after flower.

Conservation status:

Status in Legislation: Not Listed.
Suggested status: Widespread, locally common and secure.



JN, *L.* sp Mallee nana, Monarto, MU
*Note marbled effect on hood, and dense colony forming nature of this species

Linguella sp. Tall mallee nana

Tall mallee nana

Etymology: The name indicates that this is a tall species from the mallee.

Synonyms: Previously lumped under *Pterostylis nana.*

Description: rosette of **leaves** that are hardly veined, thin textured, heart shaped. **Flower stem** very slender, to 15 cm tall, lacking white cilia, with 1-4 sterile bracts. **Flower** single, to 7 mm long, very narrow in front view, neatly striped with green or red tinged lateral sepals about as long as the hood and convergent; sinus truncate with a very rounded incurved tooth; **labellum** oblong in outline.

Flowering: July – Aug.

Similar species: Easily confused with *L.* sp. Mallee nana.

Distribution: **EP, MU, YP, SL, SE.**
Widespread throughout South Australia in coastal mallee and short stringybark woodland.

Habitat: Sandy soils of the plains, where it forms large colonies of well dispersed plants.

Distinguishing features: The delicate rosettes of thin, heart shaped, crenulate leaves, smooth peduncles, slender often tall stems, narrow flowers with the hood not marbled and no black clubs.

- ***L.* sp. Mallee nana** has a marbled hood and lateral sepals with dark clubs.



JN, Karte CP, MU

Notes: Further research, DNA testing, etc, is needed to clarify the status of this form which may be just a subspecies of *L.* sp. Mallee nana. NOSSA members continue to work on understanding this genus in South Australia.

Conservation status:
Status in Legislation: Not Listed.
Suggested status: Widespread but declining due to climate change.



JN, *Linguella* sp. Tall mallee nana, July
*Note the very slender smooth stems.

Linguella sp. Warren (R. Bates 33950)

Little Warren greenhood

Etymology: The phrase name alludes to the conservation park near where it is mostly found.

Synonyms: Previously included in *Pterostylis nana* or *L. nana.*

Description: **Leaves** 5-8, sub-erect, smooth, fleshy, pale green, ovate, in a loose basal rosette about 2 cm across. **Flower stem** smooth, to 10 cm tall, with one or two sterile bracts. **Flower** single, green or greenish-brown, shiny; **galea** rigidly erect, to 20 mm high, base swollen, the top of the hood curved forward, dorsal sepal blunt, hardly longer than the narrow petals; lateral sepals erect and embracing the galea, the free points to 20 mm long, rigid with brownish glandular tips; inflexed tooth of the sinus, dark smooth and rigid; **labellum** elliptical, green-brown to 4 mm long. Whole plant drying darker than other members of the complex, flowers short lived.

Flowering: Aug – Sept.

Similar species: *L.* nana complex species.

Distribution: **SL**
Endemic to South Australia where known only from a small area of the Adelaide Hills near Watts Gully, in the adjacent Warren Conservation Park and also, near Cherry Gardens.



RB, *L.* sp. Warren, Clarendon

Habitat: On rocky ridge tops and upper slopes in micaceous schist under scrubby Eucalypts, especially *E. goniocalyx* and *E. fasciculosa,* sometimes amid outcropping rock, sometimes in clay of bulldozed track-sides.

Distinguishing features: The pale, fleshy, smooth, ovate leaves are the best feature to use for identification. When pressed the whole plant turns a dark brown. The lack of setae on the ribbed stems, the swollen stem bracts and the oddly gibbous base to the hood are good features for flower identification.



MH, Warren CP, SL

Notes: Goats and weeds are the main threats to this species. An area of about 6 km of ridge tops from Watts Gully to Williamstown has no less than four members of the *L. nana* complex and probably indicates the presence of a particular soil fungus with which the orchids are associated. Other ridges with similar soils in this district have been cleared for grazing, so although the species must have been rare before settlement it is much more threatened today as the largest population is on private property.

Conservation status:
Status in Legislation: Not Listed.
Suggested status: 2Eci



JN, *L.* sp. Warren, Hale CP.

Note very smooth stems & non crenulated leaves

Gallery



BB, *L.* sp. Coastal nana



BB, *L.* sp. Hills nana, Mt Billy CP, July



JN, *L.* sp. Wheatbelt nana, Sherlock, MU
Note setae



RB, *L.* sp. Coastal nana, Lincoln CP, EP
Note papillae on stems



***L.* sp. Artwork by Kath Alcock, SE**



RB, *L.* sp. Coastal nana
Two views with *Bunochilus* sp. flower to emphasise large size of *L.* sp. Coastal nana



JN, albino *L.* sp. Wheatbelt nana, Moorlands



JN, *L.* species, Peake, MU



RB, *L.* sp. Hills nana x *L.* sp. Mallee nana, Aldgate Valley, SL



JN, *L.* sp Wheatbelt, Pinnaroo, August
Note dense short setae on stem

Microtis R.Br.
Microtidium D.L.Jones & M.A.Clem.
Hydrorchis D.L.Jones & M.A.Clem.

Onion Orchids



JN, *M. arenaria*, Coorong NP, SE

South Australia's Native Orchids

Microtis R.Br.
Microtidium D.L.Jones & M.A.Clem.
Hydrorchis D.L.Jones & M.A.Clem.

Onion Orchids

Etymology: From the Greek *micros* small and *otis* an ear, in reference to the small ear-like column wings. The common name derives from the hollow cylindrical leaf as in the garden onion.

Hydrorchis is from the Greek *hydro* water and *orchis* an orchid, thereby indicating its aquatic habitat. *Microtidium* is the Greek diminutive of *Microtis* indicating that the whole plant and flowers are much smaller than that of true *Microtis*.

Taxonomy: The recent concept suggested by D.L.Jones and M.A.Clements of treating the two ancient species as separate monotypic genera is accepted here, but in this DVD *Microtis, Hydrorchis* and *Microtidium* are treated as a natural group – the Onion Orchids.

Description: All species are totally glabrous, arising annually from small globular tubers which give rise to a single, hollow, cylindrical leaf which emerges with the onset of the rainy season. The leaves are easily separated from the similar *Prasophyllum* as when broken they exude a clear mucilaginous sap.

The flower spike emerges in the spring-summer; the budding spike is enclosed in the leaf and breaks through about a week before flowering. Both *Hydrorchis* and *Microtidium* differ from *Microtis* in the upper leaf being solid, not hollow and both lack calli on the labellum. The flowers are numerous, tiny, usually green, apomictic or self-pollinated and resupinate; fragrant or not. The dorsal sepal forms a hood over the column, the petals usually within this hood, the labellum a variable feature, pendulous below.

The few endemic species restricted to South Australia are short plants, with short leaf, small, few-flowered spikes and a short growing season which reflects the dry climate.

Pollination: Despite being both self-pollinating and apomictic, the flowers also use nectar and perfume to attract insects. The most successful pollinators at effecting out-crossing are tiny wasps and flies but for some species ants regularly transfer pollinia, though mostly from flower to flower on the same spike. The main attractant is nectar which ponds in a transverse pit at the base of the labellum, adjacent the basal calli. These calli serve to position the pollinators in such a way that they contact the viscid disc to which the pollinia are attached.



BB, pollinating wasp

Distribution and Habitat: *Microtis* is a conglomerate genus of about thirty species, several of them as yet un-described, most of them occurring in Australia, with several in New Zealand and at least one extending to New Caledonia and through eastern Asia. Two are now in the new segregate monotypic genera *Hydrorchis* and *Microtidium.*

There are about a dozen South Australian species occupying a wide range of habitats from seashore to mountain top, from permanently damp bog to rock outcrops and springs in the semi arid zone.

Notes: Some species such as the tiny *Microtidium atratum* are very old and stable but there is a complex of species alliances at present evolving, centred on *Microtis unifolia, M. parviflora* and *M. rara* which are proving difficult to revise. Only the most obvious of these are treated in this book.

Most species are capable of forming unusually large colonies, often with a very low percentage of flowering plants. Copious seed is produced.

Hydrorchis orbicularis
(R.S.Rogers) D.L.Jones & M.A.Clem.

Waterhole Orchid or Mignonette Orchid

Etymology: The name *orbicularis* circular, refers to the almost circular lower part of the labellum.

Synonyms: *M. orbicularis*

Description: Plant wholly green or with reddish flowers and stem. **Leaf** to 25 cm, shorter than spike, rigid, fistula high up; **flower stem** to 30cm tall. **Flowers** 5 to 30, green or reddish, to 3 mm wide, sub-sessile, well spaced in a narrow spike; segments to 2 mm long; dorsal sepal helmet shaped; lateral sepals spreading but out of sight below the labellum; petals oblong, spreading below the hood, tips incurved; **labellum** 2 mm long, orbicular, fleshy, dished, deflexed, with entire margins and no calli. The flowers are not perfumed.



KB, Cowary Swamp, SE

Flowering: Late Sept – Oct – Nov.

Similar Species: *H. cupularis* from Western Australia.

Distribution: **EP, SL, KI, SE; WA, Vic, Tas.**
Rare in South Australia in high rainfall districts from southern Eyre Peninsula, Southern Lofty region, Kangaroo Island and the South East. More common in Western Australia where it occurs in two forms, both similar to South Australian forms; also Victoria and Tasmania.

Habitat: Semi aquatic species from waterholes which may be a metre deep in winter but dry out by summer, growing amid low sedges and flowering as the water recedes. Soils may be sand or clay.

Distinguishing Features: Red or green flowers with helmet-like dorsal sepal and rounded, sometimes cupped labellum.

- ***H. cupularis*** has more cupped segments but as the photo shows South Australia plants can have red, deeply cupped segments too.

Notes: Often grows with the smaller, yellowish, *Microtidium atratum,* and like that species may flower under water and still set seed through apomixis.

Now lost from the swamps of the type location, Myponga, and rapidly disappearing from all of its Eyre Peninsula sites due to clearing and salination; extinct in the Mount Lofty Ranges but currently safe on Kangaroo Island and the South East.

An ancient and relatively stable species, not known to hybridise, which is one reason for it being placed in its own genus, apart from the freak form *H. cupularis.*

Conservation Status:

Status in Legislation: Not listed nationally, vulnerable in South Australia.
Suggested Status: 3Rc in South Australia, common in Western Australia.



RB, *H. orbicularis*, Flinders Chase NP, KI

South Australia's Native Orchids

Microtidium atratum
(Lindl.) D.L.Jones & M.A.Clem.

Tiny Onion Orchid or Yellow Onion Orchid

Etymology: The name *atrata,* blackened or dark, refers to the colour of dried or senescent plants

Synonyms: *M. atrata* Lindl., *M. minutiflora* F. Muell.

Description: **Leaf** rigid, to 10 cm tall, yellow-green with a blunt solid apex. **Stem** to 15 cm tall, although in water it may be drawn up to twice that height. **Flowers** 5 to 40, tiny to 2 mm wide, sessile, crowded, nodding, yellowish; segments to 1mm long; dorsal sepal ovate, hooded, lateral sepals ovate, obliquely deflexed; petals ovate, spreading; **labellum** only 1 mm long, elliptical, deflexed, blunt with entire margins, surface with rows of tiny papillae which soon turn dark.



KB, Cowary Swamp, SE

Flowering: Late Sept – Oct – Nov – early Dec.

Similar Species: None, this is a monotypic genus.

Distribution: **EP, SL, KI, SE; WA, Vic, Tas.**
Only in higher rainfall districts near the coast, almost extinct near Port Lincoln, more common on western Kangaroo Island, now very rare in the Mount Lofty Ranges and the South East. It is found in Western Australia, where it is common, as well as in Victoria and Tasmania.

Habitat: A semi-aquatic species that inhabits margins of temporary waterholes, damp heath, shallow creek-lines and seepages amid low sedges such as *Chorizandra enodis.* Usually found adjacent to clumps of tea-tree, *Leptospermum continentale.* Frequently occurs in company with other semi aquatic onion orchids like *H. orbicularis.*

M. atratum may be in water up to a metre deep in winter. Flowering proceeds as the water level drops in spring, flowers opening as soon as the flower spike is above water level. In wet springs flowering may be completed under water, in which case the flower buds swell but do not open. Nevertheless good seed set still occurs through apomixis.

Distinguishing Features: The tiny yellow flowers are the smallest of any Australian terrestrial orchid species.

Notes: Once common in the Adelaide Hills but now rare due to grazing practices; dairy cattle quickly ruin the earth's crust and turn the orchid's habitat into mud. Until recently it grew on the shores of Lake Alexandrina, so it may once have occurred in waterholes along the lower Murray River.

Unlike most onion orchids which produce their new tubers at the end of long dropper roots, *M. atratum* forms new tubers at the plant base hence colonies of this species tend to be very dense. Despite the semi-aquatic nature of their habitat in the growing season, the sites favoured by *M. atratum* may bake hard in summer. Flowering is greatly increased in the season following a fire.

Conservation Status:
Status in Legislation: Not listed nationally, rare in South Australia.
Suggested Status: 3Vc in South Australia, more common in Western Australia.



BB, neat clump of *Microtidium*, Oct

Microtis arenaria Lindl.

Sand Hill Onion Orchid

Etymology: The epithet *arenaria* sandy, reflects one of the favoured habitats of the species i.e. coastal sandhills.

Synonyms: *M. biloba* Nicholls is treated here as a mere form of *M. arenaria* but biologically may be a valid species. *M. arenaria* has until recently been included under the name *M. unifolia.*



RB, Canunda CP, Nov, with skull spider

Description: Whole plant pale green, robust. **Leaf** single, erect to 60 cm but usually about 30 cm long, relatively stout and fleshy; **flower stem** to 40 cm tall. **Flowers** usually numerous, to 4 mm long, shortly stalked, in a crowded spike, green or yellow-green, on large, oblong ovaries; segments to 4 mm; dorsal sepal shallow and with a distinct upturned acute apex; lateral sepals deflexed to revolute; petals oblique, mostly within the dorsal sepal; **labellum** to 4 mm oblong, deflexed but well out from ovary, margins crisped, apex prominently bilobed with a small decurved spur between the lobes, basal and apical calli large. The flowers are fragrant.

Flowering: Late Aug – Sept – Oct – Nov. Flowers later in higher altitude or latitude.

Similar Species: *M.* sp. Fragrant

Distribution: **FR, EP, NL, MU, YP, SL, KI, SE; NSW, Vic, Tas; NZ.**
Very widespread and common in all regions and in all its forms. Found, especially near the coast, from near Ceduna on the west coast, abundant across Eyre Peninsula where it extends into the inland pastoral region, through the Flinders and Mount Lofty Ranges, Kangaroo Island and the South East. Also found in the Eastern states and New Zealand.

Habitat: Occurs in most habitats from the shore to mountain tops, in sand, loam, on limestone or rock; in woodland, scrub, shrub-land, grassland, swamp margins and rock outcrops but absent from dry mallee and strongly acidic soils.

Distinguishing Features: Characterised by a shallow dorsal sepal with upturned apiculus and a strongly bilobed labellum apex.

- ***M.* sp. Fragrant** has well spaced flowers with a longer labellum having thickened margins and is an even more fragrant, forest species usually requiring fire to initiate flowering.

Notes: In view of the extreme habitat differences and distribution range, as well the variety of forms one would assume several biological entities are involved but at this stage with the exception of *M.* sp. Fragrant, all the South Australian *Microtis* with upturned tip to the shallow dorsal sepal and a strongly bilobed labellum apex are treated as *M. arenaria.*

It forms quite extensive colonies through vegetative increase and is one of the most common and most collected South Australian orchids.

Unlike many onion orchids, *M. arenaria* in most of its forms is quite free flowering in better years.

It is about the only *Microtis* common on limestone, coastal dunes and offshore islands. It tolerates saline soils and grows in both flooded and well drained sites. Flowers are frequently seen with attendant pollinating insects which are attracted by perfume and nectar.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Common and well conserved in South Australia.



JN, *M. arenaria*, Coorong NP, SE

Microtis sp. Fragrant (R. Bates 26215)

Fragrant Onion Orchid

Etymology: Both the manuscript and vernacular names derive from the fragrant flowers.

Synonyms: *M. fragrans* ms.

Description: Plant wholly pale green or yellowish-green. The **leaf** is to 50 cm long, apex lax, fistula about half way up. **Flowering stem** to 30 cm, the rhachis laterally compressed. **Flowers** 10 to 30 and well spaced in a loose spike, nodding, to 3 mm across, pedicellate, ovary sub-cylindric to 4 mm long curved but not humped; segments to 3 mm long; dorsal sepal ovate, shallowly hooded, inclined downward, apex acute upturned; lateral sepals, linear-oblong, acute, recurved to revolute; petals short, falcate, blunt, only partly within the hood. **Labellum** oblong, narrowed at the middle with a longitudinal ridge and broader toward the bi-lobed apex, decurved along the ovary but not markedly appressed to it, margins crenulate, minutely papillose but not thickened. Basal calli quadrate, separated by a channel, apical callus wedge shaped, the apex often curving down onto the apiculus between the labellum end lobes. The flowers are quite sweetly fragrant, especially on warm humid days.



KB, Melrose, FR

Flowering: Nov – Dec.

Similar Species: *M. arenaria, M. rara*.

Distribution: **FR, NL, SL; Eastern states**
High rainfall mountainous areas of the Mount Lofty Ranges especially south of Adelaide but exact distribution unknown due to fire requirements; also in the Eastern states.

Habitat: Grows in fertile soils in forests especially on the edges of grassy clearings or in heathy damper patches, but has only been observed flowering after fires.

Distinguishing Features: It differs from **all other *Microtis*** in the raised longitudinal ridge on the labellum.

- From ***M. arenaria*** it differs in the more sparse flowers and long labellum
- From ***M. rara*** in the more crowded flowers and shorter labellum not so strongly pressed to the ovary.

Notes: *M.* sp. Fragrant is a member of the difficult *M. arenaria* complex of freely out-crossing species. It has leanings toward *M. rara,* especially shorter labellum forms of that species, and *M. oblonga* (R.S.Rogers). It is highly likely that hybridising occurs and that this increases the complexity of forms.

It would be tempting to describe the various microspecies in the complex but best to name only the most widespread and obvious taxa.

Though there are much more fragrant species in Western Australia, this species has the strongest perfume of any Eastern States species.

M. sp. Fragrant is frequently visited by wasps and flies in search of nectar and spikes may at times be fairly buzzing with them.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Further studies required but probably secure.



JN, *M.* sp. Fragrant, Oct
*Note flowers are not sparse as in *M. oblonga*

Microtis eremaea R.J.Bates

Desert Onion Orchid

Etymology: From Latin *eremaea* of the desert. Both the scientific and common names refer to the arid habitat of the species.

Synonyms: Previously treated as an inland form of *M. parviflora*.

Description: Whole plant uniformly greenish, robust. The **leaf** is rigid, leathery, to 30 cm, apex erect, **stem** to 40 cm. **Flowers** numerous, tiny, erect, to 2 mm wide, in a dense pyramidal spike; the floral bracts long and pointed even in bud; ovaries, cylindrical, larger than the flower, to 4 mm long; floral segments to 2 mm long; dorsal sepal ovate tilted upward, ovate, tip acute, straight; lateral sepals oblong, curved; petals linear, small and enclosed in the hood. **Labellum** cordate, to 1.8 mm, decurved sharply at the base, apiculate, with slightly crenulate margins; basal calli rounded, apical callus small but distinct. The flowers are not perfumed.

Flowering: Sept – Oct – Nov.

Similar Species: *M. parviflora, M.* sp. Flinders.

Distribution: **GT, FR, EP, EA; WA.**
On the semi arid inland side of the wheat belt, into the pastoral zone, but very scattered and rare. Recorded for the Gawler Ranges, Arkaroola Sanctuary and probably at Old Boolcoomatta; and also found in Western Australia where it is common.

Habitat: Restricted to the base of granite rocks where water and detritus collects, or about springs. Found under shrubs or in very open places and often the only orchid present or occasionally with *Prasophyllum* sp. Desert.

Distinguishing Features: Very similar to *M. parviflora* but that is a species of high rainfall forest clearings and swamps.

- ***M. parviflora*** also differs in having smooth labellum margins, no apical callus and less erect flowers.
- It may also be confused with ***M.* sp. Flinders** which is a much deeper green, much shorter, few flowered plant which never has a long, dense pyramidal flower spike.

Notes: Perhaps more common in the past but rabbits seem to scratch up the tubers while sheep and wild goats heavily graze its habitat.

The species flowers freely only after wet winters; most years it is only represented by leaves. *M. eremaea* forms small dense colonies which follow the deeper cracks in the rock or shelter in *Triodia* tussocks.

Conservation Status:
Status in Legislation: Not listed nationally, endangered in South Australia.
Suggested Status: 3Vci in South Australia but common in Western Australia.



RB, *M. eremaea*, WA

Microtis frutetorum Schltdl.

Common Woodland Onion Orchid

Etymology: The epithet *frutex,* shrub, with the suffix habitat refers to the woodland habitat and therefore it is not surprising that it has colonised pine plantations.

Synonyms: *M. unifolia*

Description: Whole plant verdant green, moderately robust. **Leaf** to 40 cm, apex lax, fistula set at about the middle; **flower stem** to 30 cm. **Flowers** numerous, to about forty, 3-4 mm across, erect, and stalked, on ovoid to box-like ovaries; the segments are up to 3 mm long; dorsal sepal ovate with a short, straight or up-turned apiculus; lateral sepals oblong, revolute; petals falcate within the hood. **Labellum** to 3 mm long, ovate, pendulous not appressed to the ovary, variable but usually not much longer than wide, apex truncate without an apiculus, margins crenulate, basal calli rounded, apical callus curved, much raised. The flowers are not fragrant.

Flowering: Late Sept – Oct – Nov.

Similar Species: *M. unifolia*.

Distribution: **FR, EA, EP, NL,?YP, MU, SL, SE.**
Very widespread from northern Eyre Peninsula, through the Flinders and Mount Lofty Ranges, the Murray Flats and South East but absent from Kangaroo Island. Extends well into the pastoral zone in places like the Gawler Ranges, Wilpena Pound and Old Boolcoomatta.

Habitat: Favours open woodland in fertile soils, especially in native pine forest. In the semi arid zone found at the base of slopes where water seeps out. In the Adelaide Hills it colonises pine plantations.

Distinguishing Features: A somewhat variable species with smallish flowers with oblong labellum, the flowers on large ovaries.

Notes: There are several varieties which may be regarded as 'microspecies.' The main variation lies in the ovary shape and size; some have small ovoid ovaries, others have ovaries large and box shaped. Labellum size and shape also vary but in view of the similar habitat for all the forms, apparent intergrades and no outstanding features it seems best to regard them all as one variable species.

Does not need fire to initiate disturbance but flowering can be sparse except in exceptional seasons.

Apparently hybridises with other species in disturbed sites.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Common and well conserved.



RB, *M. frutetorum*, Wirrabara NFR, Nov
*Note small flowers with oblong labellum and small apiculus

Microtis oblonga R.S.Rogers

Slender Swamp Onion Orchid

Etymology: The name *oblonga* refers to the narrow oblong labellum of this taxon.

Synonyms: Previously included under *M. rara*.



KB, Pambula Swamp, SL

Description: Slender plant with a **flower stem** to 30 cm or more, **leaf** fistula low down. **Flowers** green, well spaced on a long slim spike, to 2 mm across; dorsal sepal shallow with a straight apex; lateral sepals pale edged and recurved; **labellum** almost as long as the elongate ovary, to 4 mm, narrow oblong, with crenulate margin, basal calli smooth and dark, apical callus wrinkled and variable. The flowers are strongly fragrant, lasting up to a week.

Flowering: Nov – Dec.

Similar Species: *M.* sp. Fragrant, *M. rara*.

Distribution: **SL, KI; Qld, NSW, ACT, Vic, Tas.**
Found in the Mount Lofty Ranges and on western Kangaroo Island.

Habitat: Restricted to tea-tree swamps and hanging bogs, often on peaty mounds and amid sedges and ferns.

Distinguishing Features: Best recognised for the low leaf fistula, long spike with well spaced, green, fragrant flowers having a relatively long labellum.

- The similar ***M. rara*** which also has a low fistula and sparse flowers has larger, lighter green flowers, thicker and longer labellum. It is rare in South Australia and restricted to the lower South East, but common in the Eastern States.
- ***M.* sp. Fragrant** has a high leaf fistula with shorter ovaries and labellum and occurs in damp woodland not bogs.

Notes: It is often considered that *M. oblonga* is a mere race of *M. rara* and certainly there are intermediate forms.

It flowers mostly after fires, grazing or slashing.

Once common in the hundreds of swamps in the Adelaide Hills and Fleurieu Peninsula it is rarely seen these days due to clearing of habitat and farming practices.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3Vcii



KB, *M. oblonga*, Pambula Swamp, SL, Dec

Microtis sp. Hanging bogs (R. Bates)

Hanging-bog Onion Orchid

Etymology: The phrase and common name refer to the restricted habitat of the species.

Synonyms: None.

Description: A tall, very slender species with a **flower stem** to 40 cm tall and a low **leaf** fistula. The **flowers** are well spaced, tiny, often in a somewhat spiral arrangement, pale green with oblong ovaries angled well out from the stem; dorsal sepal well hooded, ribbed; petals short, lateral sepals revolute; the **labellum** is oblong narrowed about the centre, strongly curved, about half as long as the ovary with crenulate, papillose, pale margins; the basal calli strongly saddle shaped, apical callus pyramidal. Flowers are faintly perfumed lemon.

Flowering: Nov – Dec – Jan.

Similar Species: Related to *M. oblonga, M.* sp. Curved lip.

Distribution: **SL**
So far only known from hanging bogs of the Fleurieu Peninsula in South Australia, but likely to occur in Eastern states peat bogs.

Habitat: Found on the sometimes peaty mounds which are part of hanging bogs at the base of tea-tree and swamp honey myrtle.

Distinguishing Features: The slender nature of this species with well spaced flowers having a fat dorsal sepal separate it from others found in peaty bogs.

Notes: The bog where it grows also contains the rare *M. oblonga* and *M. parviflora* ssp. Dense spikes but is not a hybrid of these. It may be a stabilised *M.* sp. Curved lip and *M. oblonga* hybrid.

It is the most common onion orchid where it grows. Its habitat has been almost totally destroyed in South Australia. Found in 2008 by NOSSA members and friends.

It is self pollinated and visited by small wasps which feast on the nectar.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Rare and threatened because it is a swamp species.



KB, *M.* sp. Hanging Bogs, Pambula Swamp, SL, Dec
*Note short fat dorsal sepal

Microtis rara R.Br.

Sweet Onion Orchid

Etymology: The name *rara* sparse or far apart, refers to the flowers which are more widely spaced than in other *Microtis* species.

Synonyms: *M. magnadenia*.

Description: Plant wholly verdant green, slender to 45 cm. **Leaf** to 45 cm, apex lax, fistula near the base. **Flower stem** to 40 cm. **Flowers** few to many, widely spaced, 3-5 mm across, on slender pedicels, ovary elongate, to 5 mm, appressed to the scape or not; segments to 4 mm; dorsal sepal shallowly hooded, ovate, apiculate; lateral sepals tightly rolled; petals lanceolate and spreading; **labellum** oblong, to 5 mm long, decurved against the ovary and sometimes pressed tightly against it, apex emarginate or truncate, margins crenulate, and callosities smooth and darker green. The flowers are sweetly fragrant.

Flowering: Late Oct – Nov – Dec – early Jan.

Similar Species: *M. oblonga* R.S.Rogers.

Distribution: **SE; WA, Qld, NSW, Vic, Tas.**
Restricted to the lower South East and very rare there. More frequent in the Eastern states.

Habitat: Only in peaty swamps and creek-sides where often hidden in dense tea-tree thickets and reeds and only flowering after fire or other disturbance.

Distinguishing Features: With so much variation from population to population and the fact that on dried specimens the labellum may shrink to half its original length it is difficult to recognise the forms.

- ***M. oblonga*** has dull flowers having the labellum not as long as the ovary.
- The habitat, habit, fragrance, flowering time and general variation is similar for ***M. rara*** and ***M. oblonga***.

Notes: Forms small colonies by vegetative increase. The species is rarely seen these days as most peat bogs have been destroyed.

Conservation Status:
Status in Legislation: Not listed nationally, rare in South Australia.
Suggested Status: Endangered in South Australia but common and secure interstate.



RB, *M. rara*, NSW, Nov
*Note thick oblong callus on labellum in side view

Microtis sp. Topperwein (R. Bates)

Waterhole Onion Orchid

Etymology: The phrase name indicates the species occurs in waterholes such as Topperwein NFR.

Synonyms: None.

Description: A slender species with **leaf** base striated, the fistula set low. **Flowers** are moderately large, fleshy, sparsely set, erect, dorsal sepal flat; **labellum** oblong, fleshy with thick, non-crenulate margins, at first short but elongating with maturity to equal the length of the ovary; callus plate covering much of the lamina. The flowers are perfumed.

Flowering: Late Oct – Nov – early Dec.

Similar Species: *M. rara, M. brownii.*

Distribution: **SE.**
As treated here this species is only known from a few waterholes east of Penola in the South East region.

Habitat: Like *M. brownii* from Western Australia, this species grows in waterholes. Indeed both occur with the water orchid *H. orbicularis*. Flowers as the water in lagoons dries up.

Distinguishing Features: The moderately large, fleshy flowers and the waterhole habitat are useful features for identification.

- Also resembles the more slender non fleshy ***M. oblonga***.



CH, Topperwein NFR, late Oct
*Note how pollinia are removed intact, a feature of out-crossing species

Notes: This species is more out-crossing than most onion orchids. It occurs with or near *M. parviflora* ssp. *parviflora,* usually in or around large river red gums *(Eucalyptus camaldulensis)*, rushes and sedges. In dry years, when there is no water in these ephemeral lagoons by early spring, flowering does not occur. Several dry years could see the species disappear.

Most similar to *M. brownii* of Western Australia but also similar to *M. rara* of the east. Perhaps it is best to treat all as forms of *M. rara.* It may eventually be proved that *M. rara, M. brownii* and *M.* sp. Topperwein are all part of one variable species.

Only discovered in 2005, it may also be found in Western Victoria.

Conservation Status:

Status in Legislation: Not Listed.
Suggested Status: Rare and threatened due to swamp clearance.



CH, *M.* sp. Topperwein, late Oct

Microtis unifolia (G.Forst.) Rchb.f.

Common Onion Orchid

Etymology: The name *unifolia* Latin means single leaf, a feature common to the genus.

Synonyms: There are many including *Ophrys unifolia*, the first name used and *Epipactis porrifolia* Sw.



RB, Chambers Gully, SL

Description: This rather nondescript onion orchid is a fleshy long **leaved** onion orchid with fairly dense, plain green **flower** spike distinguished by a strongly oblong **labellum** with thick margins and strong calli. The dorsal sepal apex is short and straight to decurved.

Flowering: Oct – Nov – Dec.

Similar Species: *M.* sp. Curved lip, *M. frutetorum*.

Distribution: **?FR, ?NL, SL; WA, Qld, NSW, ACT, Vic, Tas; NZ; Polynesia; Indonesia and East Asia.**
In the broad sense one of the most widespread species in the genus from New Zealand to the Eastern States of Australia and perhaps as far north as the Philippines.

Habitat: Mostly a grassland and grassy woodland species in South Australia restricted to cool sites in rich soils, usually with other onion orchids but never common here.

Distinguishing Features: Set apart by the short labellum with its thick, crenulate margins.

- Most similar to ***M.* sp. Curved lip** which is a swamp species having a curled under labellum.
- Also similar to ***M. frutetorum*** which has an upswept dorsal sepal apex and smaller labellum without thickened margins.

Notes: *M. unifolia* has at times been treated as a New Zealand endemic but as evidenced by the image opposite from the Adelaide Hills there appear to be no real differences between New Zealand and Australian forms hence the species is re-instated for South Australia.

Unlike *M.* sp. Fragrant, *M. rara* and *M. arenaria* this species has no detectable fragrance indicating that it has a different pollination strategy.

South Australian material has at times been determined as *M. frutetorum* but that species never has a thick labellum or blunt dorsal sepal.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Apparently rare in South Australia.



JN, *M. unifolia*, Victor Harbor, Oct
*Note short dorsal sepal and thick crenulate labellum

Other Undescribed Microtis

Microtis sp. Curved lip (N.N. Donner 5999)

Curved lip Bog Onion Orchid

Etymology: The phrase name refers to the curved labellum of this species.

Synonyms: Previously placed under *M. unifolia* (G.Forst.) Rchb.f; *M. curvichila* ms.

Description: The whole plant verdant green; **leaf** shorter than the flower spike, to 30 cm long, arising from a small spherical tuber, apex rigidly erect, fistula set low down. **Flower stem** to 50 cm. **Flowers** usually 10-30, to 3 mm wide, fleshy, nodding, in a moderately dense cylindrical spike; ovaries curved forward and ribbed; dorsal sepal sub-orbicular, to 2.5 mm, deeply concave, strongly ribbed; lateral sepals oblong, recurved; petals ovate-lanceolate, falcate, within the hood; **labellum** oblong, to 2.5 mm long, curved down in a neat semicircle, crenulate, truncate, calli smooth, the apical callus cordate and much raised. The flowers are lightly fragrant.

Flowering: Nov – Dec – Jan.

Similar Species: *M. unifolia*.

Distribution: **SL, KI.**
Restricted to areas of high rainfall on Fleurieu Peninsula and Kangaroo Island.

Habitat: *M.* sp. Curved lip is found only in a few permanently damp peaty bogs, in sphagnum or on mossy mounds, often with *M. parviflora* ssp. Dense spikes.

Distinguishing Features: One of the most obvious features of *M.* sp. Curved lip is the blunt hood.

- The similar ***M. unifolia*** also has a broad dorsal sepal but the apiculus is decurved and the labellum is appressed to the ovary.

Notes: The flowers are rarely seen except after fire which makes the species similar to Western Australian species *M. globula, M. pulchella* and *M. familiaris* also from peat bogs and also flowering after fire.

M. parviflora ssp. Dense spikes and *M.* sp. Narrow labellum favour the same habitat but also occur in other swampy places. *M.* sp. Hanging bogs, only recently (2005) recognised is found in this habitat. There may be other rare *Microtis* restricted to peat bogs and flowering only after fire. Unfortunately most of this habitat has been destroyed.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3Ec at least in South Australia and little known in the remainder of its range.



RB, *M.* sp. Curved lip, Pambula Swamp, Dec

Microtis sp. Flinders (R. Bates 45201)

Small Flinders Onion Orchid

Etymology: The phrase name indicates where this species is found viz. Flinders Ranges.

Synonyms: *M. flindersica* ms.

Description: Whole plant deep uniform green or blue green, not very robust. **Leaf** to 25 cm, rigidly erect and often with a short blunt apex, equalling or exceeding the flower spike, fistula set low. **Flowers** usually less than twenty, in a short congested spike, tiny, with a short subtending bract; segments about 2 mm long; dorsal sepal ovate, ribbed, with a distinct upturned apiculus, lower margins strongly decurved; lateral sepals recurved not revolute; petals only 1 mm long, within the hood; the **labellum** cordate, to 1.8 mm, curved in a semi circle, apex with a downturned apiculus; margins hardly crenulate but with small excrescences; basal calli reniform, apical callus small and irregular. The flowers are not perfumed.

Flowering: Sept – Oct.

Similar Species: *M.* sp. Short-leaf, *M. eremaea*.

Distribution: **FR**
Endemic to higher parts of the southern and central Flinders Ranges.

Habitat: This is the only South Australian species restricted to dry ridges, where it grows in pockets of fertile soil, receiving extra runoff, in open places amid grasses, herbs and other small geophytes, scattered between shrubs and sparse trees. The soil is often quite dry at flowering time.

Distinguishing Features: *M.* sp. Flinders differs from ***M. eremaea*** in not having a long pyramidal flower spike and in its deeper colour.

- It differs from the similar short ***M.* sp. Short-leaf** in the cordate labellum, and deeper green colour.

Notes: The species has a short growing season as in the Flinders Ranges rains often doesn't fall until June and by the time flowering commences in late September its habitat is drying out, hence the short flower spike and telescoped flowering period. Does not require fire to flower but the best shows of this species do occur after fire.

It is frequently sympatric with *M. frutetorum*.

M. sp. Flinders occurs as small scattered populations.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3Rc



JN, Wirrabara NFR, NL

Microtis sp. Late flowered (R. Bates 16589)

Late Onion Orchid

Etymology: The phrase name refers to the fact this is the last of the woodland species to flower.

Synonyms: *M. postremus* ms.

Description: Plant wholly shiny green, to 40 cm tall. The **leaf** is slender to 45 cm long with a lax tapered apex, usually senescent at flowering, fistula set below the middle; **flower stem** to 30 cm. **Flowers** numerous, to 2.5 mm across, sub-sessile, ovary ovoid-cylindrical to 4 mm long; segments to 2.2 mm; dorsal sepal ovate, not ribbed, apex upturned; lateral sepals linear-oblong, revolute; petals oblong within the hood; **labellum** tiny, to 2 mm long, more or less quadrate but often constricted toward the apex, decurved, margins, undulate, crenulate, apex with a short decurved apiculus; basal calli comma shaped, apical callus small and irregular.

Flowering: Nov – Dec – Jan.

Similar Species: *M. frutetorum, M.* sp. Nash, *M. unifolia*.

Distribution: **NL, MU, SL.**
Higher parts of the Mount Lofty Ranges from Jamestown south.

Habitat: Damper sites in open grassy woodland, especially in rich loamy soils.

Distinguishing Features: Although not a very distinctive species it can usually be recognised by the combination of shiny flowers, late season, and the tiny quadrate rather than caudate labellum.

Notes: This is the last of the woodland *Microtis* species to flower. It only flowers in profusion after heavy spring rainfall, and may benefit from fire.

The species is somewhat midway in appearance between *M. frutetorum* and *M. parviflora* ssp. *parviflora* and perhaps derived from a cross between them. It sets up large populations by vegetative increase.

Frequently found with *M. parviflora* ssp. *parviflora* but begins flowering slightly later. Its fertile woodland habitat in mountains suffers severely from grazing pressures.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3Rci in South Australia.



RB, *M.* sp. Late-flowered, Mt Crawford, Dec

Microtis sp. Narrow labellum (Hj. Eichler 18099)

Strap-lip Onion Orchid

Etymology: The phrase name refers to the narrow labellum of this species.

Synonyms: *M. leptochila* ms.

Description: the whole plant is dull green. **Leaf** to 40 cm long, apex lax, exceeding the flower spike, fistula set low down; **flower stem** to 30 cm tall. **Flowers** numerous, sub-sessile, nodding, to 3 mm across, in a dense, narrow-cylindrical spike; segments to 2.5 mm, dorsal sepal sub-orbicular, apex short acute, upturned; lateral sepals oblong, tightly revolute; petals obtuse within the hood; **labellum** to 3 mm long, narrow-oblong, often constricted toward the apex, strongly decurved but not appressed, apex emarginated, apiculate, margins undulate; basal calli square, apical callus cordate. The flowers are not fragrant.

Flowering: Nov – Dec – Jan.

Similar Species: None

Distribution: **SE; Vic.**
Restricted to the lower South-east coast and extending into Western Victoria.

Habitat: The species is largely confined to black, boggy, somewhat alkaline soils, in coastal swamps. It is present in dense vegetation but flowers are only seen in disturbed sites i.e. on mown fire breaks or burnt areas where it sets up dense stands. It is often the only orchid present where it occurs.



JN, Piccaninnie Ponds CP, SE

Distinguishing Features: The very long, narrow, crowded spikes with rounded dorsal sepal and narrow labellum are features to aid identification.

- This very late flowered species is quite distinctive; the flowers resemble those of ***M. rara*** but are much smaller and in dense spikes, with swollen, not attenuated ovaries. Unlike *M. rara* they are not perfumed.

Notes: This is another example of a *Microtis* that is limited to swampy habitat. The species may have extended to the black soil coastal bogs south of Adelaide but all such habitat have probably been destroyed now.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3Rc



BB, pollinating wasp on *M.* sp. Narrow labellum, Piccaninnie Ponds CP

Microtis sp. Nash (R. Bates 44740)

Nash's Onion Orchid

Etymology: The phrase name honours Ray Nash, South Australian orchidologist since the 1950s.

Synonyms: *M. nashii* ms.



KB, Wanilla, EP

Description: A stunted plant, wholly green, rigid. **Leaf** to 25 cm, striated, apex rigid, blunt, fistula about half way up. **Flower stem** to 20 cm. **Flowers** few, 5-25, small, about 2.5 mm across, erect, on short pedicels, ovaries oblate not enlarging much after anthesis; segments about 2 mm long; dorsal sepal shortly ovate, shallowly hooded, with a short straight or curved apiculus; lateral sepals ovate, recurved; petals oblong, within the hood; **labellum** sub-oblong but broadest at the base and tapering toward the retuse or truncate apex, about 1.7 mm long, appressed to the ovary, margins crenulate and papillose, basal calli oblong, shiny, apical callus small, verrucose. The flowers are not scented.

Flowering: Sept – Oct.

Similar Species: *M. frutetorum, M.* sp. Short-leaf.

Distribution: **EP, YP, MU, SL, SE**
Throughout the wheat-belt, from near Elliston on Eyre Peninsula, across Yorke Peninsula, Fleurieu Peninsula, the Murray Mallee and upper South East.

Habitat: In fertile soils, often over limestone in low woodland especially under sheoaks on the coastal side of the wheat-belt.

Distinguishing Features: Although the flowers are similar to ***M. frutetorum,*** the stature is shorter, the whole plant more rigid and stocky, the segments shorter, the dorsal sepal with a decurved apiculus.

- Similar in size to ***M.*** **sp. Short-leaf** but that species has a shorter leaf, and a much narrower usually elongate labellum.

Notes: *M.* sp. Nash is one of the first *Microtis* to begin flowering and may be seen in bloom in early September.

Often found with other onion orchids particularly *M. arenaria*.

The species does not need fire to stimulate flowering. It is becoming rare due to clearing of its habitat for farming, and to a build up of weeds, especially sour-sobs.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3Rc.



CH, *M.* sp. Nash, Hartley, MU, Sept

South Australia's Native Orchids

Microtis parviflora R.Br. ssp. *parviflora*

Slender Onion Orchid

Etymology: From *parvi* small and *flora* a flower. This species has tiny flowers.

Synonyms: *M. bipulvinaris* Nicholls.

Description: Plant wholly soft green. The **leaf** is to 40 mm long, slender, fistula high up. **Flower stem** to 50 mm, slender. **Flowers** to 2.5 mm across; numerous in a narrow pyramidal spike, sub-sessile, on slender ovaries, angled down; segments to 2 mm long; dorsal sepal ovate, with a short upturned apiculus; lateral sepals ovate, curved back; petals oblong, largely within the hood; **labellum** to 2 mm long, triangular to heart shaped, curved, with a short decurved apiculus, margins entire or almost so; basal callus darker green, apical callus absent. The flowers are not scented.



JN, Nov

Flowering: Late Oct – Nov – Dec.

Similar Species: *M. eremaea* R.J.Bates, *M.* sp. Flinders R.J.Bates, *M. holmesii* Nicholls.

Distribution: **MU, NL, SL, SE; Qld, NSW, ACT, Vic, Tas**
Restricted in South Australia to high rainfall districts of the Mount Lofty Ranges and South East; also in the Eastern states, New Zealand, Oceania and eastern Asia**.**

Habitat: In damper areas in open forest, woodland, heath-land and paddocks. Usually found in disturbed areas with other *Microtis*.

Distinguishing Features: The soft green plants with a pyramidal flower spike, the flowers with a somewhat heart-shaped labellum aid identification.

Notes: This species becomes somewhat prolific in colonising road cuttings, railway lines and lightly grazed paddocks especially near creeks and swamps.

It seems to hybridise with sympatric species as there are often large swarms of plants with intermediate features.

In dense thickets of tea-tree and the like it rarely flowers without fire, which is of course a form of disturbance. *M. parviflora* ssp. *parviflora* acts like a weed along roadsides and even in old gardens.

Ants are frequently seen on the flowers and sometimes have pollinia attached, but they effect pollination on the same spike. Tiny wasps, *Brachonidae*, are far more efficient pollinators as they fly from spike to spike.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Secure.



RB, *M. parviflora* ssp. *parviflora*, Peter Creek, SL

Microtis parviflora ssp. Dense spikes (R. Bates 57790)

Swamp Onion Orchid or Dense spikes

Etymology: The phrase name refers to the habit of the plant having a crowded spike of flowers.

Synonyms: *M.* ssp. *brevichila* ms.

Description: Plants short and stocky, wholly yellow-green. The **leaf** is fleshy to 30cm long, apex rigidly erect, and fistula lower than the midpoint. **Flower spike** to 25 cm tall. **Flowers** in a usually short dense conical spike; numerous, tiny, fleshy, erect, to 2 mm across, sub sessile; ovary short and swollen; segments less than 2 mm long; dorsal sepal almost orbicular, deeply hooded with a short apiculus; lateral sepals ovate, recurved; petals with pale margins, within the hood; **labellum** cordate, 1.5 mm by 1 mm, strongly deflexed at the base, margins entire, undulate, apex blunt or with a short apiculus; basal calli green, apical callus absent.



JN, Stipiturus CP, SL

Flowering: Late Oct – Nov – Dec – Jan.

Similar Species: *M. parviflora* ssp. *parviflora*

Distribution: **SL**
Endemic to the Southern Mount Lofty Range, predominantly on Fleurieu Peninsula.

Habitat: Largely restricted to permanently damp peat bogs, especially on mounds, or in hanging bogs with tea-tree, *L. continentale* but also in paddocks or in disturbed places on swamp margins in peaty sand.

Distinguishing Features: The very short labellum and dense spike of flowers in swampy habitat set this species apart.

- ***M. parviflora* ssp. *parviflora*** has flowers more sparsely arranged on the scape.

Notes: At its best this form can have up to 100 flowers in a head. Forms small clusters of plants by vegetative reproduction but seeds freely onto bare ground where groups of up to a thousand plants have been noted.

Spikes are often covered in thrips which makes them very sticky.

M. *parviflora* ssp. Dense spikes can disappear just as fast as its habitat becomes overgrown.

The species is rapidly becoming rare due to draining, sub-division and overgrazing.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 2V, nationally threatened due to loss of swamp habitat.



RB, *M. parviflora* ssp. Dense spikes, Carey Gully, Dec
*Note the dense spikes and short labellum

Microtis sp. Short-leaf (R. Bates 54342)

Short-leaf Onion Orchid

Etymology: The phrase name is a reference to the short thick leaf of this species.

Synonyms: *M. brevis* ms.

Description: Whole plant uniformly pale green, small and slender. **Leaf** usually less than 20 cm tall with a rigid, suddenly tapering apex, the fistula high up. **Flower stem** to 25 cm tall but usually much less. **Flowers** 5-20, tiny, about 3 mm across, in a short spike which overtops the leaf; sub-sessile; the floral bract ovate-acuminate, twisted; ovary ovoid to elongate; segments 2-3 mm long, dorsal sepal ovate about 2.2 mm long, ovate, very shallow, curved forward, sub-acute; lateral sepals recurved to revolute; petals falcate, very short; **labellum** narrow-oblong, often tapering toward the apex as in the type ssp., to 2.8 mm long, pendulous or decurved labellum margins thickened and crenulate, turning dark when dried, lower lamina smooth and curved with three longitudinal lines; basal calli smooth, apical callus, small but distinct and papillose. The flowers are not fragrant.



MH, Clare, NL

Flowering: Late Sept – Oct – early Nov.

Similar Species: *M.* sp. Flinders, *M.* sp. Nash.

Distribution: **FR, EP, NL, YP, MU, SL, SE.**
Widespread in South Australia.

Habitat: Grows in open grassy woodland in fertile soils, usually on bare ground, probably once also in native grassland but such habitat is now too degraded to support orchids.

Distinguishing Features: *M.* sp. Flinders and *M.* sp. Nash are also short species.

- ***M*. sp. Flinders** is wholly deep green and has a very short cordate labellum. It is endemic to the Flinders Ranges.
- ***M*. sp. Nash** is much earlier flowering with a very short oblong labellum. It occurs on the plains.

Notes: It is surprising that this species had not been recognised long ago. Leaf length and texture however have not been seen previously as constant features and it has been difficult to link these features with floral features.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3Rc



RB, *M.* sp. Short-leaf, Hindmarsh Tiers, SL

Gallery



RB, *M. arenaria* leaves
*Note curved leaves are a feature of many *Microtis* in winter



KB, *M.* sp. Short leaf, NL
two variations



RB, *M. parviflora*
***M.* aff. *parviflora*, SL**



RB, *M.* aff. *parviflora*,
Porters Scrub CP, SL
*Note different, longer, shallow hood and constricted labellum



RB, *M. parviflora* ssp. *parviflora*, Wirrabara NFR, FR



RB, *M. frutetorum* (L), *M. unifolia* (middle), *M.* sp. Curved lip (R)

Oligochaetochilus Szlach.

Rufoushoods



KB, *O. boormanii* complex, Melrose, FR

South Australia's Native Orchids

Oligochaetochilus Szlach.

Rufoushoods

Etymology: The name derives from the Greek *oligos* few, *chaetae* bristles and *cheilos* a lip referring to the often sparse bristles on the labellum.

Taxonomy: The genus has long been referred to as 'Rufa group greenhoods,' after the first named species *Pterostylis rufa* R.Br. and at times in the nomenclatural history of the genus all sixty species have been treated as one, i.e. all united under *Pterostylis rufa.* Even as late as the 1970s less than ten species were recognised Australia wide. At present there are about twenty named species while Jones & Clements may have as many as forty undescribed species in manuscript. Massive clearance and overgrazing by stock combined with rabbit, feral pig and goat plagues, as well as droughts are thought to have caused the extinction of many uncollected taxa.

Description: *Oligochaetochilus* differ from true *Pterostylis* in its ground hugging rosette and spike of many flowers emerging from the centre of the rosette. Tubers are large and long roots without terminal tubers mean the genus does not increase clonally. An important feature of the flowers is that the lateral sepals spread away from the hood; they are usually pendent, therefore exposing the labellum which is beset with pale hairs or setae and is very irritable. Most species flower after the rosette has begun to senesce and flowering is completed long after the rosette has withered. Unlike *Pterostylis* there are no species outside Australia.

Pollination: Like all members of the *Pterostylis* alliance *Oligochaetochilus* flowers are pollinated by *Diptera* (flies) in this case long bodied flies, many of which feed on soil fungus in the larval stage. The flies are thought to be sexually attracted but this has never been proven. Pollinators are observed to fly in from downwind, hover in front of the flower before alighting on the insectiform labellum (see adjacent) and shaking it until it is sprung, thereby being themselves thrown into the hollow galea which is closed off by the sprung labellum. The flies then flutter around inside the translucent hood until they find the narrow escape route upward through the column wings, thereby depositing any pollinia they may have already collected or removing the pollinia of the current flower. The attractant allomone is not highly specific as hybrids are sometimes found between sympatric species, and the hybrids themselves appear fertile so that new 'species' are evolving from the hybrids which best attract pollinators.



MH, pollinator on labellum

Distribution and Habitat: The genera are widespread but mostly in southern Australia, especially in the pastoral zone. This segregate genus, removed from the super genus *Pterostylis* in 2003, has at least 60 species throughout Australia excepting the northern Tropical zone and most of the true desert. Plants favour dry situations and are often the only orchids to be found in parts of our semi-desert country. There are many relict or highly localised species restricted to a particular soil or rock type. Some species grow along the coast, some in the mountains and others on the plains. The genus seems to be in a period of rapid evolution and more recently evolved species are variable in the extreme.

Notes: Many of the older stabilised species rarely set seed. Thus many species are 'young' and not well marked, especially in the *O. bisetus* complex. These young, still evolving taxa are sometimes referred to as micro-species.

Flowering: In dry years flowering may not occur as all energy is put into making a new tuber. Some years it is so dry that rosettes do not appear and either the old tuber carries over into a second year or produces a new tuber through its microrrhizal association with soil fungi. Species may delay flowering during years with a 'late break' or telescope flowering in years when early rains are not followed up. Some species such as *O. lepidus* frequently bloom in winter just 4-8 weeks after rain, others such as *O. despectans* bloom well into summer but the main flowering month in South Australia is October.

Drought tolerance/drought avoidance features:

Drought tolerance:

- Large moisture-storing tubers, shallowly buried to take advantage of light rain.
- Waxy leaves pressed flat to the soil thus avoiding water loss.
- Fast growth, some species are able to flower on just two good rainfalls.
- Leaves senesce before or soon after flowering begins; moisture and food from the leaves is then stored in the tuber and scape. Leaves are able to absorb moisture from dew.
- Leaves also contain an anti-freeze and can tolerate black frosts.
- Just one month after rain a replacement storage tuber is produced as large as the old.

Drought avoidance:

- Plants favour damper microhabitats, growing at the base of larger rocks and in seepage zones or on the cooler damper south side of bushes.
- Tubers of desert species do not usually germinate in drought years.
- Leaf senesces before hot weather meaning plants avoid moisture loss during flowering.
- Plants cease respiration in long dry periods and resume after rain even up to three months later, staying green even in bone dry soil.
- Leaves are pressed to the soil.



RB, rosette by quartz rocks in desert

Oligochaetochilus arenicola (M.A.Clem. & J.Stewart) Szlach.

Sand-hill Rufoushood

Etymology: The name *arenicola* meaning sand dweller, refers to the favoured habitat of the species which is consolidated, coloured sand-hills near the coast.

Synonyms: *Pterostylis arenicola* M.A.Clem. & J.L.Stewart; previously included in *Pterostylis boormanii* Rupp and *Pterostylis mitchellii* Lindl.

Description: **Leaves** several, in a flat basal rosette to 8 cm across, green at first but withering as flowering progresses. **Flower stem** to 25 cm tall, elongating as flows progressively open. **Flowers** several, to about 10, red-brown and pale green, the **galea** to 2.2 cm high, apex a fine decurved point; lateral sepals deflexed, rounded but not particularly broad at the base, the margins with sparse hairs, lamina strongly veined, the long fine apices, divergent, not upswept; the **labellum** is oblong, thick, red, channelled, with short marginal hairs.

Flowering: Sept – Oct – Nov.

Similar Species: *O. boormanii* complex.

Distribution: **MU, SL, SE.**
Endemic to South Australia where it is limited to the Adelaide coastal area as well as within a few kilometres of the lower Murray and Murray Lakes.

Habitat: Restricted to coloured sand dunes, mostly under *Callitris gracilis,* but also on limestone. This habitat was always restricted but is now reduced to a few small pockets.



KB, Mowantjie Willauwar CP, MU

Distinguishing Features: This is an early, free flowering species of coloured coastal sands. The rounded lateral sepal base, hairy sepal margins, long sepal tips and small often pale labellum help to identify it.

- Differs from ***O. boormanii*** in the more varicoloured flowers, and the narrower base to the lateral sepals, these with less distinct marginal hairs and larger differently shaped labellum.

Notes: This is a remarkably variable species, no two plants looking quite the same in flower morphology and colouring. This would suggest a recent origin, perhaps as a hybrid origin. Its pollinator, however, is remarkably effective for this group.

Despite the loss of 90% of its habitat the species has multiplied since 1980 due to preservation and improved management of its habitat. The species was one of the first in South Australia to have management plans formulated and its successful rehabilitation and the interest it has generated in the management of other vulnerable orchids has shown the value of such plans.

Conservation Status

Status in Legislation: Nationally vulnerable, vulnerable in South Australia.
Suggested Status: 2Vc, nationally threatened.



RB, *O. arenicola,* Tailem Bend, MU

Oligochaetochilus bisetus (Blackmore & Clemesha) Szlach.

Rusty Rufoushoods

Etymology: The name *biseta* meaning two bristles, refers to the two prominent hair-like bristles near the labellum base.

Synonyms: *Pterostylis biseta* Blackmore & Clemesha, *Pterostylis rufa* auct.non R.Br. J.M.Black(1943), *Pterostylis* Mt Brown Anon.

Description: **Leaves** 6 to 16, with bristly margins, in a large basal rosette appressed to the ground, withered at flowering. **Flower stem** short, to about 20 cm, sturdy with numerous sheathing bracts. The **flowers** are 1 to 6, in various tones of red-brown to dirty brown and green, with large transparent areas between the coloured sections. **Galea** to 30 mm high with a long filiform straight apex to 30 mm long; lateral sepals deflexed, narrow and cupped at the base, about as large as the galea but hairy at the back, with longer filiform, pendulous tips to about 60 mm long; petals very large and window-like; **labellum** oblong to 6 mm long, thin textured surface often dished, with two mole like projections at the base, each with a single long colourless hair (seta) growing from it, these parallel and erect, labellum base humped and free of cilia, the rest of the margins with numerous short hairs, apex upturned.



JN, Monarto, MU

Flowering: Oct – Nov – Dec.

Similar Species: *O. despectans, O.* sp. Flinders*, O. maximus, O. ovatus, O. psammophilus, O. planulatus, O. cobarensis, O. bisetus* complex members.

Distribution: **FR, EA, EP, NL, MU, YP, SL, SE; Vic.**
In the broad concept, widespread across South Australia from the West coast near Fowlers Bay, inland to the Gawler Ranges and as far as the Northern Flinders, throughout the Mount Lofty Ranges, the Murray lands and upper South East; Victoria.

Habitat: Favours dry sclerophyll forests and woodland, often on hard rocky ground.

Distinguishing Features: This is the most complex group of species in the genus. *O. bisetus* can be recognised by large bristle-edged rosettes, late flowering, the medium-short stem, large flowers, erect not nodding, with huge transparent petals, long straight sepal tips, lateral sepals never uniformly coloured, and thin textured oblong labellum with uniform marginal hairs and twin basal setae.

- **All of the above similar species** may have some or even most of these features but none have all of them.

Notes: Usually occurs in small discrete colonies with plants recruited from seed.

Conservation Status

Status in Legislation: Not Listed.
Suggested Status: Well conserved, but some rare subspecies likely.



BB, *O. bisetus*, Mulbura Park, YP
*Note hairs on lateral sepals

Oligochaetochilus sp. Blue-bush Plains (R. Bates 26130)

Blue-bush Rufoushood

Etymology: The phrase name indicates one of the best known habitats for the species, i.e. *Maireana sedifolia* or blue-bush plains.

Synonyms: Previously included under *Pterostylis lingua* M.A.Clem., *P. thamnophilus* ms

Description: A variable, semi desert species with a large rosette of overlapping, ovate **leaves** with bristly margins. The **flower stem** is about 20 cm tall with a few tight bracts. **Flowers** numerous, moderately large, to 2 cm across by 4 cm long, dark brown and white, the **galea** to 30 mm high with a long filiform straight apex to 30 mm long; lateral sepals deflexed with a few marginal setae, narrow and slightly cupped at the base, about as large as the galea, with pendulous, filiform points of variable length and position; petals narrower and window-like; the **labellum** oblong with two long basal setae set in slight swellings, the basal hump of the labellum fleshy and always with a few, sometimes many, bristles.



RB, Pualco

Flowering: Sept – Oct – Nov.

Similar Species: *O. cobarensis*, *O. bisetus* and *O. excelsus* complexes

Distribution: **FR, EA, EP, MU.**
Widespread in the pastoral country from Eyre Peninsula across to the Olary Spur and north of the River Murray.

Habitat: Occurs particularly in blue-bush and saltbush country around low ranges covered with *Triodia* or shrub-land.

Distinguishing Features: The extreme variability of this species is one of the features catching attention, but usually the robust plants, tall stems, medium to large flowers with many blends of grey, green brown and white, the two long basal bristles on a narrow labellum and the cluster of smaller bristles on the basal appendage help to identify it.

- The hood is similar to ***O. bisetus*** but with narrower petals,
- The lateral sepals narrow as in ***O. excelsus***, with a few marginal setae and filiform points of variable length and position
- The labellum is similar to that of ***O. excelsus*** but broader and with two long basal setae set in slight swellings, the basal hump of the labellum fleshy and always with a few, sometimes many, bristles.

Notes: A member of the *O. bisetus* complex. It would appear to have originated as *O. bisetus* x *O. excelsus* hybrids but as it largely replaces both those species in the pastoral districts it must be regarded as a separate entity.

It has been written up in manuscript with names such as *O. thamnophilus* and *O. variabilis* suggested. It is also suspected that further variation in some areas is a result of genetic input from other species, some of them probably now extinct as a separate entity.

Conservation Status

Status in Legislation: Not Listed.
Suggested Status: Widespread and well conserved in dry-land parks like Caroona Creek Conservation Park.



RB, *O.* sp. Blue-bush Plains, Outalpa, EA

Oligochaetochilus sp. Broughton River Gorge (R. Bates 35061)

Broughton River Rufoushood

Etymology: The phrase name reflects the only known location of this relict species.

Synonyms: *Pterostylis* 'Broughton River Gorge'

Description: A short species with a small **rosette**. The **flowers** are few; the **galea** green with window like petals; lateral sepals brown, short and narrow; **labellum** large, thick, red-brown, contrasting with the flower colour, having the eye like swellings at its base with a very fine hair forward projecting from each, and a similar pair of hairs below with four shorter hairs toward the apex; the base of the labellum has a grooved swelling.

Flowering: Oct.

Similar Species: The much more elongate *O. bisetus* and other members of the *O. bisetus* complex.

Distribution: **NL**
Only known from Broughton River Gorge in the Northern Lofty Ranges, where it is possibly extinct.

Habitat: Found in gravelly quartz rubble under mallee overlooking the gorge in an area badly degraded by grazing.

Distinguishing Features: The small rosette, quartz gravel habitat, short sepals, contrasting colours and large thick labellum with a grooved base set this species apart from other *O. biseta* complex species.

Notes: A member of the *O. bisetus* complex.

This apparently relict species is one of the most endangered in South Australia, being known from one slope in one gorge in an overgrazed farming area. Recent visits have shown that overgrazing by sheep has caused most of its gravelly soil habitat to be washed into the Broughton River. No plants remain at the Type location.

The recent demise of this species so soon after its discovery indicates that some Rufoushoods may have become extinct in South Australia without ever being collected.

Conservation Status

Status in Legislation: Not listed nationally, endangered in South Australia.
Suggested Status: 2E critically endangered nationally.



RB, *O.* sp. Broughton River, Broughton River, NL

Oligochaetochilus sp. Outback (R. Bates 41674)

Outback Rufoushood

Etymology: From the Outback area where the species is most common, outback New South Wales and adjacent South Australia.

Synonyms: *Pterostylis* aff. *lingua* M.A.Clem.

Description: Rosette large, to 5 cm across, of many overlapping dark green, slightly fleshy **leaves**, with vaguely serrated margins. **Flowering spike** robust with up to 4 sheathing leaves. **Flowers** 2-6, large, brown and white with greenish veins; **galea** to 2 cm long, inflated with broad window like petals; lateral sepals very broad and rounded at the base, suddenly constricted into long free filiform points; **labellum** brown, broad, thin textured, with a silky pointed tip, margins with four long seta near the base and many short ones toward the apex.

Flowering: Sept – Nov.

Similar Species: Other members of the *O. bisetus* complex.

Distribution: **EA, MU; NSW.**
The Olary Spur north of Pualco Station in the Eastern Area, the Murray district and in outback New South Wales.

Habitat: Found in scrubland on dry rocky hills.

Distinguishing Features: Differs from the similar ***O. bisetus*** in the broad base to the lateral sepals and the less distinct basal pair of long setae on the silky tipped labellum.

Notes: This rare species is a member of the *O. bisetus* complex.

The area in and near the Olary Spur north and south of the Barrier Highway is a centre of speciation in this genus, their being many localised species. Many of the orchids in the pastoral country flower according to rain so that in a dry year no flowering occurs but after a wet winter thousands of plants seem to mysteriously appear.

Sheep and rabbits have probably eliminated many other orchids in the area but a leek orchid, *Prasophyllum* species, a spider orchid *Arachnorchis toxochila*, an onion orchid *Microtis* species, the desert form of *Diplodium robustum* and *Hymenochilus pagophilus* and many other *Oligochaetochilus* species remain mostly in small numbers.

Conservation Status

Status in Legislation: Not Listed.
Suggested Status: 2R in South Australia, nationally uncommon.



RB, *O.* sp. Outback, Danggali CP, EA

Oligochaetochilus sp. Tall woodland (R. Bates 55028)

Woodland Rufoushood

Etymology: The phrase name refers to the habit and habitat preference of the species.

Synonyms: Previously included in and *O. bisetus* (syn. *Pterostylis biseta*), *O. sigmoidea* ms.

Description: **Leaves** 6 to 16, ovate-lanceolate, to 5 cm long, margins serrated, in a large flat basal rosette to 10 cm across, senescent soon after flowering begins. **Flower stem** to 50 cm tall, slender with several, scaly bracts. **Flowers** 3 to 12, rusty brown and translucent white, erect on long slender pedicels; **galea** to 22 mm high, slender in front view, lacking petal flanges, bulging slightly near the middle, the free point to 15 mm long, suberect; petals flanged, veined; lateral sepals sigmoid, hinged at the base then down-swept, with upswept free points, conjoined part ovate, striped, dished, with variously hairy margins, suddenly contracted into filiform upturned points to 25 mm long; **labellum** very sensitive on a long green hinge, ovate, to 5 mm long, with a beaked, upturned apex, lamina striated, a pair of long parallel seta in basal mounds on each side, margins undulate and beset with numerous short soft setae. The flowers open up to 4 at a time.

Flowering: Late Sept – Oct – Nov.

Similar Species: O. *bisetus* complex species.

Distribution: **FR, NL, SL.**
Throughout the Mount Lofty and Flinders Ranges from the Barossa Valley north to Wilpena.

Habitat: Occurs on fertile sandy loams on the flats and lower slopes of the ranges in open forest and woodland especially with River Red Gums and *Callitris*. This species is usually found with a great variety of other orchid species and was probably very common before settlement. Most of the habitat of this species was cleared in the 19th century.

Distinguishing Features: Differs from the type form of ***O. bisetus*** in being a much taller plant, with long pedicels, narrow galea, and distinctive lateral sepals which have a double bend when viewed from the side. It has a much broader labellum than *O. bisetus*.

Notes: A member of the *O. bisetus* complex.

It occurs in large populations as it has a more effective pollinator than *O. bisetus* and sets numerous capsules. These populations are limited by the fact that all are now in small relict woodlands.

Conservation Status

Status in Legislation: Not Listed.
Suggested Status: 3Rci.



RB, *O.* sp. Tall woodland, Nuriootpa, NL

South Australia's Native Orchids

Oligochaetochilus boormanii (Rupp) Szlach.

Sikhs Whiskers

Etymology: The species was named in honour of J.L. Boorman, an English-born collector for the Sydney Botanic Gardens.

Synonyms: *Pterostylis boormanii* Rupp and once included in *P. mitchellii* Lindl.

Description: **Leaves** 6 to 12, sessile and flat on the ground, the rosette to 8 cm across, withered at flowering. **Flower stem** to 30 cm, slender in most forms. **Flowers** 1 to about 10, deep red-brown, the **galea** swollen, to 2 cm high, often ciliate, apex produced into a fine recurved point, petals large transparent and window like, narrower than the galea; lateral sepals deflexed vertically, very broad at the base with numerous rigid cilia on the back and on the thickened margins, the lobes filiform, divergent, with upturned tips to 2 cm long; the **labellum** is fleshy, small, linear-oblong, gibbous basally, apex down-curved, lamina channelled above and below, the margins with long fine bristles in an irregular pattern.



RB, Sept

Flowering: Sept – Oct – Nov.

Similar Species: *O. arenicola, O. lepidus*, *O. exallus*, *O. xerophilus.*

Distribution: **FR, EP, NL, MU, YP, SL; Qld, NSW, Vic.**
Very widespread in South Australia from the West coast across Eyre Peninsula, inland as far as the Gawler Ranges, throughout the Flinders Ranges as far north as Arkaroola, rare in the Mount Lofty Ranges and in the Murray Mallee. Occurs also in the Eastern mainland states.

Habitat: Fertile soils in *Callitris* woodland, or shallow soil pockets on rocky ground, especially in the Flinders Ranges or other rocky ranges.

Distinguishing Features: The broad reddish lateral sepals with thickened bristly margins, the very small labellum and the random setae on the hood make this a most distinctive species (or complex).

Notes: This is quite a complex in South Australia, some of the species such as *O. arenicola, O. exallus, O. lepidus* and *O. xerophilus* have already been separated out but others may be cryptic, including small flowered plants from gorges in the Flinders Ranges. Jeanes and Backhouse (2006 pg 138) treat West Victorian and southeast South Australian plants as *P*. aff. *boormanii* 2 Sunset Rusty hood.

Fine bodied, long legged flies have been observed pollinating flowers on several occasions, these arriving from downwind, which suggest some pheromone is released by the orchid. It occurs most frequently as discrete colonies of up to a thousand plants.

Conservation Status

Status in Legislation: Not Listed.
Suggested Status: Secure, but some forms, if shown to be separate taxa, may be endangered.



BB, *O. boormanii*, Melrose, FR, Sept

Oligochaetochilus sp. Bimbowrie (R.J.Bates 41164)

Bimbowrie Rufoushood

Etymology: The phrase name reflects the name of the sheep station where it once grew.

Synonyms: None.

Description: **Leaves** 5 to 15, blue-green, with immersed veins, ovate, in a ground hugging basal rosette to 10 cm across, senescing soon after flowering begins. **Flower stem** to 30 cm tall, with several sheathing bracts basally. **Flowers** 4 to 12, a rich chocolate-brown with pale markings, erect on slender pedicels; **galea** to 20 mm high, curved forward, much inflated, no petal flanges inside, free point straight to 8 mm long; petals broad, curved, transparent; lateral sepals deflexed, with broad, thickened, shoulders to 18 mm across, hardly dished, shiny, the margins beset with short bristles; suddenly constricted into long free, upcurved divergent points about 15 mm long; **labellum** on a long hinge, brown, to 6 mm long, triangular, broad, channelled, basal hump with a crest of 6 to 16 fine hairs, margins with numerous fine hairs of various lengths. The flowers open up to four at a time.

Flowering: Sept – Oct – Nov.

Similar Species: *O. boormanii, O. xerophilus, O. linguus.*

Distribution: **FR.**
Endemic to a small area of South Australia north of the Barrier Highway from Olary to Kalabity.

Habitat: On the southern slopes of granite hills amid low shrubs in shallow soils with moss and lichens. The area is semi arid pastoral country often over-run with wild goats.

Distinguishing Features: Only discovered in 1989, this species is recognised by the tall stems with numerous chunky flowers, the rich colour, rounded sepals and very hairy labellum. No other species has a combination of dark, thick textured, rounded flowers and a thick, broadly triangular labellum.

Notes: This is the only member of the *O. boormanii* complex to grow in the semi desert.

In good years locally common on Old Boolcoomata Station, but threatened by large flocks of wild goats which are denuding the landscape. This area is now a reserve and home to as many as six *Oligochaetochilus* species.

Conservation Status
Status in Legislation: Not Listed.
Suggested Status: 2V, nationally vulnerable



RB, *O*. sp. Bimbowrie, Bimbowrie, EA

Oligochaetochilus sp. Lower Murray (R. Edge s.n.)

Lower Murray Rufoushood

Etymology: The phrase and common names refer to the area where the species grows/grew.

Synonyms: This species has long been known but not recognised with a phrase name until 2005.

Description: An attractive species with a large blue-green rosette of up to 15 **leaves**. **Flower stem** sturdy to 20 cm high. **Flowers** 2-8, large, maroon-brown with broad segments to 2 cm across; the dorsal sepal much smaller than the lateral sepals; the petals much curved and window like; the lateral sepals dished, with a broad, thickened but neatly rounded base, sub-orbicular with acuminate upturned apices to 1 cm long; **labellum** ovate to 8 mm long and 6 mm wide, thick textured, concave, with a smooth basal hump and many pairs of long, fine, pale setae at right angles to the thickened labellum margins, deeply coloured.

Flowering: Oct – Nov.

Similar Species: A member of the *O. boormanii* complex, similar to the desert loving *O. xerophilus.*

Distribution: **MU**

The species is apparently endemic to the Murray district and is now perhaps extinct due to overgrazing, rabbit plagues, weed infestation, and the removal of granite for building and limestone for road works.

Habitat: Restricted to rocky areas along the lower River Murray, often on sheet limestone in pockets of red soil under native pines *Callitris gracilis* or cracks in granite. The near coastal habitat is rather dissimilar to the desert sands favoured by *O. xerophilus*

Distinguishing Features: The blue-green rosettes, chunky appearance, deeply coloured flowers, large rounded labellum, short sepals and limestone loving nature are features to set this species apart.

- *O.* sp. Lower Murray differs from ***O. arenicola*** in being earlier flowering, with narrow segments.

Notes: A member of the *O. boormanii* complex.

There is one large collection from Mannum but the habitat there is not known; the other collection is from between Murray Bridge and Tailem Bend. All known locations were from within a kilometre of the River Murray. South of Tailem Bend the species is replaced by the related *O. arenicola* which grows on coloured sand over limestone, and also grows under native pines *(Callitris)*. Both are relict species thought to be derived from the very widespread and promiscuous *O. boormanii*.

Conservation Status

Status in Legislation: Not Listed.
Suggested Status: 2E critical, if not extinct.



RB, *O.* sp. Lower Murray, Tailem Bend, MU

Oligochaetochilus cobarensis (M.A.Clem.) Szlach.

Outback Rufoushood

Etymology: From the 'Outback' area where the species is most common, outback New South Wales and adjacent South Australia and *cobarensis* after the town of Cobar near where the Type was collected.



RB, Plumbago, EA

Synonyms: *Pterostylis cobarensis* M.A.Clem.

Description: **Leaves** 4 to 8 in a small, ground-hugging rosette to about 5 cm across, ovate, margins smooth, usually withered at flowering. **Flower stem** to 20 cm, wiry with a few scarious bracts near the base. **Flowers** 2 to 8, opening consecutively so that only a few are open at one time, brownish-green, erect; **galea** to 15 mm high, bulbous basally with a compressed hood; dorsal sepal point to 5 mm, upturned, petals much curved, of a plastic texture; lateral sepals deflexed, about 20 mm long, narrow, tapering gradually into fine divergent points which are more than half the total sepal length; **labellum** on a short hinge, cuneate, to 5 mm long, margins with long silky hairs, the apex densely felted with short white appressed hairs.

Flowering: Late Aug – Sept – Oct.

Similar Species: Several species as yet un-named from the Olary Spur and adjacent arid plains.

Distribution: **FR, EA, MU; NSW.**
Scattered through the rain-shadow areas in the eastern foothills of the Flinders Ranges (i.e. the Bibliando Range) and across the semi-arid Olary Spur, north and south of the Barrier Highway; also in the Mootwingie to Cobar area of western New South Wales.

Habitat: On calcareous or heavily mineralized soils about rock outcrops, in the shelter of low shrubs.

Distinguishing Features: The small, few leaved, smooth rosettes, slender scape with few bracts, small flowers with narrow sepals, sharp petals, pointed labellum and long setae all set it apart. The rosettes are rather smaller than other species in the area.

Notes: A species tolerant of drought and cold.

This is one of a complex of perhaps a dozen small species, each favouring a different soil or rock type and all endemic to the semi-arid pastoral country east of the Flinders Ranges.

This species has suffered from sheep and rabbit grazing.

Plate 192 in Orchids of South Australia (1990) depicts this species.

Conservation Status

Status in Legislation: Nationally vulnerable South Australia.
Suggested Status: 3R, but common nationally.



RB, *O. cobarensis*, Olary Spur, Sept

Oligochaetochilus despectans (Nicholls) Szlach.

Lowly Rufoushood

Etymology: The name *despectans* Latin to look down refers to the flowers which are placed on or near the ground.

Synonyms: *Pterostylis despectans*, *Pterostylis rufa* var. *despectans* Nicholls.

Description: **Leaves** small, ovate-lanceolate, acute, 6-16, overlapping in a small, tight, ground hugging rosette, dry and shrivelled at flowering time. **Flower stem** to about 5 cm, usually much less, covered with sheathing, withered stem bracts. **Flowers** 1 to 5, on slender, down-curved pedicels which rapidly elongate just before flowering to reach 3 cm and place the flowers on the ground; whole flower a pale brown or greenish- brown with transparent patches on the 15 mm long horizontal **galea** which ends in a fine straight or decurved point about 20 mm long; lateral sepals deflexed, dished, the fine points straight or curved upward and about 25mm long; **labellum** to 5 mm long, obovate, thin, the margins with short pale setae, with a pair of longer hairs from small mounds at the base of the labellum.



MH, seed capsule
*Note stem becomes erect

Flowering: Late Oct – Nov – Dec.

Similar Species: *O. mirabilis*, *O. bisetus* complex, *O.* sp. Flinders.

Distribution: **NL; NSW, Vic.**
Restricted in South Australia to the northern Mount Lofty Ranges near Mount Bryan and Koolunga; also in Victoria and adjacent New South Wales.

Habitat: On hard bare usually stony ground in low Eucalypt woodland, especially with Peppermint Box (*Eucalyptus odorata*) in areas that have long been subject to grazing.

Distinguishing Features: This remarkable plant is the only species having started upright, then the stem bends so that the flower lies on the ground. After successful pollination, the stem becomes upright again.

- The wholly pale green ***O. mirabilis*** of Eyre Peninsula is also a dwarf plant with a similar morphology and also with long pedicels but does not place its flowers on the soil.
- The flowers of other ***O. biseta* complex** species are much larger and with short pedicels.
- The species ***O.* sp. Flinders** from the mid Flinders Ranges also has small flowers on long down curved pedicels, but this has a thick labellum.

Notes: *O. despectans* forms quite extensive colonies, but there are very few of them known. The flowers are very hard to locate as they are quite cryptic. Flowers open up to a month after the leaves have withered away.

It is hoped that further searching of suitable habitat will reveal more populations, especially as it is known to survive on grazed ground.

Conservation Status

Status in Legislation: Nationally endangered, endangered in South Australia.
Suggested Status: 3Eci in South Australia, similarly endangered nationally.



MH, *O. despectans*, Nov
*Note downward bending flower stem and lateral sepal filaments on the ground



CH, rosette of *O. despectans*, Mt Bryan, July

Oligochaetochilus exallus D.L.Jones

Coastal Rufoushood

Etymology: The Latin *exallos* means different and indicates that this species has a different colour, labellum and lateral sepals to *O. boormanii*.

Synonyms: Has also been referred to as *Pterostylis* 'Belvidere' and *O.* sp. Coastal.

Description: Usually with a large **rosette** flat on the ground. **Flower stem** to 20 cm tall, but much shorter in dry seasons. **Flowers** up to 8 rich red-brown; **galea** swollen, often ciliate, apex produced into a fine recurved point, petals large transparent and window like, narrower than the galea; lateral sepals deflexed vertically, broad at the base with numerous rigid cilia on the back and on the thickened margins, the lobes filiform, divergent, to 2 cm long; the **labellum** is fleshy, linear-oblong, with a mantle of fine hairs basally, apex down-curved, lamina channelled above and below, the margins with long fine bristles in an irregular pattern.

Flowering: Early Oct – Nov – early Dec.

Similar Species: *O. boormanii*.

Distribution: **EP, YP, SL.**
O. exallus ranges from southern Eyre Peninsula to Lake Alexandrina.

Habitat: Mostly found within a few kilometres of the shore but never littoral. The species occurs on limestone or less frequently on sand hills, especially on more fertile soils which have of course mostly been cultivated.

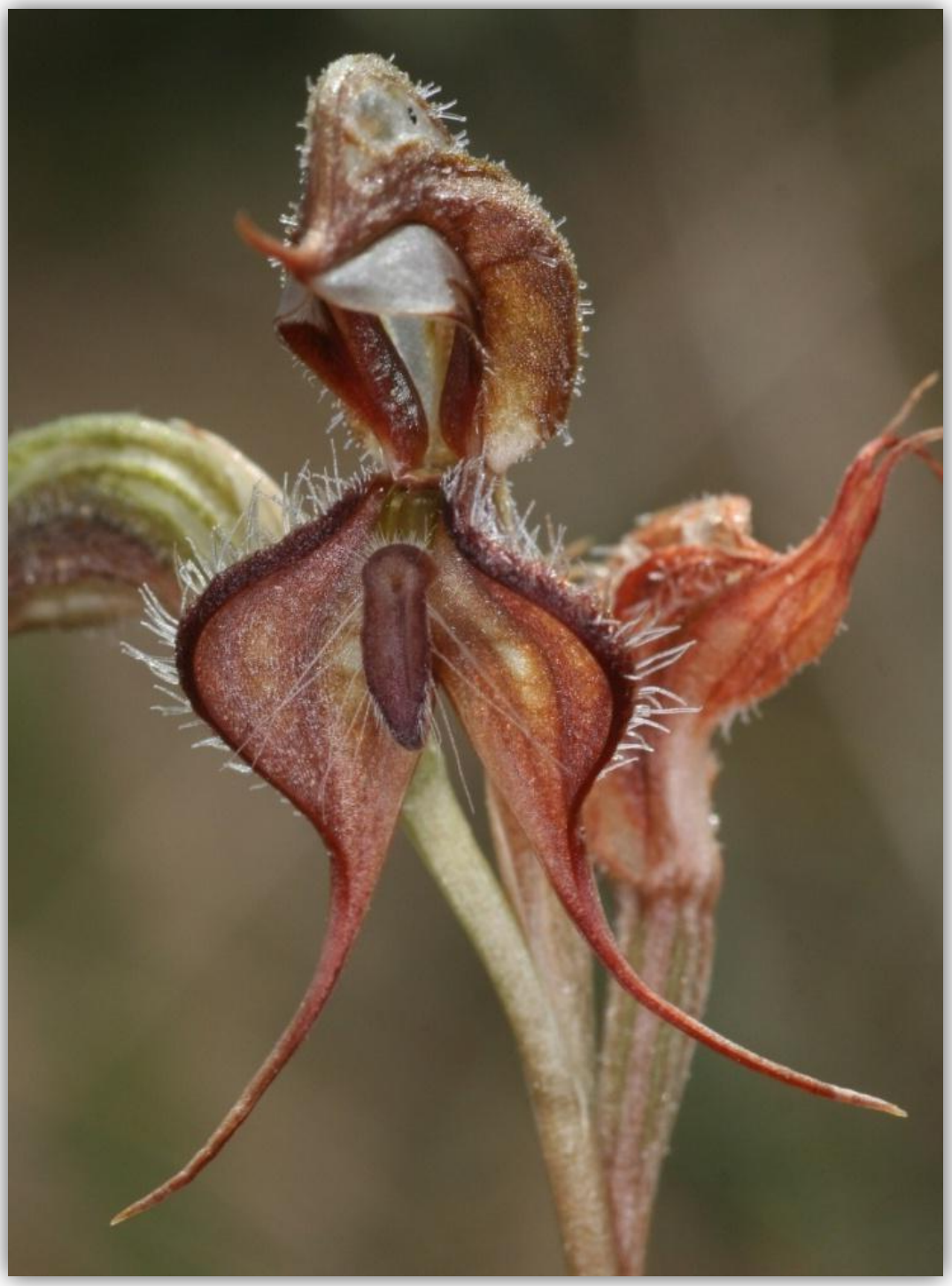
Distinguishing Features: The flowers have narrower lateral sepals and larger labellum than ***O. boormanii*** and the taxon is obvious from its coastal habitat and the often short plants with fleshy flowers.

Notes: *O. exallus* is similar to *O. boormanii* but it has narrower lateral sepals and a different labellum. There is some variability and this is the reason the taxon has not been previously recognised. Further DNA studies are required to assess its relationship with *O. arenicola* (also a coastal species) and *O. boormanii* (an inland species).

Wild Orchids of Victoria (2007) treat other possible species in Victoria.

Conservation Status

Status in Legislation: Not Listed.
Suggested Status: Widespread but rare, probably 3V, not conserved.



BB, *O. exallus*, Hardwicke Bay, YP

Oligochaetochilus excelsus (M.A.Clem.) Szlach.

Tall Rufoushood

Etymology: The name *excelsa* meaning high, lofty refers to the tall stem, *O. excelsa* being the tallest of the *Oligochaetochilus* species.

Synonyms: *Pterostylis excelsa* M.A.Clem., *Pterostylis mitchellii.*



RB, Nov

Description: **Leaves** lanceolate, 6 to 16, in a large, ground-hugging rosette to 15 cm across, withered at flowering time. **Flower stem** slender, flexible, to 80 cm tall but usually about 30 cm, with several, clasping, bracts, mostly at the base. **Flowers** few to about ten, on long pedicels, erect or nodding; **galea** to 20 mm high, red-brown, green-brown or even darker with translucent white stripes, apex produced into a filiform point about 10 mm long; lateral sepals about as long as the galea, deflexed, produced into long filiform points about 25-30 mm long; **labellum** to 4 mm long, fleshy, dark, ovate-lanceolate, tip straight, less than 2 mm broad, deeply channelled below, a crest of short cilia on the basal swelling and longer bristle-like setae along the anterior margins.

Flowering: Late Sept – Oct – Nov.

Similar Species: There are similar species in the un-named *O. excelsus* complex*, O. cobarensis.*

Distribution: **GT, FR, EP, NL, MU, YP, SL, SE.**
Endemic to South Australia where it is very widespread, especially across Eyre Peninsula where it occurs from the coast inland to the Gawler Range, in the Flinders and Mount Lofty Ranges and across the wheat-belt to the Murray mallee. On the inland side of its range it is replaced by a host of similar species.

Habitat: In dry woodland, mallee and about rock outcrops in hard soil; extending to blue-bush flats where it is often the only orchid.

Distinguishing Features: Most easily recognised by the tall stems and late flowering. Flowers are red-brown, green-brown to darker coloured with translucent white patches, with a small but thick, straight labellum, and long pedicels.

Notes: Flowers open progressively, one or two at a time and the stem elongates throughout the long flowering season, so that a 80 cm tall plant would be found only in a wet spring at the end of the flowering time. Seed capsules are not commonly seen and this suggests that insects visit infrequently.

This species occurs in small loose groups as well as widely spaced individuals in poorer habitat and appears to form occasional hybrids in land recovering from grazing, mostly with members of the *O. bisetus* complex. Like most members of the complex it suffers from rabbit grazing as the juicy stems are most attractive to browsing animals in dry times. A form from basalt grassland near Mt Gambier (now extinct) was probably *O. basalticus*, (the collections being in Canberra Botanic Gardens).

A coastal form on Eyre Peninsula occurs on sandy, lateritic soils and may represent a separate taxon (see *O. excelsus* Southern Eyre Peninsula form).

Conservation Status

Status in Legislation: Not Listed.
Suggested Status: Secure.



KB, *O. excelsus*, Halbury, NL

Oligochaetochilus excelsus, southern Eyre Peninsula form

Eyre Peninsula Tall Rufoushood

Etymology: The name acknowledges this is treated here as a form of *O. excelsus.*

Synonyms: *Pterostylis excelsa* M.A.Clem., *O. excelsus*

Description: Rosette of fleshy, crinkled, strongly veined **leaves**, mounded, not flat, withering at flowering time. See *O. excelsus* for a description of the flower.

Flowering: Oct – Nov – Dec.

Similar Species: All members of the *O. excelsus* complex.

Distribution: **EP**
Found only on Southern Eyre Peninsula.

Habitat: Laterite rubble and adjacent rock outcrops

Distinguishing Features: The southern Eyre Peninsula form of *O. excelsus* has a very different rosette of fleshy, crinkled, strongly veined leaves in a mound rather than flat like typical ***O. excelsus***. The flower has a broader labellum, but like other *O. excelsus* has a late flowering time.



PH, Wanilla, EP

Notes: It was not until 2007 that I managed to get pictures of this form sent by local orchid enthusiasts.

Like *O. bisetus* species, *O. excelsus* is probably a complex found all across southern Australia and some species such as *O. basalticus* from Victoria have been recently split from it.

Another form illustrated in Wild Orchids of Victoria page 140 (2007) as *O.* aff. *excelsus* has also been seen in our Upper South East near Yumali.

This taxon is probably better treated as *O.* aff. *mitchellii*.



PH, basal rosette of *O. excelsus*, southern EP form from Wanilla, EP

Conservation Status

Status in Legislation: Not Listed.
Suggested Status: Secure.



JN, *O. excelsus* Southern Eyre Peninsula form, Oct

Oligochaetochilus sp. Flinders

Flinders Rufoushood

Etymology: The phrase name is indicative of where the species occurs, viz. in the central Flinders Ranges.

Synonyms: None.

Description: Plants always with a small rosette to 3 cm across, **leaves** tightly packed, ovate. **Flower stem** to 10 cm tall with several papery bracts above the rosette which is shrivelled at flowering time. **Flowers** 1-5, small grey-green and white about 1.5 cm across, on long pedicels and facing downward, the subtending floral bract rather large for the flower size; dorsal sepal with a long hooked tip to 2cm; petals transparent, slender; lateral sepals narrow-ovate, the long filiform tips pendulous or backswept at first then curved forward, sometimes on or close to the ground; **labellum** narrow, rather straight with sparse setae on the margins and basal mound, deeply channelled below.

Flowering: Oct – Nov.

Similar Species: *O. despectans* in habit, *O. excelsus* in flower appearance.

Distribution: **FR.**
Only known from about Hawker to Narrina.

Habitat: Grows on the lower slopes of tall ranges or on low ridges usually on hard clay of gravelly slopes with mallee and on the edge of *Callitris* (native pine) forest. Found with *O. bisetus* and *Hymenochilus* species well away from major orchid populations.

Distinguishing Features: The small size of this species, the narrow labellum, the long slender pedicels and rather drooping flowers help to set it apart but further research is needed to determine the extent of populations.

Notes: The species is similar to the *O. excelsus* complex.

The areas where it grows have long been grazed by sheep and this combined with a run of many dry winters has limited searches for this species which is most easily located in the low ranges east of the turn off to Wilpena Pound from the main Hawker- Blinman road. Hopefully better collections and pictures can be taken in the future.

Conservation Status

Status in Legislation: Not Listed.
Suggested Status: K.



RB, *O.* sp. Flinders, Narrina
pressed specimen at the Adelaide Herbarium

Oligochaetochilus sp. Gammon Range (R. Bates 34295)

Gammon Range Rufoushood

Etymology: The phrase name refers to the ranges where the species is best known.

Synonyms: Previously included in *Pterostylis* aff. *hamata* and also *Pterostylis excelsa., Pterostylis magnus* ms.

Description: **Leaves** 5 to 15, overlapping, lanceolate, to 8 cm long, in a large, flat ground hugging rosette to 15 cm across, usually withered at flowering. **Flower stem** 5 to 35 cm tall, at first stocky but elongating remarkably as flowering progresses, several scaly stem bracts mostly near the base. **Flowers** 2 to 12, greenish-brown or greyish and white, with a dark green or brown labellum, on slender pedicels, more or less erect; **galea** slender to 30 mm long, swollen at the base, free point to 20 mm long, decurved or angled down in front of the lateral sepals; petals narrow; lateral sepals decurved or pendent, narrow throughout, margins not thickened or hairy, free points to 35 mm long, parallel or upswept, sinus between them narrow; **labellum** on a broad hinge, narrow lanceolate, thick textured, tip straight, base humped, with a crest of short setae, marginal hairs longer and angled downward. The flowers open progressively, one or two at a time, lasting just a few days.

Flowering: Late Aug – Sept – Oct; the onset of flowering depends on rainfall.

Similar Species: Species of the *O. excelsus* complex.

Distribution: **LE, FR**
Endemic to South Australia, it occurs mostly in the northern Flinders Ranges from Mt Fitton south to about Hawker.

Habitat: Mostly along *Callitris glaucophylla* (native pine) fringed creek-lines and dry ridges but extending to arid shrub covered rock outcrops in shallow alluvial soils. Not in calcareous soils.

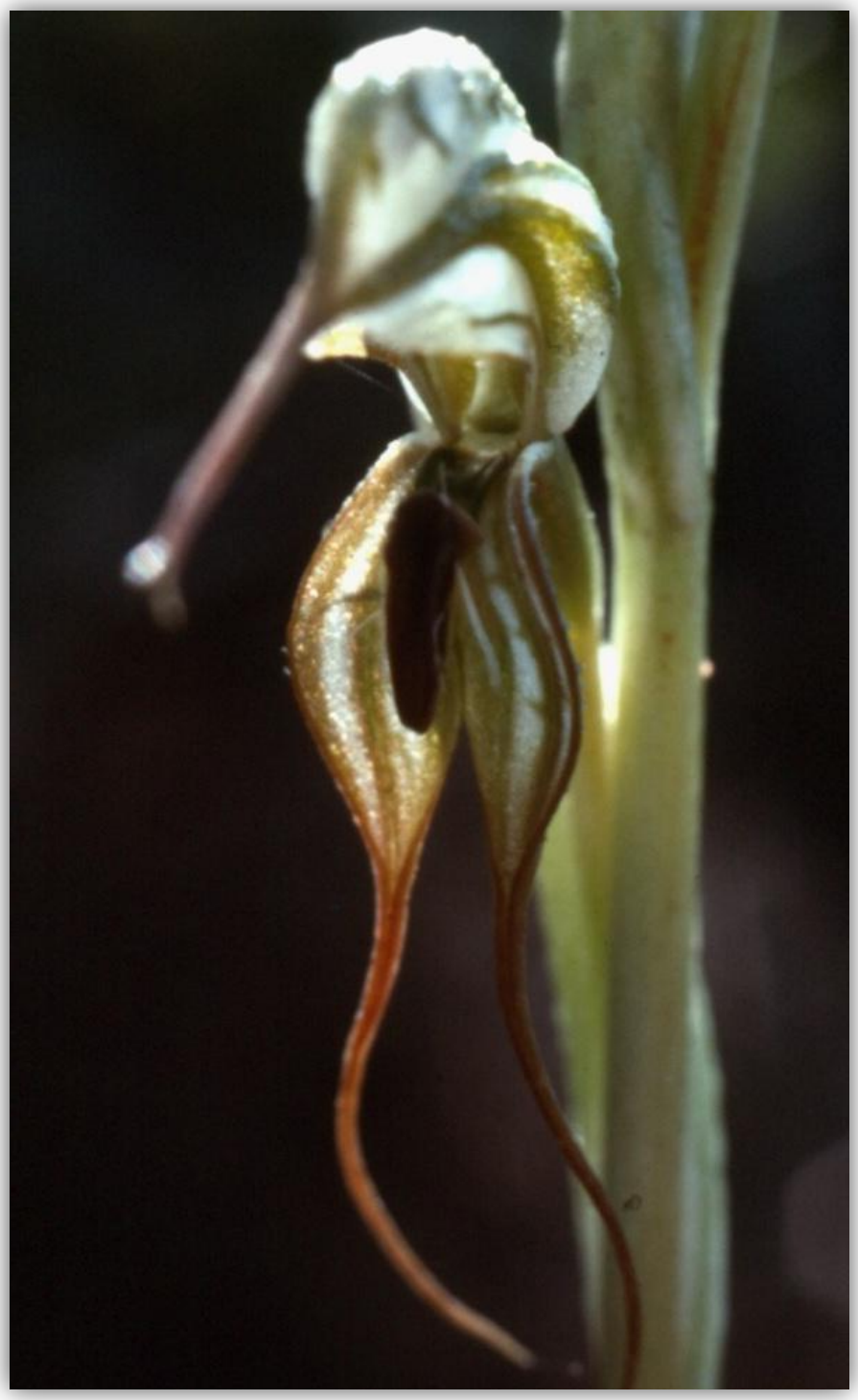
Distinguishing Features: This taxon differs from other members of the complex in the large flowers with narrower labellum and in long free points.

Notes: This species sets up colonies of hundreds of plants in ideal habitat but is usually found as single individuals scattered amid the rocks of largely inaccessible ridges and rock ledges.

Flowering only occurs after wet winters but if spring rains do not occur most buds will abort and only short, few flowered specimens will be found. A single spike may stay in flower for as long as ten weeks.

Conservation Status

Status in Legislation: Not Listed.
Suggested Status: Secure in large parks like the Gammon Ranges and Arkaroola Sanctuary, although climate change and feral goats are a serious threat.



RB, *O.* sp. Gammon Ranges, Weetootla Gorge, FR

Oligochaetochilus sp. Mount Geharty (R. Bates 30699)

Geharty Rufoushood

Etymology: After the location on eastern Eyre Peninsula, a centre of diversity in this genus.

Synonyms: Previously under *Pterostylis excelsa*.

Description: Very slender plant with large flat basal rosette of rather bristly edged **leaves**. The **flower stem** is slender to 40 cm tall. **flowers** 3-10, very narrow, brown on long slim pedicels; the **galea** laterally compressed, the dorsal sepal with a long downward curved filiform apex; the lateral sepals narrow with similar upward curved filiform tips to 3 cm long; the **labellum** is similar to that of *O. excelsus* but more curved and with a longer pair of basal setae.

Flowering: Oct – Nov – Dec.

Similar Species: Species of the *O. excelsus* complex.

Distribution: **EP.**
One of several species endemic to northern and eastern Eyre Peninsula; this species only occurs west of Cowell.

Habitat: Only occurs about schistose outcrops of rock in dry hills, usually in *Dodonaea* and *Melaleuca* shrub-land.

Distinguishing Features: The species is easily recognised by its slender, attenuate appearance, especially the long filiform tips to the segments.

- The labellum is similar to that of ***O. excelsus*** but more curved and with a longer pair of basal setae. Despite growing at a higher altitude than the plains loving *O. excelsus* this one begins to flower earlier.

Notes: It is unlikely that the many un-described *Oligochaetochilus* species in South Australia will ever be resolved unless they are common and widespread or so distinct as to not be confused with any other. Many will be lost in any case, before they can be studied in any detail. *O.* sp. Mount Geharty is one of those species.

Conservation Status

Status in Legislation: Not Listed.
Suggested Status: 2E.



RB, *O.* sp. Mount Geharty, Mount Geharty, EP
* Note pollinia visible in transparent galea

Oligochaetochilus sp. Mount Olinthus (R. Bates 62451)

Mount Olinthus Rufoushood

Etymology: The phrase and common names refer to the location.

Synonyms: None.

Description: **Leaves** 4 to 8 in a small ground hugging basal rosette, blue-green, ovate, to 4 cm long, usually withered at flowering. **Flower stem** short and stocky to 15 mm tall, with a few scale like bracts. **Flowers** 2 to 6, greenish-grey or brown and white, erect on short pedicels; **galea** to 15 mm high, curved, swollen at the base with two petal flanges inside, the free point about 6 mm long; lateral sepals deflexed, ovate, to 10 mm across, slightly dished, the margins variously bedecked with short rigid bristles, tapering gradually into 8-12 mm long free points which are straight or divergent; **labellum** on a short hinge, brown, anvil-shaped with a broad crescent shaped basal lobe and a narrow triangular apical portion which is deeply channelled, apex straight, subacute; basal lobe with a crest of two to seven erect hairs, margins of apical lobe with three to five pairs of fine forward curved hairs, the apex often silky. The flowers open one or two at a time.

Flowering: Late Sept – Oct – Nov.

Similar Species: *O.* sp. Arkaroola*, O. excelsus* complex.

Distribution: **EP.**
Endemic to Eyre Peninsula where it is confined to low ranges such as the Mount Olinthus and Darke Ranges.

Habitat: Occurs on the ridge tops in shallow hard soils over quartz in low shrublands.

Distinguishing Features: The short stature, rigid flowers and anvil-shaped labellum and small rosettes all serve to set it apart from ***O. excelsus***.

- ***O.* sp. Arkaroola** from the North Flinders is very similar but lacks the crescent hump and has two '*bisetus*-like' bristles near the base.

Notes: This species has had recovery plans prepared for it and the whole Olinthus Range has been placed under heritage agreement. Each mountain range on Eyre Peninsula seems to have its own flower form, but all share the similar features.

A careful search of each ridge has indicated that there are less than fifty plants per range, which means that each population is relict as the ranges have not been greatly modified since settlement. It would also appear that the species is fading through hybridising with the many sympatric species.

Conservation Status

Status in Legislation: Not Listed.
Suggested Status: 3Ec.



JN, *O.* sp. Mount Olinthus, Gawler Ranges, EP

Oligochaetochilus sp. Slender desert (R. Bates 41266)

Slender Desert Rufoushood

Etymology: The phrase name indicates that this is a slender species from the eastern pastoral zone.

Synonyms: None, but previously included in *Pterostylis cobarensis* M.A.Clem.

Description: Rosette to 3cm across with few smooth, slender green **leaves**. **Flower stem** very slender to 15 cm tall. **Flowers** up to 10 small, usually pale to 12 mm across; **galea** narrow with a very fine point to 8 mm long; petals only a few mm apart; lateral sepals pendulous, slender with incurved, smooth margins, with long fine apices; the **labellum** narrow-acuminate, apex down curved, apex pubescent, margins with long silky hairs. One or two flowers open at a time.

Flowering: Sept – Oct.

Similar Species: *O. excelsus* complex, *O.* sp. Oratan Rock.

Distribution: **EA**
Restricted to the eastern and northern Olary Spur.

Habitat: Restricted to granite country in dry pastoral country. Found mostly in fertile red soils amid resurrection ferns at the base of large rocks.

Distinguishing Features: The early flowering, very thin stems, numerous, narrow, floppy, small, pale flowers and narrow labellum with its basal pair of long setae, set this apart from other pastoral zone species.

Notes: Flowering only occurs in better seasons when there is above average rainfall.

Usually found growing with other species such as *O. linguus*, *O.* sp. Old Boolcoomata etc. One could speculate how many Rufoushoods once grew in the arid, stony, geologically diverse hills of the Olary Spur in north eastern South Australia and in the nearby Barrier Ranges in New South Wales. Rabbit plagues saw the demise of most in the 20th century.

Conservation Status

Status in Legislation: Not Listed.
Suggested Status: Unknown but threatened by desertification of its environment, rabbits, goats and other grazing herbivores.



RB, *O.* sp. Slender desert, Billeroo, EA

Oligochaetochilus ferrugineus D.L.Jones

Sandplain Rufoushood

Etymology: The Latin name *ferrugineus* iron or rusty is suggested by the reddish or red-brown flowers; the common name refers to the habitat.

Synonyms: Previously included in *Pterostylis rufa* R.Br. and *Pterostylis squamata* R. Br. and as *O.* sp. Sandplain D.N.Kraehenbuehl 5670.

Description: **Leaves** 5 to 9 in a ground-hugging basal rosette; broadly ovate, blue-green, strongly veined, to 35 mm long. **Flower stem** to 30 cm tall, with several stem sheathing bracts. **Flowers** 3 to 10, red-brown with few white markings, erect; **galea** to 14 mm high, fleshy, swollen and curved forward, with a short upturned point to 3 mm long, broad petal flanges inside, not touching; petals curved, brownish; lateral sepals decurved, to 15 mm long, margins thickened and incurved, free points to 5 mm long, divergent, tapered gradually to a thick apex with incurved margins; **labellum** oblong-ovate, fleshy, apex truncate of notched with dense short pubescence; basal hump with a dense crest of short white cilia, labellum margins with irregular curved seta, the individual cells visible.



JN, Wolseley

Flowering: Late Sept – Oct – Nov.

Similar Species: *O.* sp. Rock ledges*, O. pusillus, O. squamatus.*

Distribution: **SL, SE; Vic.**
Restricted to the South-eastern border districts, from Ngarkat CP south with one disjunct collection from near Cockatoo Valley on the southern edge of the Barossa Valley; also in Victoria.

Habitat: In sandy soils in open, shrubby woodland, often with *Callitris gracilis.*

Distinguishing Features: Previously confused with ***O. pusillus*** but larger than that species in all its parts and with broad lateral sepals.

- This species is very similar to ***O. squamatus*** from Tasmania and the Eastern states but the larger size, different labellum cilia and different habitat indicate they are biologically distinct.

Notes: Most of its habitat in South Australia has been destroyed but the species once occurred in large colonies of thousands of plants.

The form from around rock outcrops may be a distinct subspecies.

No hybrids are known.

Like many species of the complex the stem will keep on elongating as flowering progresses so that during a wet spring very tall plants may be found by November.

Conservation Status

Status in Legislation: Not listed nationally, endangered in South Australia.
Suggested Status: 3Eci, rare nationally.



JN, *O. ferrugineus*, two colours, Ngarkat CP, SE

Oligochaetochilus hamatus (Blackmore & Clemesha) Szlach. complex

Oligochaetochilus sp. Crossed Sepals (R. Bates 57329)

Bibliando Rufoushood

Etymology: The phrase name refers to the sepals crossed in bud.

Synonyms: *Pterostylis* aff. *hamata.*

Description: **Leaves** 4 to 10, pale green, ovate-lanceolate, smooth, in a ground hugging basal rosette to 8 mm across, senescent at flowering. **Flower stem** to 30 cm tall, with several sheathing bracts. **Flowers** 3 to 7, sub-erect, pale green-brown and translucent, emergent from a 30 mm long, curved floral bract which encloses the pedicel; **galea** to 20 mm long, neatly curved, swollen, without petal flanges, the free point strongly decurved, needle-like, to 10 mm long, angled distinctly through the lateral sepals when in bud; petals narrow but bulging; lateral sepals arched forward then decurved, sigmoid in side view, the free points to 12 mm, strongly upswept; **labellum** triangular, thick, blunt, the margins with several long silky hairs, basal hump smooth. The flowers open up to three at a time.

Flowering: Sept – Oct – Nov.

Similar Species: *O. hamatus* of the Eastern States.

Distribution: **EA**
Endemic to semi-arid South Australia, where it is known only from the foothills of the Bibliando Range in the rain-shadow of the eastern Flinders but probably extending north from there.

Habitat: Grows on the shaded slopes of low rocky hills and in gorges amid scattered shrubs, especially *Senna* and *Dodonaea,* in more fertile calcareous soils.

Distinguishing Features: This most distinctive species is instantly recognised from the strange habit of crossing the free point on the dorsal sepal through the free points of the lateral sepals, especially in bud. The large floral bracts are also distinctive.

Notes: First seen in the 1980s and not collected until this century. Little is known of this species as no real orchid studies have been made in the area. There may be several other un-described species in the eastern foothills of the Flinders Ranges as there are frequent soil and habitat changes. In this area populations of all orchids have crashed since settlement due to overgrazing by sheep and rabbits.

Conservation Status
Status in Legislation: Not Listed.
Suggested Status: Unknown but probably threatened.



TB, *O.* sp. Crossed Sepals, Bibliando, EA

Oligochaetochilus lepidus D.L.Jones

Halbury Rufoushood

Etymology: The Latin *lepidus,* elegant, neat or fine reflects the small neat habit of plants; the phrase name indicates the best known location for the species.

Synonyms: *O.* sp. Halbury (*R. Bates 8425*, or *Pterostylis* Halbury and previously included in *P. boormanii.*

Description: **Leaves**, ovate, about 5-10, in a small basal rosette to 5 cm across, flat on the ground, green at flowering. **Flower stem** reaching to 30 cm, but usually about 10 cm, slender, becoming wiry with age. **Flowers** few to about ten, only one or two open at a time, greenish or greenish brown with paler striations; **galea** to 15 mm high, apex, with a filiform upturned point to 1 cm long; lateral sepals deflexed, basally broad, the apices filiform to 2 cm long, divergent and often upturned; the **labellum** is tiny, to 4 mm long, oblong, thick and channelled, margins with few long silky setae. No two plants have the same flower morphology and colour.



KB, Halbury, NL

Flowering: Late July – Aug – Sept – Oct.

Similar Species: *O. boormanii, O. pusillus, O. arenicola.*

Distribution: **NL, YP, SL.**
Endemic to South Australia and restricted to the Adelaide Plains as far north as Snowtown.

Habitat: In loamy or clay soils in *Callitris* and Mallee-woodland, often over limestone, usually with other similar species.

Distinguishing Features: Differs from ***O. boormanii,*** in being smaller in all its parts, with paler flowers, which begin to open a month earlier. *O. boormanii* has much broader lateral sepals with more obvious marginal hairs.

- ***O. pusillus*** has even smaller flowers without long filamentous segments.

Notes: This is the first *Oligochaetochilus* species to begin flowering.

It was once widespread across the Adelaide Plains from Golden Grove to Snowtown but with most of its habitat now cleared, it survives in just one viable population. Fortunately this population is thriving, despite competition from serious weeds such as sour-sobs (*Oxalis pes-caprae*) and bridal creeper.

Like its sister species *O. arenicola* it is very well pollinated by small mycetophilid flies, whereas *O. boormanii* and *O. pusillus* are not as well pollinated. This species was named in 2009.

Conservation Status

Status in Legislation: Nationally endangered, endangered in South Australia.
Suggested Status: 2Eci, nationally endangered.



JN, *O. lepidus*, Aug

Oligochaetochilus linguus (M.C.Clem) Szlach.

Swept-back Rufoushood

Etymology: From the Latin *lingua* a tongue, the species appears to be poking out its often pink tongue; the common name alludes to the swept back lateral sepals.

Synonyms: *Pterostylis lingua* M.A.Clem.

Description: Ground hugging rosette to 5 cm across, with 6-10 thin textured, narrow ovate **leaves**. **Flower stem** shiny and slender to 25 cm tall, with very few bracts. **Flowers** 3-8, thin textured, about 2 cm across, pale coloured brownish and white with green patches; **galea** narrow, the dorsal hood with an acuminate variable tip to 2 cm long; petals narrow and coloured not transparent; lateral sepals rather flat, usually swept back, the base at first erect then abruptly bent, mostly free with long fine acuminate tips to 3 cm long, reflexed on either side of the scape; **labellum** thin textured, standing rudely out from the lateral sepals, oblong-ovate with crenulate margins, beset with variable hairs, basal hump with few short hairs, flowers strongly out-crossing.

Flowering: Sept – Oct.

Similar Species: None, perhaps an aberrant member of the *O. bisetus* complex.

Distribution: **EA, FR; NSW**
In South Australia known only from the dry eastern slopes and foothills of the Flinders Ranges, across the Olary Spur, and into New South Wales as far as the mid-west from about Cocopara north to the Pilliga.

Habitat: *O. lingua* is found as small isolated populations in more fertile soils amid native grasses under stunted *Callitris* and low shrubs, usually where water runs off rock sheets onto sandy loams.

Distinguishing Features: The most obvious features of the species are the thin textures, lateral sepals which become reflexed with age to the point that the acuminate tips end up swept back on either side of the scape.

Notes: In South Australia this species tends to be found with other rare desert loving species, most of them un-named. Collections have come from Baratta and Oulnina.

It is probable that *O. lingua* was more common before rabbits, sheep and goats invaded its habitat.

Conservation Status

Status in Legislation: Not listed nationally, endangered in South Australia.
Suggested Status: Rapidly disappearing, probably 3V in South Australia but safe in New South Wales.



RB, *O. linguus*, Old Baratta station, EA

Oligochaetochilus sp. Old Boolcoomata (Bates 62450)

Large-lip Rufoushood

Etymology: Old Boolcoomata station is where the type came from.

Synonyms: Previously included in *Pterostylis lingua.*

Description: Rosette to 5 cm across, **leaves** blue-green, smooth. **Flower spike** to 20 cm tall, robust. **Flowers** large to 3 cm across, maroon-brown with translucent patches; **galea** to 3 cm long apex upturned acuminate; lateral sepals broadest near the base, margins with a few small setae, basal section suddenly contacted at the middle**,** sinus wide, filiform apical points to 3cm long, divergent; **labellum** larger than any other South Australian species, a wide beak, indented surface, margins with numerous long fine white hairs, basal hump with several short erect hairs.

Flowering: Late Sept – Oct.

Similar Species: *O. lingua*.

Distribution: **EA**
Only known from Old Boolcoomata, now part of Bimbowrie Conservation Park.

Habitat: Found only under native pines *(Callitris)* in drainage lines from large granite rocks.

Distinguishing Features: The large maroon flowers and over-sized labellum set it apart from the similar ***O.* sp. Bimbowrie**.

Notes: A probable relict species, there being no other similar habitats east of the Gawler Ranges. Species such as this one, flower only in years of above average rainfall when they can produce enormous rosettes at least 5 cm across.

Conservation Status

Status in Legislation: Not Listed.
Suggested Status: Probably close to extinction due to climate change and the degradation caused by feral goats over many years. Nationally critically endangered.



RB, *O.* sp. Old Boolcoomata, Old Boolcoomata, EA

Oligochaetochilus sp. Quartz (R. Bates s.n.)

Quartz hill Rufoushood

Etymology: The phrase name indicates that this species is restricted to ridges of white quartz in the desert fringes.

Synonyms: None.

Description: A slender species to 20 cm tall arising from a **rosette** of 5-8 narrow, lanceolate, blue-green **leaves** with dentate margins; the **flower stem** reaches to 20 cm tall and is thick with numerous leafy bracts. **Flowers** 3-7, about 2 cm across, pale grey-green and brown; the **galea** is small, the dorsal sepal apex upturned about 1 cm long; petals large and transparent; lateral sepals narrow especially at the base, rigid, straight, the free points to about 3 cm long, slightly divergent, margins with sparse bristles, lamina reticulate-linear veined; **labellum** triangular-oblong, with a central pit, margins somewhat dentate, beset with long sparse hairs, basal hump with up to eight very erect shorter setae. One or two flowers open at a time.

Flowering: Sept – Oct – Nov.

Similar Species: *O. linguus*.

Distribution: **EA**
Restricted to the semi-arid Olary Spur. It may be found in Bimbowrie Conservation Park.

Habitat: Restricted to rocky quartz ridges and slopes in low shrub-land with porcupine grass mounds. Usually the only orchid present in such places although nearby ranges may have a variety of rufoushoods.

Distinguishing Features: Part of a difficult complex, recognised only from the rather thick labellum and choice of habitat and quartz substrate.

Notes: Like most orchids in the area it may be impossible to find some years, flowering only after wet winters. Like most species of rufoushoods, early rains may encourage flowering in early September while the rosettes are still green but flowering usually occurs after the leaves are dead.

Conservation Status

Status in Legislation: Not Listed.
Suggested Status: Unknown; there may be some extensive areas of quartz with large populations but since the area is largely trackless the extent of this habitat is unknown; suggest 3Rci.



RB, *O.* sp. Quartz, Oulnina Park, EA

Oligochaetochilus maximus
(M.A.Clem. & D.L.Jones) Szlach.

Large Red Rusty hood

Etymology: The Latin maximus, the largest as this has one of the largest flowers of the *O. bisetus* complex.

Synonyms: *Pterostylis maxima; w*as once included in *Pterostylis biseta*.

Description: **Leaves** 6 to 12, overlapping, in a large ground-hugging basal rosette, withered at flowering time, ovate to 45 mm long, margins smooth. **Flower stem** to 35cm tall, with several scaly sheathing bracts. **Flowers** 2 to 8, deep red-brown, glossy with translucent white sections; **galea** to 30mm high, erect, with a 20 mm long upturned point; lateral sepals obliquely deflexed, deep red-brown, base broad, circular, suddenly contracted into 30 mm up-curved filiform points; **labellum** to 8 mm long, broad, obovate, with numerous marginal setae, two prominent setae in mounds near the base.

Flowering: Oct – Nov.

Similar Species: *O. bisetus* complex species.

Distribution: **SE; NSW, Vic.**
Known in South Australia from near Bordertown and Martin Washpool Conservation Park; also in New South Wales and Victoria.

Habitat: Mallee and Bulloke *(Allocasuarina)* woodland on hard stony-clay soils.

Distinguishing Features: Recognised from the large, shiny red-brown flowers. The South Australian plants in Bulloke woodland had some of the features of ***O. cheraphilus***.

Notes: The species was only described in 1989 and since then most of the South Australian populations have been destroyed by over grazing. It is likely that this species occurred more widely in South Australia before settlement. There are similar forms on Eyre Peninsula.

No hybrids are known.

Conservation Status
Status in Legislation: Not listed nationally, endangered in South Australia.
Suggested Status: Probably extinct in South Australia but secure in the Eastern states.



ID, *O. maximus*, Bendigo, Vic

Oligochaetochilus mirabilis D.L.Jones

Nodding Rufoushood

Etymology: The name *mirabilis* in Latin, means astonishing, wonderful, which this species is in its late blooming and odd stance.

Synonyms: *Pterostylis* sp. Eyre Peninsula

Description: The **leaves** are 5 to 12, small, lanceolate, overlapping, in a ground-hugging rosette to 3 cm across, withered well before flowering. **Flower stem** to 8 cm tall, slender, covered with long scaly sheathing bracts. **Flowers** one to several, greenish and white, on long pedicels bent at right angles to the stem so that the flowers face down; **galea** narrow, about 20 mm long with a 15 mm long, straight, filiform apex; lateral sepals deflexed, slender, upper part to 12 mm long, the filiform tips pendulous or bent back, to 25 mm long; the **labellum** is narrow ovate, thin textured, greenish or pale brown, to 8 mm long and with two long setae arising from mounds near the base, and many shorter ones on the lateral margins.



KB, Mt Olinthus, EP

Flowering: Late Oct – Nov – Dec - early Jan.

Similar Species: *O. despectans.*

Distribution: **EP.**
Endemic to eastern Eyre Peninsula in the higher country between Cleve and Kimba, from near the coast to about 100 km inland, at about a dozen known sites.

Habitat: Mostly in scrublands of broombush, *Melaleuca uncinata*, but also in woodland of *Callitris* and Eucalypts, particularly in stony brown loams.

Distinguishing Features: *O. mirabilis* could only be confused with the similarly late flowering ***O. despectans,*** which does not occur on Eyre Peninsula and has less narrow, and brown, not green flowers, the flowers placed on the ground.

Notes: This is the last orchid to flower on Eyre Peninsula, the flowers opening successively over about eight weeks so that by the time the last flower closes the basal rosette has been dead for up to twelve weeks.

This species was only discovered in the 1980s. The lack of collections reflects its cryptic habit and late flowering. The species has had recovery plans drawn up and hopefully a small reserve will be set up to protect the largest population.

Other (largely un-described) *Oligochaetochilus* species occur throughout its range but no hybrids have been observed. This species was named in 2007.

Conservation Status

Status in Legislation: Nationally vulnerable, vulnerable in South Australia.
Suggested Status:2Vci nationally threatened.



RB, *O. mirabilis*, Coolanie, Dec

Oligochaetochilus ovatus (M.A.Clem.) Szlach.

Ovate lip Rufoushood

Etymology: From *ova* Latin an egg, in reference to the broadly ovate, thin textured labellum.

Synonyms: *Pterostylis ovata* M.A. Clem.

Description: **Leaves** 5 to 10, in a ground hugging basal rosette, ovate-lanceolate, to 5 cm long, senescing as flowering progresses. **Flower stem** to 15 cm, with one or two tight stem bracts. **Flowers** 1 to 10, red or pinkish-brown and white with green suffusions, nodding, on curved pedicels; **galea** to 30 mm long, the petals large curved and transparent, dorsal sepal point to 8 mm; lateral sepals reflexed against the ovary, ovate, the free points to 20 mm long; **labellum** almost membranous, ovate, pink-red with darker striations, flat with short 1 mm long setae on the gibbous base.

Flowering: Late Aug – Sept – Oct.

Similar Species: *Pterostylis biseta* complex.

Distribution: **GT, EP.**
Endemic in South Australia where it is restricted to northern and eastern Eyre Peninsula.

Habitat: Mostly on granite porphyry, in shallow soil pockets in open places or amid sparse shrubs or porcupine grass (as in picture), often with other *Oligochaetochilus* species.



KB, Scrubby Peak, EP

Distinguishing Features: Easily separated from the ***O. bisetus* complex** of species as it does not have the two long setae on the labellum base.

Notes: Usually occurs as single plants separated by hundreds of metres, but occasionally in colonies of up to a dozen plants.

Most populations are found in and about the Gawler and Moonabie Ranges. Its habitat has fortunately been reserved in the Gawler Range regional reserve.

Populations have gradually declined due to climate change and grazing, especially by rabbits. The very large tubers are produced just below the soil surface to take advantage of the generally light showers falling through the growing season. Tubers swell rapidly after rain and plants use the stored moisture during frequent dry periods of several weeks.

Conservation Status

Status in Legislation: Not Listed.
Suggested Status: 3Rc, nationally rare.



JN, *O. ovatus*, Hiltaba

Oligochaetochilus planulatus (D.L.Jones) Szlach.

Plains Rufoushood

Etymology: From the Latin *plana* flat as in the very flat labellum lamina.

Synonyms: *Pterostylis planulata* D.L.Jones & M.A.Clem.

Description: Wholly green plant with a large rosette to 4 cm across, having many overlapping **leaves** which are often withered at flowering. **Flowering stem** to 30 cm tall, slender to robust, with 2-6 stem bracts, leafy towards the base. **Flowers** 2 to 7, to 3 cm long, on short but slender pedicels, translucent greenish, with darker green or brownish tones; **galea** obliquely erect, with a prominent filiform point; lateral sepals deflexed, often against the stem, base circular to ovate, flat, wider than the hood, margins ciliate, free points filiform to 35 mm long, usually bent or turned forward; **labellum** to 7 mm long, oblong to ovate, thin textured margins with up to 12 pairs of short seta, a pair of longer more prominent forward pointing basal seta.



KB, October

Flowering: Late Oct – Nov.

Similar Species: *O. bisetus, O. psammophilus*

Distribution: **SE; Vic.**
In South Australia only known from the upper South East; also in Western Victoria.

Habitat: Mostly on the plains in shrub-lands or rocky outcrops, especially in South Australian blue-gum woodland with *Callitris* species.

Distinguishing Features: The species is difficult to separate from some forms of ***O. bisetus*** but generally the green striated flowers and southerly distribution help.

Notes: Named in the 1993 with its exact distribution and distinctiveness yet to be settled.

See also illustration in Wild Orchids of Victoria.

Conservation Status

Status in Legislation: Not Listed.
Suggested Status: 3Rc in South Australia and probably secure in Victoria.



JN, *O. planulatus*, Peebinga CP, SE

Oligochaetochilus psammophilus D.L.Jones

Sandy Creek Rufoushood

Etymology: The name *psammophilus* Greek, meaning sand loving refers to the habitat of this species, i.e. deep white sands.

Synonyms: Previously included in *Pterostylis biseta* Blackmore & Clemesha or as *Pterostylis* Sandy Creek

Description: **Leaves** 6 to 16, ovate, overlapping, to 5 cm long, with serrated margins, in a ground hugging basal rosette, often partly covered with loose sand, green when flowering starts but soon senescing. **Flower stem** short and stocky, usually less than 15 cm high but elongating in late flower, with several leafy bracts. **Flowers** 2 to 12, rather crowded, usually a verdant green and translucent white, but brown forms do occur, several flowers open at a time, nodding; **galea** broad to 30 mm high, swollen at the base, free point to 10 mm long; petals large, curved and transparent; lateral sepals deflexed to decurved, 20 mm across, dished, broadest near the middle, free points to 20 mm long; **labellum** broad-ovate, to 6 mm long, green, thin textured with a blunt upturned apex; two long parallel seta set in mounds near the base, margins with few forward angled hairs.

Flowering: Late Aug – Sept – Oct.

Similar Species: Members of the *O. bisetus* complex**,** ***O. boormanii*.**

Distribution: **EP, YP, SL; NSW.**
Scattered across Eyre Peninsula, Northern Yorke Peninsula and in the Barossa Valley, but of very isolated occurrence. It is rare on Eyre Peninsula and Yorke Peninsula; also occurs in New South Wales.

Habitat: In deep white sands in open woodland of native pines *Callitris gracilis* and broombush shrub-land amid annual herbs, usually with other *Oligochaetochilus* species.

Distinguishing Features: This interesting species has features of both ***O. bisetus*** and ***O. boormanii***.

- It can be recognised by its short, sturdy stems, verdant green (rarely tan), flowers, broad segments and paper thin labellum.

Notes: This species occurs in very large scattered colonies of hundreds of plants in ideal habitat. It flowers earlier than related species. Where it occurs with *O. bisetus*, it flowers up to four weeks earlier than *O. bisetus.*

Although by no means the most distinctive member of the complex it has been well studied and is a good example of a localised, habitat specific species, as well as being a sister species to a more widespread taxon.

Pollination is effected by mosquito-like flies which have been observed to approach from down-wind and dive bomb the labellum until they are thrown into the galea.

Conservation Status

Status in Legislation: Not Listed.
Suggested Status: 3Vc, nationally threatened.



BB, *O. psammophilus*, Sandy Creek CP, SL

Oligochaetochilus pusillus (R.S.Rogers) Szlach.

Small Rusty hood

Etymology: The epithet pusillus meaning very small, refers to the diminutive plants with their small flowers.

Synonyms: *Pterostylis pusilla* R.S.Rogers, and has been included under *Pterostylis rufa* R.Br.



KB, Parilla, MU, Oct

Description: **Leaves** 4 to 8, ovate, rounded, to 30 mm long, in a small ground hugging basal rosette to 5 cm across, senescing as flowering progresses. **Flower stem** to 20 mm tall, slender, with few bracts. **Flowers** 1 to 6, small, greenish and dark purple-brown, erect on slender pedicels; **galea** obliquely erect, to 10 mm high, point of dorsal sepal about 3 mm long, straight; lateral sepals deflexed, narrow, deeply concave, the free points stiff, to 6 mm long, pale, margins much incurved; **labellum** to 4 mm long, purple-brown, oblong; margins with small, pale, fine, easily damaged setae. Often the flowers all open at once.

Flowering: Late Aug – Sept – Oct.

Similar Species: *O. ferrugineus, O.* sp. Rock ledges, *O. aciculiformis.*

Distribution: **FR, EP, NL, MU, YP, SL, SE; NSW, Vic.**
Widespread in South Australia, especially in the wheat-belt and Flinders Ranges as far north as Blinman, from the West Coast near Fowlers Bay to the South East, from the coast to mountain tops but absent from Kangaroo Island and rare in the Southern Mount Lofty Ranges. Once grew around Adelaide; also in Victoria and western New South Wales.

Habitat: Mostly on calcareous soils or in association with *Callitris* native pines. In woodland, mallee scrubs, mallee heath, shrub-land and about rock outcrops inland.

Distinguishing Features: The small size of flowers, thin flower stem and the oblong labellum set it apart.

- ***O. ferrugineus*** has the whole plant much larger and without fine points on the sepals
- ***O.* sp. Rock ledges** has much paler flowers

Notes: There are several similar but less common species such as *O. ferrugineus* from sandy woodland in the lower South East and Barossa Valley and *O.* sp. Rock ledges from rocky gorges in high rainfall areas. Through most of its range it is found as single widely scattered plants.

There is considerable variation in size of the plants; populations on limestone soils are often tiny but there are large rosette forms in *Callitris* woodland in loamy soils and these may be regarded as a separate subspecies.

O. pusillus forms rare hybrids with other members of the complex.

Conservation Status

Status in Legislation: Not Listed.
Suggested Status: Secure and locally common in parks.



MH, *O. pusillus*, Paradise Station, MU
*Note sinus of lateral sepals is not visible in this image.

Oligochaetochilus sp. Rock ledges (pl. 185, Bates & Weber 1990) R.J.Bates

Rock-ledge Rufoushood

Etymology: The phrase name refers to the habitat preference of the species.

Synonyms: *Pterostylis rufa* R.Br., *Pterostylis aciculiformis* (Nicholls)Szlach., *Pterostylis* sp. Rock ledges R.J.Bates, *Pterostylis* aff. *aciculiformis* (Nicholls)M.A.Clem. & D.L.Jones R.J.Bates & J.Z.Weber(1993), *O. aculeatus* ms D.L.Jones.

Description: **Leaves** 5 to 8 in a small, ground hugging basal rosette; ovate, dull green, to 30 mm long, veined, usually withered at flowering. **Stem** to 20 cm tall, slender with a few narrow, sheathing bracts. **Flowers** 1 to 5, small, dull greenish-brown and white, on slender pedicels; **galea** to 10 mm high, thin textured and brittle, not greatly inflated, the free point to 3 mm long, not upturned; petals narrow, transparent with brown striping, petal flanges inside hood elongated but not touching; lateral sepals decurved and often backswept, to 10 mm long, narrow and rather flat except for the incurved but not thickened margins, the free points gradually tapered into fine, hardly divergent points to about 6 mm long; **labellum** oblong, often somewhat broader toward the apex, or narrow in the Adelaide Hills forms, to 4 mm long, basal hump with few cilia, margins with longer but sparse seta.

Flowering: Oct – Nov – early Dec.

Similar Species: *O. pusillus, O. ferrugineus.*

Distribution: **SL, SE**
Largely confined to the Adelaide Hills between the Barossa valley and Meadows but also in the upper South East.

Habitat: Usually in shallow soils on rock ledges or in hard clay amid rocks on ridges in lightly wooded locations.

Distinguishing Features: Has been confused with ***O. pusillus*** but is larger, does not have such narrow margins to the lateral sepals or such a narrow purplish labellum.

Notes: *O.* sp. Rock ledges is of limited habitat in the Adelaide Hills; the species occurs in few, very small patches. It is quite likely that the South East and Mount Lofty Range plants are different species with the South East plants identical to plants from western Victoria (Grampians). In any case none of these equate to *O. aciculiformis* (of the eastern states) in the strict sense. It has been confused with a similar taxon in the upper South East but this is now allied with *O. ferrugineus*.

Conservation Status

Status in Legislation: Not listed nationally, endangered in South Australlia.
Suggested Status: 3Eci, nationally threatened.



RB, Mt Bold, SL

Oligochaetochilus setiferus
(M.A.Clem., Matthias & D.L.Jones) Szlach.

Bristly Rufoushood

Etymology: The Latin name *setifera* beset with hairs or bristles, is most apt for this species with its three separate sets of setae on the labellum.

Synonyms: *Pterostylis setifera* M.A.Clem., Matthias & D.L.Jones

Description: **Leaves** 5 to 10 in a flat basal rosette, ovate, ciliate on a short petiole, to 40 mm long, withered at flowering time. **Flower stem** almost wiry, to 30 cm tall, with small sheathing bracts. **Flowers** 2 to 6, erect on long, slender, uptilted pedicels, translucent white with greenish stripes and suffusions; **galea** erect, to 15 mm long, suddenly down turned at the top, with a short upturned point; petals straight; lateral sepals deflexed obliquely in front of the flower, narrow, to 15 mm long, the sinus acute, free points to 12 mm long, divergent, stiff; margins of lateral sepals with numerous white, shiny bristles to 2 mm long; **labellum** on a long green hinge, to 5 mm long, triangular, brown or green, channelled, lifted well off the sepals, margins with long, pale yellow setae (at least in South Australia), these curved and up to 5 mm long, labellum base with a crest of massed short white bristles. Flowers open one or two at a time.

Flowering: Late Sept. – Oct – Nov.

Similar Species: None.

Distribution: **MU; Qld, NSW, Vic.**
Known in South Australia only from two collections close to the Victorian and New South Wales borders, one north of the river Murray and one south of the river; more common in the Eastern states.

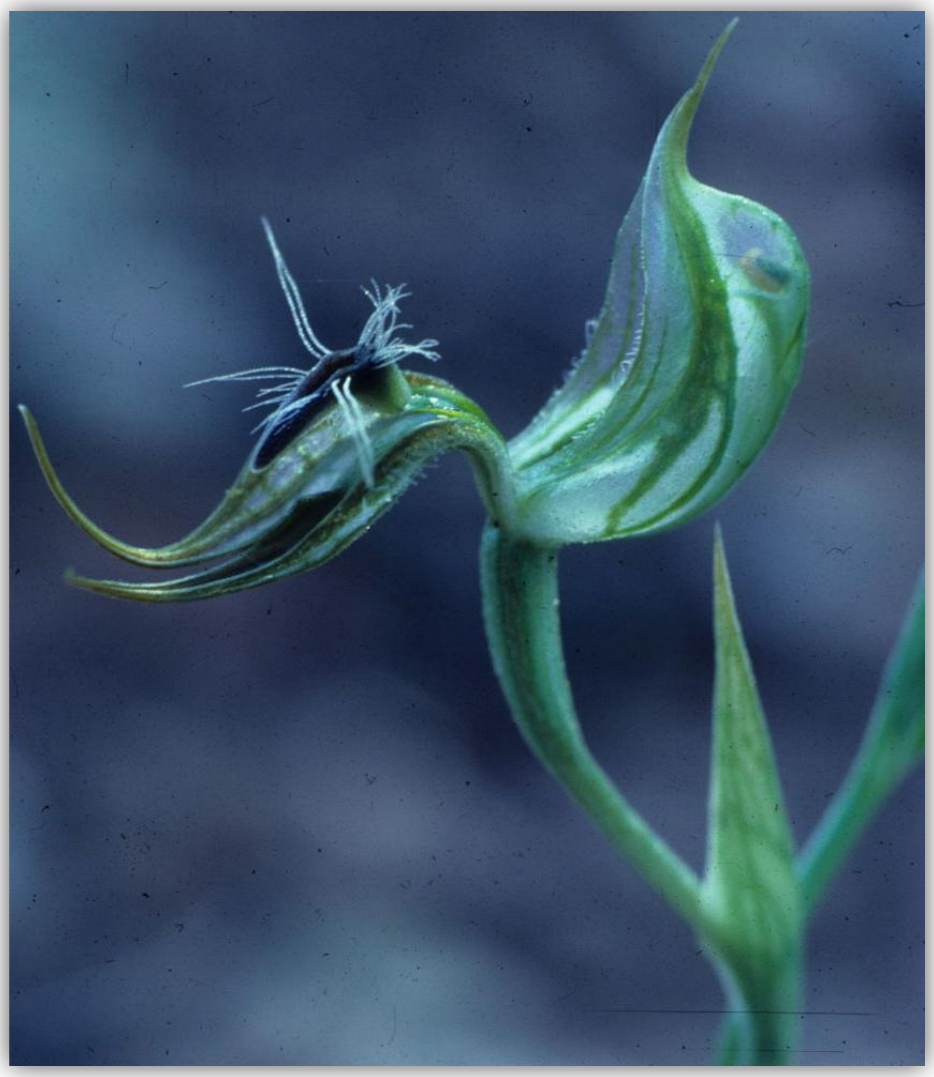
Habitat: In South Australian plants occur in clay swales at the base of sand dunes with native pines; in the Eastern states large populations can occur in Ironbark forests and harder soils under mallee.

Distinguishing Features: *O. setiferus* is not likely to be confused with any other species as it is the only member to have upturned flowers. Other significant features are the long petiole, the thick labellum with numerous, often yellow setae.

Notes: This is a most distinctive species, yet it was only described in 1985. The South Australian plants seem to have been outliers but one would suspect it may have been common at least in the heavy soils around Pinnaroo which were put to agricultural use long ago.

Conservation Status

Status in Legislation: Not listed nationally, endangered in South Australia.
Suggested Status: E in South Australia, but not collected for 20 years, but still common in New South Wales.



RB, *O. setiferus*, Canopus, MU

Oligochaetochilus xerophilus (M.A.Clem.) Szlach.

Desert Rufoushood

Etymology: The name *xerophilus* is a misspelling of the Greek *xerophilous* and means flourishing or thriving in a hot dry environment, a reference to the preference this species has for desert sands about rock outcrops in semi-arid places.



RB, EP

Synonyms: *Pterostylis xerophila* M.A.Clem.

Description: **Leaves** 4 to 10 in a ground hugging basal rosette to 8 cm across, ovate, smooth, hardly petiolate, withered at flowering time. **Flower stem** to 15 cm with few sheathing bracts near the base. **Flowers** 1 to 5, more or less nodding on slender pedicels, deep red-brown with pale translucent areas; **galea** to 20 mm high, base much swollen, top a slender hump, galea extended into a fine 10 mm long point; petals transparent; lateral sepals deflexed, ovate, with thickened, flared margins with numerous white setae, the free points curved forward, to 20 mm long; **labellum** ovate, thick textured, highly sensitive, base humped, without hairs, margins with few sparse hairs.

Flowering: Late Aug – Sept – Oct.

Similar Species: *O. boormanii, O.* sp. Lower Murray

Distribution: **GT, EP, MU; Vic.**
Mostly on the inland side of the wheat-belt and extending further into the desert than other species. From the edge of the Great Victoria Desert, across northern Eyre Peninsula with an outlier in the Mallee near the Victorian border; also in Western Victoria where it is rare.

Habitat: It occurs mostly in sand adjacent to rock outcrops but also on the rock outcrops themselves in shallow soils.

Distinguishing Features: Distinguished from the related ***O. boormanii*** by its broad, rather variable labellum and less hairy sepals.

Notes: *O. xerophilus* occurs as scattered plants and small colonies but seems to have suffered a contraction of its range in recent years due to wheat farming in marginal areas and to overgrazing by rabbits and sheep. Where it once occurred on stable red sand dunes i.e. in Yumbarra Conservation Park it has disappeared as the dunes are eroded.

Conservation Status

Status in Legislation: Nationally vulnerable, vulnerable in South Australia.
Suggested Status: 3vci, nationally threatened.



KB, *O. xerophilus*, Kododo, Gawler Range

South Australia's Native Orchids

Undescribed Oligochaetochilus

Oligochaetochilus sp. Arkaroola (R.J. Bates s.n. 159960)

Griselda's Rufoushood

Etymology: Named in honour of Griselda Sprigg, explorer and matriarch of Arkaroola Sanctuary.

Synonyms: None.

Description: **Leaves** ovate, to 3 cm long, in a flat basal rosette, hardly overlapping, blue-green and veined, margins smooth. **Flower stem** to 15 cm, fleshy with several scaly bracts near the base. **Flowers** 2 to 6, small, grey-green and white, nodding on long pedicels; **galea** to 15 mm long, not swollen, much curved, with two large petal flanges inside the base, the free point to 5 mm long; petals large, curved and flared; lateral sepals decurved, rigid, fleshy, narrow and deeply concave, about 10 mm across, with a few irregular setae on the back, tapering into long divergent points about 12 mm long; **labellum** triangular, fleshy, to 5 mm long, straight and channelled, with a pair of erect hairs 1 mm long on the basal swelling, another longer pair on small mounds on the margins near the base, and a few shorter ones toward the tip. The flowers open progressively over several weeks.

Flowering: Sept – Oct.

Similar Species: *O.* sp. Mt Olinthus.

Distribution: **FR.**
Endemic to a small area of arid, rocky Northern Flinders Ranges in Arkaroola Sanctuary.

Habitat: Restricted to rock ledges and scree slopes in gravelly soils amongst lichens, with *Callitris* and *Dodonaea* in cold shaded sites, sometimes with *Hymenochilus pagophilus*.

Distinguishing Features: It is distinguished by its concave lateral sepals, large petals compared to the dorsal sepal, and unusual labellum.

Notes: This species has the most northerly distribution of any orchid in the Flinders Ranges. It occurs in the vicinity of *O.* sp. Gammon Range and *O. boormanii* but not in the same habitats. Has only ever been seen as isolated plants and is probably a relict species.

No hybrids are known.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 2Ec, nationally endangered.



RB, *O.* sp. Arkaroola, Devils Slide, FR

Oligochaetochilus sp. Canegrass (R. Bates 77674)

Desert Sandhill orchid

Etymology: The phrase name refers to the station property where the species is most common.

Synonyms: *Pterostylis* sp. Canegrass.

Description: A drought tolerant species with a small **rosette** of 3-8 pale green, flaccid, linear lanceolate **leaves** pressed into the sand. **Flower stem** to 15 cm, very slender, even wiry with few clasping bracts. **Flowers** 1-7 moderately small, to 1.6 cm across, rusty red and green-white, thin textured; the **galea** narrow, sepals much curved and constricted with a 4-5 mm long acuminate apex; petals transparent except for their brown base; lateral sepals broadly ovate, mostly rusty red with some white patches, broadest at the centre, margins mostly smooth, free apices divergent, acuminate to 2 cm long; **labellum** insect-like, brown, triangular, the apex decurved, lamina deeply channelled, no basal hump, margins with few very fine long cilia set at different angles.



RB, Canegrass station, MU

Flowering: late Aug – Sept – Oct.

Similar Species: *O. boormanii, O. linguus.*

Distribution: **EA, MU; NSW.**
Occurs in the semi-desert, plains country south of the Olary Spur, probably as far south as Hypurna near the Murray River and probably as far east as the Darling River in New South Wales.

Habitat: So far only seen growing amid porcupine grass *(Triodia)* hummocks in low, red, consolidated sand hills with light mallee. This country is largely trackless and unexplored botanically.

Distinguishing Features: This species is usually the only orchid where it occurs: certainly it is the only species on red sand dunes. The rosettes leaves are much narrower than those of the few other *Oligochaetochilus* species on the dry plains. The thin textured but pretty flowers have a short acute labellum, similar to that of ***O. cobarensis*** and ***O. boormanii***.

- *O.* sp. Canegrass lacks the numerous bristles of ***O. boormanii***
- *O.* sp. Canegrass has broader sepals than ***O. cobarensis***

Notes: It is believed that rosettes only appear in years of above average cool season rainfall, but flowering has been noted to proceed even as long as 8 weeks after rain when the rosette leaves had shrivelled to dust.

How this species has dealt with 150 years of sheep grazing, feral goats and rabbit plagues is unsure; perhaps it is a prolific seed producer and re-coloniser during rare wet winters.

Conservation Status

Status in Legislation: Not Listed.
Suggested Status: Unknown; the only populations located so far are close to the few mallee-desert tracks in this vast region.



BB, *O.* sp. Canegrass, Bimberrie, EA

Oligochaetochilus sp. Everard Range (L. Scott 173)

Mimili Orchid

Etymology: The phrase name acknowledges the species is only known from the Everard Range in South Australia's northwest.

Synonyms: None

Description: Plant to 10 cm tall with a rosette of smooth ovate dark green **leaves**; scape very slender. **Flowers** usually single, sometimes 2-3, on a slender pedicel, brown and white about 1 cm across but the lateral sepals to 5 cm long; **galea** narrow, 1.2 cm long, the dorsal sepal with a 2 cm long upturned filiform apex; petals mostly transparent; lateral sepals about 1 cm across, with narrow base, ovate with short setae on the margins, very fine filiform semi pendulous tips to 5 cm long; **labellum** shaped like the body of a squid, main part ovate, orange-brown to 8 mm long with crenulate edges, basal hump pale, with two eye-like swellings at the base and a crest of short pale cilia.

Flowering: May – June – July – Aug – Sept.

Similar Species: None

Distribution: **NW.**
Known only from the Everard Range, an area of high local plant endemism in the deserts of South Australia's northwest region.

Habitat: Found in narrow chasms at the base of large granite aprons, under the shelter of *Acacia* shrubs, or large boulders, especially where water seeps out after heavy rain.

Distinguishing Features: Unlikely to be confused with other species due to distribution, odd shaped labellum and very long sepals. The species is slightly reminiscent of ***O. woollsii*** from the Eastern states.

Notes: This species does not appear every year and has only been reported after heavy autumn rains.

Conservation Status

Status in Legislation: Not Listed.
Suggested Status: Unknown due to the difficulty of access to the Aboriginal lands where it occurs but probably endangered as rarely seen.



RB, *O.* sp. Everard Range, Mt Ilbillee, NW

Oligochaetochilus sp. Mt Victoria Uranium Mine

Uranium Rufoushood

Etymology: The species has only been seen on rocky hills near the now closed Mt Victoria uranium mine.

Synonyms: Previously known as *Pterostylis* Mt Victoria.

Description: A dwarfed species, the rosette with pointed blue-green **leaves**; the **flower spike** to 10 cm. **flowers** 2-5 fleshy red-brown, green and translucent; the **galea** small to 2 cm long; the lateral sepals rigidly deflexed and hooked outward, margins smooth, rather flat, rather unusual that they lack a filiform point, instead simply tapering throughout; **labellum** fleshy, red-brown and deeply channelled above and below, base with a crest of 6-10 rigid white setae, the margins with many short setae.

Flowering: Aug – Sept – Oct.

Similar Species: *O. boormanii, O.*sp. Canegrass.

Distribution: **EA.**
North of the Olary Spur.

Habitat: Restricted to highly mineralized soils over granite rocks in sparsely vegetated low hills.

Distinguishing Features: The fleshy flowers with hooked, short, flattened lateral sepals are quite distinctive. The early flowering may also be significant.

Notes: Decline of populations is due to decreasing winter rainfall patterns, continued grazing and regular plagues of rabbits, goats and locusts. Like many desert species flowering is determined by rainfall occurrence. Heavy rain in autumn may see the flowers open in winter but if rains do not occur until mid-winter then flowering will occur in spring. Most years' rainfall is insufficient to initiate flowering.

Conservation Status

Status in Legislation: Not Listed.
Suggested Status: 2E.



RB, *O.* sp. Mt Victoria Uranium Mine, Mt Victoria, EA

Oligochaetochilus sp. Oratan Rock (R. Bates 62448)

Diminutive Rufoushood

Etymology: The phrase name indicates the area near where the species was last seen.

Synonyms: None.

Description: Tiny rosettes with thin **leaves**; **flower stem** short, fine, to 10 cm. The **flowers** are tiny, pale brown; the **galea** is about 1 cm long with a fine upturned point and large petal flanges; the petals narrow, the lateral sepals are glabrous, only a few mm long with short, fine, up-turned tips; the **labellum** is rather basic, about 3 mm long, strongly curved with few short fine, strongly down-curved hairs along the margin.

Flowering: Sept.

Similar Species: *O. pusillus*.

Distribution: **EA.**
Little is known. No other orchids were seen within 20 kilometre, even the castle shaped Oratan Rock itself was without orchids, not surprisingly as a flock of feral goats had made it their home.

Habitat: The only colonies so far located were growing under *Dodonaea stenozyga* around small rocks with quartz pebbles on a slight rise on largely denuded sheep grazed flats with chenopods.

Distinguishing Features: The dwarf nature of the species and even its simplicity tend to set it apart. The picture shows that the whole flower is smaller than the lateral sepals of ***O. bisetus***.

Notes: This diminutive species needs much further study. The author is probably the only person to have looked for orchids in the vast area which may be suitable, and that for a total of just a few hours on a single day. Thorough searches of the vast, mostly trackless area where it was found may reveal other colonies.

It is unlikely to ever be named unless it can be relocated, which is unlikely since climate drying has intensified the desertification process occurring along the South Australian/New South Wales border areas.

Conservation Status

Status in Legislation: Not Listed.
Suggested Status: Unknown but likely to be endangered due to grazing of its desert habitat.



RB, *O.* sp. Oratan Rock (L) *O. bisetus*, (R), Oratan Rock, EA

Gallery



O. planulatus, Upper SE, orchid art by Kath Alcock



RB, *O. exallus*, Moonta, YP



RB, *Oligochaetochilus* species, Kalabity, EA



RB, *O. despectans* rosette, Mount Bryan, NL



KB, *O. bisetus,* Caroona Ck, MU



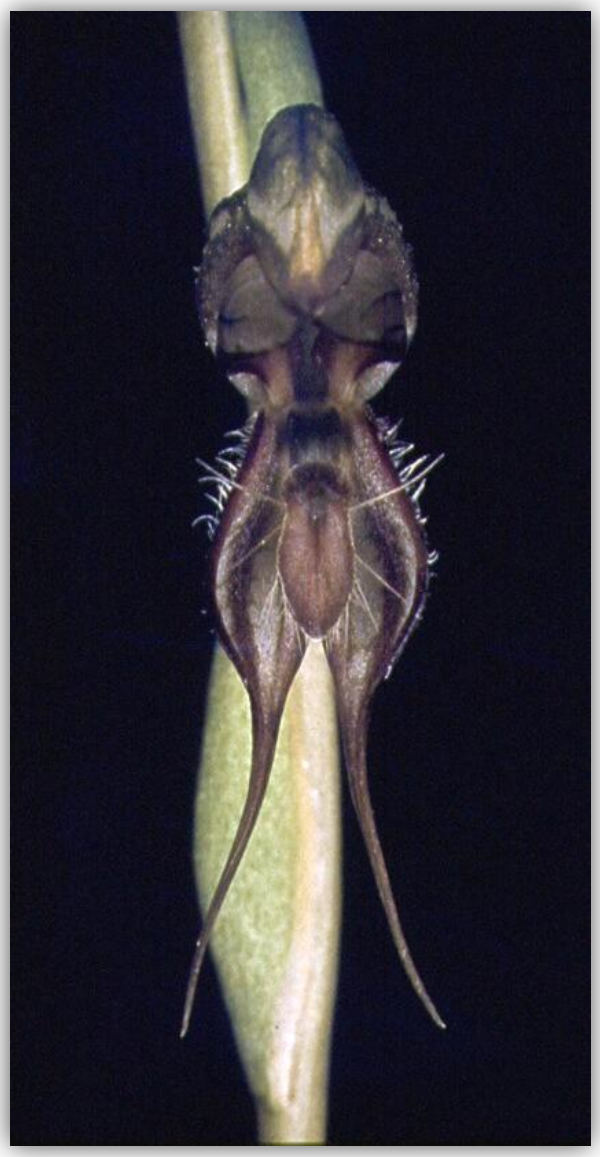
KB, *O. bisetus,* Caroona Ck, MU



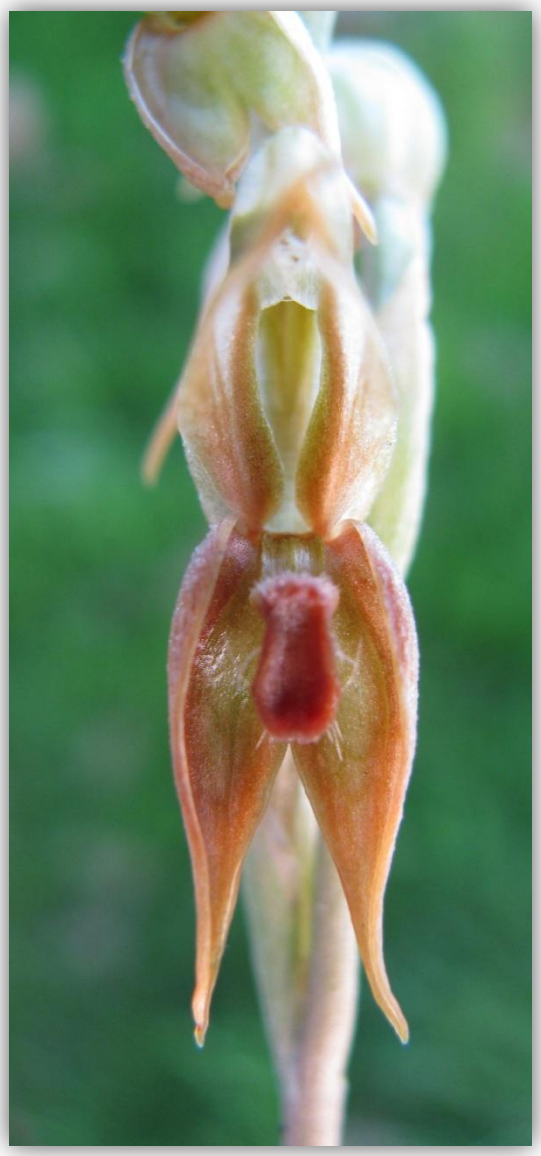
RB, *O. bisetus,* Snowtown, NL



KB, *O. bisetus*, Parilla, SE



RB, *O.* sp. Blue-bush plains, Whyalla



RB, *O.* sp. Rock Ledges, Scott Creek CP, SL



JN, *O. xerophilus*, Pine Lodge, Sept
Example of variation in the species





CH, *O. despectans* colonies of rosettes;
top: during growing season (July), bottom: when rosettes senesced (Nov)



RB, *O. psammophilus* hybrids, Lyndoch, SL



RB, petaloid *O. psammophilus*

South Australia's Native Orchids

Orthoceras R.Br.

Horned Orchids



RB, *O. stricta*, Mt Crawford
*Note three colour forms and three bract sizes, same population

South Australia's Native Orchids

Orthoceras R.Br.

Horned Orchids

Etymology: From the Greek, *orthos,* straight or upright and *keras* a horn, referring to the erect horn-like lateral sepals.

Taxonomy: *Orthoceras* is a small genus of two or three species, perhaps better regarded as monotypic, with several forms showing minor differences. See Orchids South Australia (1990) plates 124 (same as facing page) and 125 for illustrations showing some of the variation in South Australia. The illustration opposite shows colour variation in one population while plate 125 shows a swamp form with rounded labellum apex and larger lateral lobes.

Description: The completely glabrous plants arise annually from long fleshy tubers and are recognised from their grass-like tussocks of linear basal leaves and tall brittle flower stem. Flowers retain their shape long after anthesis and plants can still be recognised the following winter from the dead remains. The fleshy flowers with long erect to spreading lateral sepals and the glossy, trilobed labellum with yellow basal crucifix marking are unlike any other Australian orchid.

Pollination: The flowers are self pollinated, and the ovary begins to swell even before the flowers open. There has been little evidence of out-crossing in South Australian plants but as flower colour varies considerably and some clones have a strong spicy perfume there must have at some time been some out-breeding.

Distribution and Habitat: The genus is widespread throughout all of eastern Australia and in New Zealand and in New Caledonia. It occurs in a variety of habitats from dry to moist, with woodland preference.

Notes: The two species *O. strictum* from Australia and *O. novae-zeelandiae* from New Zealand do not seem to be separate species as both forms with intermediates have been found in both countries. *Orthoceras* is most closely related to *Diuris*, even though the flowers are most dissimilar. It may be well worth studying the South Australian plants from different habitats to see if there are any morphological differences such as those seen in the Eastern states. A watch should also be kept for any insect pollination.

South Australia's Native Orchids

Orthoceras strictum R.Br.

Horned Orchid or Crucifix Orchid

Etymology: The name, *strictum*, very upright, refers to the narrow upright lateral sepals, common to all forms of this species, and the rigid plants.

Synonyms: *O. strictum* forma *viride* Hatch (the green flowered form), *O. novae-zeelandiae.*

Description: **Leaves** 2 to 7, in a loose tussock, linear, erect, and channelled to 30 cm long. **Flowering stem** to 50 cm, stout, brittle, green or brownish or purplish. **Flowers** 1 to 7, (rarely to 12) green to purple-black, subtended by a tall bract which exceeds the flower; dorsal sepal to 12 mm, ovate, rigid, hooding horizontally; lateral sepals to 25 mm long, filiform, tips thickened, erect and divergent; petals to 6 mm hidden within the hood; **labellum** with a yellow crucifix mark extends to 10 mm, is trilobed and curved downward; lateral lobes erect, mid-lobe with incurved margins, lamina with three low swellings. The **flowers** rarely emit a spicy odour.



KB,with short bracts

Flowering: Late Oct – Nov – Dec – early Jan.

Similar Species: *O. novae-zeelandiae* from New Zealand.

Distribution: **FR**, **EP**, **NL**, **MU**, **YP**, **SL**, **KI**, **SE**; **Qld**, **NSW**, **ACT**, **Vic**, **Tas**; **NZ**.
Widespread from central Eyre Peninsula, north into the Flinders Ranges near Wilmington, throughout the Mount Lofty Ranges, as far north east as the Tothill Ranges, Yorke Peninsula, rare on Kangaroo Island and extending throughout the South East; also in the eastern states and New Zealand.

Habitat: From coastal flats to mountain tops, peat bogs to rock outcrops in the wheat-belt, heath or forest but most common in open woodland.

Distinguishing Features: Recognised from the fleshy flowers with erect or spreading 'horns' (lateral sepals), the hooding dorsal sepal, the grass-like tussocks of linear basal leaves and tall rigid flower stem.

- ***O. novae-zeelandiae*** from New Zealand is said to have a short labellum apex and a short floral bract, but these features have also been seen in plants from Southern Australia.

Notes: Despite being so widespread it is uncommon. It is one of the last orchids to flower, extending into January when the soil is quite dry and the leaves have withered. More obvious after fire but flowers freely enough without disturbance.

Green flowered and purplish coloured forms are about equally common, while intermediate forms with green and brown flowers are rare. These intermediates indicate that some out-crossing may occur. Otherwise the species is generally self-pollinated. Some forms with rounded labellum are treated at times as separate taxa but this seems un-realistic.

It is likely that this is a relict of earlier times when the species was out-crossing.

Rarely cultivated but has done best in sphagnum moss.

Conservation Status

Status in Legislation: Not listed.
Suggested Status: Uncommon; declining throughout its range.



RL, *O. strictum*, Scott Creek CP, SL

Gallery



Spectacular *Orthoceras* art by Kath Alcock



MH, *O. Strictum,* Bangham CP, SE
*Note grass-like leaves senescing



CH, Belair NP, SL



JN, *Orthoceras* variations, SE



RL, labellum marking, SL

Plumatichilos Szlach.

Bearded Greenhoods



KB, *Plumatichilos* species, Coonalpyn, SE

South Australia's Native Orchids

Plumatichilos Szlach.

Bearded Greenhoods

Etymology: The name means plume tongued from the Latin *plumaria* feathers and *cheilos* a lip and is very appropriate as all species have a long plumed labellum exserted from the flower.

Taxonomy: For more than a hundred years *Plumatichilo*s was included in the super genus *Pterostylis* but is such a distinctive group of species that they should never be returned to that genus. For many years only one species P*terostylis barbata* (type from Western Australia) was accepted until Leo Cady named the eastern plants as *Pterostylis plumosa*. Today some twenty taxa are thought to exist, most undescribed, particularly from Western Australia. D.L.Jones advises that true *P. plumosum* does not occur in South Australia but does accept that *P. tasmanicum* occurs here, as well as a cluster of undescribed taxa yet to be understood. See *Wild Orchids of Victoria;* Jeanes and Backhouse (2005) for illustrations pg. 177 of two of these, i.e. *P.* sp. Mallee bearded greenhood and *P.* sp. Woodland Bearded Greenhood.

Description: This is a well marked genus indeed, instantly recognised from its 'pineapple leaf' rosette, single flower, elongate hood and the eccentric, linear, plumed labellum. It does not reproduce vegetatively but usually occurs in loose clusters of plants from seed recruitment.

Pollination: This is little understood but fat bodied flies have been observed in or about the flowers. I have seen no published descriptions of actual pollination events. However the plumed labellum with 'wingless female fly decoy' at its tip, fluttering in the breeze, is an obvious visual cue. Why the bristles on the labellum face out from the entrance to the hood is not obvious but the yellow colour of the bristles is known to be a generalist fly attractant.

Distribution and Habitat: There are at least a dozen species throughout southern Australia with one a visitor to New Zealand. Species occur from the coast to well inland, from swamp margins to rock outcrops, in woodland or heath, on plains or in high mountains.

Notes: The most bizarre species are in the south-west of Western Australia, while those of the eastern states are less distinctive and more recently derived. The person who first records the whole pollination event will be very lucky indeed. Most species are out-crossing but some species, like *P. tasmanicum*, are strongly self-pollinating. Some out-crossing species rarely set seed.

David Jones suggests that there are several other cryptic species of *Plumatichilos* in South Australia and I have included in the Gallery a photo of two together for comparison.

South Australia's Native Orchids

Plumatichilos tasmanicum (D.L.Jones) Szlach.

Southern bearded greenhood

Etymology: The name reflects the origin of the original or Type collection.

Synonyms: *Pterostylis tasmanica,* and previously included in *Pterostylis plumosa* and *Pterostylis barbata.*



KB, Honan NFR, SE

Description: **Leaves** 8-12, sub-erect, in a fleshy, crowded basal rosette which extends up the flower stem, lanceolate, to 25 mm long, with white veins around the base, margins crenulate. **Flower stem** to 15 cm tall, with two or three small sheathing leaves. **Flower** single, translucent green with darker veins, shortly cylindrical, with yellow labellum hairs; ovary short and soon swelling. **Galea** erect, to 25 mm long, bulbous at the base, constricted above, the apex erect and shortly pointed, or blunt, petals hidden; lateral sepals deflexed, linear, almost as long as the galea, involute, joined for less than half their length; **labellum** to 15 mm long, filiform, arched, and densely covered with yellow hairs to 10mm long, tremulous, with a dark, duck shaped terminal appendage. Flowers are self pollinated and keep a neat shape for about a week.

Flowering: Sept – Oct – Nov.

Similar species: *P. plumosum, P.* sp. Mallee Bearded Greenhood.

Distribution: **SE; Vic, Tas; NZ.**
Uncommon in South Australia where found mostly in the lower South East but perhaps in heathy places in smaller numbers elsewhere. This species is more common in Victoria and Tasmania and extends to New Zealand.

Habitat: Damp sandy depressions and open places among tea-tree and bracken around swamp margins, usually on Stringybark flats.

Distinguishing features: Differs from the similar ***P. plumosum*** in its smaller, rounder, poorly veined flowers, short swollen ovaries and shorter blunter sepals. It has a high proportion of flowering plants, especially compared with *P. plumosum* which usually has many non flowering rosettes.

Notes: Long considered distinct but not named until 1994. It occurs in scattered colonies or as single plants. The species is most easily located in the Glencoe area north of Mount Gambier.

Many species of orchid have developed self pollinated sister species, but these are uncommon in *Pterostylis,* at least in Australia. However, with *P. tasmanicum* and *P. plumosum* we see an example of this.

Conservation status:
Status in Legislation: Not listed nationally, vulnerable in South Australia.
Suggested status: 2Vci in South Australia, rare in the east.



JN, *P. tasmanicum*, Padthaway, Oct

Plumatichilos sp. Mallee Bearded Greenhood

Mallee bearded greenhood

Etymology: The name refers to the habitat of this bearded green-hood.

Synonyms: Previously referred to as *Pterostylis plumosa* Cady or *Pterostylis barbata* Lindl.

Description: **Leaves** 8-18, in a crowded, sub-erect basal rosette, looking like the top of a miniature pineapple, lanceolate, to 35 mm long, pale green with darker veins. **Flower stem** to 30 cm tall, fleshy with two or three stem leaves. **Flowers** usually single, rarely two or three, translucent, light green with darker green stripes and a yellow labellum; **galea** slender apart from the bulbous base, erect, to 40 mm high, constricted near the middle, petals fused to the hood, dorsal sepal with a short point; **labellum** to 25 mm long, filiform, with numerous long yellow bristles, tremulous, mostly exserted from the flower and tipped with a brown or greenish variously shaped knob; column wings with filiform appendages often protruding from the flower; pollinia visible through a transparent patch on the top of the galea.

Flowering: Late Aug – Sept – Oct.

Similar species: *P. tasmanicum*, *P. plumosum*.

Distribution: **FR, EP, NL, MU, YP, SL, KI, SE.**
Widespread throughout the agricultural regions of the state from the coast to mountain tops.

Habitat: This species is found in open forest, woodland, mallee broombush, heath and scrub in a variety of soils from sheet limestone, sand and clay loams, usually alkaline.

Distinguishing features: The very similar ***P. tasmanicum*** is self pollinated with shorter broader flowers on a swollen ovary. There is considerable variation in flower size, appendage shape and length of dorsal sepal points indicating that sub-specific taxa are involved but these have not been well studied.

Notes: The flowers are pollinated by short stocky flies which have wingless females. Very little is known about the pollination strategy of the complex. One would be hard put to even guess the significance of a yellow plumed labellum with its bristles pointing out of the flower.

P. sp. Mallee Bearded Greenhood is usually found as scattered individuals and small groups. It is an out-crossing species and full seed capsules are infrequent. Locally common in conservation parks of the Adelaide Hills, absent from drier parts of the wheat-belt and only in the southern Flinders Ranges as far north as Quorn.

Conservation status:
Status in Legislation: Not Listed.
Suggested status: Rare nationally.



KB, *P.* sp. Mallee Bearded Greenhood, Sherlock, MU, Sept
*Note the stripes and veins

Plumatichilos sp. Woodland Bearded Greenhood

Woodland Plumed or Bearded greenhood

Etymology: The phrase name refers to the habitat of this species.

Synonyms: Previously included in *Pterostylis plumosa* L Cady and before that *Pterostylis barbata.*

Description: This common species with large pineapple like rosettes with white based **leaves** can reach up to 30 cm tall with one or two large out-crossing green **flowers** without strong striping. Although the **galea** length varies the hood is often short compared with *P. plumosum*, the base swollen and the apex rarely elongated. The lateral sepals tend to curve out in front of the short ovary. The **labellum** has a mix of short and long yellow hairs and a dark brown terminal appendage.

Flowering: Sept – Oct.

Similar species: These include *P. plumosum* in the eastern states, *P. tasmanicum* in Tasmania, southern Victoria and the South East of South Australia.

Distribution: **FR, EP, NL, MU, YP, SL, KI, SE.**
Unclear due to confusion with other taxa but certainly in the Mount Lofty and Flinders Ranges and the South East and probably on Eyre Peninsula, Yorke Peninsula and Kangaroo Island.

Habitat: It grows in woodland, scrub and forest, usually on well drained slopes in heavier soils.



BB, Wirrabara NFR, NL, Sept

Distinguishing features: Although galea length varies the hood is often short compared with ***P. plumosum***.

Notes: Flowering peaks in September and extends into October in better watered sites.

Some would believe that all the South Australia taxa would be best treated as a single species, yet with distinct habitat requirements, degree of out-crossing and a different range of flowering times, as well as minor morphological differences, it seems logical to regard them as distinct entities.

The eastern states and Western Australia also have similar undescribed taxa.

Conservation status:
Status in Legislation: Not Listed.
Suggested status: Widespread and well conserved at present.



KB, *P.* sp. Woodland Bearded Greenhood, Alligator Gorge, FR

Gallery



BB, *P. sp.* Woodland Bearded Greenhood, Wirrabara
*Note distinctive rosettes



BB, *Plumatochilus* species, Flinders Ranges



JN, *Plumatichilos* with transparent patch, Big Heath CP, SE



Two similar species at present included under *P. plumosum*
(L) *P.* sp. Woodland Bearded Greenhood, Adelaide Hills
(R) *P.* sp. Mallee Bearded Greenhood, east of Meningie

South Australia's Native Orchids

Prasophyllum R.Br.

Leek Orchids



KB, *P. australe*, Mt Compass, Dec

South Australia's Native Orchids

Prasophyllum R.Br.

Leek Orchids

Etymology: From the Greek, *prason*, a leek, and *phyllon,* leaf, in reference to the leek-like orchid leaf.

Taxonomy: Most closely related to *Corunastylis* and *Microtis*, but easily separated by its larger flowers. Plants of *Microtis* exude sticky mucilage when broken, but *Prasophyllum* does not. *Corunastylis* had been included as part of *Prasophyllum* until the 1980s when they were split off as a separate genera, viz. *Genoplesium.* Now known as *Corunastylis,* the most obvious difference is flowering time, viz. autumn, whereas *Prasophyllum* flower in spring. Some species are difficult to identify as they exhibit a great deal of variation even in a single population.

Description: A single, hollow terete leaf arises in autumn-winter from a globular tuber enclosed in scaly sheaths. The flower spike develops in bud while enclosed in the leaf and forces its way out at the weakest point (a fistula) just before flowering. The portion of leaf above the fistula (the blade) is often withered at flowering while the part below is fleshy and stores moisture for flower development. Most species occur as scattered individuals or in loose colonies, but some species form tight clumps through vegetative tuber increase. A few species require fire to stimulate flowering but most South Australian species flower freely without fire. The genus is characterised by the numerous non-resupinate flowers in a terminal spike. The dorsal sepal is curved under the flower, the lateral sepals may be free or partially conjoined, or divergent; petals are of flimsier texture and spreading. The labellum usually has a single callus plate which may be glabrous or shortly pubescent, and often has crisped margins. Dominant flower colours are green, red-brown and white although in many species melanic or dark pigmented forms may occur or even dominate.



MH, *Ichneumon* wasp on *Prasophyllum* spike

Pollination: This is affected by nectar seeking insects, predominantly flower wasps, while species with white labella are also visited by bees. Nectar occurs on the labellum, either free, or in tissue, which it releases when punctured. Many species have fragrant flowers. Unlike the other states, South Australia has a preponderance of apomictic species, i.e. they freely set seed asexually, without transfer of pollinia.

Distribution and Habitat: *Prasophyllum* is a large genus of some 90 species, mostly in southern Australia, with a few in New Zealand. About 30 species occur in South Australia, many of them un-described, including some which may be extinct. Species occur in a wide range of habitats, from swamps to rock outcrops in the desert, from the seashore to mountain tops, from dense forest to sparse grassland and even in waterholes. Soils range from peat, through boggy clay to sand, to powdery gypsum dust.

Notes: Several species of *Prasophyllum* which occur close to our border in Western Victoria are likely to have been in South Australia before massive clearance following European settlement. These include *P. brevilabre* which occurs in Glenelg River National Park, *P. diversiflorum* from north of Portland, *P. flavum* from Glenelg River NP, *P. lindleyanum* from west of the Grampians and *P. pyriforme.* Almost certainly some of our records of *P. constrictum* from the South East are this latter species or related un-described taxa.

Following disturbance, such as fires or floods it may be interesting to explore the appearance of leek orchids, especially the *P. odoratum* complex, particularly in unusual habitats such as black clay flats or native grassland. One would suspect that there is a *P.* aff. *odoratum* for every habitat and that many are already extinct due to total destruction of those habitats since European settlement.

South Australia's Native Orchids

Prasophyllum australe R.Br.

Southern Leek Orchid or Swamp Leek Orchid

Etymology: The Latin name, *australe* means southern, and refers to the distribution of the species which was first collected in southern Tasmania.

Synonyms: None.

Description: **Leaf** to 45 cm, with distinctive red stripes at the base, apex rigidly erect, and fistula low down. **Flower spike** to 90 cm. **Flowers** numerous in a loose cylindrical spike, green, brown and white, to 10 mm across, on narrow elongated ovaries appressed to the scape; segments to 8 mm long; sepals ovate lanceolate, with brown median stripe outside; lateral sepals conjoined for at least part of their length; petals curved and spreading, brown with white edges; **labellum** sessile, to 9 mm long, white, with an erect inflated base, sharply recurved at the middle, recurved part crisped and crenulate, callus green with terminal knuckles. The flowers are delightfully fragrant.

Flowering: Nov – Dec –Jan.

Similar Species: There are none.

Distribution: **SL, KI, SE; Qld, NSW, ACT, Vic, Tas.** Restricted to high rainfall southern parts of the Mount Lofty Ranges, western Kangaroo Island and the lower South East; more common in the eastern states.

Habitat: Confined to swampy ground in peaty sand and gravel amid Myrtaceous plants and reeds, also along boggy creeks.



KB, Mt Compass, SL

Distinguishing Features: The large brown and white, fragrant flowers opening widely in a swampy habitat make this species recognisable. The vertical red stripes on the leaf base are a useful marker when not in flower.

Notes: *P. australe* is an ancient species threatened and becoming rare through the draining and the drying up of its swampy habitat for conversion to farmland.

It forms small colonies by vegetative increase and flowers more freely after fire, grazing or mowing. Good sized colonies can often be smelled before they can be seen.

It is pollinated by flower wasps but the flowers are often frequented by colourful jewel beetles and small spiders which match the colour and pattern of the flowers.

Conservation Status:

Status in Legislation: Not listed nationally, rare in South Australia
Suggested Status: 3Vci in South Australia but common in the Eastern States.



KB, *P. australe*, Mt Compass, Dec

Prasophyllum calcicola R.J.Bates

Limestone Leek Orchid or Dwarf Leek Orchid

Etymology: The name means lime dweller and refers to plants which thrive in soils rich in calcium carbonate (limestone).

Synonyms: Had been previously treated as a form of *P. macrostachyum*.

Description: A dwarfed species with **flower spike** to 10 cm high. **Leaf** red-based, filiform above the dilated fistula, to 10 cm. **Flowers** few to about twenty, to 4 mm across, green with red edges or wholly green, standing well out from the scape which is usually red, on comparatively large ovaries; sepals lanceolate, to 3 mm, the laterals connate for at least half their length; petals only 2 mm long; **labellum** green with maroon tints, or wholly green or red, recurved at right angles near the middle, smooth; callus plate triangular. The floral fragrance is very faint.



KB, *P. calcicola,* Innes NP, YP

Flowering: Late Aug – Sept – early Oct.

Similar Species: There are none.

Distribution: **EP, YP, KI; WA.**
Largely coastal from the west coast near Venus bay, on southern Yorke Peninsula and the south coast of Kangaroo Island; also in Western Australia.

Habitat: Under mallee and scrub in calcareous soils especially non-wettable sands, and in leaf litter on sheet limestone from the high tide line to about 10 km inland. Sometimes found with *P. goldsackii.*

Distinguishing Features: A dwarfed species with strongly contrasting green flowers with red outlines on red stems, easily overlooked on account of its small size.

Notes: This species has a short flowering season, usually the middle two weeks in September; the flowers appear to be apomictic.

It was found on Kangaroo Island, for the first time, in 1990. An earlier flowered, wholly green form was discovered in Warrenben Conservation Park, on Southern Yorke Peninsula. *P. calcicola* is part of a complex of several mainly Western Australian species grouped around the common *P. macrostachyum.*

Fires destroy large numbers of plants.

Conservation Status:
Status in Legislation: Not listed nationally, vulnerable in South Australia.
Suggested Status: 3Rci in South Australia, the green form is endangered nationally.



CH, *P. calcicola,* Foul Bay, YP

Prasophyllum catenemum D.L.Jones

West Coast Leek Orchid

Etymology: From the Greek, *kata* meaning down and *anemos* for wind hence windblown, this species occurs only on the wind-blown coast, from about Venus Bay westward to Fowlers Bay, hence the name West Coast leek orchid.

Synonyms: *P. patens, P. odoratum*, *P.* Coast sandhills and *P.* sp. West coast.

Description: Often stocky, colony forming species with a **flower spike** to 35 cm; **leaf** red-purple based. **Flowers** 10-25, dense, greenish brown and white, often with pink striations, moderately large; lateral sepals not widely divergent, sometimes partly joined; dorsal sepal cupped or deflexed; petals obliquely spreading, with pink or green central stripe; **labellum** pale yellow-green to off white, recurved near the middle with crisped margins in the upper half; callus plate green and yellowish, conspicuous in the upper half of the lamina. The flowers have a lemon perfume.

Flowering: Late Aug – mid Sept.

Similar Species: *P.* sp. Coast sandhills.

Distribution: **EP.**
From the west coast of, and only on, Eyre Peninsula.

Habitat: A species of dry sandy coastal sedge-lands dominated by *Lepidosperma* and *Gahnia*.



RB, Ceduna, EP

Distinguishing Features: The western distribution, often stocky plant, early flowering, large callus plate, striated petals and lateral sepals not much divergent or even joined, all help to set the species apart.

- ***P.* sp. Coast sandhills**, flowers up to two weeks later, has a much larger white labellum, widely divergent lateral sepals, smaller callus plate and is a clumping species from higher rainfall coastlines.

Notes: A member of the *P. odoratum* complex, the species was first recognised as distinct in 1988 and was seen again on NOSSA's 2001 excursion to Eyre Peninsula. This species seems out of place in the low, dry, sedge-land of the West Coast.

There are many members of the *P. odoratum* complex in South Australia, but *P. catenemum* is only likely to be confused with another coastal species *P.* sp. Coast sandhills.

Conservation Status:

Status in Legislation: Not listed nationally, but as *Prasophyllum* sp. West Coast (R.Tate AD96945167) R.J.Bates, endangered in South Australia.

Suggested Status: 3Rci, nationally rare.



TB, *P. catenemum*, West Coast, EP

Prasophyllum collinum D.L.Jones

Eyre Leek Orchid

Etymology: From the Latin, *collinus*, from the hills, near Mount Olinthus.

Synonyms: Previously included under *P. odoratum* or *P.* sp. Wanilla.

Description: A slender leek orchid with a **flower spike** up to 50 cm tall; **leaf** red based. **Flowers** variously coloured greenish brown with white, in a sparse spike of up to 30 flowers; sepals mostly dark coloured, lateral sepals free, divergent; dorsal sepal forward or deflexed; petals range from deep purple to pale pink, obliquely forward; **labellum** rigidly erect in the upper half, apex not recurved, with incurved, frilly margins, narrow and acute, striking various poses, sometimes deep pink but more frequently pale pink or white; callus plate yellowish green. The flowers have a strong lilac fragrance.

Flowering: Sep – mid Oct.

Similar Species: *P. odoratum* complex.

Distribution: **EP**.
Once abundant on Eyre Peninsula, in woodland and grassy open shrublands, but most of this habitat has been cleared.

Habitat: Soils range from sandy loam to heavier soils, never in poor country and not extending to the northern wheatbelt where it is replaced with *P. odoratum* or to the coastal fringe where it is replaced by *P.* sp. Coast sandhills and *P. catenemum*.

Distinguishing Features: Look for the frilly erect labellum with long channelled callus and the narrow petals, because the colour is so variable it cannot be used as a guide.

Notes: A member of the *P. odoratum* complex, this is a mid-season species not requiring bush fires for blooming. There are at least a dozen leek orchids in the *P. odoratum* complex in South Australia, most of them undescribed.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3R, nationally rare.



RB, *P. collinum*, Wanilla, EP

Prasophyllum constrictum R.S.Rogers

Mallee Leek Orchid

Etymology: The epithet, *constrictum,* refers to the constricted labellum lamina, but this is by no means a constant feature.

Synonyms: *P. gracile* R.S. Rogers and previously referred to, incorrectly, as *P. fuscum R.Br.*

Description: **Leaf** red based, fistula about three quarters from base, apex long and lax. **Flower spike** slender to robust, to 30 cm tall. **Flowers** numerous, in tints of green and purple-brown, to 8 mm across; sepals lanceolate to 8 mm long, lateral sepals variously divergent or conjoined, tips recurved and bidentate; petals similar; **labellum** shortly clawed, oblong-cuneate to lanceolate, smooth, recurved in the distal one third; callus plate triangular to elongate, shiny, viscid, broadest at the base; ovaries obovoid and standing out from the scape. Flowers perfumed, in some forms distinctly honey-like, while others are sweetly floral.

Flowering: Sept – Oct.

Similar Species: *P. occidentale, P. validum*.

Distribution: **YPx**, **MU, SE**.
Restricted to the Murraylands, upper South East and once on the Yorke Peninsula.

Habitat: Fertile red soils of the wheat-belt, particularly over limestone, in grassy native pine forest clearings, but this habitat today has been cleared for farming.

Distinguishing Features: The green and purple-brown flowers with narrow segments and entire margined labellum on relatively robust plants set this species apart.

- The similar ***P. occidentale***, which occurs throughout the wheat-belt and near pastoral zone, is a more delicate plant with crenulate labellum and broad based callus plate.
- The much larger, late flowered ***P. validum*** is wholly yellow-green and restricted to the Flinders Ranges.

Notes: It would perhaps be best to apply the name *P. constrictum* only to wheat-belt plants, while mountain plants, grassland and swamp plants probably represent un-described taxa.

Conservation Status:
Status in Legislation: Not listed nationally, rare in South Australia.
Suggested Status: 2E, critically endangered nationally due to loss of habitat and a drying climate.



RB, *P. constrictum*, Tintinara, MU

South Australia's Native Orchids

Prasophyllum elatum R.Br.

Tall Leek Orchid

Etymology: The name, *elatum,* Latin, tall, refers to the height of the plant.

Synonyms: There are none.



RB, Mt Lofty, SL

Description: Plant robust, often very tall, with a **flower spike** to 1.5 metres. **Leaf** greenish or purple-brown, fleshy, the part above the fistula short and rigid. **Flowers** 10 to 60, to 15 mm across, in a moderately dense, often very long spike, sessile; ranging from pale green through to brown and almost black, the labellum white or pink with coloured veins and a green callus; ovary long and narrow, appressed to the scape. Sepals ovate-lanceolate to 12 mm long; dorsal sepal dished under the flower, lateral sepals usually united; petals smaller and spreading in front of the flower. **Labellum** to 10 mm, ovate, erect, apex obtuse, margins prominently crisped, callus plate broad and much raised at the edges. Flowers not or only lightly perfumed.

Most variation is in plant colour. In South Australia both the green and melanic plants are equally common, with intermediate tones less frequent. There is some variation in the labellum callus which may be short or long, pointed or obtuse.

Flowering: Late Aug – Sep – Oct – Nov.

Similar Species: None.

Distribution: **FR, EP, NL, MU, YP, SL, KI, SE; WA, Qld, NSW, Vic, Tas.**
Very widespread and locally common from central Eyre Peninsula, across the wheat-belt, to the central Flinders as far north as Wilpena, into the Murray Mallee, common in the Mount Lofty Ranges and Kangaroo Island and throughout the South East; also in Western Australia and the eastern states.

Habitat: *P. elatum* occurs from the high tide mark to the tops of mountains, in forest, woodland, heath, mallee-broombush, scrubs, Spinifex (*Triodia*) grassland and rocky outcrops. Soils range from limestone to acid sands, from peaty sand around swamp margins, to skeletal clays on dry ridges in the Flinders Ranges.

Distinguishing Features: A tall, distinctive species recognised by the dense flower spike with large flowers with obviously raised callus plate on a frilly labellum, colours varying markedly.

Notes: This is perhaps the best known of the South Australian leek orchids and is commonly seen after fire near Adelaide. Displays are spectacular after fire or ploughing. In fact, except on limestone, it rarely flowers without fire. Many years ago farmers planting wheat on newly rolled and burnt scrubs had even noted *P. elatum* flower spikes sticking up above the crop.

P. elatum is very much an out-crossing species. Pollinating wasps are frequently observed working the spikes and collecting large bundles of pollinia on their heads.

Leaves on non flowering plants are typically greenish, small and spindly but after fire the same plants are many times larger and often much darker. This dark colour makes the plants look like dead sticks and probably gives them some protective camouflage as kangaroos do eat the plants.

Some forms from coastal limestone closely approach the Western Australian *P. giganteum.*

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Common and well conserved.



MH, *P. elatum* flowering after hot fire, SL

Prasophyllum fecundum R.J.Bates

Fertile Leek Orchid

Etymology: The epithet *fecundum,* Latin for fruitful, refers to the ovaries, which swell rapidly and are soon larger than the flower.

Synonyms: None.

Description: Plant small and slender, to 25 cm tall. **Leaf** blue-green with a red base, apex long and lax. **Flower spike** slender, to 20 cm tall. **Flowers** few, in a loose spike, on turgid ovaries standing out from the scape, green and red-brown, to 8 mm across; dorsal sepal lanceolate, to 6 mm, more or less horizontal with a recurved tip; lateral sepals narrower, free in mature flowers and divergent; petals shorter, linear and blunt, incurved not widely spreading; **labellum** sessile, ovate, recurved at right angles, about 5 mm long, purple, margins crisped, callus shiny, pubescent around the margins. Flowers are apomictic and strongly scented.



CH, Foul Bay, YP

Flowering: Mid Sept – mid Oct.

Similar Species: *P. fitzgeraldii* Rogers & Maiden, *P.* sp. Bright Shiny Maroon.

Distribution: **EP, YP, SL.**
Endemic to South Australia where it is scattered across southern Eyre Peninsula, the leg of Yorke Peninsula and in the Barossa Valley.

Habitat: In mallee heathland and *Callitris*/Pink gum (*Eucalyptus fasciculosa*) woodland or on rock outcrops, in the wheat-belt, in sandy or loamy soils. Often grows with the related *P. fitzgeraldii* but flowers earlier.

Distinguishing Features: This species is most distinctive, with its few, tiny, somewhat globular flowers.

Notes: First described in the 1980s, this species is part of the apomictic *P. fitzgeraldii* complex, but unlike many of the forms of that species, it is a very fixed taxon and where it is sympatric with other members, it flowers earlier.

Although the flowering period covers about four weeks, individual flowers are short lived with the blooming for one plant completed in a few days.

P. fecundum is most common on Eyre Peninsula and was probably common on the Adelaide Plains before settlement, but near Adelaide is now restricted to the Lyndoch area. Like all members of its complex, it does not require fire to stimulate flowering.

Conservation Status:
Status in Legislation: Not listed nationally, rare in South Australia.
Suggested Status: 3Rc, nationally rare.



RB, *P. fecundum*, early Sept

Prasophyllum fitzgeraldii R.S.Rogers & Maiden

Fitzgerald's Leek Orchid

Etymology: Named in honour of R.D. Fitzgerald, an Australian botanical artist, of Irish birth.

Synonyms: None.

Description: Plant slender to 40 cm. **Leaf** red based, apex long and lax. **Flower spike** to 30 cm. **Flowers** usually numerous in a sparse to moderately dense spike, variable from form to form; on turgid ovaries standing out from the scape; purple green and red-brown, about 10 mm across; dorsal sepal, ovate lanceolate, shiny, to 8 mm long, lateral sepals free when mature, lanceolate, divergent; petals linear-oblong spreading; **labellum** sessile, ovate, 5-6 mm long, usually purple, recurved almost at right angles near the middle, with crisped and crenulate margins; callus usually prune coloured, triangular, slightly raised and velvety pubescent. Flowers often strongly perfumed.



JN, Onkaparinga NP, SL

Flowering: Oct – Nov.

Similar Species: *P. pallidum*, *P. pruinosum.*

Distribution: **FR**, **EP**, **NL**, **YP**, **MU**, **SL**, **SE**.
Rare on southern Eyre Peninsula, but more widespread in the Mount Lofty and southern Flinders Ranges and extending through the upper South East.

Habitat: In woodland, mallee heath and open forest in better soils especially gravelly and sandy loams or on limestone and also about rock outcrops in the wheat-belt.

Distinguishing Features: The strongly perfumed flowers with pinkish labellum and velvety pubescent callus aid in identifying the species.

- ***P. pallidum*** has a similar morphology, but the whole plant including flowers is greenish, the lateral sepals not divergent, labellum more triangular.
- ***P. pruinosum*** has a taller, elongated labellum.

Notes: The species is apomictic, but it is also visited by wasps.

It has become rare in recent years, due to loss of habitat, grazing, and competition with weeds.

There are numerous undescribed species, the most notable of which are few flowered wholly purple forms from mallee scrubs of the upper South East and plants which are greenish with few brown or pinkish tints and some without perfume from the Flinders Ranges. Several are treated separately in this text (see *P.* sp Alligator Gorge, *P.* sp. Bright Shiny Maroon, *P.* sp. Gum Lagoon).

Several from Tasmania have been named as separate species leaving true *P. fitzgeraldii* as a purely South Australian endemic.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3Rc, nationally rare.



BO, a pale mallee *P. fitzgeraldii*, EP, Oct

Prasophyllum sp. Bright Shiny Maroon (R. Bates 3404)

Shiny Leek Orchid

Etymology: The phrase name refers to the flowers that are shiny maroon and green.

Synonyms: Previously included in *P. fitzgeraldii*.

Description: Very slender **flower spike** to 25 cm; **leaf** to 30 cm, narrow and lax at apex, base purple. **Flowers** 5-25 in a loose and slender spike, maroon and green, about 6 mm across, all segments narrow, the sepals maroon or green and maroon, petals incurved; **labellum** green or purple, the callus mostly shiny but with pubescent edges. The fragrance is very sweet.

Flowering: Sept – early Oct.

Similar Species: *P. fitzgeraldii*

Distribution: **SE**; **Vic**.
From near Coomandook in the South East to Western Victoria.

Habitat: Occurs mostly in fertile red soils over limestone, in mallee and *Callitris* woodland.

Distinguishing Features: The slender spikes of narrow, maroon flowers are an obvious feature. Some populations have the whole flower maroon, but most are a shiny maroon and green.

- ***P. fitzgeraldii*** has more dense flower spikes, the flowers being more pink and green and not so slender.



CH, Mount Boothby CP, SE

Notes: A member of the *P. fitzgeraldii* complex, this species is apomictic and out-crossing. The species blooms mostly after fires when the very large size of some populations becomes obvious. However, fire is not always a requirement for flowering.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Unclear due to lack of flowering most years, but probably nationally endangered due to habitat destruction.



BB, *P.* sp Bright Shiny Maroon, Sept

Prasophyllum sp. Alligator Gorge

Soft Velvet Leek Orchid

Etymology: The phrase name refers to the area where the species is most common.

Synonyms: Previously treated as a form of the widespread *P. fitzgeraldii*.

Description: A pale species with **flower spike** to 25 cm. **Leaf** slender, mostly green, to 25 cm tall. **Flowers** 5-20, mid-sized to 7 mm across, in a narrow, dull spike, mostly yellow-green and pale or lilac-brown; all segments narrow, sepals and petals green, largely free; **labellum** triangular, recurved at right angles, green; callus plate shortly-triangular, dished, not much raised, pale or lilac-brown, velvety but often with a shining smooth centre. A very fragrant species.

Flowering: Late Sept – Oct.

Similar Species: *P. fitzgeraldii*.

Distribution: **FR**, **NL**.
The species is restricted to the Flinders Ranges from Telowie Gorge to Mount Brown, especially in richer soils on ridges; endemic to South Australia.

Habitat: Prefers grassy open woodland of blue-gum (*Eucalyptus leucoxylon*), and yacca (*Xanthorrhoea quadrangulata*), sometimes in mallee-broombush country.

Distinguishing Features: The slender, pale pink flowers, and northern distribution, set this species apart.

- ***P. fitzgeraldii*** is a predominantly purple flowered plant with the whole callus velvety.

Notes: A member of the *P. fitzgeraldii* complex, flowers are short lived, apomictic, blooming mostly after bushfires.

Not well known or collected due to not being free flowering, except after fires. Suspected of being a new species as early as the 1970s. See also P. sp. Gum Lagoon and P. sp. Bright Shiny Maroon.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3 Rc.



RB, *P.* sp. Alligator Gorge, Mt Remarkable NP, FR

Prasophyllum sp. Gum Lagoon (P.J.Lang 1633)

Subtle Leek Orchid

Etymology: The phrase name refers to a location where it is found, Gum Lagoon Conservation Park and the common name refers to the flowers being pale, not deep purple.

Synonyms: *P.* sp. aff. *fitzgeraldii* 3 in Wild Orchids of Victoria 2006, previously included in *P. fitzgeraldii.*

Description: A slender species with a **flower spike** to 50 cm; **leaf** taller than the flower spike. **Flowers** in a dense spike, mid-sized, pale greenish, 15-30; sepals green, lateral sepals widely divergent; petals divergent and forward with a purplish mid stripe; **labellum** pale greenish, cream edged, margins crenulate; callus usually tan or purple-brown, velvety pubescent. Very strongly and sweetly perfumed, apomictic.

Flowering: Sept – Oct – early Nov.

Similar Species: *P. fitzgeraldii*, *P. pallidum*.

Distribution: **YP**, **MU**, **SL**, **SE**; **Vic**.
Widespread, but now rare from Yorke Peninsula, extinct on the Adelaide Plains, the eastern foothills of the Southern Mount Lofty Ranges; also in the South East, from Lucindale northward; also found in Victoria's southwest.

Habitat: In Gum and Stringybark woodland as well as mallee-broombush.



KB, Mt Boothby, SL

Distinguishing Features: Recognised by the uniform appearance of the dense flower spike with its green flowers with the contrasting purple-brown and pale labellum.

- The deep maroon-purple flowers of ***P. fitzgeraldii*** are similar in shape but of a different texture and colour.
- ***P.* sp. Alligator Gorge** from the Flinders Ranges is very similar but differs in having narrow segments and a pink labellum callus.
- ***P. pallidum*** is wholly verdant green and cream and has narrower segments than *P.* sp. Gum Lagoon.

Notes: A member of the *P. fitzgeraldii* complex, there may be as many as a dozen different forms. They have in the past been considered micro-species, but that concept has changed as the full distribution shows that each remains constant even when growing with other members of the complex.

This species flowers better without fires. Wild Orchids of Victoria 2006 refers to this species as *P.* sp. aff. *fitzgeraldii* 3 (p. 249).

Conservation Status:

Status in Legislation: Not Listed.
Suggested Status: 3Vci, nationally threatened by habitat loss.



BB, *P.* sp. Gum Lagoon, Sept

Prasophyllum sp. Jip Jip

Outcrop Leek Orchid

Etymology: The phrase name indicates the location of the best known population.

Synonyms: Previously included under *P. fitzgeraldii* or *P. occultans.*

Description: Wholly green, few-flowered plants to 25 cm tall; **leaf** slender, elongate with lax apex. **Flowers** greenish and white, with short thick broadly spreading segments; **labellum** reflexed at right angles, pale green with crinkled shortly crenulate margins; callus plate fleshy green with minimal pubescence on the edges; ovary short, almost globular. The flowers are strongly and sweetly fragrant.

Flowering: Late Sept – Oct.

Similar Species: P. sp. Gum Lagoon, *P. occultans.*

Distribution: **SE**.
Only known from a few granite outcrops near Mount Boothby and Jip Jip Conservation Parks.

Habitat: Occurs in shallow soils near the granite aprons, often under sheoaks (*Allocasuarina* sp.) and mixed with other *Prasophyllum* species.

Distinguishing Features: Can be recognised by the wholly green flowers, with their broad segments.

- ***P.* sp. Gum Lagoon** also has greenish flowers, with broad segments, but that species has some purple-brown tinges and a pubescent labellum callus.
- ***P. occultans*** also has a mostly bare labellum callus, but that species has slender segments.

Notes: A member of the *P. fitzgeraldii* complex.

More collections of this species are required before it can be described as new.

See also D. Rouse 2005.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3 Ec.



RB, *P.* sp. Jip Jip from Jip Jip CP, SE

Prasophyllum sp. Pink lip (M. Houston 63)

Pink-lip Leek Orchid

Etymology: The common name is from Wild Orchids of Victoria 2006 p. 248 and refers to the pale pink labellum.

Synonyms: *P.* sp. aff. *fitzgeraldii* 1 as 'Pink-lip Leek orchid' in Wild Orchids of Victoria 2006. Also referred to in the past as *P*. sp. Bagdad.

Description: Slender apomictic species with **flower spike** to 30 cm tall; **leaf** to 25 cm. **Flowers** few to many in a loose spike, erect, to 5 mm across, not widely expanding and short lived, green and pink with a pink labellum; segments narrow, lateral sepals somewhat curved forward, petals forward pointing with some pink tints; **labellum** only slightly bent at midpoint, pale pink with a rose pink callus. Flowers strongly sweet scented.

Flowering: Late Sept – early Oct.

Similar Species: Any coloured member of the *P. fitzgeraldii* complex, particularly *P. fitzgeraldii* and *P.* sp. Alligator Gorge.

Distribution: **SE**; **Vic**.
Known only from the South East of South Australia from near Kingston, eastwards to adjacent parts of western Victoria, viz. to near the Grampians.

Habitat: Mostly in woodland and heath, particularly with manna gums (*Eucalyptus viminalis*) and yaccas (*Xanthorrhoea* sp.), often near swampy depressions, and in South Australia associated with sand on limestone.



CH, Desert Camp CR, SE

Distinguishing Features: The forward curved lateral sepals and the pink labellum only slightly bent giving plants an appearance of not being fully open set this species apart.

Notes: A member of the *P. fitzgeraldii* complex.

Recognised in Victoria since the 1990s but it was first photographed in South Australia, about 2003.

At the Bagdad site the species occurs with *P.* sp. Gum Lagoon and large numbers of *P. odoratum*. The Bagdad area was once the fringe of a very orchid diverse area but most species seem to have disappeared, without ever being collected, as the district was cleared and/or planted to pines.

For images see Wild Orchids of Victoria, 2006.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Probably nationally endangered.



BB, *P.* sp. Pink lip, Desert Camp CR, Sept

Prasophyllum frenchii F.Muell.

Maroon Leek Orchid

Etymology: Ferdinand Mueller (1889) named this species, in honour of G. French, who collected the type specimen near French's Forest, Victoria.

Synonyms: *Prasophyllum hartii* R.S. Rogers.

Description: Slender to robust plant, 20-40 cm tall. **Leaf** red based, apex long and lax. **Flowers** numerous in a loose to quite dense spike, red-brown, yellow and green, to 9 mm across, on short sessile ovaries, appressed to the scape; sepals lanceolate to 8 mm, dorsal sepal broader than the free divergent lateral sepals; petals rather blunt and parallel to incurved; **labellum** to 6 mm long, broad-ovate, base pouched, recurved at right angles past the middle, margins undulate, callus short and horseshoe shaped, warty, fleshy, variable. Flowers are fragrant.



KB, Piccaninnie Ponds CP, SE

Flowering: Late Oct – Nov – Dec.

Similar Species: *P. murfetii* D.L.Jones, *P. litorale* R.Bates.

Distribution: **SE**; **Vic**.
Restricted to the lower South East, only, but also in Victoria.

Habitat: Swampy heath and tussock grassland on limestone, close to the sea, or in river red gum (*Eucalyptus camaldulensis*) flats and swamp margins; inland in heavier soils.

Distinguishing Features: Plants found in swampy/near swampy habitats with flowers that are thick textured, with relatively short segments and a plain labellum with horseshoe-shaped callus plate are features to look for in this species.

Notes: Note that true *P. frenchii* may be restricted to east of Melbourne.

Strongly out-crossing, fragrant and a magnet for wasps on warm days. Flowers are often seen being attended by a variety of beetles, wasps, bees as well as flower spiders which feed on these insects. The flowers occur freely without fire.

Almost extinct in South Australia now. It may have occurred as far north as Beachport and near Naracoorte, but its swampy habitat has been largely drained and converted to pasture.

Plants at Piccaninnie Ponds Conservation Park are being overgrown with dense shrubs which is limiting the open heathy habitat.

Plants from swamps on the Fleurieu Peninsula, south of Adelaide, which were previously included in *P. frenchii*, have recently (2006) been described as *P. murfetii.* There may have been other similar species in swampy areas, from the Mid North and South East regions, but these are now extinct and known only by few scrappy specimens.

Conservation Status:
Status in Legislation: Nationally endangered, endangered in South Australia.
Suggested Status: 3Eci, nationally threatened.



KB, *P. frenchii*, Piccaninnie Ponds CP, Nov

Prasophyllum goldsackii J.Z.Weber & R.J.Bates

Goldsack's Leek Orchid

Etymology: Named in honour of Harold Goldsack, South Australian orchidologist, collector of the type specimen.

Synonyms: *Prasophyllum pudicum* Goldsack ms.

Description: Plant slender, to 30 cm tall. **Leaf** blue-green often with a purple or red base, apex long and lax. **Flowers** few, to many, in a loose very narrow spike, not or hardly opening, dark brown and shiny outside, greenish inside, sessile on turgid ovaries inclined out from the scape; sepals parchment like, dorsal sepal ovate, twisted, very short, to 4 mm; lateral sepals longer, narrower, largely conjoined, with a hooked, decurved apex; petals much reduced, oblong; **labellum** hidden within the flower or visible through a gap, triangular, to 5 mm long, green with pale prune coloured velvety edges; callus plate green or brown, extending to two ridges near the apex. Flowers hardly perfumed.

Flowering: Late Sept – Oct.

Similar Species: *P.* sp. Enigma.

Distribution: **EP**, **YP**.
A South Australian endemic, mostly coastal, rare on southern Eyre Peninsula, but slightly more common on Yorke Peninsula.

Habitat: Largely on limestone, in shallow soil pockets, but also in calcareous sands. Found in mallee and scrub, often with other apomictic leek orchids.



KB, Warrenben CP, YP
Note leaf senesced,

Distinguishing Features: This bizarre species is remarkably constant and easily recognised from its closed, very dark, leathery flowers.

Notes: The species is cleistogamous and apomictic.

A sister species which has partly closed flowers is *P.* sp. Enigma, *w*hich is something of a link between *P. goldsackii* and the widely expanding *P. fitzgeraldii*, from which they both seem to have derived. *P. goldsackii* is nevertheless a constant, pure breeding species. Most of its habitat has now been cleared. Fortunately it is present in some large conservation parks.

Conservation Status:

Status in Legislation: Nationally endangered, endangered in South Australia.
Suggested Status: 3Rc, nationally rare.



CH, *P. goldsackii,* Minlaton, YP

Prasophyllum sp. Enigma (R. Bates 2350)

Contorted Leek Orchid

Etymology: The phrase name is suggested by the freaky, contorted, enigmatic flowers.

Synonyms: Previously included in *P. goldsackii*.



KB, Hardy's Scrub, SL

Description: Slender apomictic species with a slim **flower spike** of 5-20 small green-brown and purple flowers which open incompletely. **Flowers** are always untidy, the dorsal sepal buckled, the lateral sepals glued together and twisted, the petals irregular; **labellum** purplish, with only a few cilia; callus plate slightly raised. These kinds of features are not unusual in apomictic species, where the actual flower shape is not important to pollination success.

Flowering: Sept – early Oct.

Similar Species: *P. goldsackii* Weber & Bates.

Distribution: **EP, YP, SL**.
Across southern Eyre Peninsula, Yorke Peninsula and near Clarendon, in the Adelaide Hills. Endemic to South Australia.

Habitat: On limestone, sands and loams in scrubs, mallee heath and woodland, usually with other leek orchids.

Distinguishing Features: *P.* sp. Enigma has untidy purple and green, partly opening flowers.

- ***P. goldsackii*** has the flowers almost black and closed

Notes: A member of the *P. fitzgeraldii* complex, it was previously treated as a form of that species, but it is too constant over a wide geographical range to be considered a mere apomictic micro-species.

Like the earlier named *P. goldsackii,* it is clearly derived from *P. fitzgeraldii.* At least six *P. fitzgeraldii* derivatives have been described as separate species in the last few years and this is one of the most unique and bizarre of them.

Conservation Status:

Status in Legislation: Not listed nationally, endangered in South Australia.
Suggested Status: 3Rci, nationally vulnerable.



JN, *P.* sp. Enigma, Onkaparinga NP, SL, Oct

Prasophyllum laxum R.J.Bates

Koppio Leek Orchid

Etymology: From the Latin, for limp. Both the leaf and the flower spike are rather flaccid.

Synonyms: *P.* sp. Koppio, *P.* aff. *lindleyanum*.

Description: A very slender plant with **flower spike** to 30 cm tall. **Leaf** also to 30 cm, with green or red base, with a filiform apex which is somewhat flaccid. **Flowers** 5-20 in a lax spike, which is rather floppy, the flowers to 7 mm across, rather pale green and pink-brown, all segments slender; lateral sepals green, partly conjoined, sub-erect to 6 mm long; petals linear with a brown stripe; **labellum** with an 'S' bend, green and pink-brown, slender to 7 mm long; callus plate indistinct, dull, pinkish vaguely velvety. The flowers are very fragrant and sweet**.**

Flowering: Late Sept – mid Oct.

Similar Species: *P. lindleyanum.* Probably more closely related to members of the *P. fitzgeraldii* complex, particularly *P.* sp. Alligator Gorge.

Distribution: **EP**.
The species is endemic to Eyre Peninsula where it is restricted to the higher hills around Koppio. It is confined to an area of less than 100 square kilometres.

Habitat: It occurs in fertile soils, on sandstone outcrops, under drooping sheoak (*Allocasuarina verticillata*), usually mixed with other *Prasophyllum* species.

Distinguishing Features: Probably best recognised by the green and pink-brown labellum with the distinctive 'S' bend.

- Vaguely reminiscent of ***P. lindleyanum***, an attractive Eastern States species, with greener flowers and more marked sigmoid bend of the labellum.

Notes: The species is apomictic and flowers without fire.

A single poor collection at the Adelaide Herbarium, made some fifty years ago, by M. Clarke, was the only indication that the species existed until R. Bates and Sarah Way, researching the critically endangered Eyre Peninsula subspecies Yellow Tailed Black Cockatoo's nesting habitat, found a large population on private property, in 2004. This location was burnt out by a devastating bush fire a few months later, but the species is expected to recover. The name *P. laxum* was published in September 2008.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 2E, nationally endangered.



KB, *P. laxum*, Southern Eyre Peninsula

Prasophyllum litorale R.J.Bates

Vivid Leek Orchid

Etymology: The Latin epithet, *litorale*, meaning 'of the sea shore', refers to the coastal habitat.

Synonyms: *P. frenchii* or *P. hartii.*

Description: Plant robust, with a **flower spike** to 30 cm tall. **Leaf** to 40 cm, red based, apex usually senescent at flowering. **Flowers** numerous in a crowded colourful spike, to 10 cm across, flowers of varying hues, from greenish to purple and pink, ovoid, sessile ovaries; dorsal sepal to 8 mm, dished, horizontal; lateral sepals ovate-lanceolate, erect, parallel and free; petals to 7 mm oblong to spathulate, thin textured and crenulate; **labellum** white to pink, to 6 mm, ovate on a short claw, recurved at right angles near the centre, base pouched, margins crisped and crenulate; callus green, broad, rugulose, channelled, glistening with nectar, most raised at the labellum bend. The flowers are sweetly fragrant.



MH, Vic, Nov

Flowering: Dec – Jan.

Similar Species: *P. frenchii, P. murfetii.*

Distribution: **SE**; **Vic**.
Known in South Australia only from near Piccaninnie Ponds Conservation Park, but extending from there along the coast in Victoria, to near Portland.

Habitat: Coastal headlands and dunes in bare patches amid low heath, often with clay substrates damp from seepage, usually less than 100 metres from the shore.

Distinguishing Features: Recognised by the crenulate labellum and petals, and the suffused colouring of the crowded flowers.

- The somewhat similar ***P. frenchii*** has smaller flowers with a less crenulate labellum.
- ***P. murfetii*** is somewhat intermediate between the two, but has a different geographical range.

Notes: Previous to being named in 1990 it had been included in *P. frenchii.*

It is strongly out-crossing and mostly pollinated by flower wasps.

With its more exposed habitat, one would expect an earlier flowering period. The species must always have been rare, as its limited habitat in Victoria has not been modified much. We cannot be sure how far it extended into South Australia as its habitat here was modified much earlier. Probably extinct in South Australia now and if it was to occur anywhere it would be in Canunda Conservation Park.

Conservation Status:
Status in Legislation: Not listed nationally, endangered in South Australia.
Suggested Status: Possibly extinct in South Australia and nationally endangered.



RB, *P. litorale*, Portland, Vic

Prasophyllum murfetii D.L.Jones

Denzel's Leek Orchid

Etymology: The name honours Denzel Murfet, South Australian field botanist, who collected the types, with Rosemary Taplin.

Synonyms: *P. hartii, P. frenchii* .

Description: A robust plant to 80 cm tall; **leaf** red based. **Flowers** numerous, in a narrow inflorescence, red or pink, yellow and green; dorsal sepal broad, cupped below the column; lateral sepals short, broad and free, brown outside; petals parallel, often pink or with pink tints; **labellum** recurved at right angles, pink or white; callus plate yellow, verrucose as in *P. frenchii*. The flowers are sweetly fragrant.



HL, Stipiturus CP, SL

Flowering: Nov – Dec – Jan.

Similar Species: *P. frenchii, P. litorale.*

Distribution: **SL**.
P. murfetii is a local endemic to Fleurieu Peninsula.

Habitat: Found in a variety of swampy habitats.

Distinguishing Features: Robust plants from swampy habitats with colourful flowers with crisped labellum lamina and prominent, tapered, yellowish callus plate.

- ***P. frenchii*** has smaller simpler flowers, having a shorter labellum with less crenulate margins and is restricted to the lower South East.

Notes: Only recently (2006) described, it was previously included under its sister species, *P. frenchii*, as there are more similarities than differences between the two.

The species is different in each of its few highly threatened populations. A dull green form found in peat bogs and may prove to be a separate species. A colourful form from Tooperang is now extinct and was possibly a separate undescribed taxon.

Nationally endangered due to draining, drying and clearing of its swampy habitat.

Conservation Status:
Status in Legislation: Nationally critically endangered, endangered in South Australia.
Suggested Status: Nationally endangered.



RAL, *P. murfetii*, Stipiturus CP, SL
*Note the size of the flowers

Prasophyllum occidentale R.S.Rogers

Plains Leek Orchid

Etymology: The Latin name, *occidentale*, western, refers to the first collection of the species, which was made on the West Coast.

Synonyms: *P. gracile* Rogers,
P. fuscum var. *occidentale* Weber & Bates.

Description: Plant slender with **flower spike** 10 -30 cm tall. **Leaf** red based, apex slender and lax. **Flowers** numerous, in a loose spike, very variable, pale yellow-green or with purplish tints; sub-sessile, on small ovaries; dorsal sepal to 7 mm long, ovate-lanceolate, decurved; laterals sepals often conjoined; petals oblong, spreading forward; **labellum** to 8 mm, recurved near the middle, with a triangular, pale green or pink lamina with crisped crenulate margins; callus with a broad base before the bend, thereafter narrower more raised and glistening. The flowers are sweetly fragrant.

Flowering: Late Aug – Sep – Oct.

Similar Species: *P. validum* R.S.Rogers, *P. constrictum* R.S.Rogers.

Distribution: **FR**, **EP**, **NL**, **MU**, **YP**, **SL**, **KI$_x$**, **SE**. Widespread through the wheat-belt and extending into the adjacent pastoral districts, from the West coast to the northern Flinders, to the upper South East. Once collected on Kangaroo Island but extinct there now.



BB, Foul Bay, YP

Habitat: Grassland and grassy woodland in better soils, from the seashore to sub-alpine grassland, often well inland.

Distinguishing Features: An early flowering species with slender appearance and relatively narrow segments.

- ***P. constrictum*** is a larger species flowering somewhat later.
- ***P. validum*** is a wholly green and yellowish flowered species, flowering later.

Notes: Before settlement it must have been one of the most abundant orchids in the State, but most of its habitat is now cultivated or overgrazed. Nevertheless it has been found re-colonising abandoned farmland.

The species is strongly out-crossing and frequently seen with wasps and flies feeding on the nectar. Consequently flowers soon close and spikes have a ragged appearance from all the action. It flowers freely without fire.

The sand heath form from southern Yorke Peninsula, and the high grassland form, may be separate subspecies.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Widespread and secure.



JN, *P. occidentale*, Melrose, Sept

Prasophyllum occultans R.J.Bates

Cryptic Leek Orchid

Etymology: The Latin name *occultans*, hidden, refers to the dull coloured flowers and hidden pubescence on the lip.

Synonyms: None.

Description: Plants dull green, slender,with a **flower spike** to 30 cm tall. **Leaf** wholly green or with a red base, apex lax. **Flowers** few to 15 in a loose spike, greenish, about 6 mm across, sessile on swollen ovaries standing out from the scape; dorsal sepal to 6 mm, ovate, rigid, straight; lateral sepals lanceolate, free, erect, almost parallel; petals shorter, linear-oblong with a darker median stripe, thrust forward; **labellum** sessile, cuneate, recurved at right angles with a curved apex, margins pale, crenulate; callus triangular mostly smooth but with some short, marginal pubescence. The fragrance is indistinct.



KB, Mt Boothby CP, SE

Flowering: Sept – early Oct.

Similar Species: *P. pallidum* Nicholls, *P. occidentale* R.S.Rogers.

Distribution: **EP**, **YP**, **SL**, **KI**, **SE**.
Endemic to South Australia, where it is scattered from central Eyre Peninsula, across Yorke Peninsula, into the upper South East, very rare on Kangaroo Island, and on the Fleurieu Peninsula.

Habitat: Especially in shallow soils over rock, including limestone, and usually with other Leek orchids.

Distinguishing Features: *P. occultans* has only a little 'hidden' pubescence on the callus edge, has fewer flowers and a blue-green leaf.

- ***P. pallidum*** has the whole of the callus plate pubescent
- ***P. occidentale*** is totally glabrous.

Notes: A well defined member of the apomictic *P. fitzgeraldii* complex and, like all members of the alliance, does not require disturbance or fire to flower. The plants are also usually well hidden under shrubs and are not easily found.

Probably common before settlement, but becoming rare, due to loss of habitat, really just 'hanging on' about rock outcrops, which appear as islands in a sea of agriculture.

Conservation Status:
Status in Legislation: Not listed nationally, rare in South Australia.
Suggested Status: 3Rc, nationally rare.



MH, *P. occultans,* SE, Sept

Prasophyllum odoratum R.S.Rogers

Scented Leek Orchid

Etymology: The Latin name, *odoratum,* means perfumed.

Synonyms: *P. album* R. Rogers.



CH, Potters Scrub, MU

Description: Plant slender to robust, **flower spike** 10-60 cm tall. **Leaf** red or purple based, apex lax. **Flowers** few to numerous, in a loose spike, on turgid ovaries which stand out from the stem, predominantly white and green but frequently with pink, red or brown tints; dorsal sepal ovate lanceolate, to 10 mm long, angled down; lateral sepals free from the (often humped) base and divergent; petals linear-falcate, spreading or curved, often as long, or longer than the sepals; **labellum** large, thin textured, white, reflexed, often markedly, the tip thrust through the sinus of the lateral sepals; lamina crisped and crenulate, the callus a green or pink shallow tongue, the apex bilobed or not. The flowers are very sweetly fragrant.

Flowering: Sept – Oct – Nov.

Similar Species: *P.* sp. Coast sandhills*, P. spicatum, P.* sp. Waterholes*, P. rotundiflorum.*

Distribution: **FR**, **EA**, **EP**, **NL**, **MU**, **YP**, **SL**, **SE**; **Vic**.
Very widespread in South Australia from the West Coast across Eyre Peninsula and the Gawler Ranges, Yorke Peninsula, into the Flinders Ranges as far north as Blinman, the Mount Lofty Ranges and extending almost to Broken Hill, across the Murray Mallee and into the South East. It is mysteriously absent from Kangaroo Island. Also in the Eastern states. Similar plants from Western Australia and New Zealand have been named as separate species.

Habitat: From sea level to mountain tops, in forest, woodland, grassland, scrub, mallee, mallee heath, rock outcrops, shrub steppe and coastal heath in all soil types.

Distinguishing Features: *P. odoratum* is typically a mid spring flowering species. Best recognised by the conspicuous white labellum with crenulate margins, the tip being somewhat recurved.

- Early flowered and late flowered plants are now treated as separate species.
- Similarly plants with labellum bent at right angles, plants with somewhat globular flowers and plants with dense spikes are all treated here as belonging to separate species.

Notes: Until 1989, when it was the first member of the complex to be described, it was often lumped under *P. patens* R.Br., a very similar species from the east coast of New South Wales.

The species is mostly free flowering, although in the Adelaide Hills there is a form which flowers profusely only after fire. This form may prove distinct (as *P. album)*. The flowers of most forms are delightfully fragrant although no more so than many other leek orchids. A form without perfume in the South East may prove distinct.

P. odoratum has the most extensive distribution of any South Australian leek orchid, even after the many species have been split off.

Conservation Status:
Status in Legislation: Not Listed
Suggested Status: Common.



JN, *P. odoratum*, Coonalpyn, Oct

Prasophyllum sp. Callitris (J. Carrick 3738)

River Murray or Pine forest Leek Orchid

Etymology: The phrase name suggests the favoured habitat of *Callitris* woodland; the common name indicates the distribution along the Murray River.

Synonyms: Previously included in either *P. odoratum* Rogers or *P. patens* R.Br.

Description: A robust species with a **flowering spike** to 30 cm; leaf often withered at flowering time. **Flowers** very erect, to about 1 cm across in a compact, often crowded spike are in colours of white, pink, yellow-green and brown on very short plump sessile ovaries; sepals with incurved margins; petals often crenulate, white; **labellum** clear white, crisped, reflexed at the centre; callus rather large, fleshy, yellow-green with white edges; column arms large and pink. The flowers are strongly fragrant.

Flowering: Oct – Nov.

Similar Species: Any of the numerous species in the *P. odoratum* complex.

Distribution: **MU; NSW, Vic.**
Mostly in the Murray region, from Murray Bridge on the west bank of the River and eastwards across into north western Victoria and southern New South Wales.



CH, MU, Sept

Habitat: Almost confined to open *Callitris* woodland on the plains, especially on calcareous loam, with tough sedges and iron-grasses. Frequently found with *Oligochaetochilus* and *Hymenochilus* species.

Distinguishing Features: The often thick base to the plants, the dead leaf at flowering, rigid dense flower spike, short sessile ovaries, frilly petals, thick labellum callus and large pink column arms all serve to set this species apart from other ***P. odoratum*** complex species which have a tremendous variation in fragrance. This species has one of the most intensely sweet odours of any leek orchid.

Notes: A member of the *P. odoratum* complex, the species is strongly out-crossing. As with most insect pollinated leek orchids, spiders are frequently seen on the flower spikes, and these often blend in with flower colour, viz. white leek orchids attract white flower spiders, green flowered leek orchids have green spiders and so on.

The *P. odoratum* complex is the largest of the leek orchid complexes and there is a species for almost every habitat.

Conservation Status:
Status in Legislation: Not Listed
Suggested Status: Suggest 3Rci, nationally uncommon due to climate change.



MH, *P.* sp. Callitris, MU, Oct

Prasophyllum sp. Coast sandhills (Hj.Eichler 14100) R.J.Bates

Leathery Leek Orchid

Etymology: The phrase name refers to the sepals which are brown and leathery.

Synonyms: Previously included under *P. odoratum, P. carnosum* ms.

Description: Plants robust with a **flowering spike** to 30 cm, often in clumps of several plants; **leaf** red at base, fistula near the top, apex blunt, stem very short below the flower spike. **Flowers** usually 5-20, in a short dense spike, in purple brown, green and white; sepals leathery, to 8 mm, lanceolate; lateral sepals free and slightly divergent; petals white with a red-brown central stripe; **labellum** white, to 10 mm, base horizontal, reflexed at right angles near the middle, erect part crisped and crenulate; callus plate brown or green, tongue shaped with a white border. The flowers are strongly fragrant.

Flowering: Sept – Oct.

Similar Species: Part of the *P. patens* R.Br. complex, which includes *P. odoratum, P. spicatum* and *P. pruinosum,* in South Australia. There are several similar species as yet un-described.

Distribution: **EP, YP, SL.**
Distinctly coastal, from near Venus Bay in the west all along the mainland coast and some off shore islands, at least as far east as Cape Jervis. Very similar species occur in Western Australia and Victoria.



RB, Innes, YP

Habitat: In coastal sandhills and headlands, on windblown heath, but extending up to 5 kilometres inland in tussock grassland; only in calcareous soils.

Distinguishing Features: Can be recognised by the often clumping habit, and some morphological features such as the leathery sepals and upright labellum.

- Differs from other members of the ***P. odoratum* complex** with the distinct flowering time, and the coastal habitat with calcareous sands.

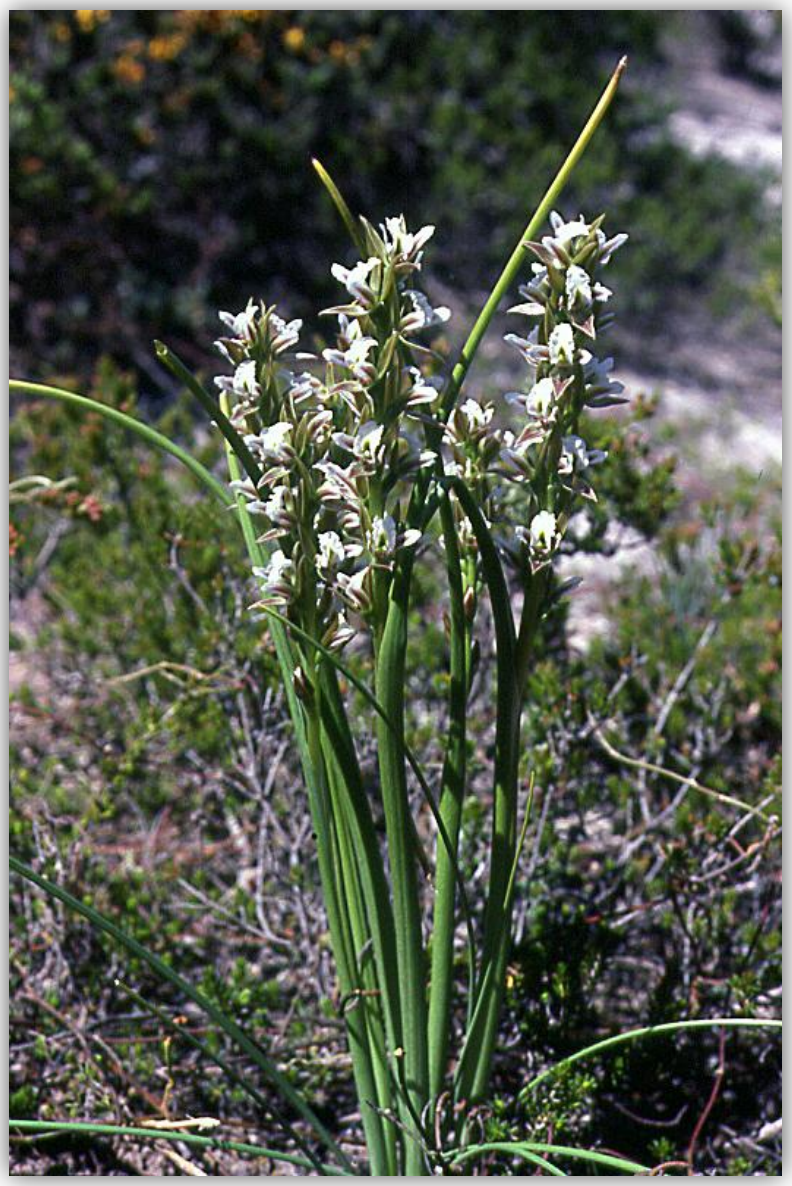
Notes: A member of the *P. odoratum* complex.

Although long recognised as a distinct species, due to habit and some morphological features this species has not yet been published.

Clumps of plants have been noted in loose sand and these make for a spectacular display after fire. The species is free flowering even without fire.

Conservation Status:

Status in Legislation: Not Listed
Suggested Status: Widespread and well conserved.



RB, *P.* sp. Coast Sandhills, YP, Sept

Prasophyllum sp. Desert (J. Carrick 2398)

Desert Leek Orchid

Etymology: The phrase name reflects the distribution of the species, through the southern edges of the South Australian deserts.

Synonyms: Previously included variously under *P. odoratum* and *P. album*.

Description: Robust to very robust with **flowering spikes** to 1 m tall; **leaf** tough to 60 cm long, usually mostly senesced at flowering time. **Flowers** numerous in a dense sub-cylindrical spike, large, to 12 mm across, green, red-brown and white; sepals thick textured, lateral ones divergent and bidentate, greenish or brown; petals widespread and longer than the other segments, red-brown or pink with white edges; **labellum** recurved at right angles, apex erect, lamina white and crinkled, often voluminous; callus plate large and green, tongue shaped, reaching just past the bend.

Flowering: Sept – Oct.

Similar Species: Members of the *P. odoratum* complex.

Distribution: **GT, FR, EA, EP, MU; NSW.**
From the Gawler Ranges, across to the central and northern Flinders Ranges and into the Olary Ranges;also north western New South Wales.



RB, Oulnina, EA

Habitat: Mostly associated with red desert loams, rocky hills and sand flats mostly, with *Triodia* hummocks, in grassy shrub-land.

Distinguishing Features: Generally easy to recognise on account of its robust nature, frilly, white, erect labellum apex, long narrow petals and semi desert habitats.

Notes: A member of the *P. odoratum* complex. Previously common but overgrazing, rabbits and climate change have degraded its habitat.

This species only flowers in years of above average winter rainfall. In dry years the leaves are filiform and less than 10 cm tall or do not appear at all. Its strategy of flowering only in wet years means that the flower spikes are less likely to be eaten, because of other plentiful feed.

Flowers are strongly fragrant, the perfume detectable from up to 50 metres away.

The species is out-crossing being pollinated by wasps.

Conservation Status:

Status in Legislation: Not Listed
Suggested Status: Not known as it is difficult to survey suitable habitat through-out all its vast distribution, due to lack of access roads, but probably endangered due to climate drying.



RB, *P.* sp. Desert, Sept

*Note leaf senesced, in foreground.

Prasophyllum sp. Late Coastal Dunes (*H.Goldsack 555*)

Late Leek Orchid

Etymology: The phrase name refers to the late flowering species from coastal regions.

Synonyms: Previously included in *P. odoratum.*

Description: Robust plants with a **flowering spike** to 30 cm high, very fleshy; **leaf** to 50 cm long but usually partly senesced at flowering time. **Flowers** numerous, in a dense cylindrical spike, green, or brown and white to 2 cm across, buds short; sepals thick textured, broad, green, lateral sepals free, divergent; petals variable often white and crenulate; **labellum** white, bent at right angles, erect, margins crenulate, frilly; callus plate bilobed, matt yellow, ending soon after the bend. The flower fragrance is sweet and fruity.

Flowering: Nov – Dec.

Similar Species: *P. litorale*, *P.* sp. Coast sandhills, *P.* sp. Sandplain, *P.* sp. Desert.

Distribution: **EP**, **YP**.
Endemic to SA, where it is found only on southern coastal Yorke Peninsula, mostly from Marion Bay to Edithburgh, and on Eyre Peninsula, in the Coffin Bay National Park.

Habitat: The species grows from high tide mark, on some beaches, and in adjacent dunes, or sand flats, always in calcareous soils, usually over clay subsoil, in stunted heath and tough sedge land.

Distinguishing Features: Easily recognised from its late flowering, sturdy, fleshy nature, senescent leaf at the time of flowering and large flowers with erect labellum.

- It often occurs with the similar ***P.* sp. Coast sandhills**, which is always long finished blooming when this species begins.
- ***P. praecox,*** another member of the *P. odoratum* complex flowers nearby in late winter, and has already released its seed by the time *P.* sp. Late Coastal Dunes flowers.

Notes: As a member of the *P. odoratum* complex, the species is out-crossing and pollinated by native bees. Like some others in the *P. odoratum* complex it is sometimes seen as clumping plants.

This species flowers after all other orchids throughout its distribution have finished flowering. It is restricted to coastal areas, often in the littoral zone. Its closest ally is probably *P. litorale*, which is also a late flowered coastal taxon.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Not determined due to lack of knowledge of its total distribution, but its habitat is threatened, in the long term, by coastal development.



KB, *P.* sp. Late Coastal Dunes, Dec

Prasophyllum sp. Sandplain (K & B Bayley s.n.)

Plains Leek Orchid

Etymology: The common name indicates that the species is restricted to the extensive plains of South Australia's upper South East region.

Synonyms: Previously included under *P. odoratum.* See also Wild Orchids of Victoria 2006, as Sandhill Leek orchid.

Description: A robust species with **flower spike** to 40 cm tall; **leaf** wholly green to 30 cm with a thick apex. **Flowers** numerous, green and white, in a short dense spike; lateral sepals more or less parallel; petals tipped white, curved forward; **labellum** frilly white, recurved at right angles; callus plate short, broad and green. The flower has a strong citrus odour.

Flowering: Late Oct – Nov – early Dec.

Similar Species: *P.* sp. Coast sandhills, *P.* sp. Late Coastal Dunes, *P.* sp. Desert.

Distribution: **SE**; **Vic**.
From near Meningie across to Ngarkat Conservation Park, South East and adjacent western Victoria.

Habitat: Restricted to broad sand-plains in heath and woodland and mallee.



CH, Yumali, SE

Distinguishing Features: This is the only member of the *P. odoratum* group to have consistently green and white flowers without any brown or pink. Given the habitat in which it is found the November flowering time for a member of this group is also distinctive.

- ***P. sp.* Coast sandhills**, ***P.* sp. Late Coastal Dunes**, ***P.* sp. Desert**, all have large flowers in a dense spike, the labellum apex erect, but all have different habitats.

Notes: As a member of the *P. odoratum* complex, it is strongly out-crossing and pollinated by native bees.

Commonly collected in the past and even R.S. Rogers considered it a separate species, although he did not publish it as such. Apparently the species is rare nowadays due to mass clearance of the Upper South East.

Wild Orchids of Victoria 2006 also discusses this species (p. 250).

Conservation Status:

Status in Legislation: Not Listed.
Suggested Status: 2Rc in SA, more common in Victoria.



KB, *P.* sp. Sandplain, Bucks Camp, Ngarkat CP, Nov

Prasophyllum sp. Topperwein (R. Bates 67084)

Red Gum Marsh Leek Orchid

Etymology: The phrase name indicates the only known South Australian location while the common name acknowledges the habitat.

Synonyms: There are none.

Description: A very slender few flowered species with a **flower spike** to 20 cm tall; **leaf** blade short and narrow. **Flowers** slender, 5-15, in a narrow, sparse spike, very fragrant, in tones of pale green, lolly-pink and white; dorsal sepal lined, lateral sepals very divergent; petals wide spread; **labellum** narrow, white, apex flexed right back on to labellum base and exceeding it, often somewhat painted with pink or even purple; callus broad, reflecting the colour of the lamina, extending beyond the bend. Flowers are sweetly fragrant.

Flowering: Early Nov – Dec.

Similar Species: *P.* sp. Waterholes, *P. odoratum*, P. *brevilabre*.

Distribution: **SE**; **Vic**.
In South Australia it is found near the border adjacent to southwest Victoria.

Habitat: Occurs on the edge of marshes in swampy River Red gum (*Eucalyptus camaldulensis*) flats.

Distinguishing Features: Easily recognised by the small size, short leaf and sparse flowers with narrow segments, sweet fragrance, flared lateral sepals and pretty labellum, reflexed right back through the sinus of the sepals.



RB, Topperwein NFR, SE

Notes: A member of the *P. odoratum* complex.

It has only recently recognised as a possible new species, although collected many times over the last hundred years. Possibly just a form of *P*. sp. Waterholes but the laid back, elongate labellum is constant and the plants flower much earlier.

The species has been discussed by Dean Rouse in his unpublished works. It flowers earlier than *P*. sp. Waterholes when the two grow together.

Conservation Status:

Status in Legislation: Not Listed.
Suggested Status: 3Vci.



JN, *P.* sp. Topperwein, Topperwein NFR, Nov

Prasophyllum sp. Waterholes (R. Bates 9037)

Pretty Waterhole Leek Orchid

Etymology: Both phrase and common names refer to the waterhole habitat of the species.

Synonyms: *P.* sp. Waterholes, previously included under *P. odoratum* as a late or waterhole form.

Description: Robust colourful species with **flower spike** to 30 cm tall. **Leaf** to 20 cm, base purple. **Flowers** numerous in a crowded spike, green, pink, white and brown, the lateral sepals widely spreading and thrust horizontally forward; **labellum** white, curved back gradually at nearly 180 degrees, margins very frilly and crisped; column wings usually pink and exposed.

Flowering: Nov – Dec – Jan – Feb.

Similar Species: *P. odoratum* and others in the *P. odoratum* complex, *P.* sp. Topperwein.

Distribution: **SE**; **Vic**.
Only found in the South East and adjacent Victoria.

Habitat: Restricted to waterholes which fill with water in winter and dry out in spring-summer. These waterholes are mostly on river red gum (*Eucalyptus camaldulensis*) flats.

Distinguishing Features: The waterhole habitat, late flowering, very widely divergent, forward thrust lateral sepals, pale labellum callus and incurved petals all set it apart from other members of the complex.

- The ubiquitous ***P. odoratum*** is a woodland species with labellum folded back on itself and lateral sepals not thrust forward horizontally.
- ***P.* sp. Topperwein** is a smaller species with sparse flowers with narrow segments.

Notes: As a member of the *P. odoratum* complex, the species is out-crossing, the blooms being a source of nectar to bees and wasps on sunny days. The fragrant blooms open as the water holes dry out, meaning flowering is later in wet years.

This species has been recognised as distinct since about 1990, but in view of the large number of similar species has not yet been published. It is of course unrealistic to accept species from dry sites of the pastoral zone as being the same taxa as waterhole species.

See Rouse *P.* aff. *odoratum* 'C' and Wild Orchids of Victoria p. 250 as *P.* sp. aff. *odoratum* 3 where several forms are illustrated.

Conservation Status:

Status in Legislation: Not Listed.
Suggested Status: 3Vci, nationally rare.



KB, *P.* sp. Waterholes, Bool Lagoon, SE

Prasophyllum pallidum Nicholls

Pale Leek Orchid

Etymology: The Latin name, *pallidum*, for pale, refers to the pale green flowers.

Synonyms: None.



MH, Belair NP, SL

Description: Plant slender with a **flower spike** to 30 cm tall. **Leaf** long and lax, the base green. **Flowers** many, to 7 mm across, wholly pale green, in loose spikes, standing well out from the spike on turgid ovaries; sepals lanceolate to 7 mm long; dorsal sepal angled downward; lateral sepals connate for much of their length, not strictly erect; petals linear-oblong, curved on either side of the labellum; **labellum** paler green than the other segments, recurved at right angles, margins tightly crenulate and shortly ciliate; callus a grooved triangle, covered with short pubescence, which extends on to the lamina; the column has a conical appendage at the base. The flowers are sweetly fragrant, but apomictic.

Flowering: Late Sept – Oct – early Nov.

Similar Species: *P. occidentale, P. occultans, P. fitzgeraldii.*

Distribution: **FR**, **NL**, **SL**.
Endemic to the Mount Lofty and Flinders Ranges.

Habitat: In better soils, of woodland and grassy open forest.

Distinguishing Features: *P. pallidum* is easily recognised from the green base to the leaf, neat, pale green flowers, conjoined lateral sepals and the short, pubescent labellum.

- Some forms of ***P. fitzgeraldii*** have very pale flowers but can be easily separated on the basis of their free lateral sepals.

Notes: A member of the *P. fitzgeraldii* complex, with apomictic flowers, which nevertheless, successfully attract pollinators and do exhibit some out-crossing. This is a free flowering species which can still be found at the type location near Adelaide.

Pale flowered *P. fitzgeraldii* plants and *P. lindleyanum* have caused erroneous records of *P. pallidum* in Victoria.

Conservation Status:
Status in Legislation: Nationally vulnerable, rare in South Australia.
Suggested Status: 3Rc, nationally rare.



JN, *P. pallidum*, Scott CP, Oct

Prasophyllum praecox D.L.Jones

Early Leek Orchid

Etymology: The Latin name, *praecox*, means early, and refers to the precocious flowering, often starting in winter.

Synonyms: Previously referred to *P. odoratum* or *P.* sp. Early.

Description: Plant small, slender, early flowering with a **flower spike** to 25 cm; **leaf** purple based. **Flowers** few to about 10, pale green, greenish-brown with pink and white; segments narrow, lateral sepals free, divergent; dorsal sepal 3-veined, deflexed; petals narrowly spreading with pinkish central suffusions; **labellum** bent at right angles at about the midpoint, upright, with the apex recurved to the lateral sepals, lamina usually white, crisped; callus plate yellowish-green to white. Flowers sweetly fragrant.



MH, Brentwood, YP

Flowering: Aug – Sept.

Similar Species: *P. odoratum*.

Distribution: **EP**, **YP**.
Endemic to coastal SA on both Eyre and Yorke Peninsula.

Habitat: In sedgeland, *Callitris* woodland or mallee.

Distinguishing Features: The early flowering, small size, small upright labellum, striated dorsal sepal and narrow petals, all set it apart.

Notes: *P. praecox* grows in the same area as several other leek orchids. The author noted, as early as 1972, while teaching at Yorketown, that different species flowering from August to December all had similar flowers. The *P. odoratum* complex is the largest group of leek orchids, remarkably diverse in habitat requirement, perfumes and flowering times (winter to early autumn), yet all so similar in flower shape!

P. praecox has unspectacular flowers and is best sorted by its early flowering in an area where most leek orchids flower much later.

More work needs to be done on this species, to determine its overall distribution.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3R, nationally rare.



MH, *P. praecox*, YP

Prasophyllum pruinosum R.S.Rogers

Plum Leek Orchid

Etymology: The common name refers to the light purple-plum coloured flowers.

Synonyms: *S. patens* var. *pruinosum* (R. Rogers) R. Rogers.

Description: Plant slender, rigid with a **flower spike** to 40 cm tall. **Leaf** red based, apex lax. **Flowers** numerous, in a narrow crowded spike, in tones of yellow-green, brown, purple and white, ovaries sessile, appressed to the scape; sepals to 8 mm long, dorsal sepal recurved; lateral sepals linear-oblong, erect and parallel, bi-dentate, with incurved margins; petals shorter, linear-oblong, parallel on either side of the labellum; **labellum** narrow, coloured, bent at right angles, crenulate; callus plate colourful, often stained red around its borders, not much raised but tongue-like and ending just past the bend. The flowers have a light minty or musty-sweet odour.

Flowering: Late Sept – Oct – Nov.

Similar Species: *P. odoratum, P. fitzgeraldii*.

Distribution: **SL**.
Endemic to the Adelaide Hills and adjacent Barossa region as far north as Rowland Flat.

Habitat: Open woodland and grassy forest, in the open or in the shelter of broom-like shrubbery growing in fertile loams, usually with other leek orchids.



RB, Belair NP, SL

Distinguishing Features: The large, narrow, sometimes colourful labellum with a non-pubescent callus sets the species apart.

- ***P. odoratum*** is found within the same areas but has a distinctly white, crenulate labellum.
- ***P. fitzgeraldii*** has a more triangular labellum with a pubescent callus plate.

Notes: It is an out-crossing species visited by bees and flies. It flowers freely without fire. Too frequent fires have wiped out entire populations, i.e. at Anstey Hill Conservation Park. The species was once common on the Adelaide Plains but extinct there now; it has suffered a rapid decline throughout its limited range in the last 50 years. Sadly it may be lost within a few years.

The species is sometimes regarded as an aberrant member of the *P. patens* complex. The variation in floral odour is a reminder that we should not place too much value in orchid perfume as a distinguishing feature between species.

Conservation Status:
Status in Legislation: Nationally endangered, vulnerable in South Australia.
Suggested Status: 2Eci, nationally endangered.



CH, *P. pruinosum,* Belair NP, SL

South Australia's Native Orchids

Prasophyllum rotundiflorum R.S.Rogers

Grassland Leek Orchid

Etymology: From Latin, *rotunda*, round and *flora* flower, alluding to the rounded flowers.

Synonyms: At times included with *P. odoratum* R.S.Rogers.

Description: Short stocky plants with a **flower spike** to 25 cm tall; **leaf** very fleshy. **Flowers** in a short dense spike, somewhat globular in appearance as the petals curve inward; sepals green; petals white with a pink median stripe; **labellum** crenulate, white, curved back in a semi-circle; callus plate pubescent yellow; column arms short and broad. The fragrance is like orange blossom.

Flowering: Late Sept – Oct.

Similar Species: *P. odoratum* complex.

Distribution: **NL**, **SL**.
In high rainfall parts of the Mount Lofty Ranges and not seen at the Type location (Cherry Gardens) for many years.

Habitat: Restricted to *Themeda/Austrodanthonia* grasslands with high rainfall areas.

Distinguishing Features: Distinguished by its incurved flowers having a rounded appearance.

Notes: *P. rotundiflorum* is a member of the large *P. odoratum* complex and as such is an out-crossing species.



RB, Mt Cone, NL
*Note incurved petals giving a rounded appearance

It would be well worth searching all vestiges of native grassland for this species. Much further work needs to be done on this species. The original collection from Cherry Gardens was made from native grassland, but the material is not in good condition.

The species was thought to be synonymous with *P. odoratum* for many years. It was assumed to have been extinct, until it was recently discovered (1990s) in the mid north grasslands.

Conservation Status:

Status in Legislation: Not listed nationally, endangered in South Australia
Suggested Status: 3Eci, nationally critically endangered.



KB, Mokota CP, Sept

Prasophyllum spicatum R.J.Bates & D.L.Jones

Long-spiked Leek Orchid

Etymology: The Latin name, *spicatum,* means 'a spike', in reference to the long narrow spike of crowded flowers.

Synonyms: *P. odoratum* var. *album, P. truncatum*.

Description: Slender plants with a **flower spike** to 80 cm. **Leaf** wholly green, apex rigid, shorter than the spike. **Flowers** numerous white and green, in a long narrow but dense spike; sepals green to 8 mm long, lateral sepals spreading; petals white tipped, spreading; **labellum** white, very erect, voluminous, crenulate and bright; callus plate hardly raised, hardly exceeding the bend. The flowers are lightly fragrant.

Flowering: Nov.

Similar Species: *P.* sp. Coast sandhills.

Distribution: **SE**; **Vic**.
Between Comaum and Coonawarra, near the Victorian border; also in Victoria.

Habitat: Sandy heath of the lower South East, where it should be looked for after fires.

Distinguishing Features: A species which flowers after fires, with a dense spike of green and white flowers.

- ***P.* sp. Coast sandhills** is found in different localities, has similar flowers, but they are larger and in a broader, less dense spike.



MH, Vic, Nov

Notes: The flowers are out-crossing.

Only a single collection exists of this species in South Australia.

Further north this species is replaced by the much more robust and green flowered *P.* sp. Sandplain. I suspect that when areas of heathy woodland, in the lower South East are burned, the species will reappear, perhaps in large numbers.

It is possible that the South Australian and western Victorian plants represent a separate taxon as the types of true *P. spicatum* are from Eastern Victoria.

Conservation Status:
Status in Legislation: Not listed nationally, endangered in South Australia.
Suggested Status: Nationally endangered, 3Eci.



JN, *P. spicatum*, Glenelg River NP, Vic

South Australia's Native Orchids

Prasophyllum validum R.S.Rogers

Melrose Leek Orchid

Etymology: The Latin name, *validum*, means strong, stout, and refers to the robust plants.

Synonyms: *P. fuscum* var. *validum.*



KB, Melrose, FR

Description: Robust to very robust, green plants with a **flower spike** to 1 metre tall. **Leaf** wholly green to 50 cm, rigid but with apex shrivelled at flowering time. **Flowers** numerous, large, green and green-white in a narrow spike to 20 cm long, to 2 cm across; lateral sepals very erect, partly joined, bidentate; dorsal sepal deflexed; petals parallel, boomerang shaped; **labellum** pale green to white, very erect, margins undulate; callus plate elongate, much raised, yellowish, shining; column appendages white and pointed. The flowers are mildly fragrant.

Flowering: Late Oct – Nov – mid Dec.

Similar Species: *P. occidentale*, P. sp. Bushfires.

Distribution: **FR**.
Restricted to the southern Flinders Ranges, mostly near Melrose and Quorn.

Habitat: It occurs in Spinifex (*Triodia*) covered slopes, in Sugar-gum (*Eucalyptus cladocalyx*) woodland and scrubs.

Distinguishing Features: The northern distribution, late flowering, tall size and wholly greenish and white flowers make the species easy to identify.

- ***P. occidentale*** is a smaller and earlier flowering species.
- ***P.* sp. Bushfires** is a more colourful species of the Adelaide Hills.

Notes: Plants in dense bush only flower after fire. It is an out-crossing species and is pollinated by flower wasps.

Further research is needed to assess its relationship with similar large green flowered plants in Victoria.

An old collection from 'Happy Valley' may have been an error.

All populations occur in conservation parks but it is nationally threatened due to climate drying and reduced range.

Conservation Status:

Status in Legislation: Nationally vulnerable, vulnerable in South Australia.
Suggested Status: 3Vc



KB, *P. validum*, Melrose, NL, Nov

South Australia's Native Orchids

Prasophyllum viretrum D.L.Jones & D.T.Rouse

Basalt Leek Orchid

Etymology: From Latin *viretum* meaning green-sward or turf. That with the common name indicates the habitat of this orchid.

Synonyms: Previously included under *P. hartii* R.S.Rogers

Description: A small clumping species with few small dull yellow and brown flowers to 1 cm across. **Leaf** longer than the flower spike, about 20 cm tall, erect. **Flowers** 5 to 20, fleshy, about 7 mm across, on very short plump ovaries, short lived; sepals free and divergent; the petals pale edged; the **labellum** short and recurved at right angles, with a short thick marginally winged, green callus plate not reaching to the tip. Flower fragrance is sweet but diffuse. The flowers may be self pollinated.

Flowering: Mid Oct – mid Nov.

Similar Species: *P. frenchii, P. diversiflorum.*

Distribution: **SE**; **Vic**.
Once occurred from Mount Gambier to central southern Victoria.

Habitat: Restricted to basalt grasslands and grassy open forest. These habitats have been overgrazed in South Australia's South East.

Distinguishing Features: This species is somewhat intermediate between *P. frenchii* and *P. constrictum.*

Notes: There is a single collection in the Mueller herbarium, in Melbourne, made in the 1880s.

The species may be extinct in South Australia but still occurs in south western Victoria. It is one of perhaps half a dozen leek orchid species which have become extinct in the South Eastern region since settlement, most of them from native grassland, fertile soils in grassy woodland, in black soil flats and bogs. Some may still exist but will only appear again after summer fires.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Probably extinct in South Australia.



BB, *P. viretrum*, Western Victoria, Nov

Undescribed Species

Prasophyllum sp. Bushfires (R.S.Rogers 2681)

Bushfire Leek Orchid

Etymology: The phrase name reflects the need of this species for fire, before flowering.

Synonyms: Previously included in the illegitimate '*P. gracile* Rogers' and more recently under the name *P. constrictum* and *P. pyriforme,* and as *P.* sp. aff. *pyriforme* 1 in Wild Orchids of Victoria 2006, pg 274.



JQ, Kangarilla, SL

Description: Generally robust plants with the **flowering stem** to 60 cm tall; **leaf** purple based, rather dark green, to 35 cm tall. **Flowers** numerous, strongly perfumed, very variable, in colours of red, brown, pink, green and yellow, in a moderately dense elongate spike; lateral sepals partly free, erect to 1 cm long, apex bidentate; **labellum** smooth, pink, purple, green or gold, margins mostly entire, often constricted about the middle; callus long and shiny usually extending toward apex of the labellum. The flowers are strongly fragrant.

Flowering: Nov – Dec.

Similar Species: *P. constrictum*, *P. validum*, *P. occidentale*, *P.* sp. Verran Tanks, *P. pyriforme,* a Victorian species,

Distribution: **SL; Vic.**
In South Australia it is found only in the higher parts of the Adelaide Hills but also occurs in Victoria's Grampians. This is one of several wildflowers with such a disjunct distribution.

Habitat: Mostly on gravelly soils of exposed sites such as ridges and rocky banks in stringy bark (*Eucaltyptus obliqua* & *E. baxteri*) woodland, and flowering only after hot summer fires.

Distinguishing Features: A species with variable coloured flowers with segments that are narrow; appearing after fire.

- ***P. constrictum*** is a mallee species
- ***P. validum*** is found only in the Flinders Ranges
- ***P. occidentale*** is an early flowered species from grassy habitats
- ***P.* sp. Verran Tanks** is endemic to Eyre Peninsula
- ***P. pyriforme*** is a Victorian species.

Notes: A strongly out-crossing species, the flower spikes are visited by a host of wasps and native bees.

Flowering occurs mostly in the summer following a bushfire. This species flowered in profusion after the Ash Wednesday fires in 1983, but has hardly been seen since until the bushfire near Mt Bold in 2007. Several good populations were found in flower then, including large clumps with pink blooms. Unfortunately no photographs were taken in 2007 despite some clumps having up to six deep pink flowers!

Conservation Status:
Status in Legislation: Not Listed
Suggested Status: Possibly 2Vci, threatened by change of fire regimes.



JQ, *P.* sp. Bushfires, SL, Nov

Prasophyllum sp. Gilbert River (R. Bates 16499)

Gilbert River Leek Orchid

Etymology: The phrase name reflects the area where it was last seen**.**

Synonyms: There are none.

Description: A robust species with a **flower spike** to 50 cm; **leaf** fleshy to 30 cm long. **Flowers** numerous in a cylindrical spike, red-brown, green and cream, to 10 mm across; segments to 8 mm long greenish or red-brown, lateral sepals conjoined for half their length; petals red-brown with cream edging; **labellum** recurved at right angles, usually cream, green and reddish, margins crenulate; callus much raised, triangular, shining, its base concave, the apex slightly wrinkled on some specimens; column appendages large. A very fragrant, out-crossing species.

Flowering: Oct – Nov.

Similar Species: *P. murfetii, P. diversiflorum*.

Distribution: **NL**.
It is only known from the Gilbert River Valley. This species is endemic to the northern Mount Lofty Ranges.

Habitat: It occurred in boggy, *Poa*/*Lachnagrostis* grasslands, on heavy clay.

Distinguishing Features: The coloured labellum with a triangular callus plate sets this species apart.

- ***P. murfetii*** has a horseshoe shaped labellum callus.
- ***P. diversiflorum*** has a white labellum and is a Victorian species.

Notes: Unfortunately this species is apparently extinct, through loss of its habitat. The area through which the Gilbert River flows has long been used for agricultural production.

It was known for several years without a collection being made. Eventually a single spike was sent to Canberra Botanic Gardens about 1990.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Possibly 2E.



Photographer unknown, *P.* sp. Gilbert River, Manoora, NL

Prasophyllum aff. parviflorum

Nelson Leek Orchid

Etymology: The Latin name, *parviflorum*, means small flowered, as is this species.

Synonyms: *P. frenchii* F.Muell., *P. hartii* R.S.Rogers, *P. parviflorum* Nicholls.

Description: A relatively small, fine plant with highly coloured **flower stem** to about 25 cm; **leaf** red based. **Flowers** few, sparsely arranged on the scape, pink and purple-brown; segments short, lateral sepals broad, free, more or less parallel; dorsal sepal cupped forward; petals forward; **labellum** recurved, slightly constricted after the bend; callus plate broad, fleshy, then sharply tapering to a blunt point. The flowers are fragrant.

Flowering: Late Nov – Dec.

Similar Species: *P. frenchii, P. parviflorum, P. litorale* and *P. murfetii.*

Distribution: **SE**.
The species is restricted to the Nelson-Cape Douglas area today, but was probably more widespread before settlement. It is often found with either *P. litorale* or *P. frenchii*, and is possibly a mimic of them.

Habitat: In coastal heath on calcareous sand or on terra rossa soils over limestone.

Distinguishing Features: Much smaller and finer than ***P. frenchii,*** with fewer flowers, having a different fragrance and different column appendages, etc.

Notes: In 2005 this species was found in South Australia by NOSSA members and requires further study.

The taxonomy of this group is complex and difficult to sort out. Each population itself is also variable. *P. frenchii* sensu stricto may be restricted to east of Melbourne. *P. hartii* may be the large species at Piccaninnie Ponds Conservation Park and coastal Victoria, while *P. parviflorum* may also be two species, one east of Melbourne (see The Orchids of Victoria, 1995, p. 247) and another in the south west of Victoria and adjacent South Australia.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: K, presumably Eci, in South Australia and nationally endangered.



MH, *P.* aff. *parviflorum*, Piccaninnie Ponds CP, Dec

South Australia's Native Orchids

Prasophyllum sp. Verran Tanks (D. Murfet 1298)

Eastern Eyre Leek Orchid

Etymology: The phrase name refers to Verran Tanks, a Conservation Park on eastern Eyre Peninsula, the centre of its distribution.

Synonyms: Previously included under *P. constrictum* and before that *P. fuscum.*

Description: Robust, fleshy plants with a **flower spike** to 60 cm tall; **leaf** to 40 cm tall. **Flowers** numerous in a moderately dense spike, mostly red brown, purplish and dark green, to 10 mm across; segments rigid, green and red-brown; lateral sepals partly conjoined to 9 mm long; dorsal sepal to 5 mm broad; petals similar, incurved; **labellum** red-brown and green, recurved at right angles, apex erect, lamina thick, margins sinuate; callus plate thick, elongate triangular, much raised, red-brown to purple, hardly developed below the bend. The flowers have a sweet, fruity smell.

Flowering: Oct – Nov.

Similar Species: *P. constrictum, P. validum, P*. sp. Bushfires.

Distribution: **EP**.
Endemic in South Australia where it is restricted to a small area of eastern Eyre Peninsula, from Cleve to Cowell.

Habitat: In dry scrubs, rocky shrub-land and sand-plain, in varied soils, all in areas subject to drought.

Distinguishing Features: A more robust species with rigid, fleshy segments.

- ***P. validum*** lacks the rich red-brown colours and occurs in montane habitat
- ***P. constrictum*** is a lesser species without fleshy segments
- ***P.* sp. bushfires** has more narrow segments and different locality of occurrence.

Notes: This species flowers later than any other orchids in the area except for *Oligochaetochilus.*

The flowers are out-crossing, and are pollinated by thynnid wasps.

Like most species of drought prone districts it does not flower every year, but nor does it require fire to initiate flowering, although in dense scrub probably flowers better after fire as noted on some collections. The species was possibly more widespread before land clearing for wheat farming.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 2Rc**.**



RB, *P.* sp. Verran Tanks from Verran Tanks, EP

Gallery



RB, seed capsules of *Prasophyllum* showing seed dehiscence holes
The unusual seed release holes. Seeds are released as the wind shakes the capsules.

South Australia's Native Orchids



RB, *Prasophyllum* species,
Lyndoch, SL



RB, *Prasophyllum* species
Tintinara, SE



RB, *P.* sp. Coast Sandhills,
Innes NP, YP



CH, *Prasophyllum* species,
Aberdour CP, SE



BB, *P. pruinosum*, showing variation in a population

South Australia's Native Orchids



PH, *P. fitzgeraldii* complex, Wanilla, EP



RB, *P. elatum*, SL



RB, *Prasophyllum* species and spider



KB, *P. odoratum*, Padthaway, SE





RB, pink *P. murfetii,* Tooperang, SL, Nov **BB, *P. murfetii*, Stipiturus CP, Dec**

As can be seen from the images above, there is a difference between the Tooperang coastal plains plants and those from highland bogs, for example, Stipiturus CP.



MH, *P. litorale,* Victoria.



KB, *P.* sp. Sandplain, Ki Ki, Nov



KB, *P. odoratum*, Potters Scrub, MU, Aug



CH, *Prasophyllum* species, SE



MH, Desert Camp,
un-perfumed, SE



RB, green *P. calcicola*
Warrenben North, YP,



BB, *P. fitzgeraldii*, *P.* sp. Pink lip and *P.* sp. Gum Lagoon, Sept



CH, *P.* sp. Gum Lagoon with spider



RB, *P. occultans*, *P. odoratum* complex, *P.* sp. Gum Lagoon



JN, *Prasophyllum* species, Big Heath CP, SE



BB, *P. occidentale*, Carrapee Hill CP, Sept



MH, *P. pruinosum,* Belair NP, SL



CH, *P. occultans,* Jip Jip CP, SE

Pterostylis R.Br. sensu lato

Greenhoods



BB, *P. nutans*, Hindmarsh Valley, SL, Oct

South Australia's Native Orchids

Pterostylis R.Br. sensu lato

Greenhoods

Etymology: see discussion under *Pterostylis* R.Br. sensu stricto

Taxonomy: For nearly two centuries greenhood orchids' taxonomy had remained stable, with all species treated as *Pterostylis.* In 2001 Polish botanist Szlachetko began, without seeing live material, to separate *Pterostylis* into several smaller genera with the publication of segregate genera such as *Plumatichilos* and *Oligochaetochilus.* As early as 1998, Australians David Jones and Mark Clements intention to divide the genus was already known. Jones and Clements phylogenetic work had already shown that there were many separate clades in *Pterostylis*; each was better treated as a separate genus, a much neater and realistic approach. In the light of Szlachetko's publication it became imperative for them to publish their findings. They published their 14 separate genera within *Pterostylis* in 2003. Szlachetko could indeed be accused of plagiarizing the work of Jones and Clements, taking advantage of it to name new Australian genera in both *Pterostylis* and *Caladenia.*

Description: All species in the super-genus *Pterostylis* have glabrous leaves in a rosette arising annually from orbicular tubers and the genus is characterized by the combination of the dorsal sepal and petals into a hooded, column-enclosing structure, referred to as the galea. The dorsal sepal is deeply concave and interlocking with grooves in the median line of the petals. The resupinate flowers are rather thin textured and despite the common name greenhoods, many have a good deal of red, purple or brown in them and most have some sort of white or translucent striping. The lateral sepals are joined in the basal part (the lower lip) and may be erect, forming part of the hood, or deflexed, often with long filiform or acuminate tips. The point at which the lateral sepals become free is termed a sinus which is usually 'v' shaped. This sinus may be straight or curving in profile.

The labellum is joined to the base of the column by a movable claw which may be triggered by a visiting insect. It often has a curved penicillate appendage. The column is elongated, following the curve of the hood, the upper part with two translucent hatchet shaped wings, overtopped by a two-celled anther, each cell with two pollinia. The stigma is two lobed, prominent and near the middle of the column below the anther.

Pollination: *Pterostylis* are myophilous, that is they attract flies or mosquito-like fungus gnats (mycetophilids). Exactly what attracts the flies is not known but each of the groups seems to have a separate pollination strategy. See individual segregate genera for details.

Distribution and Habitat: This is a large genus conglomerate with an estimated 200 species, many as yet un-described. In actual fact it may be better to regard *Pterostylis* as a group of as many as ten allied genera. Most species are confined to Australia but at least twenty occur in New Zealand with others in Oceania and New Guinea. There could be as many as seventy South Australian species making it our largest genus.

Plants occur in all but the most hostile environments, i.e. in the desert, or on saline soils.

There are species from the seashore to mountain tops, semi aquatic species and species occurring in semi-arid country, from swamps to powdered gypsum flats, in dry or wet acid soils, dry or wet alkaline soils, grassland, woodland, forest or heath.



TO, pollen vector about to enter a Pterostylis flower**, SL**

South Australia's Native Orchids

Pterostylis R.Br. sensu lato

Greenhoods

Based on the Type species *Pterostylis curta* R.Br., *Pterostylis* have a single, often large flower arising from a basal rosette, usually colony forming, with erect lateral sepals and a relatively simple, unadorned labellum. They are mostly spring-summer flowered in southern Australia.





RL, *Pterostylis curta*, rosette & flower

The other genera at present lumped under *Pterostylis* but treated separately in this work include:

1. **Speculantha D.L. Jones & M.A. Clem.**, small, multi-flowered species with usually separate flowering and non flowering plants, or rosettes on side shoots, blooming mostly in summer-autumn, erect lateral sepals, simple labellum, some fragrance evident.
   There are about 20 species, 3 in South Australia.
2. **Bunochilus D.L. Jones and M.A. Clem.**, large green, multi-flowered species, with raised rosette and flowering plants separate, winter-spring flowered, narrow flowers, narrow pendant lateral sepals, labellum highly sensitive with a median papillose line and no fragrance.
   There are about 12 species, at least 6 in South Australia.
3. **Urochilus D.L. Jones and M.A. Clem.**, large maroon, multi-flowered species, with rosette and flowering plants separate, autumn-winter flowered, broad flowers, with rounded, pendent lateral sepals, highly sensitive, poorly adorned labellum and no fragrance.
   There are about 6 species, only 1 in South Australia.
4. **Oligochaetochilus Szlach.**, large, multi-flowered dull coloured species, flowering from a flat basal rosette usually withered at flowering time, not colony forming, spring-summer flowered, lateral sepals with a broad base and elongate free tips, variously down-swept or sigmoid, petals winged, labellum beset with hairs, highly sensitive.
   As many as 100 species about 30 in South Australia.
5. **Hymenochilus D.L. Jones & M.A. Clem.**, smaller, verdant-green, multi-flowered species, flowering from a flat basal rosette, winter-spring flowered, lateral sepals, short and rounded, pendent, labellum highly sensitive, simply adorned with a basal appendage, no hairs.
   There are about 10 species at least 6 in South Australia.
6. **Plumatichilos Szlach.**, single flowering species, from a bromeliad like, sub-erect basal rosette, not colony forming, spring flowered, lateral sepals linear, pendent, labellum filiform, bristled or plume-like, beset with long, often coloured hairs, mobile but not sensitive.
   There are about a 12 species, perhaps 3 in South Australia.
7. **Diplodium Sw.**, large, single-flowered species, flowering plants and rosettes separate, flowering plants with stem leaves (cauline), lateral sepals erect, a simple unadorned labellum, colony forming, flowering at most times of the year except mid spring.
   There are about 50 species, perhaps 12 in South Australia.
8. **Linguella D.L. Jones & M.A. Clem.**, similar to *Pterostylis* itself, i.e. single flowered from the rosette, colony forming, but with small flowers, lateral sepals parallel, erect, with an inflexed tooth in their sinus, flowering in the cooler months.
   There are about 20 species, at least 6 in South Australia.
9. **Taurantha D.L. Jones & M.A. Clem.**, similar to *Pterostylis* itself but with a flat rosette and labellum tip notched. There are about 8 species but only 1 in South Australia.

South Australia's Native Orchids

Pterostylis R.Br. sensu lato

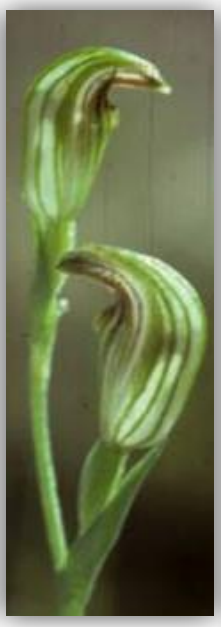
Greenhoods



JN, *Plumatichilos*, SE



BB, *D. erythroconchum*, MU



RB, *S. parviflora*, SE



RB, *U. sanguineus*, SL



KB, *O. arenicola*, MU



RB, *H. pagophilus*, FR



KK, *L.* sp. Hills nana, SL



JN, *T. concinna*, SE



KB, *B. littoralius*, SE

South Australia's Native Orchids

Pterostylis R.Br. sensu stricto

True Greenhoods



KB, *P. falcata*, Myponga, SL

South Australia's Native Orchids

Pterostylis R. Br**.** sensu stricto

Greenhoods in the Strict Sense

Etymology: The generic name is derived from the Greek *pteron* a wing, and *stylis* a style or column, referring to the prominent wings found at the top of the column.

Taxonomy: Most species have had rather stable taxonomy with few or no synonyms. A few sister species have been segregated out over time and a few more are likely to be sub-divided in future.

Description: All species have an uncomplicated basal rosette of leaves and a single flower with green often the dominant colour. The flower forms a hood (the galea) with the semi-fused dorsal sepal and petals united, the lateral sepals clasping the hood to leave a variable orifice between or alongside them, the labellum may or may not protrude from the hood or galea, through the sinus of the sepals. The labellum is simple, mostly ovate to lanceolate on an irritable claw with a sensitive plumed spur at its base. Most of the out-crossing species form large colonies through vegetative increase.

Pollination: Mosquito-like fungus gnats are frequently encountered on or in the flowers; these are just as likely to be female as male so sexual attraction is not likely. The flowers do not have the musky odours of some other greenhoods, nor is the labellum particularly mobile as in many genera. The more out-crossing species have larger flowers on average than the self-pollinating species, although *P. pedunculata* is an exception. Hybrids are common which indicates low pollinator specificity. The attractant is not clear, it may be warmth but as pollinators are frequently seen in the flowers on cloudy days this is not definite.

Distribution and Habitat: *Pterostylis* in the strict sense is a distinctly eastern genus, there being no species native to Western Australia. It is however the most widespread of the greenhood genera to the east and north of Australia occurring in New Zealand, Oceania, New Guinea and Indonesia. The species are essentially restricted to higher rainfall areas, often in forest or swamps but also in heath and especially in the riparian zone. Species occur from the littoral zone to the alpine area but avoid deserts.

Notes: Other Pterostylis likely to have occurred in the South East of South Australia before settlement include *P.* aff. *revoluta* and *P. alpina* both of which occur in western Victoria.

Pterostylis cucullata R.Br. ssp. cucullata

Leafy Greenhood

Etymology: The name *cucullata* means hood-like and refers to the large flower which is often partly enclosed in the upper leaf bract.

Synonyms: *P. cucullata*

Description: Short plants with a tight rosette of erect rounded, crenulate and fleshy **leaves** to 4 cm long. **Flower stem** partly enclosed in the rosette, often less than 5 cm long, upper bract often enclosing the flower. **Galea** about 3.5 cm long green, white and dark brown, very erect, thick textured; lateral sepals short, chocolate, swept forward away from the main part of the hood so leaving a space up to 1 cm across, velvety front; petals dark brown; dorsal sepal mostly white, striped green; **labellum** brown, oblong and obliquely set, quite visible from the side view; stigma large and sticky.

Flowering: Aug – Sept.

Similar Species: ***P.*** *cucullata* ssp. *sylvicola*.

Distribution: **SLx, SEx?; Vic, Tas.**
Mostly coastal from near Robe in the South East but possibly extinct;previously at Fairview Park, in the Southern Lofty region but now extinct; still present in southern Victoria, Tasmania and Bass Strait islands.

Habitat: Under shrubs in non-calcareous sandhills mostly within a few hundred metres of the sea, except where it occurred near Adelaide.

Distinguishing Features: Easily recognised by the thick, rounded, large, fleshy, crenulate leaves and the velvety chocolate coloured front to the flowers.

- Mostly distinguished from ***P. cucullata*** ssp. ***sylvicola*** by the short stature and shorter hood. ***P.*** *cucullata* ssp. *sylvicola* is taller in stature with larger flowers.

Notes: A large colony of this taxon was bulldozed at Fairview Park, a north eastern suburb of Adelaide in the 1960s to make way for a supermarket. The last colony seen in South Australia was on Dulcie Rowley's property near Nene Valley, South East, in the 1970s. The Fairview Park plants were seen in cultivation in Adelaide until about 1990. Attempts to re-introduce them all failed due to weeds and snails.

P. *cucullata* ssp. *cucullata* retains the above described characteristics in cultivation.

Conservation Status

Status in Legislation: As *P. cucullata,* vulnerable nationally, endangered in South Australia.
Suggested Status: Probably extinct due to clearance in South Australia and 3Ec nationally.



JJ, Yanakie, Victoria

Pterostylis cucullata R.Br. ssp. **sylvicola** D.L.Jones

Forest Leafy Greenhood

Etymology: The name *sylvicola* means inhabitant of the woods, alluding to the fact that this sub-species occurs in woodland or forest of the mountains.

Synonyms: As *P. cucullata* until 2006.

Description: **Leaves** 3 to 7 in a sub-erect basal rosette; elliptical, to 10 cm long, thick textured, crenulate. **Flower stem** to 30 cm tall, robust, with several large elliptical stem leaves, the upper one (the floral bract) not enclosing the flower. **Flower** solitary, dark velvety brown, green and white; **galea** to 40 mm long, curved forward at the top; dorsal sepal green and white, blunt; petals brown; laterals sepals brown, obliquely erect, velvety pubescent, loosely embracing the galea but with a space between them, the free points to 15 mm long, recurved; **labellum** to 15 mm, oblong, oblique, brown, decurved at the apex, not protruding.

Flowering: Late July – Aug – Sept –early Oct.

Similar Species: *P. cucullata* ssp. *cucullata, P. riparia* from New South Wales.

Distribution: **SL; Vic.**
Restricted to the Southern Mount Lofty Ranges, but probably extending to the southern Flinders Ranges before settlement; also found in the Eastern States.

Habitat: This tall forest sub-species occurs in fertile chocolaty loams in open forest, on slopes and ridges often with stringybarks and maiden hair fern.



KB, Belair NP, SL

Distinguishing Features: Is distinguished by forest habitat and the chocolate-fronted large flowers.

- ***P. cucullata*** ssp. ***sylvicola*** is short in stature, has a shorter hood and is found in the littoral zone.

Notes: Forms small colonies although most recruitment is from seedlings.

Natural hybrids with *P. nutans* are recorded, and *P. cucullata* has been used in many man-made hybrids.

The pollinating flies have been observed to enter the flowers from the side thus setting off the labellum after they are in the flower.

Conservation Status:

Status in Legislation: As *P. cucullata*, vulnerable nationally, endangered in South Australia.
Suggested Status: 2Eci. *P. cucullata* ssp. *sylvicola* is endangered in South Australia but a little more common in eastern Victoria.



BB, *P. cucullata* ssp. *sylvicola*, Belair NP, Sept

Pterostylis curta R.Br.

Blunt or Curt Greenhood

Etymology: The name is from the Latin *curta* shortened, and refers to the short acuminate lobes of the lateral sepals.

Synonyms: None

Description: **Leaves** 3 to 6, large, petiolate, with smooth margins, in a loose basal rosette up to 80 mm across. **Flower stem** to 30 cm tall. **Flower** usually single, the **galea** about 3 cm high, erect, green with pale brown tints, mostly at the short acute apex; lateral sepals erect, much curved forward then back, the acuminate lobes not much exceeding the hood; **labellum** longer than the column, brown, oblong, twisted near the blunt apex, protruding.



KB, Mt Billy CP, SL

Flowering: Early July – Aug – Sept – Oct.

Similar Species: None

Distribution: **FR, NL, SL, SE; Qld, NSW, ACT, Vic, Tas; Lord Howe Is.** Restricted in South Australia to fertile soils in a few damp gorges in the southern Flinders Ranges, the Mount Lofty Ranges, Hindmarsh Island and the lower South East; common in the Eastern states.

Habitat: Forms small to quite extensive colonies in forest, coastal dunes and shady gullies, especially along creeks where it flowers freely.

Distinguishing Features: Easily distinguished by the large blunt flower with its twisted labellum poking out the front.

Notes: Sometimes forms extensive carpets of leaves and can be a spectacular sight with up to fifty flowers per square metre. Double or even triple headers occasionally occur.

The Adelaide Hills form is the tallest in Australia.

Natural hybrids have been recorded with *P. pedunculata* and *P. nutans.*

Numerous man made hybrids have been registered.

The most commonly cultivated terrestrial native orchid as it is free flowering, multiplies rapidly and is disease resistant.



RB, masses of *P. curta*, Belair NP, SL

Conservation Status

Status in Legislation: Not listed nationally, rare in South Australia.

Suggested Status: 3Rc in South Australia, common nationally.



MH, *P. curta*, Wirrabara NFR, NL

Pterostylis falcata R.S.Rogers

Sickle Greenhood

Etymology: From the Latin *falcus* curved like a sickle or falcate, in reference to the long curved galea apex.

Synonyms: *P. furcata* Lindl.

Description: **Leaves** 4-6 in a loose rosette, to 8 cm long, lanceolate. **Flower stem** to 30 cm tall with several stem bracts. **Flower** single rather large and elongate, green and white with a bulge at the base of the sickle shaped **galea**, dorsal sepal often with a free elongate point to 3 cm long; lateral sepals erect and widely separated from the hood, to 3 cm long, sinus protruding; **labellum** green lanceolate protruding , to 25 mm long.



RB, West River, Church Road, KI

Flowering: Nov – Dec – Jan.

Similar Species: *P. lustra* D.L.Jones, *P. furcata* Lindl.

Distribution: **SL, KI, SE; Qld, NSW, ACT, Vic, Tas.** Uncommon in the Southern Mount Lofty Ranges, south western Kangaroo Island (Rocky River) and the South East; also in the eastern states and Tasmania.

Habitat: In fertile black acid soils of swamps and creek beds in shaded places, often flowering only when the creeks begin to dry out in late spring-summer. The rosettes may be covered by a metre of often fast flowing water in winter, a most unusual habitat for an orchid.

Distinguishing Features: The rather large flowers with sickle shaped hood and long free point to the galea, the bent lateral sepals and the large well exserted labellum all make this a distinctive species.

- Can be confused with ***P. lustra*** which is smaller and found in alkaline soils.

Notes: This species has become exceedingly rare in South Australia due to clearance, blackberry infestation, increased salinity of Kangaroo Island rivers and stock trampling.

R.S. Rogers described plants he collected as 'in the dry bed of the Stunsail Boom River' on Kangaroo Island.

It crosses with *P. nutans* to produce the hybrid *P.* x *ingens* which has been known to outnumber it at certain locations.

Not collected in the SL region until the 1980s.

Conservation Status

Status in Legislation: Not listed nationally, endangered in South Australia.
Suggested Status: Critically endangered in South Australia, more common in the other states.



BB, *P. falcata*, front view, SE

Pterostylis foliata Hook.f.

Slender Greenhood



MH, Hindmarsh Is., SL

Etymology: From the Latin *foliata* leafy, refers to the large leaves, both in the basal rosette and up the stem.

Synonyms: *P. vereenae* R. Rogers, *P. gracilis* Nicholls.

Description: **Leaves** 3 to 6 in a loose sub-erect basal rosette, or staggered up the stem; petiolate, elliptical to ovate lanceolate, variable in the same rosette, to 80 mm long with crenulate margins. **Flower stem** to 30 cm, stout. **Flower** self pollinated usually single, green with white stripes; **galea** to 25 mm high, hardly bulbous, often partly enclosed in the floral bract, apex decurved, sub acute; lateral sepals erect, embracing the galea, the free points to 20 mm long, like horns above the galea; **labellum** lanceolate, curved at the tip, greenish-brown, sub-acute, projecting out of the flower.

Flowering: Aug – Sept.

Similar Species: None.

Distribution: **SL, KI, SE; NSW, Vic, Tas; NZ.**
Restricted to high rainfall coastal districts of the Southern Lofty Ranges, Kangaroo Island and the South East.

Habitat: In forest glades and woodland amid low ferns, *Cheilanthes* and *Adiantum*, especially along small creeks, with *Eucalyptus fasciculosa* but also colonising pine plantations.

Distinguishing Features: This species easily distinguished by the sub-erect basal rosette, robust stem and a flower appearing too small for the rest of the plant.

- The flowers resemble a large ***Linguella* aff. *nana*** but are not closely related.

Notes: Occurs as small**,** loose groups, formed from seed recruitment.

Due the self-pollinating tendencies flowers are short lived, the ovary swelling within a few days of anthesis and the flower slowly closing. The capsule is very large for the flower size. Double headers do occur but the second flower is often incomplete or reduced to a slender spur.

Plants from Cherry Gardens in the Adelaide Hills, sent by a school girl Vereena Jacobs to R.S. Rogers in 1917 had leaves in a flatter basal rosette. Rogers considered them distinct from *P. foliata* and named them *P. vereenae*. However considering the vast distribution, taking in New Zealand, most features are rather constant.

No hybrids recorded in South Australia.

Conservation Status

Status in Legislation: Not listed nationally, rare in South Australia.
Suggested Status: 3Rc in South Australia, more common in the Eastern states.



KB, *P. foliata*, Hardys Scrub, SL

Pterostylis x ingens (Rupp) D.L.Jones

Hybrid Greenhood

Etymology: The name *ingens* means monstrous, massive tremendous size and refers to the size of the flower and plant.

Synonyms: *P. acuminata* var. *ingens* (Rupp).

Description: A robust species with smooth **leaves** to 8 cm long, **flower stem** to 30 cm and a large **flower** to 4 cm long, hardly nodding, green and white, the dorsal sepal apex upturned or not; lateral sepals to 3 cm long; **labellum** curving forward well out of the flower usually with a purple or brown glandular median stripe.

Flowering: Oct – Nov –Dec.

Similar Species: The parent species of the hybrid, i.e. *P. nutans* and *P. falcata* complex.

Distribution: **SL, SE?; Vic.**
Rare in South Australia, at Scott Creek Conservation Park and Myponga and possibly the South East; also in the eastern states.

Habitat: Always found in damp, disturbed spots, particularly creek-banks, bogs or edges of waterholes.

Distinguishing Features: Not always easy to identify, presumably because some colonies appear to be back-crosses with *P. nutans* or *P. falcata* but usually recognised from its intermediate characters.

Notes: It increases vegetatively to form large clonal colonies.

This species is commonly cultivated because of its vigorous growth, (hybrid vigour). The parent species of South Australian forms are the tall forms of *P. nutans* and *P. falcata*. *P.* x *ingens* has been used as a parent in more advanced man made crosses such as *Pterostylis* 'Ruckman.' These days, hybrids are easily recognised and unlikely to be named as a variety of a species to which they are not related, at least not in South Australia. However, that is what happened when these plants were first named as *P. acuminata* var. *ingens.*

Conservation Status

Status in Legislation: Not Listed.
Suggested Status: Not likely to persist naturally in South Australia as the P. *falcata* parent is almost extinct due to habitat loss.



KB, *P.* x *ingens*, Myponga, SL

Pterostylis lustra D.L.Jones

Small Sickle Greenhood

Etymology: The name means shining as in lustrous and refers to the shiny leaves and flowers which need to reflect light in the dark shady places the species favours.

Synonyms: *P. furcata* Lindl., *P. falcata* R.S.Rogers.

Description: **Leaves** 2 to 5, in a loose basal rosette, ovate-lanceolate, to 50 mm long, with smooth margins. **Flower stem** slender to 20 cm tall, with 2 or 3, lanceolate stem bracts. **Flower** single, large, pale green, translucent; **galea** erect, to 30 mm high, slightly swollen near the base, curved forward at the top with a 30 mm long straight filiform point; petals narrow acuminate; lateral sepals erect to 40 mm long including the 30 mm long, straight, filiform tips, embracing the galea, the sinus thrust forward well away from the galea; **labellum** lanceolate, greenish-brown, about as long as the galea and curved well forward out of the flower. Flower thin textured but long lived.

Flowering: Late Oct – Nov – Dec.

Similar Species: *P. falcata* and *P. furcata* from Tasmania.

Distribution: **KI, SE; Vic, Tas.**
Rare and localised in the lower coastal South East and the south west of Kangaroo Island.

Habitat: Restricted to swamps, swampy creek margins, or shallow creek-beds with silky tea-tree *Leptospermum lanigerum,* mostly on alkaline ground. Semi aquatic, as it may be under water in winter. Once seen as a lithophyte on a block of limestone sitting in a *Gahnia* and tea-tree swamp west of Millicent. Often in deep shade, (see image on next page).

Distinguishing Features: Can be distinguished from the similar ***P. falcata*** by the smaller, shinier plants with a straighter dorsal sepal point and straighter back-swept lateral sepals as well as the preference for limestone substrates.

Notes: Forms small clonal colonies by vegetative increase.

Apparent hybrids with *P. nutans* and *P. curta* have been observed in the South East region and Kangaroo Island.

Conservation Status

Status in Legislation: Not Listed.
Suggested Status: 3Eci, nationally threatened.



BB, *P. lustra*, Glenelg River area, Vic
*Note pollinator on leaf

Pterostylis nutans R.Br.

Nodding Greenhood

Etymology: From the Latin *nutans* meaning nodding, so both the common and scientific names refer to the nodding flowers.

Synonyms: None

Description: **Leaves** 3 to 6 in a loose basal rosette; ovate to 8 cm long, petiolate, pale green with crenulate margins. **Flower stem** to 30 cm tall (at least in the Adelaide Hills forms), with small stem bracts, the top often curved forward. **Flower** single, to 25 mm long, pale green with brownish tips; **galea** curved forward and down, bulbous basally; dorsal sepal and petals pointed; lateral sepals angled down beside the galea, the free points to 15 mm long and exceeding the galea; **labellum** to 15 mm long, strongly curved, green, with a coloured centre stripe in brown or even purple red, with glandular hairs, the tip well out of the flower and directed upward.

Flowering: June – Jul – Aug – Sept – Oct – early Nov.

Similar Species: None

Distribution: **SL, KI, SE; Qld, NSW, ACT, Vic, Tas; NZ.** From western Kangaroo Island, through the Southern Mount Lofty Ranges and lower South East; also in the eastern states.

Habitat: Shady gullies and damp woodland in leaf litter and loams or sand and also around swamp margins in the South East in peaty sand.



BB, Native Wells NFR, SE

Distinguishing Features: The nodding, pale green flowers with brownish tips to the galea and strongly curved labellum with conspicuous hairs make this species easily identifiable.

Notes: Plants from the South East are much shorter and more insipid but flower morphology is consistent. *P. nutans* can form quite extensive colonies but is usually found in smaller clonal colonies of about fifty plants which all flower at different times so that by September one usually finds plants in capsule, flower and early bud.

Pollinators are often seen buzzing around in the bulbous base of flowers which are somewhat transparent.

Commonly cultivated and does well in pots with a light open mix, flowering freely if kept in a cool shady position. Naturally hybridises with *P. cucullata* in the Adelaide Hills. Numerous man made hybrids have been produced.

Conservation Status

Status in Legislation: Not Listed.
Suggested Status: Secure.



RL, *P. nutans*, Mt Crawford NFR, SL

Pterostylis pedunculata R.Br.

Maroon-hoods

Etymology: The name *pedunculata* with a flower stalk refers to the long flower peduncle.

Synonyms: None

Description: **Leaves** in a basal rosette, 3 to 6, petiolate, oblong-ovate, to 6 cm long, dark green with conspicuous veins. **Flower stem** to 30 cm tall, with small stem bracts. **Flower** single, rarely two, white with green stripes at the base, becoming darker toward the top, eventually dark brown, maroon or orange; **galea** erect to 20 mm long, hooded at the top with a short straight or curved point; lateral sepals narrow, erect and loosely embracing the galea, the free points to 30 mm long, divergent; **labellum** to 5 mm long, dark brown, ovate, the apex just reaching out of the flower.



RB, Kuitpo Forest, SL

Flowering: Late July – Aug – Sept – Oct – early Nov.

Similar Species: *P. erecta, P. oblonga* in eastern states.

Distribution: **FR, NL, YP, SL, KI, SE; NSW, ACT, Vic, Tas; Lord Howe Is.**
Widespread in high rainfall areas east of Spencer Gulf, but very rare in the southern Flinders Ranges and northern Mount Lofty regions, and only at the very tip of Yorke Peninsula.

Habitat: Woodland and forest, especially in shaded gullies in most soil types, less frequently in damp heath. The species is often associated with native cherries *Exocarpus cupressiformis,* colonising pine plantations and outer suburban gardens.

Distinguishing Features: Can be easily distinguished by the maroon to dark brown colouration on the front and top of the flowers, with long sepal extensions; one of the smallest in this genus.

Notes: Forms clonal colonies which can be small and dense or large enough to number in the thousands.

Flowers are long lived which is probably as a result of infrequent pollinator visitation. In a cool shaded site blooms may last up to 8 weeks, the colouration of the hood becoming more intense with time.

Forms infrequent hybrids with *P. curta,* and *P. nutans* where they are sympatric.

Commonly cultivated in pots or in bushland gardens probably because it is easy to grow rather than for the small flowers. Plants are rarely seen as epiphytes in the fork of large trees but more frequently on fallen logs. Has even colonised neglected house guttering.

Conservation Status

Status in Legislation: Not Listed.
Suggested Status: Secure.



MH, *P. pedunculata,* Topperwein NFR, SE

Gallery



BB, *P. pedunculata*, SE



KB, *P. foliata*, SL



KB, *P. curta*, Mt. Billy CP, SL



MH, *P. nutans,* Topperwein NFR, Aug



KB, *P. nutans,* Scott CP, July



MH, *P. foliata*, leafy plant Hindmarsh Is.

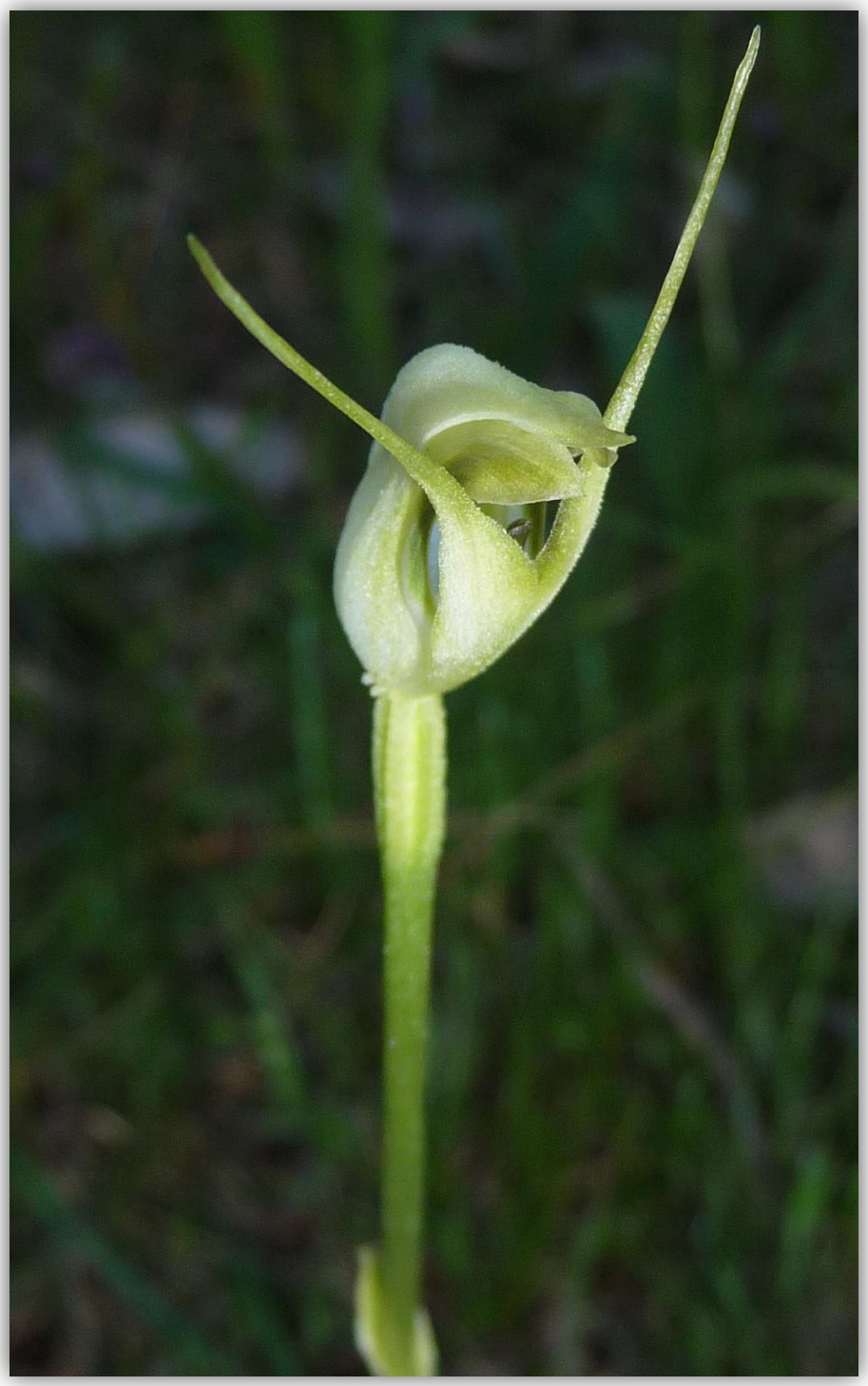


BB, *P. lustra* rosettes
*Note the clonal nature



GN, *P. pedunculata*, Adelaide
A most unusual sight – a dense colony growing in a suburban lawn.





BB, a pale *P. pedunculata*, Hindmarsh Valley, SL, Sept



***P. falcata*, KI, Dec**
A rare greenhood in a water-fern patch



RL, well camouflaged *P. nutans*, Thomas Gully, Kangarilla, SL

Pyrorchis D.L.Jones & M.A.Clem.

Fire Orchids



KB *P. nigricans*, freshly opened flowers, SL

South Australia's Native Orchids

Pyrorchis D.L.Jones & M.A.Clem.

Fire Orchids

Etymology: From the Greek *pyro* fire and *orchis* an orchid; this and the common name reflect the need of species in this genus for fire to facilitate flowering.

Taxonomy: Previously included under *Lyperanthus* and even *Burnettia*; the name *Pyrorchis* was only published in the late 1990s.

Description: Bothspecies are easily recognised by their large orbicular to ovate, fleshy leaf which is often patterned with dark spots, blotches or even white flecks. The flowers are set on a fleshy stem to 20 cm with many bracts. they are in colours of purple, maroon or pink and white. These can be quite spectacular when fresh but soon begin to wither and turn black.

Pollination: The pollinators are not known and some degree of self-pollinating occurs. Without a summer fire flowering is rare but after a suitable hot burn flowering occurs *en masse* and can be quite spectacular.

Distribution and Habitat: A genus of two species probably originating in the west as Western Australia has both species but only one extends through South Australia to the Eastern states, becoming less common as one goes further east. Both species have a preference for light sandy soils in heath or heathy woodland but both also occur in gravely soils or about large rocks



RB, leaves of *Pyrorchis* on favoured sandy soils, **Ngarkat CP, SA**

South Australia's Native Orchids

Pyrorchis nigricans (R.Br) D.L.Jones & M.A.Clem.

Fire Orchid or Undertaker Orchid

Etymology: From the Latin *nigra* black a reference to the colour of dried collections, both the flowers and leaves turning black as they dry.

Synonyms: *Lyperanthus nigricans* R.Br. and *Burnettia nigricans.*

Description: A colony forming species with large orbicular or ovate **leaf** of variable colour, often spotted or blotched and silvery below. The **stem** is stocky with 2-5 large swollen bracts. **Flowers** are 1-8, subtended by a swollen bract, to 4 cm long, maroon with white stripes, the broad dorsal sepal hooded over the column and labellum, lateral sepals maroon, deflexed, **labellum** red with white lateral fringe, plant turning black after flowering, no perfume.



RL, Cox Scrub, SL, Sept

Flowering: Sept – Oct – Nov.

Similar species: None.

Distribution: **FR, EP, NL, MU, YP, SL, KI, SE; WA, NSW, Vic, Tas.**
Widely distributed throughout the state although in the Flinders Ranges found only near Mambray Creek, whereas it is abundant on the Eyre Peninsula. It is also found in Western Australia, New South Wales, Victoria and Tasmania.

Habitat: Found mostly in sandy heath or sandy woodland but also on gravely slopes and ridges or about large rocks.

Distinguishing features: This species is recognised by its leaves, namely thick fleshy and ground-hugging. Flowers are distinctive but rarely seen except after fire. Flower and plant structure persists in a blackened mummified form (see Gallery for image).

Notes: Flowering is most obvious after summer fires. Cool season burns do not stimulate flowering to the same degree as summer wildfires. Colonies on calcareous soils may flower every year; elsewhere only one or two plants in a thousand are likely to flower without fire. After a hot burn masses of flower spikes may be seen per hectare; (see image in Gallery).

Conservation status:
Status in Legislation: Not Listed.
Suggested status: Abundant; conserved.



RL, *P. nigricans*, Cox Scrub, SL, Sept

Gallery



JN, *P. nigricans*, Oct



RL, *P. nigricans,* Reeves Plains, SL



KB, a long segmented *P. nigricans*, YP



PH, a green *P. nigricans*, Wanilla EP



***P. nigricans*, orchid art by Kath Alcock**



RL, *P. nigricans*, Kuipto, SL, Jan
*Note parts of the flower are still recognisable



RL, *P. nigricans* leaves, Hale CP, SL, July
*Mass of leaves is often all that will be seen.



RL, *P. nigricans*, Kuipto, SL
*This image shows why it is called *nigricans*



PH, a horde of *Pyrorchis* on burnt ground, Koppio, EP



RB, *P. forrestii*, WA



ID, *P. nigricans*, Victoria

South Australia's Native Orchids

Speculantha D.L.Jones & M.A.Clem.

Tiny Greenhoods



JN, *S.* sp. Sandheath, Honan NFR, SE

South Australia's Native Orchids

Speculantha D.L.Jones & M.A.Clem.

Tiny greenhoods

Etymology: From Latin *speculum* a mirror, reflecting the fact that flowers of most species face each other.

Taxonomy: Previously included in the super genus *Pterostylis* however there are so many differences and the group is so well marked that it is best they be treated as a separate genus. No hybrids are known either within the genus or with other greenhoods, suggesting that this is an ancient genus.

Description: Plants usually lack a rosette or stem leaves at flowering but the rosette may develop during or after flowering. The stem leaves have been reduced to a few clasping bracts. Flowers are tiny and rounded, in various shades of green, red and brown with white patches, or sometimes wholly red. The labellum is hidden within the flower and is not very irritable. As could be expected of a genus with tiny pollinators, the entrance to the flower hood is very small, the pollinia and petals reduced.

Pollination: Most species are out-crossing and pollinated by tiny *Diptera*, i.e. short bodied vinegar flies which are attracted by musty or sour odours, not by the long bodied fungus gnats which pollinate *Pterostylis.* Some species have a seminal odour, others smell of sour milk and still others are fruity. Some like *S. uliginosa* in South Australia are strongly self-pollinated.



JN, *Speculantha* and fly

Distribution and Habitat: There are about 15 species confined to eastern Australia, found from the coast, into the alpine zone and well inland, in both dry and swampy conditions.

In South Australia confined to high rainfall districts in or near swamps.

Notes: Members of this greenhood genus can flower at any time of year but the South Australian ones are late summer-autumn flowered.

Speculantha parviflora
(R.Br) D.L.Jones and M.A.Clem.

Tiny Greenhood

Etymology: The name *parviflora* little flowers, refers to the tiny green flowers.

Synonym: *Pterostylis parviflora* R.Br.

Description: **Leaves** 4-10 in a rosette separate from the flowering plant or attached on a side shoot; leaves petiolate, ovate, to 20 mm long, crenulate. **Flower stem** to 25 cm tall, slender, green, with small adpressed stem bracts. **Flowers** 2-10, tiny, green and white striped, shiny; **galea** erect except at the hooded top, to 10 mm high, apex blunt; lateral sepals erect, close to the galea and hardly exceeding it, the free points only 3 mm long at best; **labellum** to 3 mm long, green, oblong not protruding. Odour is faint and musty.

Flowering: Late March – Apr – May.

Similar species: *S.* sp. Sandheath*, S. uliginosa.*

Distribution: **SE; Qld, NSW, Vic, Tas.**
Rarely encountered in South Australia, collected at Piccaninnie Ponds CP; common in the eastern states.

Habitat: In this state only known from a site in leaf litter on limestone adjacent an alkaline tea-tree bog, but in Victoria found in varied habitats including heath-land and forest.

Distinguishing Features: This is the most slender species of the genus. The flowers are tiny but out-crossing and more delicate in appearance than the other two South Australian species.

- The more common but undescribed ***S*. sp. Sandheath** in the South East has red brown tips to the larger flowers and grows only on acid sands.

Notes: *S. parviflora* may have recently disappeared in South Australia as the only known location has become overgrown with dense shrubbery. Like most conservation parks in South Australia there is no pro-active management such as slashing some areas to keep them open. Hence orchid populations tend to crash once areas of heath-land are declared parks.

Probably more widespread before settlement, occurring in western Victoria on both the coast and inland.

Conservation status:
Status in Legislation: Not listed nationally, endangered status in South Australia.
Suggested Status: Critically endangered in South Australia; common and widespread in the Eastern states.



RB, Piccaninnie Ponds CP, SE

Speculantha sp. Sandheath

Red-tip Greenhood

Etymology: The name phrase name refers to the habitat preference of the species.

Synonyms: Previously included under *Pterostylis parviflora* R.Br. and recently referred to as P*terostylis* 'Sand-heath'.

Description: **Leaves** 4-10 in a ground hugging rosette adjacent flowering plant on a side shoot , leaves ovate, petiolate, to 20 mm long, crenulate, acute; non flowering plants with a smaller rosette. **Flower stem** to 30 cm, slender with small sheathing bracts. **Flowers** 1-12, small, facing the stem, green and white striped with red-brown tips to all segments; **galea** erect to 10 mm high, red hooded at the top, with a rounded tip. Lateral sepals erect and apressed to the galea, the free points less than 3 mm long, curved forward and not exceeding the galea, petals brown with a white spot; **labellum** to 3 mm long, red-brown, oblong, not protruding. The flowers have a musty seminal odour.

Flowering: April – May – June

Similar species: *S. parviflora, S. uliginosa, S. rubescens.*

Distribution: **SE.**
S. sp. Sandheath is restricted in South Australia to the lower South East as far north as Penola, but mostly in the Glencoe area.



KB, Honan NFR, SE

Habitat: Prefers peaty sands in stringybark woodland, especially near swampy depressions. *S.* sp. Sandheath is more frequently seen on track-sides, slashed, burned or disturbed areas.

Distinguishing features: Easily separated from other members of the complex by its brown petals and red-brown tipped segments.

Notes: The tiny pollinating flies are attracted by the musty odours and are frequent visitors, hence pollination is well effected.

This species may have occurred in the Adelaide Hills before settlement but no collections exist. *Pterostylis parviflora* was recorded for the Mount Lofty Ranges by R.S.Rogers as early as 1911 so it is surprising that no collections exist to show what species (*S. parviflora* sensu stricto or *S.* sp. Sandheath) he had seen. It is highly likely other *Speculantha* species occurred in South Australia before land clearance but were never collected.

It usually occurs as single plants or small groups that are well represented in forest reserves.

Hybrids are not known.

Conservation status:
Status in Legislation: Not listed nationally, vulnerable status in South Australia.
Suggested Status: 2Ec in South Australia, nationally rare.



KB, *S.* sp. Sandheath, near Glencoe, April

Speculantha uliginosa
(R.Br) D.L.Jones and M.A.Clem.

Peat Bog Greenhood

Etymology: The epithet *uliginosa,* of swamps, refers to the peat bog habitat.

Synonyms: Previously included under *Pterostylis uliginosa, Pterostylis aphylla* and *Pterostylis parviflora.*

Description: **Leaves** 4-10 in a ground-hugging rosette separate from the flowering plants; ovate to 20 mm long, grey-green, apex acute, petiolate. **Flower stem** to 15 cm tall, green, fleshy with 3 or 4 fleshy, closely sheathing stem leaves or bracts. **Flowers** 1-5, to 15 mm long, fleshy, green, facing into the stem, on ribbed ovaries which rapidly elongate as flowering progresses; **galea** to 15 cm high, erect, not swollen, the hood short; petals slightly exceeding the dorsal sepal; lateral sepals erect, closely sheathing the galea and shorter than it, the free points vestigial, curved against the hood; **labellum** only 3 mm long, elliptical, tip well hidden inside the flower. Flowers are strongly self-pollinated and last only a few days before collapsing, the stem and ovaries continuing to elongate.

Flowering: Late Jan – Feb – March.

Similar Species: *S. parviflora*, *S.* sp. Sandheath, *S. aphylla*.

Distribution: **SL**; **NSW, Vic, Tas.**
Very restricted in South Australia where known only from a handful of swamps on upper Fleurieu Peninsula; rare in eastern states.

Habitat: Only found on peaty mounds in extensive swampy heath and hanging bogs, in company with sedges under stunted *Myrtaceous* shrubs.

Distinguishing Features: Can be recognised from the small, fleshy green flowers on short stems which elongate after flowering.

Notes: The species has suffered greatly from draining of swamps and their conversion to pasture. It is very sensitive to disturbance and is usually only seen post flowering. It is close to extinction in South Australia and is also rare in the Eastern states.

This is the only greenhood to flower in the Southern Lofty Ranges over mid to late summer. It occurs either singly or in small groups.

This is something of a relict species. It may occur on Kangaroo Island and the South East.

Conservation Status:
Status in Legislation: Not listed nationally, endangered status in South Australia.
Suggested Status: 2E in South Australia and rare nationally.



RB, *S. uliginosa*, Yundi, SL

Gallery



KB, *S.* sp. Sandheath, Honan NFR, SE

South Australia's Native Orchids

Spiranthes Rich.

Ladies' Tresses or Spiral Orchids



JN, *S. alticola*, Feb

South Australia's Native Orchids

Spiranthes Rich.

Ladies' Tresses or Spiral Orchids

Etymology: From Greek *speira* coiled and *anthos* a flower, referring to the spirally arranged inflorescence.

Taxonomy: Until the 1990s all Australian species were described under the east Asian *Spiranthes sinensis* but taking into regard the many different forms and the limited distribution of most northern hemisphere species, it seems best to regard the Australian species as separate. The name *S. australis* was applied to all but this is still unsatisfactory given that we have small bright red and white flowered forms in woodland in New South Wales, large pink and white out-crossing swamp forms in the Alps and in southern Australia, and even a selfing greenish white form in South Australia. These forms are likely to be named as separate taxa, and indeed D.L.Jones has recently (2008) named *S. alticola* from the Australian Capital Territory.



JN, *Spiranthes* flowers with native bee pollinator

Description: The South Australian species have a rosette of fleshy, grass-like, upright leaves. The flower spike is unique in having numerous flowers in a spiral arrangement. Reproduction is mostly by seed. All species are deciduous, losing their leaves in autumn or winter dying back to a cluster of fleshy, root-like tubers.

Pollination: The flowers are pollinated by native bees although there are self-pollinated species as well.

Distribution and Habitat: *Spiranthes* is an almost cosmopolitan genus of about thirty species, principally in the Northern Hemisphere, but extending through Eastern Australia and Oceania to New Zealand. The Australian forms are likely derived from Asian species spread by seed on the feet of migratory birds via South-east Asia and New Guinea. In South Australia it is restricted to acid bogs, waterholes, lake margins and stream-sides.

Notes: The description of *Spiranthes alticola* better fits South Australia material.

There may be as many as four different taxa in Australia.

In New Zealand the common *Spiranthes* is called *S. novae-zealandica.*

Spiranthes alticola D.L.Jones

Swamp Spiral Orchid

Etymology: The name *alticola* means high dweller, referring to its distribution in Eastern Australia, in west Victoria and South Australia's South East. It also grows near sea level.



JN, Topperwein NFR, Dec

Synonyms: Previously included in *Neottia australis* R. Br., *S. sinensis* (Pers.) Ames and *S. australis* R.Br.

Description: **Leaves** 3-5, narrow lanceolate, shiny, erect at the base, to 15 cm long. **Flower stem** to 45 cm tall, slender, flexible, with several sheathing bracts. The **flowers** are numerous in a dense spiral, pink with a white labellum, rarely all white. Segments are 6-10 mm long, sepals somewhat triangular, petals lanceolate, together forming a short tube, the tips free and recurved, and the lateral sepals divergent. **Labellum** with a broad, decurved crisped, pellucid mid-lobe, side-lobes erect small. The flowers are faintly fragrant.

Flowering: Dec – Jan – Feb.

Similar Species: *S. australis*, *S.* sp. Late selfing-white.

Distribution: **SL, KIx, SE; NSW, Vic, Tas.** Confined in South Australia to a few high rainfall, near coastal, often mountain locations, southward from the Adelaide Hills in the Southern Lofty region, extinct on Kangaroo Island, (one record only), and South East; also in New South Wales, Victoria and Tasmania.

Habitat: Restricted to peaty bogs and swampy creek-sides, often in locations that are inundated throughout winter; in some areas surviving in paddocks grazed by stock.

Distinguishing Features: ***S. australis,*** which is from the eastern states and is not strictly a swamp plant, has smaller darker pink flowers with a narrow labellum.

- The two South Australian forms treated here are regarded as distinct species as where they are sympatric they begin flowering at different times and do not intergrade. *S. alticola* is the more delicate of the two.

Notes: The best specimens are found on mowed firebreaks adjacent to swamps. When vegetative reproduction produces two clonal plants next to each other the spiral arrangement of one is often a mirror image of the other. See Gallery.

Native bee pollinators work the spikes from the bottom upward but as the stigma becomes receptive well after the pollinia have matured this mechanism helps ensure out-crossing.

Plants do well in cultivation if kept moist over summer.

Conservation Status:

Status in Legislation: Not listed nationally, rare in South Australia.

Suggested Status: Rare in South Australia but more common in the Eastern States.



JN, *S. alticola* showing typical broad labellum

Spiranthes sp. Late selfing-white (R. Bates 909)

White Selfing Spiral Orchid

Etymology: The tag name is descriptive, reflecting the fact that the short-lived hardly opening flowers self-pollinate.

Synonyms: Previously included in *S. sinensis* (Pers.) Ames, or *S. cleistogama* ms.

Description: Robust plants with 3-6, lanceolate, tough dull green, erect **leaves** to 20 cm long. **Flower stem** rigid, to 50 cm tall, with several sheathing bracts. **Flowers** 10-30, wholly dull greenish white, in a loose spiral, the ovaries large and glandular hairy, enclosed in large curved bracts; segments to 7 mm long, lanceolate to narrow lanceolate, free and slightly recurved apically, forming a long slender tube. The **labellum** is long and narrow, the apex decurved but not broadly flared and hardly crenulate. The flowers are not fragrant.

Flowering: Feb – early March.

Similar Species: albino specimens of *S. alticola*.

Distribution: **SL**
Endemic to the Fleurieu Peninsula but perhaps also in Victoria, Tasmania and New Zealand.

Habitat: Peaty bogs, usually with myrtaceous shrubs, especially on mounds or on unsteady ground. Often found with *Cryptostylis* and sometimes with *S. alticola*.



RB, Tooperang, SL

Distinguishing Features: The white narrow tubular flowers spaced on the stem are features of significance for this species.

- Differs from ***S. australis*** and ***S. alticola*** in never having pink flowers, in the duller more rigid habit, the narrow segments, the hardly opening, short lived flowers which do not form attractive spirals, the rapidly enlarging ovaries, and the small labellum which is never broad and frilly. It also begins flowering later than the other two.

Notes: This species is rapidly becoming scarce through destruction of its meagre habitat in South Australia; not conserved.

The species should not be confused with white flowered specimens of *S. alticola* which occur as isolated individuals with normal *S. alticola.*

It is not suitable for cultivation.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 2E, nationally endangered.



MH & CH, *S.* sp. Late selfing-white, Nangkita, Feb

Gallery



RB, *S. alticola*, Pambula Swamp, Feb



JN, *S. alticola*, SE, Mar



RB, white *S. alticola* Larrikin Lagoon, KI
*Note the mirror image



JN, L to R *S. alticola* pink, *S. alticola* white, *S.* sp. Late selfing-white, SL



***S. alticola* with its compatriot *Cryptostylis subulata*, art by KA**





KB, *S. alticola*, Nangkita,
*Note variation in degree of spiralling

South Australia's Native Orchids

Stegostyla D.L.Jones & M.A.Clem.

Gremlin Orchids



KB, *S. congesta*, Glencoe, SE

South Australia's Native Orchids

Stegostyla D.L.Jones & M.A.Clem.

Gremlin Orchids

Etymology: From the Greek *stegia* a cover or roof and *stylos* a style referring to the column being well covered by the hooded top sepal.

Taxonomy: This group of species was previously treated under *Caladenia* but was separated from it in 2002. The genus is mostly an Eastern states one, extending to New Zealand.

There are four species which only just make it into our South East, mostly within 50 kilometres of the Victorian border. All flower later than most other members of *Caladenia* sensu lato.

Description: The genus is distinguished by the very narrow leaf, the often several flowers, which are glandular outside; the granular, often dark labellum calli and the strongly curved dorsal sepal which forms a hood over the column. All the segments have glandular hairs on outer surface.

Pollination: The pollination strategy is not well understood. Some degree of floral mimicry has been noted and yet species with dark curved labellum calli would appear to be wasp pollinated; wasps are often observed as pollinators pseudo-copulating with the dark, curved mass of calli while native bees can sometimes be seen clasping the labellum and shaking it as in buzz pollination.

Distribution and Habitat: This is mostly a genus of eastern state species from high rainfall or swampy habitat, particularly open woodland and heath. In South Australia they occur in similar habitat.

Notes: There were probably other species of *Stegostyla* in South Australia before European settlement, but massive vegetation clearance and complete loss of some habitat types has caused their extinction.

South Australia's Native Orchids

Stegostyla congesta (R.Br.) D.L.Jones & M.A.Clem.

Black Tongued Gremlin-orchid

Etymology: *Congesta*, Latin meaning crowded, refers to the dense black calli on the labellum

Synonyms: *Caladenia congesta R.Br.*

Description: Very distinctive species with a narrow **leaf** to 20 m long and 5 mm wide, few hairs, green with a red base. **Flower stem** to 50 cm high, very slender, green or red. **Flowers** 1-4 (but usually single in South Australia), to 30 mm wide, bright pink with numerous brown glandular hairs outside; segments to 20 mm long, lanceolate, flat; top sepal strongly curved over and hiding the column; lateral sepals and petals stiffly spreading. The deep pink **labellum** is strongly lobed, the mid lobe slender, entire and covered with a dense mass of black calli; side lobes slender, very erect, entire. The flowers rarely have any fragrance.



BB, Honan NFR, SE

Flowering: Nov – Dec – Jan.

Similar species: None

Distribution: **SE; Eastern states.**
Confined to the lower South East in South Australia, as far north as Millicent but rare now due to land clearance *S. congesta* is much more widespread in the Eastern states.

Habitat: In woodland with a heath under-storey, largely confined to swampy areas around Glencoe in South Australia.

Distinguishing features: The bright pink flowers with rather narrow labellum with its mass of black calli set *S. congesta* apart from other species in the South East.

Notes: Usually seen in ones and twos and seldom forming large colonies. The amazingly slender stem allows the flower to sway about in the breeze. Usually seen on mown fire breaks in forest reserves where plants receive more light and less competition. These plants average only 25 cm in height. Away from fire breaks the plants are drawn up by heathy plants so that the flower is above the heath and the stem averages 40 cm.

Black native bees and flower wasps are often seen grappling with the mass of calli on the labellum. It is unclear if sexual attraction is involved or if this is a case of floral mimicry of vernal lilies and the grappling behaviour is an example of 'buzz pollination'.

The late flowering season means the species is usually seen blooming with *Caladenia necrophylla* and as in that species the leaf is senesced at flowering in dry years.

Conservation status:
Status in Legislation: Not listed nationally, rare in South Australia.
Conservation status: Vulnerable.



RB, *S. congesta*, The Marshes NFR, SE, Dec

South Australia's Native Orchids

Stegostyla cucullata (Fitzg.) D.L.Jones & M.A.Clem.

Hooded Gremlin-orchid

Etymology: The name *cucullata* means hooded and refers to the dorsal sepal which forms a hood over the column.

Synonyms: *Caladenia cucullata* Fitzg.

Description: **Leaf** slender, to 20 cm long and 4 mm wide, sparsely hairy, green or reddish. **Flower stem** to 25 cm tall, wiry, green or red. **Flowers** 1 – 13, about 25 mm wide; not or faintly perfumed, white inside, covered outside with numerous glandular green or brownish hairs; segments to 15 mm long, broad-lanceolate, top sepal curved over the column; lateral sepals and petals spreading horizontally with upturned tips. **Labellum** white with red and purple markings; mid lobe coloured, fringed with clubbed teeth, lamina with 4 rows of red calli extending to the strongly curved apex, side lobes short, erect with entire margins.



MH, Bangham CP, SE

Flowering: Sept – Oct – Nov.

Similar species: *S. gracilis*.

Distribution: **SE; NSW, ACT, Vic.**
Restricted to the South East in the area adjacent the Victorian border between Naracoorte and Bordertown and across to Padthaway; much more widespread in the Eastern states.

Habitat: Woodland and scrubs in sandy soils. Often in the shade of stringy bark trees and always in company with a wide variety of other orchids and liliaceous plants.

Distinguishing features: *S. cucullata* is a rather attractive and distinctive species in South Australia.

- ***S. gracilis*** is a taller plant with fewer, larger more colourful flowers with a strong musky perfume.

Notes: Usually forms loose colonies. Flowers are long lasting so that a plant with several flowers, which opens its first flower in September, will still have the top flower open in November. Multi-flowered plants often have crowded flowers.

The species is pollinated by native bees and flower wasps which sometimes enter the flowers in groups, each jostling for position.

Conservation status:
Status in Legislation: Not listed nationally, rare in South Australia.
Suggested status: South Australia 2Vci, but secure in Victoria.



KB, *S. cucullata*, Bangham CP

South Australia's Native Orchids

Stegostyla gracilis (R.Br.) D.L.Jones &M.A.Clem.

Musky Gremlin-orchid

Etymology: The Latin epithet *gracilis* slender refers to the slender stem.

Synonyms: Was previously *Caladenia gracilis* and confused with *Caladenia angustata* Lindl. from Tasmania. In 2008 treated sometimes as *S. moschata*

Description: **Leaf** slender, to 20 cm long and 5 mm wide, sparsely hairy, green with a reddish base. **Flower stem** to 30 cm tall, slender green or reddish. **Flowers** 1-3, musky scented, to 35 mm across, white inside but the outside covered with numerous red to purple-brown glands; segments to 20 mm long, falcate-lanceolate, flat; top sepal erect and hooded over the column like a cap; lateral sepals and petals stiffly spreading, the tips sometimes upturned. The **labellum** white with a few pink markings is trilobed with 4 rows of stalked, clubbed calli extending down the mid-lobe where they become shorter and more crowded; side lobes erect, short and entire, mid lobe long, much decurved with clubbed marginal calli.



MH, Mary Seymour CP, SE

Flowering: Sept – Oct.

Similar species: *S. cucullata*.

Distribution: **SE; Vic, Tas.**
Once common in the Naracoorte to Mount Gambier area and still found west of Naracoorte to Nangwarry; moderately common in the Eastern states.

Habitat: In South Australia occurred mostly in fertile sandy loams in *Acacia* woodland.

Distinguishing features: It is easily recognised from its large, colourful, scented flowers.

- ***S. cucullata*** has more numerous, smaller, unscented flowers.

Notes: Collections exist from Mt Gambier in the 19th century, Glencoe in the 1950s, Comaum in the 1970s and Mary Seymour Conservation Park in 2005. Most suitable habitat has been converted to grazing or farmland.

This is a bee pollinated species.

Most South Australia plants have been single flowered perhaps reflecting that its occurrence here represented the extreme western limit of its distribution.

Large populations emit such a strong musky perfume that they are likely to be smelled before they are seen. In this regard they are similar to the unrelated *Arachnorchis gladiolata*.

This species has recently been confused with *S. moschata* from the Eastern Highlands.

Conservation status:
Status in Legislation: Not listed nationally, endangered in South Australia.
Suggested status: Critically endangered in South Australia but common nationally.



***S. gracilis*, lower SE, artwork by Kath Alcock**

Stegostyla iridescens
(R.S.Rogers) D.L.Jones & M.A.Clem.

Stegostyla aff. iridescens

Shining Gremlin-orchid

Etymology: The species is closely related to *S. iridescens* and perhaps best regarded as a mere variant.

Synonyms: Was at first treated as a form of *S. transitoria.*

Description: Slender plant to 20 cm, **leaf** narrow, erect. **Flower** 1 or 2, in tones of gold, orange and green with dark maroon, 1 cm or more across, segments rounded to lanceolate; **labellum** trilobed, the side lobes entire and erect, mid lobe with 4 rows of dark, clubbed, granular calli extending to the apex. Flowers only last a few days and are not perfumed.

Flowering: Late Oct – early Nov

Similar species: S*. iridescens, S. transitoria.*

Distribution: **SE; Vic.**
Found near Glencoe and also south-west Victoria near the coast.

Habitat: Found in damp sandy woodland and heath.



KB, Honan NFR, SE

Distinguishing features: The flowers are smaller than the out-crossing ***S. iridescens*** sens stricto.

- It differs from the similar sized greener, more inbreeding ***S. transitoria*** in being more orange or gold and with darker calli.

Notes: Only recently (2005) discovered by NOSSA members June Niejalke and Dianne Richman, with the first collection being made by Barbara and Ken Bayley.

A similar but cleistogamous form without a fringe on the labellum has recently (2008) been discovered along Squashy Creek on Kangaroo Island, again by a NOSSA member. This was the first record of the genus in South Australia outside of the South-east region. See *S.* aff. *transitoria.*

This is an example of just one of a dozen species from western Victoria which had not been recognised as occurring in South Australia until this century.

Conservation status:
Status in Legislation: Not Listed
Suggested status: Vulnerable in South Australia, rare nationally.



BB, *S.* aff. *iridescens,* Kangaroo Flat NFR, SE

Stegotyla transitoria
(D.L.Jones) D.L.Jones & M.A.Clem.

Stegostyla aff. transitoria

Shy Gremlin-orchid

Etymology: This self-pollinated species is related to *S. transitoria,* but does not open its flowers at all without help.

Synonyms: Previously confused with *Caladenia cleistantha* in South Australia.

Description: **Leaf** single, linear, to 10 cm, thin textured, sparsely hairy. **Flower stem** to 12 cm tall, green or reddish. **Flower** single, to 7 mm long, not opening, green, white and brown or red-brown, glandular outside, glabrous inside, greenish-white with red bars and spots; segments to 7 mm, elliptical, remaining strongly incurved. **Labellum** hidden, trilobed with two rows of stalked maroon-brown calli; lateral lobes erect, smooth, embracing the column, mid-lobe short, triangular, with toothed margins. Seed capsule with strong red stripe.

Flowering: Oct – early Nov.

Similar species: *Caladenia cleistantha, S. transitoria, S. iridescens*

Distribution: **KI.**
Western Kangaroo Island.

Habitat: In damp heath-like vegetation or under grass-trees and sugar gums along swampy creek-lines.



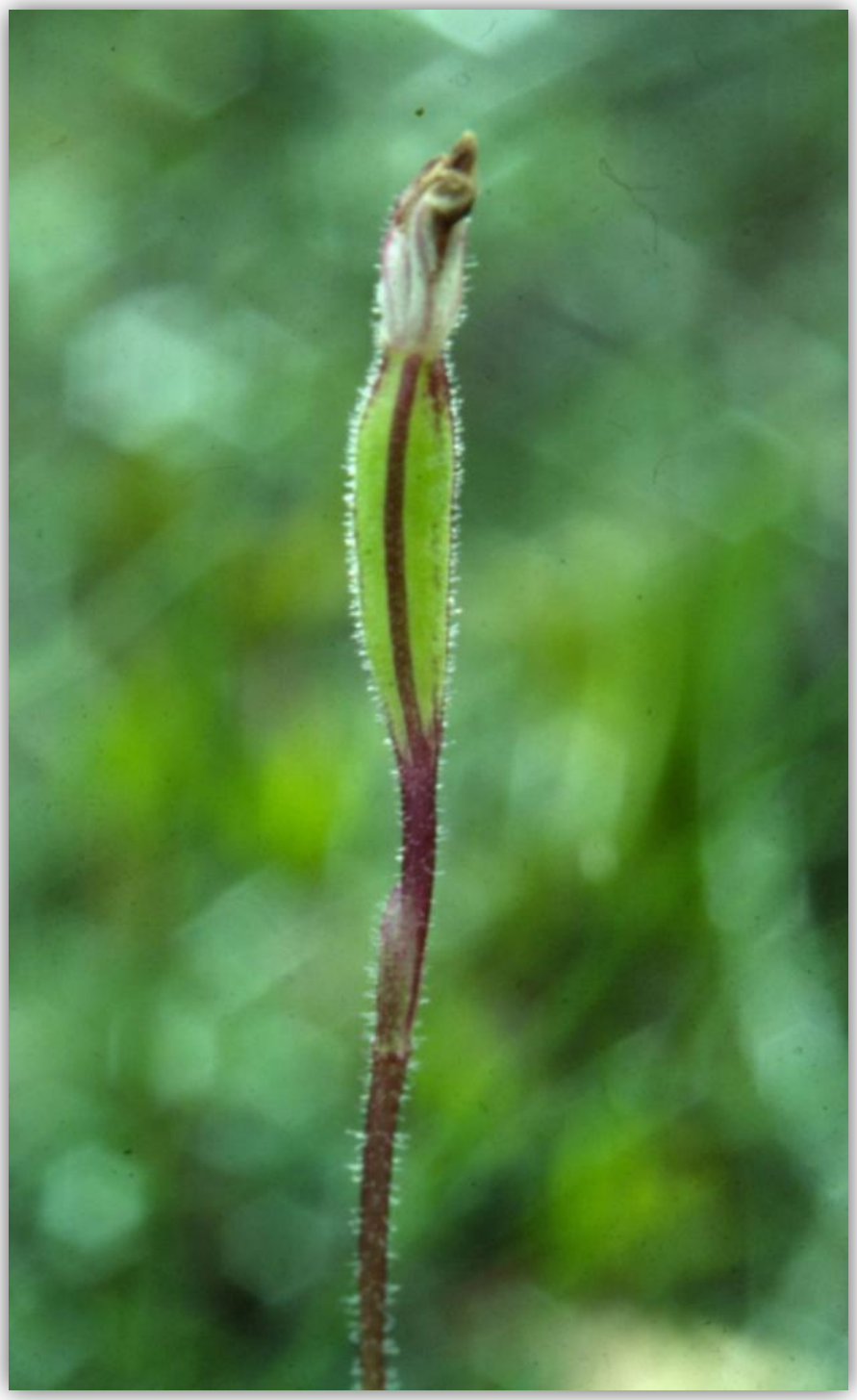
RB, Squashy Creek, KI
*manually opened

Distinguishing features: There is no doubt about this being similar to ***S. transitoria,*** but that species opens its flowers, whereas this one does not, the buds simply shrivel after self pollination has been effected, in some cases while the buds are still small.

Notes: This species was first collected on Kangaroo Island in the 1980s but as the fragile flower specimen was never opened it was assumed to be something else. The segments are thin textured and simply tear apart when attempts are made to open them.

Although this species has previously been treated incorrectly as *Caladenia cleistantha* it is still possible that the latter occurs on Kangaroo Island.

Conservation status:
Status in Legislation: Not Listed
Suggested status: 2Eci in South Australia, endangered nationally.



RB, seed capsule of *S.* aff. *transitoria*, Church Road, KI

Gallery



KB, *S. congesta*, Kangaroo Flat NFR



RB, *S. congesta*, The Marshes NFR, SE



MH, *S. cucullata*, Geegeela CP, Oct.



BB, *S.* aff. *iridescens*, Kangaroo Flat NFR, SE, Oct



KB, *S. gracilis*, Topperwein NFR, SE



BB, *S.* aff. *iridescens*, Kangaroo Flat NFR, SE, Oct



MH, *S. cucullata*, Bangham CP, SE



***S. iridescens*, Western Vic, art by Kath Alcock**

South Australia's Native Orchids

Taurantha D.L.Jones & M.A.Clem.

Cobra Greenhoods



JN, *T. concinna*, Island Swamp NFR, SE

South Australia's Native Orchids

Taurantha D.L.Jones & M.A.Clem.

Cobra Greenhoods

Etymology: From Latin *taurus* the bull, and Greek *anthos* a flower in reference to the flowers of some species in side view resembling a bull with its head lowered.

Taxonomy: Until recently this segregate genus was placed in the super-genus *Pterostylis* and although it is a true sister genus to *Pterostylis*, *Taurantha* species are genetically and morphologically distinct enough to be treated as belonging to a different genus. Certainly it is more convenient to do so as the super-genus *Pterostylis* sensu lato is so large as to become unwieldy without subdivision.

Description: The genus and hybrids can be recognised by the ground hugging rosette, single flower, usually with some red tints and the cleft labellum apex.

Pollination: This is affected by small *diptera*, presumably fungus gnats.

Distribution and Habitat: This is a small genus of green-hoods and their hybrids, with about ten taxa, mostly in the Eastern states and Pacific Islands with just the one species and hybrid reaching South Australia's far South East. Most species prefer damp woodland.



KB, *T. concinna*, SE

Notes:

Hybrids: Natural intergeneric hybrids occur with both *Diplodium* and *Pterostylis* thereby indicating the close relationship of the three genera. These crosses are referred to the hybrid genus *X Taurodium*. None of these hybrids have been collected in South Australia but *T. concinna x Diplodium striatum* or *X Taurodium toveyanum* is cultivated here and has been reported wild.

Recent discoveries: In 2007 a new colony of *T. concinna* was found by Forestry SA officer Bryan Haywood at Island Swamp NFR and in 2008 a colony of X *Taurodium* was reported from the same area but I have not yet seen it there.

Cultivation: All species are out-crossing and easy to grow in cultivation, some species are tropical, others temperate. Many species from the Eastern states are cultivated in Adelaide including semi-albino *T. concinna* as well as *T. collina, T. ophioglossa, T. taurus* and X *Taurodium* X *furcillatum.* These species do surprisingly well in shallow pots of humus-rich bush soil but need to be given extra water in warmer weather. Because they are vegetative reproducers, plants will quickly increase to fill a small pot.

South Australia's Native Orchids

Taurantha concinna (R. Br.) D.L.Jones & M.A.Clem.

Trim Greenhood

Etymology: The name *concinna* trim or neat also well-made, skilfully joined, refers to the neat appearance of the plant, in particular the neatly cut labellum apex.

Synonyms: Previously *Pterostylis concinna*.

Description: **Leaves** few, petiolate in a basal rosette about 6 cm across. **Flower stem** to 15 cm, very erect, slender. **Flower** single, the **galea** about 15 mm high, pale green with darker stripes and some brown markings near the apex; lateral sepals erect with a slightly projecting sinus, their filiform tips embracing the galea. The **labellum** is as long as the column, brown, oblong, with a notched tip just reaching through the broad sinus.

Flowering: June – July – Aug – early Sept.

Similar Species: *Linguella* sp. *nana.*

Distribution: **SE; Eastern states.**
Restricted to a few small colonies in South Australia, near Nangwarry; more common in the Eastern states.

Habitat: Grows in open sandy woodland in leafy detritus amid bracken under *Acacia mearnsii* often in areas surrounded by pine plantation.

Distinguishing Features: A distinctive species with notched labellum apex and red-brown markings on the galea and around the sinus.

- *T. concinna* could be confused with ***Linguella nana*** which does not have a notched labellum apex.



KB, Nangwarry NFR, SE
*Note the notched labellum

Notes: *T. concinna* was first discovered in South Australia in the early 1970s by one time NOSSA member Kevin Johnson. The number of plants near Nangwarry has dwindled as weeds take over so it is fortunate that the species has been located in a native forest reserve.

This species is just another example of the many Eastern species which just make it into South Australia. Nangwarry is less than 10km from the Victorian border.

A popular species in cultivation, easily grown in a well drained sandy mix. It tolerates plenty of shade and multiplies vegetatively. Its neatness is accentuated in a pot as all plants in a clone produce stems the same height.

T. concinna hybridises with *Diplodium striatum* in Victoria, to give X *T. toveyanum.*

Conservation Status:

Status in Legislation: Not listed nationally, endangered in South Australia.
Suggested Status: 1E in South Australia, secure elsewhere.



JN, *T. concinna,* SE, July

Gallery



BB, *T. concinna*, Island Swamp NFR, SE

Thelymitra Forst. et Forst.

Sun Orchids



RB, *T. antennifera*, Kuitpo NFR

South Australia's Native Orchids

Thelymitra Forst. et Forst

Sun Orchids

Etymology: The name derives from *thelys* bishop, and *mitra* headwear or hat, hence a bishop's mitre, and refers to the sometimes plumed or decorated wings of the column, which is usually produced behind and over the anther in a hood-like projection.

The name sun orchid is attributed to the flowers opening freely only in warm, often sunny, humid conditions, i.e. when their bee pollinators are most active.

Taxonomy: The taxonomy of the genus has been relatively stable for a long time although some species complexes have only recently been worked out and others are in the process of being worked on (i.e. by J Jeanes and by D.L.Jones *et al*) so we can expect several cryptic species to be described in the years to come.

Description: Plants are mostly glabrous, arising annually from ovoid tubers; the leaf is single, usually narrow-lanceolate and often large, erect. There are species with ovate leaves, spiralled leaves, almost tubular and even sparsely hairy leaves. The flowers are usually several, resupinate, with an almost regular perianth, in colours of blue, pink, purple and yellow often with darker spots, stripes or blotches. The labellum is similar to the other perianth segments. The column provides the most diversity of features for identifying the species. It is a stout structure, erect, and expanded into prominent rather thick wings, usually joined at the base below the stigma, and extended upward and over the anther so as to form a more or less complete, sometimes lobed hood, which may be entire, or plumed or decorated with various excrescences. The extension behind the anther is termed the post-anther lobe and the extensions beside it the lateral lobes. These often have lateral or terminal outgrowths termed column arms. The column arms may be tuberculate, fimbriate or terminated by conspicuous hair tufts of various colours, textures, density and inclination. Even these hair tufts are important in identifying the more cryptic species. The anther is erect or inclined forward, the connective tissue often produced into a short or even long point, two celled with four mealy or powdery pollinia (to reflect the bee pollination). The stigma is broad, flat and sticky, with a prominent viscid disc.

Pollination: Sun orchids are pollinated by small native bees. The bees are attracted by the brightly coloured, lily-like flowers, and sweet perfumes. Sun orchid flowers open in warm, humid conditions when bees are most active. The actual conditions required for opening vary greatly in different species. Some species only open in the morning, others only in sunshine, a few stay open at night.

The sun orchid flowers are thought to mimic the food flowers of bees, especially small vernal lilies. They have a symmetrical perianth like the lilies, floral guidelines and yellow appendages or fimbriate structures like the stamens of the lilies. Thelymitra flowers provide no food for the bees, which do not land on the perianth but fly straight to the column, appear to chew the yellow parts or vigorously shake the hair tufts, as in buzz pollination, meanwhile collecting the mealy or powdery pollinia on their hairy undersides. The labellum of a *Thelymitra* flower has no particular significance as an attractant, positioner or landing platform and therefore is unmodified. It is the column structure and not the labellum that serves to identify each sun orchid species.



RB, bee pollinator on *T. cyanea*

It is the more primitive members of the genus that have a modified labellum, indicating that the regular flowers have evolved from zygomorphic flowered ancestors i.e. *Thelymitra* is a highly evolved (and evolving) genus, not a primitive orchid.

Those species with small, unscented, seldom expanding flowers, with large ovaries tend to be strongly self-pollinated. They have friable, mealy or viscous pollinia which break up spontaneously and fall or ooze onto the stigma. Species with large, colourful, fragrant, easily expanding flowers with small ovaries are exclusively bee

pollinated. Nevertheless bees do visit the self pollinated flowers and because they are indiscriminate pollinators hybrids are numerous.

Most species reproduce only from seed and occur most frequently as scattered individuals, but some forms produce small tight clumps and a few species such as *T. antennifera* form large colonies through vegetative increase, the massed flowering resulting in better pollinator attraction. *Thelymitra* is most closely related to *Epiblema* from Western Australia and to *Calochilus.* Man- made *Thelymitra* x *Calochilus* crosses have been raised.



RB, *T. antennifera* floral mimicry

Distribution and Habitat: *Thelymitra* is a genus of over 80 species in Australia, with several in New Zealand and at least one extending to Oceania and South East Asia. At least forty species occur in South Australia, including several undescribed, cryptic species.

Thelymitra are found in a diverse range of habitats from the semi aquatic *T. holmesii* and *T. lucida* growing in shallow, reedy waterholes to forms of *T. nuda* growing about rock outcrops in the semi arid pastoral districts. Most species occur in light open woodland where there may be concentrations of up to a dozen species per hectare. Some of the rarest South Australian species are restricted to peaty bogs, heathy swamps and even sphagnum bogs.

Notes: The most obvious diagnostic features to use when identifying species include flower colour, presence or absence of spots, veins or striations, out-crossing or inbreeding flowers and column morphology. However with the many similar blue/mauve flowered species one needs to look at less obvious features such as number and shape of sterile bracts on the scape, height of leaf base fistula, leaf flat or channelled, keeled or not, leaf, scape and ovary colour, flower fragrance, minute details of the column and post anther lobe, such as texture, hair tufts held in front or alongside the column. There are as many as a hundred fine details used to identify species.

See section preceding Gallery for discussion on undescribed the *Thelymitra.*

Thelymitra albiflora Jeanes

Small White Sun Orchid

Etymology: From the Latin *alba* white and *floris* flower, alluding to the white flowers of the species.

Synonyms: Previously included in *T. pauciflora* but long thought to be distinct.



KB, Sevenhill, NL

Description: **Leaf** linear, channelled, to 25 cm long, rigidly erect, green. **Flower stem** pale green to 30 cm tall, with a single sheathing bract, fistula set 2 cm or more above soil level. **Flowers** 2 to about 6 in a narrow spike, about 2 cm across, clear white, sepals greenish outside, sometimes mucronate. The **column** is 5 mm high, white, post-anther lobe hooded, bright yellow with a black or red-brown collar, the apex broad and curved, with a small notch; column arms obliquely erect ending in small, white, dense hair tufts angled forward, not pressed to the column. Flowers are usually self-pollinating, opening only in warm humid conditions, few open at one time.

Flowering: Late Sept – Oct.

Similar Species: *T. pauciflora* complex.

Distribution: **FR (rare), EP (rare), NL, MU (rare), SL (abundant), SE.**
Widespread in higher rainfall districts from southern Eyre Peninsula, north to the Flinders Ranges, through the Mount Lofty Ranges and into the South East; from sea level to mountain.

Habitat: Forests, woodland, scrubs and heaths especially in well drained sites, i.e. on ridges and gravelly road verges. Found only in acid soils.

Distinguishing Features: Although the flowers are very similar to the blue flowered ***T. pauciflora***, the two taxa occur separately, preferring different microhabitats. Where they are sympatric, subtle differences in leaf and flower structure can be observed.

Notes: Pale blue specimens rarely occur.

The species hybridizes with *T. antennifera* to form a pale, yellow flowered hybrid with the basic morphology of *T.* x *macmillanii.* Also crosses with *T. juncifolia* to give a pale spotted hybrid and with *T. rubra* to give a pale salmon flower.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Widespread and secure.



RB, *T. albiflora*, Mt Panorama NFR, SL
*Note green buds of this species

Thelymitra albiflora ssp. Late cleft (R. Bates 66563)

Lobethal White Sun orchid

Etymology: As the name suggests this taxon flowers later than *T. albiflora* in the same area and the post-anther lobe is deeply cleft, the two halves with inrolled margins.

Synonyms: None, only recently discovered.

Description: Short, slender wholly green plant with **flower stem** to 20 cm, the **leaf** linear, the fistula set high up, blade only 3-4 cm long channelled, scape unibracteate. **flowers** 1-3, white, the buds green; segments all similar to 1 cm long, sepals green, petals crystalline white, rather acute except for more rounded dorsal sepal, labellum the narrowest segment; **column** pale blue, quadrate, the post anther lobe yellow and orange, deeply cleft, the two halves deeply in-rolled as two parallel tubes, hair tufts on broad arms, white, small, the individual trichomes all short.

Flowering: Nov.

Similar Species: *T. albiflora*

Distribution: **SL.**
At higher altitudes in the Adelaide Hills.

Habitat: On slashed firebreaks in messmate woodland.

Distinguishing Features: Flowers later than ***T. albiflora*** in the same area; the post anther lobe is deeply cleft, the two halves with inrolled margins.

Notes: First found by NOSSA members on a NOSSA 'Sun orchid excursion' to Lobethal in November 2005.

Blooms later than *T. albiflora*, plants were all found in flower in November. There is no fragrance; flowers are not out-crossing.

This form needs more study before being accepted. this taxon will soon to be dropped unless larger populations are found.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 2Eci, national status unknown.



KB, *T. albiflora* ssp. Late cleft, Lobethal, SL

South Australia's Native Orchids

Thelymitra antennifera (Lindl.) Hook.f.

Rabbit Ears; Lemon Sun Orchid

Etymology: The name *antennifera* with antennae, refers to the erect column arms which resemble antennae or ears.

Synomyms: *Macdonaldia antennifera* Lindl.

Description: **Leaf**, filiform, terete, erect, to 10 cm long, red striped at the base. **Flower stem** to 20 cm tall, wiry and flexuose (zigzag) with sheathing stem bracts at the point of flexion. The **flowers** are 1-4, widely and freely opening, about 30 mm across, bright yellow with dark brown column arms. **Column** about 5 mm high, with two erect, minutely papillose, somewhat two-lobed, spathulate appendages more than 3 mm long, resembling rabbit ears. The flowers are faintly but sweetly lemon scented; they are remarkably large for the size of the plant.

Flowering: Late Aug – Sept – Oct – early Nov.

Similar Species: *T.* x *macmillanii,* which occasionally comes in yellow forms.



RB, Gawler Ranges, EP

Distribution: **FR, EP, NL (rare), MU, YP, SL, KI, SE; WA, Vic, Tas.**
Very widespread in South Australia from the west coast as far west as Venus Bay, across Eyre Peninsula and inland to the Gawler Ranges, rare in the Southern Flinders near Mambray Creek, through Yorke Peninsula, the Mount Lofty Ranges, the southern Murray-lands, Kangaroo Island and the South East and also in Western Australia and the Eastern states.

Habitat: In a variety of soil types from sands to clays, from swamp margins to about rock outcrops inland, and in seepage areas in woodland, heath, mallee-heath and grasslands, from the seashore to mountain tops.

Distinguishing Features: The lemon coloured flowers with prominent dark red column arms held upright, together with the lemon perfume, make this an easily recognised species.

Notes: The species flowers more prolifically the spring after a bushfire and can be quite spectacular, when every plant in a colony of hundreds is in full bloom.

The long flowering season is due to the wide distribution as much as the longevity of the individual flowers. Plants on the West coast begin flowering in August while those about swamps in the South East flower in November. Large colonies are formed due to vegetative increase with new tubers formed on the ends of dropper roots.

The flowers are long lived, and strongly out-crossing, freely opening, even in the rain.

The species forms numerous hybrids, crossing with the blue flowered *T. nuda, T. megcalyptra, T. pauciflora, T. bracteata*, etc. as well as the pink flowered *T. luteocilium* and *T. rubra* to give the various forms of *T.* x *macmillanii.* It is thought *T. antennifera* crosses with *T. matthewsii* to give *T.*x *mackibbinii.*

Conservation Status:
Status in Legislation: Not listed.
Suggested Status: Widespread, common and secure.



RB, *T. antennifera*, Kuitpo NFR

Thelymitra arenaria Lindl.

Sand-plain Sun Orchid

Etymology: The name *arenaria* means growing in sand and refers to the favoured habitat of the species.

Synonyms: Previously at times treated as a form of *T. pauciflora*.

Description: A robust species, the **leaf** to 30 cm, linear-lanceolate, leathery ribbed and channelled with a red sheathing base. **Stem** to 40 cm tall with 1-2 bracts; **flower**s 2-12, small, purple-blue, opening tardily, buds grey-brown, sepals rather narrow, petals thin textured; **column** simple, the post-anther lobe produced into a short tube with a shallow notch, the lateral lobes upswept in front of the column, hair tufts white and toothbrush like. No fragrance and self-pollinating.

Flowering: Late Sept – late Oct (depending on altitude).

Similar Species: *T. pauciflora* complex, *T. bracteata.*

Distribution: **NL, SL, KI, SE**
From the Mount Lofty Ranges southward including well watered coastal plains.

Habitat: Somewhat restricted in South Australia to sandy heath and forests.

Distinguishing Features: The large ribbed and channelled leaf distinguishes it from the *T. pauciflora* complex; also the numerous flowers rarely seen open.

- The species is most similar to ***T. bracteata*** but lacking the large bracts and with more tooth-brush like hair tufts on the column.

Notes: This species is difficult to interpret; certainly late flowered forms of *T. bracteata* without large bracts seem to agree very well with it, yet so do early flowered sand-heath species and also plants from inland rock outcrops, neither of which can be placed under other species. For the time being the name is being applied to both. It is possible that true *T. arenaria* does not occur in South Australia.



RB, plant showing large leaf and tiny flowers

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Reasonably common and well conserved in its various forms.



JN, *T. arenaria*, Overland Track NFR, early Nov
These grow on bare sand; note brown buds

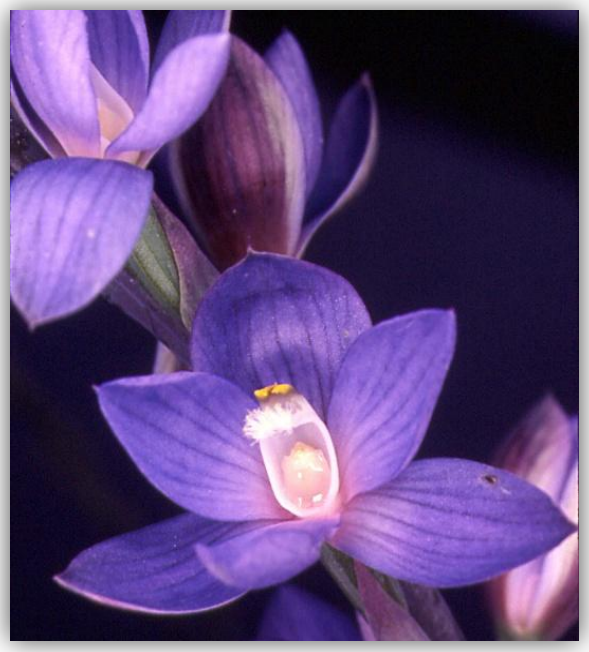
Thelymitra aristata Lindl.

Great Sun Orchid

Etymology: The name *aristata,* awned, bristle, refers to the floral bracts which are abruptly contracted into long acuminate points.

Synonyms: *T. murdochiae* Nicholls.

Description: **Leaf** large, lanceolate, to 40 cm x 30 mm, erect, channelled, ribbed, thick, fleshy, dark green with a reddish base. **Flower stem** to about 1 metre, stout, brown or green, with several large sheathing bracts. **Flowers** numerous, in a long spike, to 40 mm across, dark blue, outer surface brownish; segments to 20 mm long, ovate, widely spreading to reflexed. **Column** to 7 mm tall, white to pale blue with the mid-lobe narrowed into a slender sparsely toothed yellow hood, usually with a black collar; hair tufts white. The flowers are fragrant, many opening together.



RB, Glencoe, SE

Flowering: Oct – Nov.

Similar Species: *T. grandiflora* Fitzg.

Distribution: **SE; NSW, Vic, Tas.**
Very restricted in South Australia, being known only from the vicinity of a few swamps in the lower South East to the north of Mt Gambier; more common in the Eastern states.

Habitat: In South Australia only seen in flower on a few track sides and slashed sandy woodland amid low heath and bracken. All sites were near swampy *Gleichenia* thickets.

Distinguishing Features: Can be separated from the similar ***T. grandiflora*** from the Mount Lofty and Flinders Ranges by (at least in the South Australia plants) the deep blue flowers, the dark green leaf with purplish base, the less tubular less inflated and non-glaucous stem bracts and the more slender, differently coloured column post-anther lobe.

T. aristata is found in sand swamps quite a different habitat from the dry ridges of *T. grandiflora.*

Notes: Only flowers freely in South Australia after fire or disturbance and is rarely seen.

No hybrids have been seen in South Australia but a *T. media* x *T. aristata* is recorded for Victoria.

Only *T. grandiflora* has flowers larger than *T. aristata.*

Conservation Status:
Status in Legislation: Not listed nationally, endangered status in South Australia.
Suggested Status: 2Eci in South Australia but common in the Eastern States.



BB, *T. aristata,* Topperwein NFR, Nov

Thelymitra azurea R.S.Rogers

Azure Sun Orchid

Etymology: The common and scientific names both refer to the intense azure-blue flowers.

Synonyms: *T. azurea* has at times been referred to the Western Australian *T. canaliculata,* but that is a tall summer flowered swamp species.



KB, North of Keith, SE

Description: **Leaf** linear lanceolate, to 25 cm x 5 mm, erect, fleshy, dark green or reddish. **Flower stem** slender to 30 cm, greenish brown with one or two small sheathing bracts. **Flowers** 2-10, to 25 mm across, deep azure blue with darker stripes (and red suffusions on inland or western forms); outer surfaces grey, green, purple or brown suffused; the segments are to 14 mm long, ovate or broad-ovate, cupped, opening on warm sunny days; **column** to 5 mm tall, blue or reddish, mid lobe narrow to broadly rod-like, yellow, toothed, with two similar auxiliary lobes; column arms with short dense tufts of blue, white or mauve hairs.

Flowering: Sept – Oct – Nov.

Similar Species: *T. occidentalis.*

Distribution: **EP, MU, YP, SL, KI, SE; WA, Vic.**
Widespread in the wheat-belt from Streaky Bay eastwards, through Yorke Peninsula, Kangaroo Island, Fleurieu Peninsula, the Murray Mallee and South East but absent from the Flinders and higher parts of the Mount Lofty Ranges; also in Victoria and possibly Western Australia.

Habitat: From sandy swamp margins, poor heathland, sandy mallee (often in very dry sites) and mallee-broombush, coastal headlands, terra rossa soils over limestone and lateritic rises.

Distinguishing Features: ***T. occidentalis*** has a broader post-anther lobe and may occur on Eyre Peninsula. There are several forms in South Australia,

- the **type form** is a late flowered taxon from sandy rises near swamps and has uniformly blue flowers and narrow column mid-lobes
- the common **wheat-belt form** has more darkly veined flowers with red suffusions and flowers early. It has a tendency toward broader segments and column lobes
- there do seem to be intermediates, or perhaps the **intermediates** are a third form.

Notes: Flowers more freely after fires or disturbance.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Near threatened, but still conserved in South Australia; vulnerable in Victoria.



RB, *T. azurea*, KI

Thelymitra batesii Jeanes

Frog Mouth Sun Orchid

Etymology: Named after South Australia orchidologist Rob Bates, who first recognised this as a distinct species in the 1990s.

Synonyms: None, but has been known as *T.* aff. *holmesii* Woodland and was previously included under *T. pauciflora* and even *T. longifolia*.



RB, Para Wirra NP, SL

Description: **Leaf** linear, to 15 cm, ribbed and channelled, green with red suffusions. **Flower stem** to 30 cm, green or reddish with 2 sheathing bracts. The **flowers** are usually 1-2 but up to 5, purple-blue, often with dark veining or suffusions inside, pink to grey-brown outside, to 16 mm across. **Column** pale blue or pink, to 5 mm high, post-anther lobe with a black collar and deep yellow, thickened, cleft, irregular top; column arms thrust forward, hair tufts white, sparse and shaggy. The flowers are self pollinated, not fragrant, opening freely on warm sunny days.

Flowering: Sept – early Oct.

Similar Species: *T. holmesii, T.* aff. *holmesii* Dry land blue*, T. pauciflora* complex.

Distribution: **FR, NL, SL.**
Endemic to higher parts of the Mount Lofty and southern Flinders Ranges as far north as Wilpena.



JN, column detail, Barossa Valley, SL

Habitat: In fertile soils in grassy well drained woodland sites, often on ridges in shallow red earths.

Distinguishing Features: Although the flowers are so similar to ***T. holmesii,*** the much earlier flowering**,** the very different habitat, the fewer flowers, different bud colour and often distinct dark veining all serve to set it apart.

Notes: It was probably common before settlement but its habitat was soon overgrazed and the species is now only known from small remnant populations.

Like most grassy woodland species, free flowering. Typically found in company with up to ten other sun orchid species and hybridising with many of them.

Conservation Status:
Status in Legislation: Not listed nationally, rare status in South Australia.
Suggested Status: 3Rc, nationally rare.



JN, *T. batesii*, Flinders Ranges, Sept

Thelymitra sp. Clare (R. Bates 77464)

Little Clare Sun Orchid or Choccy top

Etymology: The names are suggested by the area where it occurs and the dark brown post anther lobe of the column.

Synonyms: None, the species only discovered in 2003.

Description: A short slender species with a **flower stem** to 20 cm tall, bi-bracteate with grey-green buds. **Flowers** 1-5, about 1 cm across, blue with darker lines, opening only in warm sunshine. **Column** white or pale blue, quadrate, the post anther-lobe dark brown, the two halves inflated, wrinkled, with incurved margins, side arms slender and thrust well forward, hair tufts terminal, held well in front of column in a hand clapping position, mop-like, white. No floral fragrance was noted.

Flowering: Mid Oct.

Similar Species: A member of the *T. peniculata* complex but differing in the dark post anther lobe.

Distribution: **NL.**
T. sp. Choccy top occurs in the mid-north in fertile soil on dry ridges around the Spring Gully and Sevenhill areas of the Northern Lofty region.

Habitat: Only known from grassy blue-gum woodland in the mid north. *T.* sp. Choccy top occurs in fertile soil on dry ridges.

Distinguishing Features: This is the only South Australian sun orchid with a chocolate coloured post anther lobe with a wrinkled apex. It differs from ***T. pauciflora*** in its shorter stature and two sterile bracts.

Notes: This species was first detected in Spring Gully CP in 2003 but it was not until 2005 that larger populations were discovered in Sevenhill Winery reserve indicating that this was a valid species.

The accompanying image is of the specimen 'R.Bates 77464'.

It is often found growing with the large white spider orchid *Arachnorchis argocalla.*

This taxon is perhaps a colour variant of *T. batesii* and so may soon be dropped as it is surely just a form of the widespread *T. batesii*.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 2Eci nationally endangered and probably restricted to the Northern Lofty Region.



KB, *T.* sp. Choccy top, Sevenhill, NL

Thelymitra benthamiana Rchb.f.

Leopard Sun Orchid or Blotched Sun Orchid

Etymology: The name honours George Bentham, British botanist and author of the definitive *Flora Australiensis*.

Synonyms: Previously placed in *T. fuscolutea,* which is now regarded as endemic to Western Australia.

Description: **Leaf** large, pale green, ovate, ribbed, leathery, erect, to 9 cm x 4 cm. **Flower stem** to 40 cm tall, but usually much less, stout. The **flowers** are usually few but sometimes up to ten, to 3 cm across, thick textured, yellowish with numerous large dark brown blotches, opening only in warm humid weather. The **column** is 7-8 mm tall, similar in colour to the other segments, post-anther lobe forming a broad fringed mantle, anther with a long finger like extension. Flowers are self-pollinated, not perfumed.



KB, Spring Mount CP, SL

Flowering: Late Sept – Oct – Nov.

Similar Species: None in South Australia.

Distribution: **EP, NL (rare), MU(rare), YP(rare), SL, KI, SE; WA, Vic.**
Widespread in coastal districts from southern Eyre Peninsula, Yorke Peninsula, Kangaroo Island, the Mount Lofty Ranges including an inland outlier in the Tothill Ranges, Fleurieu Peninsula, and the South East; also in Western Australia and Victoria.



BB, Leaf

Habitat: In a variety of often nitrogen deficient soils in scrubs, scrubby heath, woodland, and mallee-broombush and forest clearings.

Distinguishing Features: *T. benthamiana* is easily recognised when not in flower by the erect, ribbed, ovate leaf. In flower the heavily blotched yellow-green flowers are distinctive.

Notes: Widespread but sporadic, usually in small populations or isolated individuals and flowering freely only after fires when multi-flowered plants are more frequent.

No hybrids are known in South Australia although some spectacular crossings occur in Western Australia.

The species is becoming rare due to loss of habitat.

There are several similar, colourful, out-crossing species in Western Australia and T. *benthamiana* is likely to have migrated east from there about 20,000 years ago.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3Rci in South Australia but common in Western Australia.



JN, *T. benthamiana*, Desert Camp CP, SE

Thelymitra bracteata J.Z.Weber ex Jeanes

Large Bracted Sun Orchid

Etymology: The name is derived from the large sterile stem bracts of this species.

Synonyms: None; previously included under *T. pauciflora*.



RB, Hermitage, SL

Description: **Leaf** large, leathery, ribbed, to 35 cm tall, dark green with a purplish base, apex often lax. **Flower stem** usually robust, to 20-50 cm tall, with 2 long stem bracts to 5 cm long, often pinkish, the floral bract also long, to 3 cm. **Flowers** numerous, medium, to 16 mm across, petals and sepals pale blue inside, green outside, narrow and thin textured, the buds long and thin, on ribbed ovaries to 2 cm long, flowers self-pollinating and only opening on warm humid days. **Column** white or blue, post-anther lobe tubular, not inflated, notched at the apex; column arms with small soft, sparse, white hair tufts, held in front. Flowers short lived, opening one after the other, not fragrant.

Flowering: Late Sept – Oct – early Nov.

Similar Species: Similar to several species of the *T. pauciflora* complex*, T. arenaria* and *T. nuda.*

Distribution: **NL, MU, SL, KI; Eastern states**
Restricted to the Mount Lofty Ranges in South Australia and possibly on Kangaroo Island; also in the Eastern States.

Habitat: In higher rainfall districts, in woodland, forest clearings, track-sides and disturbed areas.

Distinguishing Features: Generally separable from other self pollinated members of the blue flowered ***T. pauciflora*** **complex** by the large size, the long ribbed leaf, the elongate bracts, the flaccid pale blue flowers, green outside, and the long ovaries. The column is not distinctive but the hair tufts are small and sparse.

Notes: Plants are recognisable long after flowering because of the long seed capsules. The abundance of fibrous cellulose in the plants also means that the remains of the flower spikes are often seen twelve months after flowering.

Juvenile plants one to three years old are difficult to separate from *T. pauciflora*.

Hybrids have been observed with *T. nuda* and *T. juncifolia*.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3Rc.



RB, *T. bracteata* on left, Hermitage with *T. pauciflora*, SL
*Note *T. bracteata* has larger flowers and green buds

Thelymitra brevifolia Jeanes

Peppertop or Short Red-leaf Sun Orchid

Etymology: From the Greek, *brevis* short and *folia* a leaf, referring to the short, broad, flat leaf.

Synonyms: Previously treated as a form of *T. pauciflora* but long recognised as distinct.

Description: **Leaf** short, strap-like, with several ribs, to 20 cm long, reddish especially near the base, erect. **Flower stem** to 30 cm, reddish, shiny, with two small, loosely sheathing sterile bracts, fistula set near soil level. **Flowers** are few to about seven, on short ovaries; lilac, mauve or blue, about 18 mm across; petals shortly ovate, with an apiculus, narrower sepals, greenish brown to red outside. **Column** less than 5 mm high, pale pink or mauve, the post-anther lobe hooded, variously coloured, brownish, orange or bright red, irregularly cleft and usually split; column arms upswept, the hair tufts small, white, held vertically against the mid-lobe. Flowers self-pollinating, short lived, opening only on hot humid days, usually only one or two open at a time, not fragrant.



RL, Kangarilla, SL, Oct

Flowering: Late Sept – Oct – early Nov.

Similar Species: *T. pauciflora* complex.

Distribution: **FR, NL, MU, SL, KI, SE; Eastern states.**
Mostly in the ranges or high rainfall districts, east of Spencer Gulf; also found in the Eastern states.

Habitat: Heathy winter wet sites in forest clearings, woodland and swamp margins, usually in nitrogen deficient, acid soils and adventive in disturbed sites such as road cuttings.

Distinguishing Features: A locally common species which is easily identified from the short, broad, reddish leaf; the small cupped mauve flowers with red, orange or brownish coloured post-anther lobe, and small upswept hair tufts pressed to the column.

Notes: Probably forms infrequent crosses with other members of the *T. pauciflora, T. nuda* complexes and with *T. juncifolia.* Usually sympatric with other small blue self-pollinated sun orchids.

T. brevifolia can set up quite large colonies on cleared ground left to revegetate.

Flowers better after fire.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Secure and widespread.



RB, *T. brevifolia*, Lobethal, Oct

Thelymitra brevifolia ssp. Porters (R. Bates 83123)

Pale hybrid sun orchid brevifolia

Etymology: This taxon is thought to be derived from a stabilized *T. brevifolia* x *T. albiflora*, i.e. a pale hybrid sun orchid.

Synonyms: Has occasionally been listed as *T.* sp. Pale.

Description: **Leaves** flat, short with a low fistula; plants very slender with **flower stems** to 20cm. **Flowers** 1-5, cream, white or pale blue-lilac, opening only on hot days with a ragged appearance, **column** post anther lobe often pale orange or yellow, not split, the trichome tufts white, held horizontally in front of column.

Flowering: Late Oct – early Nov.

Similar Species: *T. brevifolia ssp. brevifolia, T. albiflora*.

Distribution: **SL, MU (far western).**
So far only recognised from woodland in the northern Adelaide Hills from Norton Summit to Kaiser Stuhl.

Habitat: Usually where messmate woodland adjoins manna gum and blue-gum woodland.



RB, Lobethal BR, SL

Distinguishing Features: Column pale orange or yellow, not split whereas that of ***T.brevifolia*** is stronger in colour, usually reddish, and is irregularly cleft and usually split.

Notes: May never be described without DNA studies but worth including here as it is locally common and not an F1 Hybrid.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Probably R and restricted to a range less than 100 kilometres across.



CH, *T. brevifolia* ssp. Porters, early Nov.

Thelymitra carnea R.Br.

Tiny Pink Sun Orchid

Etymology: The name *carnea* flesh coloured, refers to the pale pink flowers.

Synonyms: *T. imberbis* Hook.f.

Description: **Leaf**, linear, almost terete, or minutely channelled, to 10 cm tall, dark green with a red base. **Flower stem** wiry, flexuose to 20 cm. **Flowers** one to three, less than 1 cm across, pale to bright pink, rarely cream. **Column** to 5 mm tall, greenish, post-anther lobe short, entire or slightly toothed; side lobes yellow, narrow-oblong, smooth edged or crenulate, more than twice as long as wide, angled up in front of the column. The flowers are strongly self-pollinating, not perfumed.



KB, Scott Creek CP, SL

Flowering: Late Sept – Oct – early Nov.

Similar Species: *T. rubra.*

Distribution: **EP, SL, KI (rare), SE; Qld, NSW, Vic Tas; NZ**
Widespread but rare in southern coastal districts, from southern Eyre Peninsula, Kangaroo Island, Mount Lofty Ranges from south of Adelaide and in the lower South East. More common in the Eastern states and New Zealand.

Habitat: Grows in bare soil around seepage areas on the edge of roads, quarries, or land slips, less often in low scrubs and woodland and often in the company of numerous other *Thelymitra,* particularly *T. rubra* and *T. flexuosa.*

Distinguishing Features: Easily mistaken for a small plant of ***T. rubra****,* but close examination of the flower will reveal the slender, narrow, bright yellow, not toothed column arms.

Notes: Cytological studies suggest that this is a stabilized hybrid, probably between *T. rubra* and *T. flexuosa.*

Its general rarity and preference for disturbed sites would also suggest a hybrid origin. Sometimes forms largish populations without either parent being present.

Supposedly crosses with *T. ixioides* to give *T.* x *irregularis,* although South Australian plants fitting the description of *T. x irregularis* are *T. juncifolia* x *T. rubra.*

The tiny flowers of *T. carnea* open only on warm, humid, sunny days. Some forms have a distinct staminode in front of the column, a feature also seen in *T. rubra*.

Conservation Status:
Status in Legislation: Not listed nationally, rare in South Australia.
Suggested Status: 3Vci in South Australia.



MH, *T. carnea,* Kuitpo Forest, SL
*Note capsules indicating the self-pollinating nature of the species

Thelymitra x chasmogama R.S.Rogers

Slaty Sun Orchid

Etymology: The name *chasmo* opening and *gama* marriage refers to the out-crossing flowers.

Synonyms: None

Description: The **leaf** is linear, channelled, rigid to 20 cm long, dark green with a red base. **Flower stem** to 40 cm. The **flowers** are two to several, 15-30 mm across, slaty-pink, on long pedicels. The **column** is almost 5 mm tall, pink, post-anther lobe forming a dilated, yellow, sub-globose hood with entire and shortly inrolled margins, usually with a dark band or collar on the back at the level of the column arms, which are erect and bear pale yellow bushy hair tufts. Flowers faintly but sweetly scented, mostly out-crossing.



KB, Clare, Oct

Flowering: Sept – Oct.

Similar Species: Similar to one of the parent species *T. luteocilium*.

Distribution: **FR, EP, NL, MU, YP, SL, SE**
May occur wherever the parent species are found, i.e. throughout the agricultural regions of the state.

Habitat: Mostly in disturbed sites which are regenerating, especially in woodland and forest clearings.

Distinguishing Features: Differs from ***T. luteocilium*** by having larger flowers which are a slaty pink and have a more expanded column midlobe.

Notes: This hybrid reproduces vegetatively to form neat clumps which are spectacular in flower.

Popular in cultivation as the hybrid vigour, vegetative reproduction and easily expanding flowers are all desirable features.

Several crosses can result in *T.* x *chasmogama* type flowers, including the original *T. luteocilium* x *T. nuda*, but also with *T. rubra* as the 'pink parent,' or with *T. megcalyptra* or any *T.* aff. *pauciflora* species as the 'blue parent'. Note the wide range of forms even in just two images.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3Rci but such ratings are not really applicable to hybrids.



KB, *T.* x *chasmogama*, Wirrabara
*Note flying bird effect when flowers expand fully.

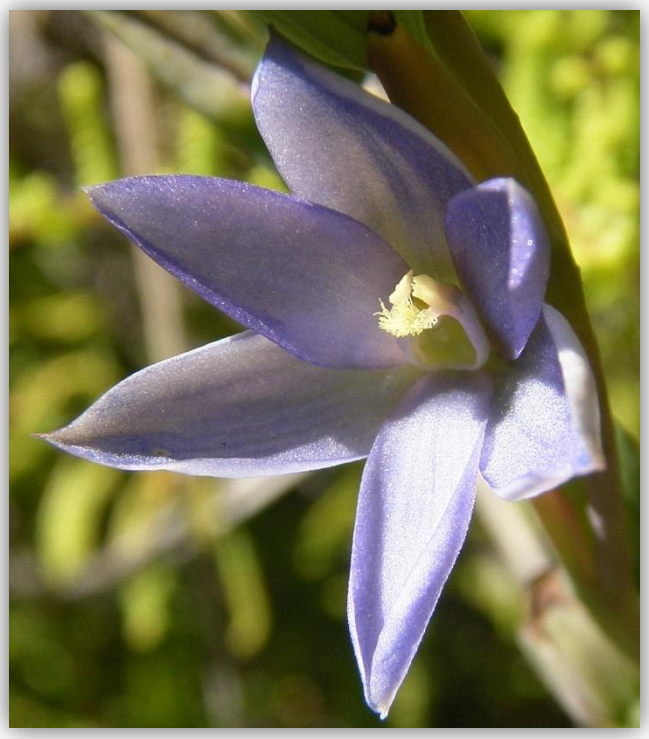
Thelymitra circumsepta Fitzg.

Naked Sun Orchid

Etymology: The name *circumsepta* enclosed in a circle refers to the tufted staminode which encloses the front of the column in some peloric forms.

Synonyms: *T. retecta* Rupp.

Description: **Leaf** linear-lanceolate, thick and channelled, to 30 cm long. **Flower stem** to 40 cm tall. The **flowers** are few to several, about 2 cm across, soft blue, greenish outside. **Column** less than 5 mm tall, the post-anther lobe notched, with a dark collar, yellow toothed, side lobes 1.5 mm, with fringed yellow margins; column arms erect, with yellow hair tufts. Flowers not scented, opening one or two at a time, self-pollinating.



RL, Cleland CP, Dec

Flowering: Dec.

Similar Species: None

Distribution: **SL, Eastern states.** Occurs near the summit of Mount Lofty and probably in the nearby Piccadilly Valley. More frequent in the Eastern states.

Habitat: In peaty hanging bogs.

Distinguishing Features: The late flowering together with the long fringed yellow side lobes, yellow hair tufts and colourful dark collar to the post-anther lobe set this species apart.

Notes: This is the last of the sun orchids to bloom, flowering around Christmas.

T. circumsepta occurs in Cleland Conservation Park. After the Ash Wednesday bushfires of 1983 its habitat became overgrown with *Gleichenia b*ut plants were relocated by NOSSA members in 2008.

The species may also have occurred in the South East before massive land clearance as it extends to western Victoria.

Conservation Status:

Status in Legislation: Not listed nationally, endangered in South Australia.

Suggested Status: Eci.



MH, *T. circumsepta*, SL, Dec

Thelymitra crenulata R.J.Bates

Dark bud Sun Orchid

Etymology: The name *crenulata* means small rounded teeth hence crinkled in reference to the crinkled post anther lobe of the column.

Synonyms: Previously listed as *T.* sp. Black buds.

Description: Very slender to 30 cm tall, **leaf** linear, sheathing the scape for 2-4 cm, scape purple-green, sterile bract one, floral bract pink-purple. **Flowers** 1-5, lilac to blue, to 10 mm across, opening infrequently, buds short, purple green to almost black; segments all similar, lanceolate, to 8 mm long, often cupped, hardly rounded, sepals apiculate, veins 8-10, darker blue, mostly linear; **column** pale blue, post-anther lobe tubular, yellow with a red-brown collar, strongly ribbed, apex having a tiny notch, arms upswept in front of column, trichomes creamy white, sparse, apical, pressed to apex of post-anther lobe.



BB, Kangaroo Flat NFR, SE

Flowering: Mostly early to mid Nov.

Similar Species: *T. rubricaulis, T. pauciflo*ra complex.

Distribution: **SE.**
Restricted to sandy heath-land in the lower South East, particularly in the Glencoe area, higher rainfall areas.

Habitat: Found mostly on the flats adjacent to waterholes or peat bogs.

Distinguishing Features: The dark buds, linear veined flowers and tiny notch in the post-anther-lobe set it apart.

- The similar ***T. rubricaulis*** has usually finished flowering before *T. crenulata* blooms.

Notes: First recognised as a distinct species about 2003 and the name published in 2010.

The area where *T. crenulata* grows is very rich in self-pollinated species. *T. crenulata* is thought to hybridise with the blue spotted *T. ixioides, T. peniculata* and the purple tufted *T. malvina* to produce colourful hybrids.

Conservation Status:
Status in Legislation: Not listed nationally, vulnerable in South Australia.
Suggested Status: 2Vci, nationally vulnerable.



JN, *T. crenulata*, The Marshes NFR, Nov., SE



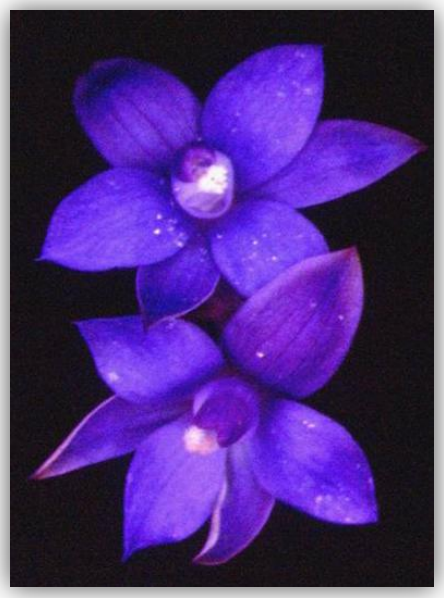
JN, column of above, side and front views, note small orifice

Thelymitra cyanapicata Jeanes

Blue Top Sun Orchid

Etymology: From the Latin *cyan,* blue and *apica,* apex, alluding to the blue post-anther lobe unique to this species.

Synonyms: Previously included in *T. pauciflora* as *T.* Blue column.



RB, Kuitpo, SL

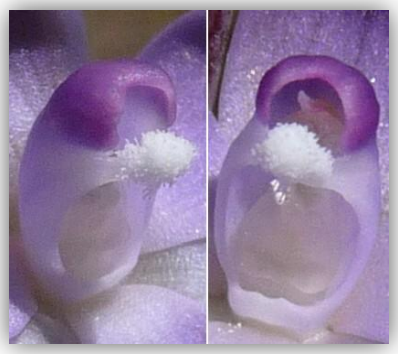
Description: **Leaf** filiform, terete, to 10 cm long, with a purple base. The **flower stem** is wiry, purplish, to 20 cm tall, with a single sheathing bract. **Flowers** 1-8, tiny, about 14 mm across, a uniform deep blue. **Column** blue 4-5 mm high, with a deeper blue hooded post-anther lobe, shallowly notched; column arms linear, obliquely erect, ending in dense, globular, white or pale blue hair tufts. The flowers are self-pollinating, opening only in warm humid weather, not or hardly fragrant.

Flowering: Oct – early Nov.

Similar Species: *T. pauciflora* complex.

Distribution: **SL, ?SE.**
Known only from the Southern Mount Lofty Ranges south of Adelaide. A similar plant has been found at Penola CP in the South East.

Habitat: Damp sandy, *Leptospermum continentale* dominated heathland amid tall sparse manna gums and it is known to have survived in land invaded by feral pines.



BB, Knott Hill, SL

Distinguishing Features: A distinctive member of the *T pauciflora* complex, identified by its short, filiform leaf and tiny, wholly blue flowers including the column.

Notes: The habitat of this species has been converted to pasture or planted to pines in the last few years and doubt must be cast on the species long term survival. Thought to be extinct in 2005 when a population of a hundred plants was located on land about to be planted to pines.

A similar plant has been found at Penola CP in the South East.

It is known to hybridise with *T. pauciflora* and *T. juncifolia,* the resultant flowers from the latter being spotted with a blue post-anther lobe.

One would suspect that the species may have had a wider distribution before settlement; perhaps also in Victoria where similar habitat exists.

Conservation Status:
Status in Legislation: Nationally critically endangered, endangered in South Australia.
Suggested Status: 2E critically endangered nationally.



JN, *T. cyanapicata*, Knott Hill, Oct, SL

Thelymitra cyanea (Lindl.) Benth.

Veined Sun Orchid

Etymology: From *cyanea* blue, in reference to the brilliant blue flowers.

Synonyms: Sometimes regarded as a form of *T. venosa* R.Br., i.e. as *T. venosa* var. *cyanea* (Lindl.) Hatch.; *Macdonaldia cyanea* (Lindl.)



KB, Stipiturus CP, SL

Description: **Leaf** thick, narrow-linear, channelled, with rounded margins, 20 to 50 cm high. **Flower stem** to 30 cm. **Flowers** few to several, 2-3 cm across, blue with darker veins, rarely white or pink, sepals purple outside. **Labellum** larger than the other segments, the anterior margins crisped. **Column** 4-5 mm high, light green, post-anther lobe not developed but with a row of blister-like calli between the base of the erect, spiral, flat, yellow column arms. No hair tufts. The anther point ends in two horn-like points. Flowers are not fragrant, self-pollinated and open only on warm mornings.

Flowering: early Dec.

Similar Species: None in South Australia. The larger, freely opening *T. venosa* is restricted to the Blue Mountains and Sydney sandstone areas.



RL, column detail

Distribution: **SL; Eastern states.**
Restricted to higher parts of the Fleurieu Peninsula; also in the Eastern states.

Habitat: Found in peaty bogs and swamps especially in raised mounds among myrtaceous shrubs.

Distinguishing Features: A late-flowering swamp species with heavily veined blue flowers, 'frog-like' column top and large, crisped-margin labellum.

Notes: Most *T.cyanea* habitat is now lost to farming, the swamps having been drained, ploughed up, grazed or overgrown. There is virtually no chance of saving the South Australian populations now.

Native bees are frequently seen on the column of *T. cyanea.*

It is likely that other *Thelymitra* species of boggy heathland, such as *T. pulchella* and *T. malvina,* as well as undescribed taxa also grew in these swamps before settlement.

Conservation Status:
Status in Legislation: Not listed nationally, endangered in South Australia.
Suggested Status: Critically endangered in South Australia.



RL, *T. cyanea,* Stipiturus CP, SL, Dec
*Note the strong venation of the flower; and the leaf at the base of the flower stem

South Australia's Native Orchids

Thelymitra epipactoides, F.Muell.

Metallic Sun Orchid

Etymology: The name e*pipactoides* Epipactis-like, refers to the supposed similarity of the plants to some European *Epipactis* orchids.

Synonyms: None

Description: **Leaf** robust, lanceolate, to 30 cm long and over 15 mm wide. **Flower stem** to 50 cm tall, fleshy, ribbed, channelled, with 1 or 2 large fleshy, loosely sheathing leaf bracts. The **flowers** are numerous, to 40 mm across, green, bronze, blue-grey, white, orange or pink, shot with darker iridescent tints or with a metallic lustre. **Column** to 8 mm, with a narrow incurved post-anther lobe, flanked by two smaller incurved or interlocking, irregularly toothed, auxiliary lobes; column arms short with a dense tuft of shaggy white hairs. Flowers lightly fragrant, opening all at once, out-crossing.



JN, Meningie, SE

Flowering: Late Aug – Sept – early Oct.

Similar Species: *T. grandiflora*.

Distribution: **EP, MU, SL, SE; Vic.**
Once widely distributed across southern agricultural districts from the Port Lincoln district on Eyre Peninsula, now believed extinct on rare on Yorke Peninsula and in the Mount Lofty Ranges, but more common in the southern Murray lands and South East. It is also in Victoria where it is rare.

Habitat: In heathy woodland, in light sand over clay, terra rossa soils over limestone or in coloured sands in *Callitris* woodland. Apparently *T. epipactoides* favoured more fertile soils which were soon cleared for cereal growing.

Distinguishing Features: Flowers with metallic-like sheen and colours make this species identifiable. An unusual feature of many plants is the bright red stigma resembling a blob of raspberry jam.

- ***T. grandiflora*** has blue flowers without metallic lustre, and tend to grow in higher rainfall areas.

Notes: Occurs singly or in small clumps.

During the massive clearance of our upper South East in the 1960s vast areas of land were rolled and burned. The following spring these areas revealed massed flowering of thousands of *T. epipactoides*, with no two plants having identical flower colouring.

Today small remaining populations rarely set seed and indicate that only large populations are viable hence the prognosis for the future of this once common plant is bleak.

Hybrids probably occur but no collections are known. The species has been used in man-made hybrids but is rarely cultivated and difficult to grow.

Conservation Status:
Status in Legislation: Nationally endangered, endangered in South Australia.
Suggested Status: 3Eci nationally threatened.



JN, *T. epipactoides*, Potters Scrub, Sept

Thelymitra exigua Jeanes

Red Gum Sun Orchid

Etymology: Latin *exigua* small or short in reference to the short stature of the species.

Synonyms: Previously treated under *T. pauciflora.*

Description: A short clumping species with ribbed, linear, fleshy **leaf** usually less than 10 cm long, sterile bracts one or two. **Flowers** 1-8, small, blue to pinkish blue about 2 cm across. **Column** pale pink, post-anther lobe dark brown, tubular and slightly inflated, open below, apex emarginate to slightly 'V' notched, yellow, apical lobes turned sharply upward with a toothbrush like arrangement of white hairs. The flowers open freely only on hot humid days, and are not or hardly fragrant.

Flowering: Oct – early Nov.

Similar Species: *T. holmesii* and many species of the *T. pauciflora* complex including *T. peniculata*.

Distribution: **FR, NL, SL, MU, KI; Vic, Tas.**
Found in the Mount Lofty and Flinders Ranges, Murraylands and Kangaroo Island but rare in South Australia; more common in Victoria and Tasmania.

Habitat: Unsure in South Australia where it is apparently restricted to damp grassy woodland on flats, usually at higher elevations.

Distinguishing Features: The distinguishing features include the short stature and clumping habit.

Notes: There are many similar forms not yet assessed in South Australia, some with a single sterile bract, others with two bracts. Further study is limited due to massive clearance and overgrazing of suitable habitat.



RB, leaves in clumps

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Widespread but probably vulnerable in South Australia



BB, *T. exigua*, Chookarloo NFR, SL

Thelymitra flexuosa Endl.

Small Yellow Zig-zag Sun Orchid

Etymology: Both the scientific and common names reflect the flexuose or zig-zag nature of the stems.

Synonyms: *Macdonaldia smithiana* Gunn ex Lindley, *T. smithiana, Macdonaldia concolor.*



CH, Kuitpo Forest, SL

Description: **Leaf** narrow-linear, green, to 10 cm long. **Flower stem** to 20 cm tall, wiry, flexuose with stem bracts at the point of flexion. The **flowers** are one or two, rarely three, yellow, about 1 cm across. **Column** 3-4 mm high, yellow, post-anther lobe swollen, with a denticulate apex; column arms rudimentary; anther point large, ovoid, protruding forward, yellow, fleshy, covered with short papillose hairs. Flowers self pollinated, not scented, opening only in warm humid weather, short lived.

Flowering: Late Sept – Oct – early Nov.

Similar Species: None.

Distribution: **EP, MU, SL, KI, SE; WA, NSW, Vic, Tas.** Widespread but uncommon across the southern, coastal, higher rainfall districts. In the Murraylands, it is found only in the Kaiser Stuhl CP. It is also found in Western Australia and the Eastern states.

Habitat: Mostly in nitrogen deficient soils which are boggy in winter, in low heath and scrub, forest clearings and swamp margins where it is more obvious after fire or disturbance.

Distinguishing Features: Easily recognised species due to the tiny yellow flowers on wiry, zig-zag stems, and the column with its 'proboscis-like' anther point.

Notes: *T. flexuosa* occurs as sparse single plants and small groups, flowering more profusely after fire.

A larger pale-flowered form occurs near waterholes of the lower South East.

Direct hybrids are not known but likely to cross with *T. rubra*, such a cross being indistinguishable from *T. carnea* which is often treated as of *T. flexuosa* x *T. rubra* origin.

Conservation Status:

Status in Legislation: Not listed nationally, rare in South Australia.

Suggested Status: Uncommon in South Australia except on Kangaroo Island where locally plentiful.



KB, *T. flexuosa,* Scott Creek CP, SL

Thelymitra grandiflora Fitzg.

Giant Sun Orchid

Etymology: The name *grandiflora* large or great flower is appropriate as this species has the largest flowers of any South Australia sun orchid.

Synonyms: Previously included in *T. aristata* or *T. aristata* var. *grandiflora*.

Description: **Leaf** large, broad-lanceolate to strap like, to 30 cm long, leathery, ribbed, often glaucous. **Flower stems** glaucous, robust to 100 cm tall, with large loosely sheathing inflated bracts which usually have a powdery bloom. **Flowers** numerous in a loose spike, to 40 mm across, pale to deep blue, lilac or pinkish-mauve, cupped, fragrant; sepals reddish-brown or green outside. **Column** more than 5 mm high, white, the post-anther lobe arched forward, greenish-brown, the sides parallel or tapering, apex somewhat bifid, denticulate or fimbriate; column arms with upswept, white, brush-like hair tufts. Flowers opening freely in warm weather, out-crossing, long lasting, many open together.



RB, Meadows, SL

Flowering: Sept – Oct – early Nov.

Similar Species: *T. aristata* and *T. nuda* in South Australia, as well as several species from the Eastern states.

Distribution: **FR, NL, MU, SL, KI_x**
Endemic to South Australia where it is widespread in the Mount Lofty and Flinders Ranges as far north as Wilpena Pound. In the Murraylands it occurs only in Kaiser Stuhl CP; and with a small outlier in western Kangaroo Island where it is now extinct.

Habitat: Forest clearings, woodland and scrub in well drained gravelly clay soils which may be laterite or podsols, or mixed with sand, extending to dry rocky ridges in better soils.

Distinguishing Features: Recognised from the robust nature of the plants, the large inflated stem bracts, and the powdery glaucous nature of most forms, the large, glowing, cupped flowers and the ragged end to the column mid-lobe.

- The similar ***T. aristata*** is restricted to the lower South East, is not glaucous and has a bright yellow top to the column mid-lobe.

Notes: The species is usually seen as scatted single plants or small groups and flowers more freely after fires.

There is some variation; as one goes north the plants have more red in the leaf base, the powdery bloom and glaucousness become less obvious and the column mid-lobe becomes more hooded, perhaps as a result of hybridising with *T. megcalyptra* or perhaps they represent a separate subspecies.

Man made hybrids have been produced, notably with *T. antennifera* and *T. nuda.* The former has orange flowers. The hybrids have all been small statured and therefore disappointing.

Conservation Status:
Status in Legislation: Not listed nationally, rare in South Australia.
Suggested Status: 3Rc, nationally rare.



RB, *T. grandiflora*, Mt Lofty, Oct

Thelymitra hiemalis D.L.Jones & M.A.Clem.

Winter Sun Orchid

Etymology: The Greek hiemalis, winter, is a reference to the late winter flowering of this form.

Synonyms: *T. ixioides* var. *subdifformis* Nicholls. The species is usually treated as a freak form of *T. juncifolia* or *T. ixioides*.

Description: An often short **stemmed** winter flowered form with larger bracts than *T. juncifolia* and narrow, oddly coloured segments, frequently misshapen. The **flowers** are purplish with narrow green or pinkish buds and sometimes green sepals. There are irregular deep blue spots on the petals. The **column** is narrow with post-anther lobe similar to *T. juncifolia*.

Flowering: Late July – Aug – early Sept.

Similar Species: Similar species include *T. juncifolia, T. ixioides* and *T. purpurata* (an Eastern states species).

Distribution: **SL, SE; Vic**
Rare in South Australia and under collected with plants observed from Mount Crawford, Meadows and near Port MacDonnell and also in south-west Victoria.

Habitat: Growing among shrubs in scrub and heath often in cold windswept sites.

Distinguishing Features: The early flowering, slender misshapen flowers and few dark spots on the petals make it easily recognised.

Notes: Rarely collected in South Australia but seen about once every 3 years.

Generally regarded as a freak development of *T. ixioides* complex of which there are several taxa in South Australia which mostly flower in late spring.

It is significant that plants are self perpetuating.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3E, but not really applicable for freak forms although this one is occasionally self perpetuating allowing it to qualify as a species in the narrow sense.



SH, *T. hiemalis*, Nangwarry NFR, Sept

Thelymitra holmesii Nicholls

Swamp Sun Orchid; Blue Star Orchid

Etymology: Named after Murray Holmes of Portland, collector of the type specimen.

Synonyms: *T. pauciflora* var. *holmesii* (Nicholls) Nicholls.



KB, Penola CP, SE

Description: **Leaf** single, linear-lanceolate, to 20 cm long, rigid, fleshy, deeply channelled and ribbed. **Flower stem** to 40 cm tall, greenish or red-brown, with several small tightly sheathing bracts. **Flowers** 2 to about 10, to 20 mm across, deep blue or indigo inside, grey outside. **Column** to 5 mm, blue with a black collar and bright yellow inflated, 'V' notched post-anther lobe, with inturned margins. Column arms with sparse, erect white hair tufts, usually red based and yellow cream or yellow topped. The flowers are self pollinated, opening one or two at a time in hot humid weather, sometimes with darker veins and blotches of purple-red.

Flowering: Late Oct – Nov – early Dec.

Similar Species: *T. pauciflora, T. mucida, T.* aff. *holmesii*.

Distribution: **SL, KI, (rare), SE; Vic.**
Restricted to high rainfall districts in the southern Mount Lofty Ranges, especially Fleurieu Peninsula, the west end of Kangaroo Island and the lower South East; more common in the Eastern states.

Habitat: Occurs in swamps, peat bogs, creeks and waterholes which may be up to 2 metres deep in winter.

Distinguishing Features: Easily recognised by the thick, deeply channelled, rubbery leaf, the late flowering, buds steel grey outside, the yellow and black column top with its deep 'v' shaped cleft.

- *T. holmesii* is similar to ***T. mucida*** but without the bloom on the column.

Notes: The species was once abundant in the Mount Compass and Myponga swamps and grew as far north as Mount Crawford.

Flowers better after fire or disturbance opens up the often dense swamp thickets. It can rapidly colonise sand borrow-pits.

T. holmesii crosses with T. *juncifolia* and *T.* aff. *pauciflora,* the hybrids having very intense colour. Variation in the form of flowers in the Southern Lofty region indicates that there are probably undescribed cryptic species present.

Conservation Status:
Status in Legislation: Not listed nationally, vulnerable in South Australia.
Suggested Status: 3Vci in South Australia but nationally secure.



JN, *T. holmesii*, Stipiturus CP, SL, Nov

Thelymitra sp. Topperwein

Horseshoe-Top Sun Orchid

Etymology: The phrase name reflects the beautifully shaped column top with canary yellow trichomes.

Synonyms: *T.* aff. *holmesii.*

Description: Sturdy but slender semi aquatic sun orchid with a **flower stem** to 60cm tall. The **leaf** is rubbery and deeply channelled, there are two strong sterile bracts on the sometimes glaucous stem. The **flowers** are about 2 cm across opening easily in hot humid weather, in tints of blue and lilac; the **column** is the same colour as the tepals and the post-anther lobe is a purple-brown, golden tipped, thickened, horseshoe-shaped with inrolled margins; the hair tufts (trichomes) are very erect, deep yellow and nestled in the apex of the post-anther lobe.

Flowering: Nov.

Similar Species: *T. lucida* and *T. holmesii* complex.

Distribution: **?SL, SE; Vic.**
Found in the lower South-east of South Australia and adjacent Victoria, with similar plants once seen at Glen Shera swamps in the Southern Lofty region. May have been common before settlement as there was once hundreds of square kilometres of this habitat. Today there are just tiny relicts.

Habitat: Restricted to grassy-sedge edged river red gum swamps.

Distinguishing Features: The large lilac blue flowers have such a distinctive post anther lobe.

Notes: The various similar species *T. holmesii, T. lucida, T. mucida* may cross in disturbed habitats and they certainly each cross with members of the *T. ixioides* complex of blue-spotted sun orchids to give a fascinating array of hybrid forms.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Most likely 3Eci although found in good numbers in Topperwein in 2010.



KB, *T.* sp. Topperwein, SE

Thelymitra hygrophila R.J.Bates

Springton Sun Orchid

Etymology: From the Greek *hygrophila* meaning moisture-loving, a reference to the species waterhole habitat.

Synonyms: Previously *T.* sp. Springton.



RB, Springton road, MU

Description: Like *T. exigua* this is a clumping species of river red gum flats, plants to 30 cm high, **leaves** are green based, rubbery, angular and deeply channelled, to 10 cm long, rather similar to those of *T. holmesii* which this species also resembles, stem bracts 1 or 3. **Flowers** 1-7, deep blue, on slender pedicels with long, strongly ribbed ovaries and small grey floral bracts, rounded, to 3 cm across, buds steel grey with pale blue edges to sepals, rather swollen, segments all of similar length except that the sepals are acute and the petals more rounded. The **column** is large, blue and erect, post-anther lobe yellow, swollen, with a narrow, dark collar, deeply cleft with inturned margins; hair tufts large, white and cottony, terminal and thrust forward below the post-anther lobe, trichomes tend to turn yellow when pressed, floral fragrance lacking. Flowers are self-pollinating or out-crossing, opening only in warm weather.

Flowering: Mid Oct.

Similar Species: *T. exigua* Jeanes, *T. holmesii.*

Distribution: **MU, SL.**
Once had an extensive habitat in the Southern Lofty and Murraylands region.

Habitat: This semi-aquatic species grows in waterholes that may be 30 cm deep in winter, often amid knob sedges. Often these waterholes on the river red gum clay flats dry out as flowering proceeds.

Distinguishing Features: The fluffy mop like cream and yellow trichomes are a distinguishing feature.

- Most resembles ***T. holmesii*** but that species has sparse hair tufts with some yellow tints and a few red basal hairs. There are intermediate forms, such as the one pictured on the next page, which have less dense trichomes.

Notes: This attractive species needs to be DNA tested to assess its relationships.

The name was published in 2010.

As all of its extensive habitat, except for a few narrow roadside strips and isolated small blocks, has been cleared there is little chance for a long term future of this species.

Conservation Status:
Status in Legislation: Not listed nationally, vulnerable in South Australia.
Suggested Status: Critically endangered.



JN, *T. hygrophila*, Kuitpo NFR, SL
*Note fluffy mop like cream and yellow trichomes, a distinguishing feature of the species

Thelymitra inflata Jeanes

Blue star sun Orchid or Adelaide Hills Plum Orchid

Etymology: The name *inflata* means swollen or inflated and refers to the swollen halves of the post-anther.

Synonyms: Previously referred to as a form of *T. mucida* Fitzg. i.e. as *T. mucida* ssp. sylvestris.

Description: A slender species to 30 cm, **leaf** linear to 25 cm, leathery, rigid, ribbed and channelled, **flower stem** rigid with 2 sterile bracts. **Flowers** 2-8, the buds slate gray with pale edged sepals, flowers blue, cupped, to 2 cm diameter. **Column** lilac-blue, post-anther lobe dark or plum coloured with glistening flecks in a powdery bloom, hooding the anther, extension bilobed, each lobe swollen, the margins incurved, their apex yellow; column arms swept up in front of the column, hair tufts cream or white, the lower trichomes with or without some red flecks. The flowers only open one or two at a time on warm humid days and are not fragrant.

Flowering: Oct – early Nov.

Similar Species: *T. holmesii, T. lucida, T. mucida.*

Distribution: **NL (rare), MU (rare), SL.**
Restricted to the Mount Lofty Ranges as far north as Clare.

Habitat: Only in the ranges and mostly on ridges and slopes in woodland sites that may be winter wet, especially along tracks and other disturbed sites.

Distinguishing Features: *T. inflata* has a bloom on the column, but the amount can be variable.

- ***T. holmesii*** is a swamp species and lacks bloom on the column
- ***T. lucida,*** also a swamp species, has small flecks of bloom and larger more freely opening flowers.
- ***T. mucida*** also has a shiny bloom but the hair-tufts are a sparse red and yellow and embracing the sides of the column.

Notes: The species has been recognised as distinct for many years.

The flowers are short lived and most plants complete flowering in a few days. Flowering time is dependent on rainfall and temperature and if the weather remains cool they may not open at all.

Conservation Status:
Status in Legislation: Not listed nationally, vulnerable in South Australia.
Suggested Status: 3 Vci in South Australia and nationally rare.



RB, *T. inflata*, Mylor, SL



BB, *T. inflata* column composite, Scott Creek CP

South Australia's Native Orchids

Thelymitra x irregularis Nicholls

Pink-Spotted Sun Orchid

Etymology: The name derives from the very irregularly toothed top to the column mid-lobe.

Synonyms: *T. ixioides* var. *carnea* Guilf.

Description: Attractive species**,** leaf slender, channelled, red at the base, to 20 cm tall. **Flower stem** wiry to 40 cm, reddish. **Flowers** are very pretty, 2-5, pink with darker veins and indigo spots, to 4 cm across, on slender pedicels. **Column** to 5 mm high, post-anther lobe short, three toothed with side lobes as long as the middle one, all apices yellow and forming an irregular crest with one or two rows of calli below; column arms ending in yellow hair tufts. Flowers are freely opening, lightly scented, long lived and open all at once.



KB, Scott CP, SL

Flowering: Sept – Oct.

Similar Species: *T. luteocilium, T. rubra.*

Distribution: **SL, SE; Eastern states.**
This is a seldom collected hybrid from the Adelaide Hills and lower South East; also in the Eastern states.

Habitat: Prefers disturbed grassy woodland or forest clearings where it usually occurs in mixed company with *T. rubra, T. pauciflora, T. juncifolia* and *T. x truncata.*

Distinguishing Features: The 'delicious' pink flowers with somewhat indistinct blue spots and the 'busy' post anther lobe make this an easily recognised taxon.

- The rare hybrid ***T. antennifera* x *T. juncifolia*** may resemble *T.* x *irregularis* but has antenna like lobes on the column top.
- ***T. luteocilium*** has yellow hair tufts but both it and ***T. rubra*** lacks spots.

Notes: The parents of the type collection are supposedly *T. carnea* and *T. ixioides,* while the parentage of South Australian plants is more likely *T. rubra* x *T. juncifolia* or rarely *T. rubra* x *T. ixioides.*

This attractive hybrid is usually seen on burnt or disturbed ground and is more common in the Eastern states. The South Australian plants are often of a brighter pink than eastern plants.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3E in South Australia.



KB, *T.* x *irregularis*, Scott Creek CP, Sept

Thelymitra ixioides SW. ex SW.

Blue-spotted Sun Orchid

Etymology: The name *ixioides* means spotted like an Ixia, and most specimens have dark blue dots or spots on the floral segments.

Synonyms: Previously included in *T. juncifolia*

Description: **Leaf** thick textured, not flat, base striated purple. **Flower stem** slender to robust to 30 cm high, either glaucous or with a purplish tinge. **Flowers** few to several, pale to bright blue, purplish or rarely pink. Floral segments broad ovate, sepals purplish outside with pale blue margins, petals and dorsal sepal spotted and blotched with dark blue, the degree of spotting variable. **Column** about 5 mm high, white or bluish, midlobe trifid, post-anther lobe yellow with a dark collar, thickly topped with papillae; side lobes yellow, longer and flat on top; column arms same colour as column with white hair tufts.

Flowering: Oct.

Similar Species: *T. juncifolia* and *T. hiemalis*.

Distribution: **SL, SE.**
In the Southern Lofty and South East regions.

Habitat: Mostly in woodland or swampy ground.

Distinguishing Features: The constant features are the purple and mauve swollen buds edged pale blue and cupped flowers with the column apex sporting a dense crest of yellow papillae.



JN, SE, Oct

Notes: There are interesting variations within this complex, some having blue column or hair-tufts, some with purple hair-tufts and others with orange. There may be separate sub species.

Flowers open easily but most will self pollinate; often locally common.

Conservation Status:
Status in Legislation: Not listed nationally, endangered in South Australia.
Suggested Status: Common and well conserved.



RB, *T. ixioides*, Penola CP, SE
*Note dense mass of golden papillae and thick white trichomes as well as spots on petals and dorsal sepal

Thelymitra sp. Hybrid dark column

Dark Column Sun Orchid

Etymology: The name hybrid dark column refers to the dark brown, tubular post anther lobe on the column, a very noticeable feature not known in any other sun orchids.

Synonyms: None.

Description: Slender to stocky, with a **flower stem** up to 40 cm tall, with a fleshy , channelled red-based **leaf**. The **flowers** are deep blue with even darker dots on any or all segments, the petals well rounded the sepals more acute. There may be up to 15 flowers per plant, all with rather dark buds or sepal backs; the **column** is rather pot-bellied with a dark tubular post anther lobe to 8 mm long, often with a crenulate apex; the white trichomes are large and densely massed in a globular cluster.



BB, Hahndorf, SL

Flowering: Oct – Nov

Similar Species: Similar taxa: its similarity to *T. ixioides* and shared features with *T. x truncata* would serve to indicate it is a stabilised hybrid between a member of the *T. ixioides* complex (and there are many in the Southern Lofty region) and another larger blue-flowered species.

Distribution: **SL.**
Found in the Southern Lofty region, especially between Hahndorf and Littlehampton in the Adelaide Hills, but may be more widespread as it would appear to need a wet swinter/spring to flower en masse.

Habitat: Favours open woodland on ridges and hilltops in well watered areas.

Distinguishing Features: A spotted sun orchid with dark tubular post anther lobe and dense a mass of white hair tufts.

Notes: This taxon had never been reported before 2010 but around Hahndorf in the Adelaide Hills there may be many hundreds. This may be an example of a new hybrid species beginning to stabilise and using up niches unsuitable for either parent.

The taxon is free flowering but no fragrance has been detected to indicate out-crossing.

It can be seen from the image above, these flowers were badly damaged by flower thrips, which are a serious threat to all spring flowered orchids in South Australia.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Not relevant.



RB, *T.* sp. Hybrid dark columns, SL, Nov

South Australia's Native Orchids

Thelymitra juncifolia Lindl.

Slender Blue-spotted Sun Orchid

Etymology: The species name *juncifolia* means reed plus leaf referring to the slender leaf.

Synonyms: Often included under *T. ixioides*.

Description: Slender to robust plant, **leaf** linear, fleshy, channelled, red at the base, to 30 cm tall and less than 10 mm wide. **Flower stem** to 60 cm tall often with a purplish tinge. The **flowers** are few to several, variable in size 15-20 mm across, bright blue, pale blue, white or purplish with dark blue spots, mostly on the ovate petals, the sepals more triangular, purplish red outside in many forms; **column** about 5 mm high, white or bluish, the midlobe trifid, the post-anther lobe orange-red with a dark collar, crested with several rows of calli, narrow to wide; the side lobules longer and flat, yellow; the column arms end in white hair tufts. The flowers are self-pollinating opening only on warm, humid days, when most flowers open together. The fragrance is variable.



JN, SE

Flowering: Late Sept – Oct – Nov.

Similar Species: *T. ixioides, T. hiemalis.*

Distribution: **EP (rare), NL (rare), MU, SL, KI, SE; NSW, ACT, Vic, Tas.**
Mostly in the Mount Lofty Ranges and South East with occasional reports from Kangaroo Island but no collections exist from there; also in the Eastern states.

Habitat: In forest clearings, woodland, rough scrub and heaths, in sandy or gravelly soils often clay based.

Distinguishing Features: Easily recognised from the blue, spotted flowers with the more triangular sepals.

- ***T. hiemalis*** is a rare winter flowered species
- ***T. ixioides*** has segments that are more uniformly rounded and swollen rounded buds.

Notes: The flowers resemble some native iris in form and this is probably mimicry. It flowers more freely after fires open up the habitat.

Several hybrids occur, viz. with *T. pauciflora, T. antennifera, T. holmesii, T. nuda* and *T. mucida*. These crosses are referred to as *T.* x *truncata* and are often confused with *T. ixioides* but have a tubular column midlobe. It also crosses with pink-flowered sun orchids to give *T. x irregularis.*

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Most forms are secure.



RB, *T. juncifolia*, Mt Crawford NFR, SL

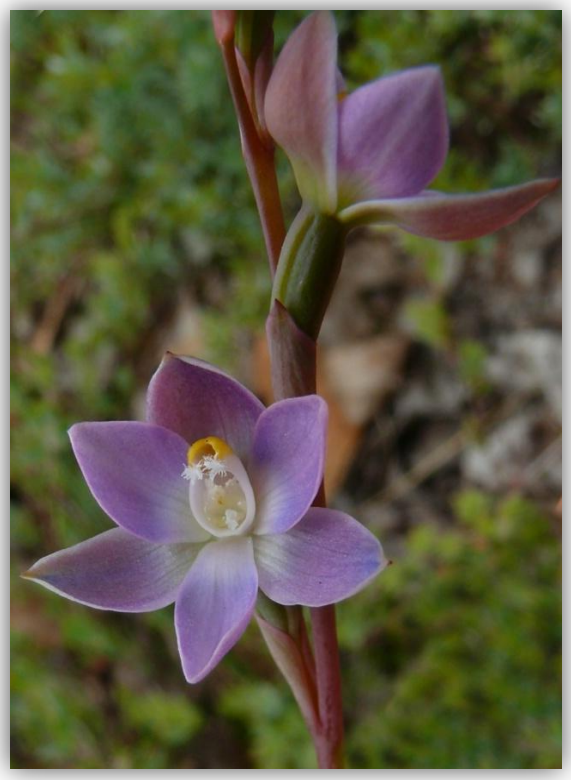
Thelymitra latifolia R.J.Bates

Flat leaf Sun Orchid

Etymology: The name *latifolia* meaning wide leaf, shows that this species has a broader, flatter leaf than the related *T. pauciflora*.

Synonyms: Although long recognised as different most collections have previously been placed in *T. pauciflora* or by Jeanes in his *T. peniculata*.

Description: A moderately stout plant; **leaf** linear lanceolate 8-20 cm long x 3-15 mm, blade flat, not fleshy, hardly channelled but with some longitudinal striations above, base tinted red and hardly sheathing the scape at all. **Flower stem** 10-30 cm tall, with 2 closely sheathing sterile bracts. **Flowers** usually 4-8, to 14 mm across, lilac to lilac-blue; floral bracts inflated, pink with a pale bloom; buds short and rounded often pink tinted, sepals with pale blue edging; segments cupped inside with up to 12 indistinct linear veins; **column** pale pink or violet, the post-anther lobe hooding and hardly inflated, tubular, red-brown, the apex rounded but not distinctly notched instead with a crinkled yellow margin; the lateral lobes bent upward, the trichomes in a toothbrush arrangement, white, in front of the post-anther lobe. The flowers are not fragrant, rarely opening, self-pollinating.



JN, Nangwarry NFR, SE
*Note pink on the back of the sepals

Flowering: Oct.

Similar Species: Other *T. pauciflora* complex species with two sterile bracts.

Distribution: **MU, SL, SE; Vic.**
Widespread in the southern Mount Lofty Ranges and South East and also in western Victoria.

Habitat: Growing mostly in sandy or gravely soils with stringy bark or pink gum in scrubby woodland in moderate to high rainfall districts; not associated with swamps.

Distinguishing Features: The flat often broad leaf not embracing the scape, the two sterile bracts, the short buds and column with post-anther lobe having crenulate margins serve to set it apart.

- It has been placed with ***T. peniculata*** Jeanes, however that species has a broadly notched post-anther lobe and strong venation and tends to be associated with swamps in South Australia.

Notes: This species had long been thought different and most South Australia collections were determined by Jeanes in 2004 as his later flowering *T. peniculata*. Subsequently the name was published in 2010.

Both species occur in South Australia but prefer different habitat and can easily be separated in the field. However it is much more difficult to separate them from pressed flowers as the post-anther lobe tends to collapse thereby rendering the differences difficult to see.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Common and well conserved.



RB, *T. latifolia* flower and leaf base, Knott Hill NFR, SL
*Note stem exserted from the broad, flat leaf at ground level and lower bract with bloom rubbed off where touched

Thelymitra lucida Jeanes

Waterholes Sun Orchid

Etymology: From the Latin *lucidus* bright, glittering, referring to the glistening bloom on the post-anther lobe.

Synonyms: None but previously included in either *T holmesii* or *T. mucida*.

Description: Slender to moderately robust swamp and waterhole plants with a linear, fleshy, rubbery, channelled and ribbed **leaf**. **Flower stem** green, to 40 cm tall with two sterile bracts. **Flowers** 2 -10, buds slate-grey with pale edged sepals, flowers deep blue to 2 cm across. **Column** mauve, post-anther lobe large, tubular, brown and curved forward, apex yellow with a deep cleft and inrolled margins, bloom reduced to lower half as glistening flecks, trichome hairs cream with red flecks, embracing the column. The flowers open freely in hot weather but are not perfumed.



KB, Penola CP, SE

Flowering: Late Oct – Nov.

Similar Species: *T. mucida* and *T. inflata*, *T. holmesii.*

Distribution: **SE; Vic, Tas.**
Restricted to the South East from near Bordertown southward but probably in similar waterholes on Fleurieu Peninsula before European settlement; also in Victoria and Tasmania.

Habitat: Restricted to edges of water holes either by river red gum swamps or in peaty, sand based water holes which dry out each year in late spring or summer. Found among fringing sedges and rushes. The plants may be immersed to a depth of one metre in winter.

Distinguishing Features: Deep blue, medium sized flowers with glistening bloom on the column top, with a deep cleft; soft coloured hair tufts held in front of the column.

- ***T. mucida*** which is a much smaller plant with few flowers and sparse hair tufts.
- ***T. inflata*** which is a more slender woodland species having a different post-anther lobe with a more distinct glistening bloom.

Notes: Often confused with *T. inflata,* which is a species of hilly woodland in sites which may be winter wet, but not in permanent swamps.

Where it grows with *T. mucida* in South Australia the latter is reduced to a tiny plant no more than 20 cm tall, usually with a single flower. *T. mucida* does not grow in water.

T. lucida is often found growing with the similar *T. holmesii*.

T. lucida can form large populations of several hundred plants and occurs in two forms, the attractive large flowered River Red Gum swamp form and the small flowered, peaty waterhole form. The former must have been abundant around the hundreds of South East waterholes before massive clearance and over-grazing following European settlement. *T. lucida* as presently understood is possibly a complex of several species in South Australia.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3Vc in South Australia and nationally rare.



RB, *T. lucida*, Topperwein NFR, SE

South Australia's Native Orchids

Thelymitra luteocilium Fitzg.

Early Pink Sun Orchid

Etymology: The name *luteocilium* meaning yellow cilia refers to the yellow hair tufts on the column arms.

Synonyms: None



HL, Belair NP, SL, Oct

Description: **Leaf** linear, slightly channelled, red based, to 20 cm long. **Flower stem** to 35 cm tall, dark reddish green. **Flowers** few, 1-2 cm across, usually pink but pallid or yellowish forms are not uncommon; sepals and petals similar, somewhat narrow-ovate. **Column** almost 5 mm high, pale pink; post-anther lobe reddish, erect and short, entire or slightly bifid with yellowish margins; column arms ending in stout, yellow, dense hair tufts reaching above the mid lobe. Flowers self pollinated, opening in warm humid, sunny conditions, usually for only a short time each day. Not scented.

Flowering: Sept – Oct – early Nov.

Similar Species: *T. rubra, T.* x *chasmogama.*

Distribution: **FR, EP, NL, MU, YP, SL, KI, SE; NSW, Vic, Tas.**
Very widespread from the coast across the wheat-belt and into the adjacent pastoral zone, from Venus Bay on the West coast, into the Gawler and Flinders Ranges as far north as Quorn, through the Mount Lofty Ranges and Murray lands to the South East and Kangaroo Island; less frequently in the Eastern States.

Habitat: Dry rocky sites in the mountains, damper loamy soils on the plains. In woodland, scrubs, mallee-heath and about rock outcrops inland.

Distinguishing Features: The yellow hair tufts on pink flowers and the early flowering habit make this easily recognised.

- ***T. rubra*** has yellow column arms without hair tufts.
- ***T. x chasmogama*** usually has more greyish tints to the flowers and does not have the 'peak' to the post-anther top.

Notes: This species must have been abundant before settlement. It is one of the earliest sun orchids to flower, although the buds rarely expand in cool weather.

Frequently hybridizes with blue flowered species to give variations of *T.* x *chasmogama.* Less frequently crosses with *T. antennifera* to form *T.* x *macmillanii*-like crosses. Also crosses with the pink *T. rubra* and flowers with sparse hair tufts have been noted where the two flower together, especially on lower Eyre Peninsula.

See Gallery for a picture of the whole plant.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Secure.



JN, *T. luteocilium*, Clare, Sept

Thelymitra x mackibbinii F.Muell.

Mackibbin's Sun Orchid

Etymology: Named in honour of J. McKibbin, collector of the type.

Synonyms: *T. chisholmii* Nicholls.

Description: **Leaf** lanceolate, to 10 cm long, channelled, broad and purplish at the base then suddenly narrowing. **Flower stem** to 25 cm tall, greenish red, with several small sheathing bracts. **Flowers** are few, to 25 mm across, purple-pink with darker veins. **Column** to 5 mm high, pale purple, with a short yellow, truncate mid-lobe with a row of irregular calli at the top; column arms elliptical, yellow, rugulose, to 2 mm long and angled upwards in front of the midlobe. Flowers faintly fragrant, opening freely.

Flowering: Sept – early Oct.

Similar Species: *T. matthewsii*

Distribution: **?SE; Vic.**
Unsure in South Australia; reported from near Bordertown, but I have seen no collections and the species seems to be no longer in South Australia but is still present in Victoria.

Habitat: Reported from disturbed woodland in fertile, quartzitic, gravelly loams.

Distinguishing Features: The conspicuous purple-pink flowers with darker veining and the distinctive column top with upwards column arms set this species apart. If such a distinctive orchid were still present in South Australia it would have been noticed.

- ***T. matthewsii*** has a spiral leaf blade.
- In some ways it is similar to ***T. peniculata,*** i.e. in the few flowers, strongly veined, but that is where the similarity finishes.

Notes: It is a supposed hybrid and although *T. matthewsii,* has often been suggested as a parent it is not found with *T. x mackibbinii* in Victoria and has not been seen near its reported locations in South Australia.

Of course there are several species of *Thelymitra* in South Australia which are found as isolated plants or small groups up to 50 km apart, including *T. matthewsii, T.* aff. *holmesii*, *T. circumsepta* and *T. malvina*, none of which are hybrids.

There are no extant collections of this taxon in South Australia.

Conservation Status:
Status in Legislation: Nationally vulnerable, not listed in South Australia.
Suggested Status: Presumed extinct in South Australia.



JJ, *T.* x *mackibbinii*, Western Victoria

South Australia's Native Orchids

Thelymitra x macmillanii F.Muell.

Crimson Hybrid Sun Orchid

Etymology: Named in honour of Thomas Macmillan a Melbourne gardener in the 1860s.

Synonyms: None



RB, Kuitpo NFR, SL

Description: **Leaf** linear to 10 cm long, red based. **Flower stem** to 20 cm, wiry, flexuose. **Flowers** one to five, 2- 4 cm across, widely opening, deep red, crimson or bright salmon pink, sometimes wholly yellowish or yellow edged. **Column** 7 mm high, red; post-anther lobe with a short, notched yellow apex; side lobes erect , produced into long, erect, oblong-lanceolate yellow, orange or red lobes about 5 mm long, with rugulose margins. Flowers opening freely, sometimes sweetly scented, lasting up to three weeks.

Flowering: Sept – Oct.

Similar Species: None

Distribution: **FR, NL, EP, MU, YP, SL, KI, SE; WA, Eastern states.** Widespread in the wheat-belt and ranges wherever *T. antennifera* occurs with other sun orchid species but rarely seen throughout its wide range; also in Western Australia where it is rare, and in the Eastern states.

Habitat: In lightly disturbed sites in woodland, grassland and mallee heath. Found in a variety of soils from terra rossa over limestone to clays and sandy loams.

Distinguishing Features: The colourful extended side lobes held above the column are conspicuous on usually brightly coloured flowers in shades of pink through to red, with or without yellow tips.

- ***T. antennifera*** has yellow flowers with deep red extended side lobes.

Notes: This hybrid is derived from *T. antennifera,* usually crossed with one of the more freely opening blue sun orchids such as *T. megcalyptra* or *T. nuda*, but also with the pink species *T. luteocilium* and *T. rubra* and the white flowered *T. albiflora.* Large colonies of this vegetatively increasing hybrid can be quite spectacular in flower.

The brilliant colours of the flowers are due to a combination of colour-inducing anthocyanins and carotenes.

The hybrid is popular in cultivation because of its vegetatively increasing habits, and the large gloriously coloured, freely opening flowers.

Conservation Status:

Status in Legislation: Not Listed.

Suggested Status: Rare in South Australia.



BB, *T.* x *macmillanii,* Scott CP, SL
*Note similarity to parent *T. antennifera*

South Australia's Native Orchids

Thelymitra malvina M.A.Clem., D.L.Jones & Molloy

Mauve Tufted Sun Orchid

Etymology: The name *malvina* purplish refers to the hair tufts on the column arms.

Synonyms: None, but previous collections mis-identified as a large form of *T. pauciflora*.

Description: **Leaf** lanceolate, to 35 cm long, with a brownish base, channelled. **Flower stem** to 50 cm tall, rigid, brownish green, with three large, sterile, sheathing bracts. **Flowers** are numerous, to 30 mm across, mauve-blue inside, greenish outside. **Column** to 7 mm long, blue with a black collar and yellow apex to the post-anther lobe which arches forward into a smooth, narrow, horizontal tube, column arms ending in a dense tuft of usually mauve hairs. Not perfumed; the flowers open two or three at a time, expanding only in warm humid weather.



BB, SE

Flowering: Oct – Nov.

Similar Species: *T. nuda* and *T.megcalyptra*, as well as similar members of the *T. pauciflora* complex in South Australia.

Distribution: **SE.**
In South Australia known only from five sites north of Mount Gambier, but probably also in the sand swamps of the Fleurieu Peninsula and Kangaroo Island before European settlement.

Habitat: Sandy swamp margins in low or slashed heath.

Distinguishing Features: *T. malvina* can usually be recognised from the mauve hair tufts but white tufted forms can still be recognised by the three sterile leaf bracts and long tubular column apex.

- ***T. nuda*** and ***T. megcalyptra*** which are more out-crossing and do not have purple hair tufts, nor do they have such a narrow forward thrusting post-anther lobe.
- There may be similar small flowered members of the ***T. pauciflora*** complex which also have purple hair tufts.

Notes: Only recently named, *T. malvina* was discovered near Mount Gambier in the 1960s by Australian plant collector Marian Beek and believed at that time distinct by wildflower artist and naturalist Kath Alcock.

Usually grows with *T. holmesii, T. mucida* and *T.* aff. *pauciflora.* Hybrids have been observed with *T. crenulata* near Glencoe. Flowers best after fire or slashing.

Found in larger numbers in South Australia in 2004.

Conservation Status:
Status in Legislation: Not listed nationally, endangered in South Australia.
Suggested Status: 2Eci in South Australia



KB, *T. malvina*, Honan NFR, SE

South Australia's Native Orchids

Thelymitra matthewsii Cheeseman

Spiral Leaved Sun Orchid

Etymology: The name honours New Zealand amateur botanist Richard H. Matthews (1835-1913) who specialized in orchids and ferns.

Synonyms: *T. daltonii* R.S.Rogers.

Description: **Leaf** distinctive, with a broad, sheathing base which has short fine hairs and is purplish below, rapidly narrowing to become linear and spirally twisted, only about 10 cm long at best. **Flower stem** to 15 cm, slender. **Flower** single, to 20 mm across, petals purple-blue, sepals reddish-purple, all with darker veins. **Column** to 5 mm long with a short notched apex; side-lobes ovate, yellow, obliquely erect, ear-like; anther point enlarged into an ovoid proboscis. Flowers only opening in warm humid weather, self pollinated, short lived and not fragrant.



BB, Nangwarry NFR, SE

Flowering: Aug – Sept.

Similar Species: None in South Australia, but the Western Australian *T. spiralis* is very similar.

Distribution: **SLx, KI, SE; WA, Vic; NZ.**
There are few collections from the Fleurieu Peninsula, the west end of Kangaroo Island, and the South East; also, possibly Western Australia, Victoria and New Zealand.

Habitat: On bare lateritic clay, calcareous or acid sands and in stunted, low nutrient heaths and scrub. Plants do well in slashed heath and flower better after fires or disturbance.

Distinguishing Features: A very distinctive plant easily identified from the spiral leaf alone. In this feature it is similar to several Western Australian species, most notably ***T. spiralis.***

Notes: Until recently the species was regarded as critically endangered in South Australia but was found in good numbers on Kangaroo Island in 2007 and in the South East in 2008. Probably occurred right across southern coastal districts before European settlement.

South Australia is now known to have the world's largest population thanks to the work of NOSSA members.

The white pollinia often ooze onto the stigma, as seen in the image above.

Conservation Status:
Status in Legislation: Nationally vulnerable, endangered in South Australia.
Suggested Status: 3vci in South Australia and similarly rare throughout its range.



JN, *T. matthewsii* with spiral leaf, SE



KB, *T. matthesii*, Nangwarry NFR, SE



BB, *T. matthesii,* Nangwarry NFR, SE

Thelymitra megcalyptra Fitzg.

Scented or Dryland Sun Orchid

Etymology: From the Greek *mega* large and *kalyptra* a veil, lid, cap-like, refers to the swollen hood or column mid-lobe.

Synonyms: *T. aristata* var. *megcalyptra* (Fitzg.) Nicholls; also previously included under *T. nuda* R.Br.

Description: **Leaf** lanceolate, to 30 cm x 30 mm, channelled, fleshy and ribbed, reddish near the base, deep green above, never glaucous. **Flower stem** to 40 cm, stout, often red tinted, with several sheathing bracts. **Flowers** several to many, to 40 mm across, deep blue, mauve or pinkish; the segments ovate, overlapping. **Column** mauve to 8 mm high, post-anther lobe produced into a curved inflated hood, yellow, red or brown with a dark collar at the level of the column arms; column arms with a dense elongated apical brush of white hairs. Flowers large, fragrant, opening in sunshine or warmth, often all open at once; on hot days the segments bend right back.

Flowering: Late Aug – Sept – Oct.

Similar Species: This is a complex of as many as half a dozen biological entities in South Australia most of them little understood. The complex includes *T. alcockiae, T. glaucophylla, T. nuda* and *T. malvina.*

Distribution: **GT, FR, EP, NL, MU, YP, SL, SE; NSW, ACT, Vic.**
This is the most widespread sun orchid in South Australia once occurring in great numbers on the plains from the coast to the pastoral zone, from near Fowlers Bay on the West coast inland to the Gawler Ranges, throughout drier parts of the Flinders Ranges as far north as Leigh Creek, across the wheat-belt to the South East, Yorke Peninsula, the Adelaide Plains as well as on coastal islands; also in the eastern states.

Habitat: In dry woodland, mallee, and mallee-broombush, grassland, shrubland and about rock outcrops well inland, in most well drained soil types.

Distinguishing Features: Best identified from the red base to the leaf, the large flowers, overlapping segments and large elongated cottony trichome tufts.

- The similar ***T. glaucophylla*** from higher rainfall districts especially in the ranges, flowers later, has no red leaf base and is often glaucous, the segments not so overlapping.
- ***T. alcockiae*** can be separated by the usually later flowering habit and the coppery red leaf with lax apex.

Notes: This is the most drought tolerant sun orchid in South Australia.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Widespread and secure.



KB, *T. megcalyptra*, Telowie Gorge, Aug

South Australia's Native Orchids

Thelymitra x merraniae Nicholls

Merran's Sun Orchid

Etymology: Named in 1929 in honour of Merran Sutherland who collected the type specimen.

Synonyms: *T. ixioides* f. *merraniae* (Nicholls) Nicholls.

Description: **Leaf** linear lanceolate, red based, to 25 cm long. **Flower stem** to 30 cm tall, reddish, with 2 sterile bracts. **Flowers** are one to several, about 2 cm across, purple-blue with darker spots and lines, sepals red on the outside. **Column** about 5 mm high, purplish; mid-lobe short, trifid, yellow crested, the post-anther lobes longer and projecting forward in a golden horseshoe, usually flat, thick and yellow but variable; column arms sub-erect, flattened, the hair tufts tangled, white, tinged with yellow or red. Flowers sometimes out-crossing, freely opening, most open at once, fragrant.



RB, Glen Shera, SL

Flowering: Oct – Nov.

Similar Species: *T. ixioides, T. polychroma.*

Distribution: **SL, SE; NSW, Vic.**
Restricted to high rainfall districts and only collected a few times, most common in the South East; also in the Eastern states.

Habitat: Swamp margins especially on mown fire breaks, tracks or areas recovering from grazing. Prefers light sandy soils and in South Australia only found with *T. juncifolia*, *T. lucida*, *T. mucida* and T. *holmesii* and probably a stabilized hybrid.

Distinguishing Features: Readily identified from the combination of both spots and stripes on the perianth segments and the large yellow smooth side lobes of the column apex.

Notes: The extreme variation in the column mid-lobe, the rarity and the brilliant colours would suggest a hybrid origin. Populations at The Marshes Native Forest Reserve, mostly single flowered, are considered a hybrid between *T. mucida* and *T. juncifolia*.

Conservation Status:
Status in Legislation: Not listed nationally, endangered in South Australia.
Suggested Status: 3Vci.



KB, *T.* x *merraniae*, Honan NFR, Nov

Thelymitra mucida Fitzg.

Plum Sun Orchid

Etymology: The name *mucida,* (mucus) refers to the shining viscid secretion or bloom on the column mid-lobe.

Synonyms: None

Description: **Leaf** linear-lanceolate, to 20 cm long, rubbery, channelled, dark, red based. **Flower stem** to 30 cm tall, slender, dark, with small sheathing bracts. **Flowers** usually three to six, to 20 mm across, pale blue with pink, or purple tints and veining, steel grey outside. **Column** to 4 mm high, pink, with a hooded post-anther lobe, deeply cleft at the top, purple with a shiny, pale bloom, the apex yellow; column arms ending in upswept brushes of wiry yellow and red hairs, embracing the column. The flowers open successively, are rarely perfumed, short lived, and expand only in warm humid conditions.

Flowering: Late Oct – Nov.

Similar Species: *T. inflata, T. lucida, T. orientalis.*

Distribution: **KI, SE; WA, Vic.**
Restricted in South Australia to the west end of Kangaroo Island and the lower South East. More common in Western Australia.

Habitat: Restricted to low heath in sandy peat swamp margins where it grows with *Cryptostylis* and other swamp loving orchids.

Distinguishing Features: A tall multi flowered plant with medium sized flowers with really sparse red and yellow hairs embracing the column, found in peaty tea-tree swamps.

- ***T. orientalis*** is a smaller plant and flower with slightly less bloom on the column, usually only one or two flowered.
- ***T. inflata,*** also has a hoary bloom on the post-anther lobe but is found in drier woodland habitats.
- ***T. lucida*** also has a hoary bloom but with white or pastel tinted trichomes which are denser.

Notes: Not recognised in South Australia until the 1970s, but certainly a distinctive plant.

T. mucida flowers more freely after fires or disturbance.

Conservation Status:
Status in Legislation: Not listed nationally, rare in South Australia.
Suggested Status: 3Eci in South Australia.



RB, *T. mucida*, KI

Thelymitra nuda R.Br. sensu lato

Fragrant Sun Orchid

Etymology: The name *nuda* naked or devoid of refers to the smooth column mid-lobe.

Synonyms: Previously listed under the New Zealand species *T. longifolia*.

Description: **Leaf** lanceolate, to 40 cm by 20 mm, leathery, channelled, with one main ridge, pale green throughout. **Flower stem** to 30 cm, rigid, rarely robust, with two large sheathing bracts. **Flowers** several, widely expanding, to 20 mm across, sky blue, sometimes with lilac veins. **Column** to 4 mm long, i.e. small for the flower size, lilac or pale blue, the post-anther lobe somewhat tubular, with a dark collar and yellow shallowly cleft apex ; column arms with a terminal tuft of dense, tangled white hairs like a ball of cotton wool. Flowers fragrant, freely expanding, and usually all open at once.

Flowering: Oct – Nov.

Similar Species: *T. alcockiae, T. megcalyptra, T. glaucophylla* and a complex of similar species interstate.

Distribution: **EP, SL, SE; WA, Qld, NSW, ACT, Vic, Tas.**
A species of higher rainfall districts, from southern Eyre Peninsula and Mount Lofty Ranges to near Mount Gambier; also in the Eastern states**.**

Habitat: Forest clearings, woodland, scrubby ridges.

Distinguishing Features: *T. nuda,* which is a late flowered species in South Australia is easily separated from the similar, early flowered largely plains dwelling ***T. megcalyptra*** from leaves alone as they do not have a red base.

- The larger ***T. glaucophylla*** has larger glaucous leaves and big flowers with a flattened post-anther lobe.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Rare in South Australia but common interstate.



KB, *T. nuda*, Chookarloo NFR, Oct

Thelymitra alcockiae Jeanes ms

Coastal Sun Orchid

Etymology: The name honours South Australian naturalist and artist Kath Alcock of Naracoorte.

Synonyms: Previously *T.* sp. Laxifolia. Long recognised as different, the species has at times been included either in *T. longifolia* or *T. nuda,* the former a New Zealand endemic.



KB, Scott Creek CP, SL

Description: Varying from small delicate plants in poor soils to robust specimens in fertile soils, the **flower stem** from 10-40 cm tall. The **leaf** is usually a coppery red, flat, linear but with a floppy apex; the scape with 2 sterile bracts. **Flower**s 2-20, moderately large, easily opening, deeply coloured in blue or mauve, rarely pink, the segments up to 1.5 cm long but rather thin textured; **column** large, the post-anther lobe inflated, apex deeply notched or split, rather dark brown, black or red throughout or with a yellow apex,. The individual flowers are often short lived and sweetly fragrant.

Flowering: Sept – Oct.

Similar Species: *T. nuda* complex in general, *T. megcalyptra*, *T. glaucophylla.*



KB, *T. alcockiae* leaf

Distribution: **FR, EP, MU, YP, SL, KI and SE.**
Widespread and often coastal, but even to the tops of high mountains.

Habitat: Found in mallee or low scrub, in calcareous soils especially with soap mallee *Eucalyptus diversifolia*, but also occurring in fertile soils or on limestone and sand inland.

Distinguishing Features: Can readily be recognised by the leaves well before flowers appear, as these are mostly red tinted, thin textured, the blade flat with a drooping apex. These leaves are often shrivelled at flowering.

- Sometimes occurs with ***T. megcalyptra*** but this inland species has finished flowering by the time *T. alcockiae* begins to bloom.
- Not easily confused with the much larger, rigid flowers of ***T. glaucophylla*** which often flowers even later. All species have readily opening fragrant flowers and only minor differences of column structure separate them.

Notes: This is an out-crossing species.

The mountain forms may be separate subspecies.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Widespread, common and well conserved in South Australia.



BB, *T. alcockiae*, Kangaroo Island
*Note pale edged buds

Thelymitra glaucophylla Jeanes ms

Glaucous Leaf Sun Orchid

Etymology: Reflects the pale glaucous bloom on the leaf and stem of living plants.

Synonyms: Previously treated under *T. nuda* R. Br.



RB, Mintaro, NL

Description: Large, wholly grey-green, often clumping plants, with a pale bloom; the **leaf** variable, base sheathing, blade fleshy very variable, erect and short in some forms, long and flaccid in others. The **flower stem** is robust, with 2 loose sterile bracts. The **flowers** are numerous to 4 cm across, blue, silver-blue or white; opening freely in warm weather; the **column** is large with a tubular, flattened post-anther lobe and dense globular white hair-tufts. There are numerous races including a late race with rigid narrow flowers which rattle together when the spike is shaken. There is also an early form having very globular flowers with lots of purple tints. Flowers are strongly fragrant and frequently visited by native bees.

Flowering: Sept – Oct – Nov – Dec.

Similar Species: *T. megcalyptra*.



RB, leaves & buds, Kings Cutting, SL

Distribution: **FR, EP (rare), NL, MU (rare) and SL.** Exact distribution unsure due to confusion with other species; mostly in the Mount Lofty and Flinders Ranges.

Habitat: A plant of grassy woodland in the ranges.

Distinguishing Features: The glaucous stem and leaf as well as large, freely opening, perfumed flowers are all features of this grassy woodland species.

- ***T. megcalyptra*** (with which it is easily confused) has a red-based leaf and different habitat preferences i.e. plains and rock outcrop.

Notes: Long recognised as distinct.

This species expands its population rapidly on regenerating land but does not cope with grazing. The best area to see this species is around Clare in the Northern Lofty region, especially at Neagle Rock Reserve where different races flower almost continuously from late September to mid November, forming clumps of up to ten plants amid the wild lavender weed. There are possibly several species involved as there are late and early flowered forms. The late form with rattly flowers and narrow pointed segments often has silvery flowers.

Conservation Status:

Status in Legislation: Not Listed.

Suggested Status: Common and well conserved.



KB, *T. glaucophylla*, Emu Flat Reserve

Thelymitra occidentalis Jeanes

Western Sky Sun Orchid

Etymology: The name *occidentalis* meaning from or of the west indicates the location of the species.

Synonyms: None

Description: **Leaf** narrow, to 25 cm, **flower stem** to 40 cm tall. **Flowers** 2-15, blue with pinkish tints, particularly in the centre, strongly veined darker; segments all similar, rounded; **column** to 5 mm tall, blue or pink, mid lobe broad, semi-circular, dark and crowned yellow, toothed, side lobes similar and converging; column arms, with mop-like tufts of white or mauve hairs.

Flowering: Sept – Oct – Nov.

Similar Species: *T. azurea.*

Distribution: **EP; WA.**
This species, which is very similar to *T. azurea,* and common in Western Australia, may occur on central Eyre Peninsula based on photographic evidence.

Habitat: In South Australia it was observed growing on a lateritic hill but no collections were found at the Adelaide Herbarium. In Western Australia it is found growing near outcroups around winter-wet depressions in sand or sandy clay.

Distinguishing Features: *T. occidentalis* can be distinguished by its much broader, more decorative post-anther lobe but there is not much else to separate it from ***T. azurea.***

Notes: *T. azurea* occurs in various forms on Eyre Peninsula and intermediate forms exist but no collections of actual *T. occidentalis* from South Australia are at the State Herbarium.

Conservation Status:
Status in Legislation: Not listed nationally, rare in South Australia.
Suggested Status: .Rare in South Australia.



RB, *T. occidentalis,* Mt. Hope, EP, Oct

Thelymitra odora R.J.Bates

Hills Fragrant Sun Orchid

Etymology: As the name *odora* suggests this is the only member of its complex (*T. pauciflora*) of small blue flowered sun orchids to have a perceptible floral odour.

Synonyms: Referred to at times as *T.* sp. Slate buds and *T.* sp. Viola-fragrans.

Description: **Leaf** narrow with a mid to high fistula, the blade channelled and about 5 cm long. **Flower stem** slender to 30 cm tall, sterile bracts 1-2, purplish. **Flowers** 1-4, deep blue, recognised from the slate-grey buds with their pale edged sepals; segments to 12 mm long, rounded with parallel darker veins. **Column** slender pale blue, post-anther lobe narrow but fleshy, thrust forward, black and shining with a yellow neatly cleft apex; hair tufts white, mop-like, on short arms and curved forward low in front of the column.



TB, Cromer CP, SL

Flowering: Late Oct.

Similar Species: *T. odora* ssp. Horse manure, *T. nuda*.

Distribution: **MU, SL, SE.**
Mostly in the Adelaide Hills.

Habitat: In messmate woodland clearings, often in seepage areas.

Distinguishing Features: The fragrant, freely opening, yet self-pollinated, neat, bright blue flowers look very similar to those of the ***T. nuda* complex** but the self pollination strategy separates the species from any *T. nuda*, as does the narrow linear leaf.

Notes: It has long been noted that this taxon existed but it was usually referred to as a *T. nuda* x *T. pauciflora* hybrid despite the fact that it does not occur where *T. nuda* grows. The name was published in 2010.

Like many species of the complex all plants flower in unison and blooming is over in a few days. Perfume varies from general floral to distinctly violet-like.

The cryptic nature of many blue flowered sun orchid species suggests that DNA studies are needed to sort relationships and status.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 3RCi.



RB, *T. odora,* Lobethal, SL

Thelymitra odora ssp. Horse manure

Horse manure Sun Orchid

Etymology: The phrase name reflects the strange odour emitted by the flowers.

Synonyms: None but occasionally discussed as a *T. nuda* hybrid.

Description: A robust species or hybrid, with a **flower stem** to 40 cm, the **leaf** fleshy, linear, to 20 cm long and very erect, red based, not glaucous, with 2-3, lanceolate to 1cm long stem bracts. **Flowers** 3-10 on long and narrow ovaries, mid sized, bright blue, often with subdued veining, opening only in warm conditions, all segments narrow to 1 cm long, the labellum very narrow; the **column** is very erect, white or pale blue, the post anther lobe inflated and tubular, the tube bent forward at right angles, deep yellow with a dark collar; hair tufts pure white, dense ovoid. The flowers are perfumed with an often strong odour of fresh horse manure.

Flowering: Early Oct.

Similar Species: *T. bracteata*, *T. nuda* and any other medium sized blue flowered species.

Distribution: **EP, FR, NL, SL, SE.**
This taxon occurs on lower Eyre Peninsula, the Southern Flinders, Northern and Southern Lofty regions and lower South East, sometimes in large pure-breeding populations.

Habitat: Restricted to grassy woodland in higher rainfall districts usually in better soils and always with many other sun orchid species.

Distinguishing Features: This species is easily recognised by its odour. It is one of the largest flowered of the inbreeding blue sun orchids. The plants are very stiff and tall, similar to ***T. bracteata*** but with darker flowers, an inflated column and large dense hair tufts.

Notes: All flowers tend to open at once, are short lived and self pollinated.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Unknown.



RB, *T. odora* ssp. Horse manure, Emu Rock, NL

Thelymitra orientalis R.J.Bates

Eastern Plum Orchid

Etymology: The name *orientalis* means of the east and reflects the fact that this is an eastern version of *T. mucida* from (mostly) Western Australia.

Synonyms: Previously included in *T. mucida.*

Description: **Leaf** filiform, terete to about 5 cm by about 2 mm, erect , obscurely channelled with a red base, fistula 1-2 cm. **Flower stem** to 10 cm with reddish tints, 2 sterile bracts. **Flower** small to 10 mm, deep blue with magenta tints, striated, the tepals rounded, the buds slate-grey. **Column** deep purple, post-anther lobe dark, apex yellow divided into 2 narrow lobes, lateral lobes with sparse trichomes pale yellow, darker towards the tips, with reddish tints at the base. The flowers are very short lived.



MH, Myponga, SL

Flowering: Late Oct – Nov.

Similar Species: *T. mucida, T. inflata, T. lucida*.

Distribution: **SL, KI, SE; Vic.**
T. orientalis has a very disjunct distribution in South-eastern Australia, being known from a tiny population near Mount Taylor on Kangaroo Island, a Myponga swamp on Fleurieu Peninsula and in The Marshes NFR in the South East; also in Victoria's Grampians and Wilson's Promontory.

Habitat: High rainfall areas with damp heathy flats and seepage areas, usually leached peaty white sand.

Distinguishing Features: The tiny flowers and trichomes enveloping the front of the post-anther lobe assist in separating this species.

- Generally a smaller, shorter plant than ***T. mucida***, some forms having only a single tiny flower. The column differs in its post-anther lobe being less deeply cleft, the halves being more inflated, the trichomes paler, with less red tones.
- ***T. inflata*** and ***T. lucida*** have larger flowers.

Notes: The eastern forms were first recognised as distinct by Bates in 2003 and it was collected as *T*. ssp. *orientalis* by the author in 2004 at The Marshes NFR. Cathy Houston pointed out that the same form occurred in the Southern Lofty region (where now possibly extinct) and Jeff Jeanes 2006 agreed it was a distinct taxon (personal communications, 2006). Its name was published in 2010.

It was located on southern Kangaroo Island in 2008 only 40 km from where *T. mucida* is found on western Kangaroo Island. Undoubtedly it was more common before massive land clearance and swamp draining.

Conservation Status:
Status in Legislation: Not listed nationally, rare in South Australia.
Suggested Status: Endangered at national level.



RB, *T. orientalis*, southern KI

Thelymitra pallidifructus R.J.Bates

Pale capsule Sun Orchid

Etymology: The phrase name and scientific name indicate one of the main features aiding recognition of this common species i.e. *pallid* pale; *fructus* fruit of the pale ovary or young capsule.

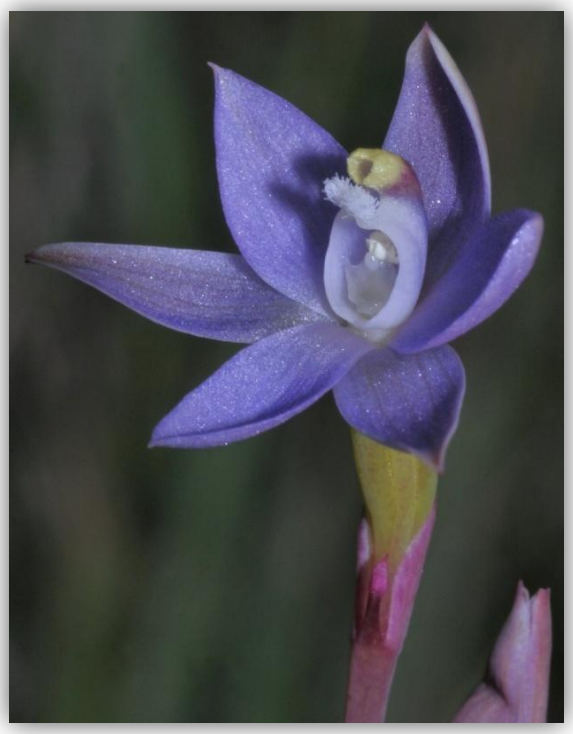
Synonyms: Previously included under *T. pauciflora* and tagged as *T.* Sp. Pale capsules.

Description: **Leaf** linear, rigid to 8 cm, the fistula 2-4 cm above soil level, blade thick but shallowly channelled. **Flower stem** slender, pink, to 20 cm tall with a single sterile bract. **Flowers** 1-8, floral bract pink, ovary pale almost translucent green, buds lilac tinged, segments pale blue or lilac inside, slightly cupped, sepals mucronate, veins indistinct. **Column** very pale blue, post-anther lobe sub-tubular, with a yellow apex, having a dark red collar, tip hardly notched, opening somewhat crenulate, trichomes in a dense apical, white clump held in front of the post-anther lobe. Flowers rarely open without heat.

Flowering: Late Oct – Nov.

Similar Species: Any other *T. pauciflora* complex member.

Distribution: **?MU, SL, KI, SE; Vic.**
Found in the southern Mount Lofty Ranges, Kangaroo Island and the lower South East in high rainfall districts, usually with many other sun orchids; also in adjacent south western Victoria.



KB, Penola CP, SE
*Note pale capsule and pink bract

Habitat: Mostly in damp, sandy heath and scrub, often with bracken and stringy-bark.

Distinguishing Features: One of the many small self-pollinated blue-flowered sun orchids with a single sterile bract, distinguished by the features indicated in the name i.e. the pale ovary or young capsule, as well as the pink floral bract.

- This is a short species with narrow short leaf, not dissimilar from ***T. pauciflora*** itself.

Notes: A recently recognised species not considered distinct until 2004; verified in 2005 and the name published in 2010.

Like most members of the complex generally encountered on slashed fire-breaks or in burned heath.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Uncommon but widespread in South Australia, not well known in other states.



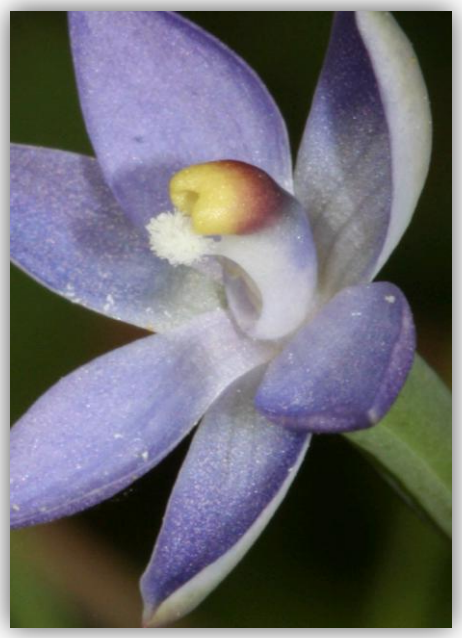
RB, *T. pallidifructus*, Chain of Ponds, Oct
*Note pale, strongly ribbed ovaries

Thelymitra pauciflora R.Br.

Slender Sun Orchid

Etymology: The name *pauciflora* meaning few flowered, describes some forms of the species well.

Synonyms: None



CH, Glen Shera Swamp, SL

Description: **Leaf**, linear, to 20 cm long, channelled near the base, terete above, red based. **Flower stem** slender to 30 cm tall, greenish-brown, with a single sterile bract, fistula set 1 cm or more above soil level. **Flowers** one to several, small, to 16 mm across, pale blue inside, sepals green and purplish outside. **Column** to 5 mm high, white, pale blue or pink, the mid-lobe produced into a sub tubular hood, with a broad brown collar and a yellow notched apex. The column arms end in small, neat, horizontal, white hair tufts. Flowers open only in hot humid weather, one or two expanding at a time; self-pollinated, not fragrant.

Flowering: Sept – Oct – Nov.

Similar Species: *T. albiflora, T. brevifolia, T. bracteata, T. cyanapicata, T.* aff. *holmesii, T. peniculata.*

Distribution: **FR, EP, NL, SL, KI, SE; WA, Qld, NSW, ACT, Vic, Tas; NZ.**
Very widespread across southern coastal South Australia, from southern Eyre Peninsula, the southern Flinders Ranges, Mount Lofty Ranges, Kangaroo Island and the South East; also in the Eastern states, Western Australia and New Zealand.

Habitat: In woodland, heath, scrubs, exotic pine plantations, roadsides, old paddocks and creek-sides in a range of damper acid soil types, from the shore to tops of mountains.

Distinguishing Features: One of the small, blue-flowered sun orchids which often have a bi-coloured appearance, i.e. sepals slightly different from the petals/labellum. Look for the small white hair tufts held straight in front and the yellow notched mid-lobe with conspicuous brown collar.

Notes: The swamp form, pictured above, flowers in November but a more common woodland form in South Australia flowers in September/October. Most of the numerous forms of the past have been or will be described as separate species and the more obvious are treated separately here.

T. pauciflora occurs as widely spaced individuals, in small groups or large colonies especially in disturbed sites such as road verges, tracks, quarries and grazed land. Forms have even been observed in roof guttering of old homes, forks of trees and on logs and tree stumps.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Common and widespread.



KB, *T. pauciflora*, Chookarloo NFR, SL
*Note different colour on sepal tips

Thelymitra sp. Insipid (R. Bates 64418)

Dull Sun Orchid

Etymology: The phrase name 'insipid' reflects the rather dull nature of this species which has dull buds; tiny dull flowers which are seldom seen open and when they do open reveal no particularly distinct features.

Synonyms: Previously treated as *T. pauciflora* R.Br. but judging from the picture in Jeanes 2004 not the same as *T. pauciflora,* the Type for which comes from New South Wales.

Description: A very slender species with a **flower stem** mostly 20-30 cm tall, with a very narrow linear **leaf** to 15 cm long, sheathing the lowest 3-8 cm of the scape, with just one slender sterile bract. **Flowers** 1-6, the floral bract and ovary narrow and dull green, the flower bud dull green-grey and also narrow; when open the flowers are thin textured, pallid blue segments to 6 mm long; **column** pale, post-anther lobe red-brown to black with a tubular yellow apex , which is rather flat on top and has a variable notch, much constricted below the post-anther lobe; the lateral lobes are broad based and the trichomes are terminal, white and tangled. The flowers are without fragrance.

Flowering: Late Oct – Nov.

Similar Species: Any members of the *T. pauciflora* complex, particularly the blue-flowered species.

Distribution: **MU, SL, KI, SE; Vic.**
From Kaiser Stuhl CP south to the lower South East and probably in Victoria i.e. the Grampians.

Habitat: Mostly in damp sites of woodland, heath and scrub, invading pine plantations but only in the cooler, higher rainfall districts.

Distinguishing Features: This species could hardly be said to have real distinctive features but can usually be recognised by the combination of very slender habit, late flowering, long narrow, sheathing leaf, rarely opening dull blue flowers and the flat red and yellow post anther lobe of the column.

Notes: Most would probably prefer to leave this species lumped under *T. pauciflora* and unless DNA studies show otherwise that is most likely where it will stay. It is nevertheless valuable to note that the early flowered *T. pauciflora* and this late flowered one are certainly separate entities.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Secure



MH, *T.* sp. Insipid, Stipiturus CP, SL, Nov

Thelymitra sp. Thomas Gully R. Bates 66393

Mount Bold Sun Orchid

Etymology: The phrase and common names reflect the location of the first known colony, i.e. Thomas Gully in Mount Bold Reserve in the Adelaide Hills.

Synonyms: Nil, not known before 2006.

Description: A slender sub-glaucous species with a **flower stem** to 25 cm tall with a linear, scabrid **leaf**, high fistula and usually single, purplish-tipped sterile bract. **Flowers** 1-10 mauve or bluish, unspotted, rounded and cupped, to 12 mm across, the sepals and petals minutely mucronate, loosely grouped, opening easily but tending to self-pollinate; the **column** is unspectacular as for most of the group, lilac, the post-anther lobe bright yellow, collar bluish, apex truncate, undulate, the lower margins spurred; the hair tufts are most like the *T. peniculata* complex, toothbrush style, white with knobbly tips.



RB, Thomas Gully, SL

Flowering: Mid Oct – early Nov.

Similar Species: This is another member of the *T. pauciflora* complex, with some similarities to *T. x truncata* as well.

Distribution: **NL, SL, ?SE.**
Although so far only recognised from the Echunga to Kangarilla area of the southern Mount Lofty Ranges I have seen photos of similar flowers from elsewhere in the Southern Lofty and South East regions.

Habitat: Grows in grassy messmate woodland on rocky steep slopes which is a rare vegetation association in South Australia.

Distinguishing Features: The truncate post anther lobe to the column and scabrid leaves, the very rounded flowers and lack of spots or stripes help but further features will need to be found before the taxon is named.

- The similar ***T. x truncata*** differs in having two sterile bracts, not scabrid leaf, variously spotted with blue and with flowers which are not rounded.

Notes: The species is reasonably drought tolerant as it was first recognised in 2006 during the worst ever winter-spring drought in the Adelaide Hills.

Found in thousands in and around Meadows Flats NFR in 2010.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Rare in South Australia, not known outside of the Southern and Northern Lofty regions.



RB, *T.* sp. Thomas Gully, Meadows Flats, Nov
*Note the rounded, cupped, well veined but unspotted segments, large stigma and crenulate, yellow, tubular post-anther lobe extension and multiple flowers

Thelymitra peniculata Jeanes

Trim Sun Orchid

Etymology: From Latin *peniculus* little brush, in reference to the narrow hair tufts on the column.

Synonyms: *T.* aff. *holmesii* (Bates 1999, Jeanes and Backhouse 2001).

Description: **Leaf** linear to about 20 cm long, erect, fleshy, channelled and ribbed below, with a red sheathing base. **Flower stem** to 30 cm high with two sterile bracts. **Flowers** 4-10, about 2 cm across pale to mid blue, often with darker blue veins, cup shaped; buds grey-green, short. **Column** purplish, post-anther lobe dark, slightly inflated, hooding the anther, and curved forward, apex deeply bilobed, yellow; lateral lobes upswept, hair tufts untidy, mop-like, white. Capsule short. Flowers open only on hot humid days, self-pollinated, no fragrance.



JN, close up showing veined violet flowers

Flowering: Late Oct – late Nov.

Similar Species: Previously confused with the *T. holmesii*. Similar to *T. batesii.* There are also several undescribed species with similar flowers.

Distribution: **SL, KI, SE; NSW, Vic, Tas.**
In high rainfall districts; more widespread in the eastern states.

Habitat: Restricted to damper, heathy, often sandy sites or under tea-tree.

Distinguishing Features: The deeply notched post-anther lobe with untidy white, mop-like hairs.

- ***T. holmesii*** is much more robust with larger flowers having a neat notch in the post-anther lobe and yellowish hair tufts.
- ***T. batesii*** is an earlier flowered species of dry woodland sites with pink tinged buds and a more gaping 'frog mouth' apex to the post-anther lobe. Both *T. peniculata* and *T. batesii* occur in the same area at times but in very different habitat.

Notes: The original list of specimens included several different species from South Australia including species with broad flat leaves, species from dry rock outcrops and the like. Even as treated here, *T. peniculata* may include several taxa from different habitats ranging from peaty swamp margins, coastal dunes and tea-tree heath.

Conservation Status:
Status in Legislation: Not listed nationally,vulnerable in South Australia.
Suggested Status: Widespread but localised and rare in South Australia, common in the Eastern States.



JN, *T.* peniculata, Honan NFR, near Glencoe, SE



JN, *T.* peniculata, close ups of column side and front
*Note collapsed pollinia

Thelymitra sp. Pale Buds (R. Bates 67079)

Pale bud Sun Orchid

Etymology: The phrase name refers to the fact that this species has paler buds unlike all other forms of the *T. peniculata* complex.

Synonyms: None previously recognised but may have been placed in *T. peniculata*.

Description: Short often stocky species with a **flower stem** to 15 cm with a low fistula and 2-3 sterile bracts; **leaf** short and fleshy. **Flowers** small, only about 1 cm across, cupped, distinctly blue-veined, with background colours of paler blue, pink and purple; floral bracts pale, sub-glaucous; buds pale, the edges of which can be seen on the image on the next page; **column** pink, post-anther lobe dark red-brown with a broad yellow apex which has two curved lobes with a deep split between them; hair tufts angled up in front of the post-anther lobe, terminal, rather sparse, sometimes red based. The flowers are not fragrant and are rarely seen open; like all members of the *T. peniculata* complex they are self pollinated.

Flowering: Late Oct –Nov – early Dec.

Similar Species: *T. peniculata* and *T. batesii* which flower earlier and occur in different habitats.

Distribution: **SL, SE**
This species is mostly restricted to the lower South East with an outlier in the Southern Lofty region near Kuitpo.

Habitat: This species is mostly restricted to damp river red gum (*Eucalyptus camaldulensis)* flats in loamy or sandy soils. Usually found with other swamp loving sun orchids such as *T. holmesii* and *T. crenulata.*

Distinguishing Features: The very pale buds, tardily opening flowers and the late flowering time are useful to distinguish this species.

Notes: This species was first noted when large numbers of plants with very pale buds were found on a firebreak by a swamp near Penola in early November 2003. A return visit two weeks later confirmed that they were indeed a new species but after Jeanes publication of new species in 2005 they were placed with his *T. peniculata*. The following year true *T. peniculata* was found flowering in the same area a month before *T.* sp. Pale buds as it became known. There are other likely species in the complex in South Australia – see *T.* sp. Pale buds in the Gallery.

The main threat to its survival seems to be climate drying and management techniques; the species favours open areas within its habitat.

The species occasionally crosses with members of the *T. ixioides* complex to produce faintly spotted and striped flowers.

A late flowering species which can be blooming into early December.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Poorly conserved, rare and localised, probably nationally endangered.



KB, *T.* sp. Pale Buds, Topperwein, SE
*Note pale edges to sepals

Thelymitra polychroma D.L.Jones

Colourful Sun Orchid

Etymology: From the Greek *poly* meaning many and *chroma* colours in reference to the many tints in the flowers.

Synonyms: None.

Description: **Leaf** about 10 cm, slender, channelled, erect. **Flower stem** to 20 cm. F**lowers** 1-5, to 3 cm across, cupped, deep blue, shot with red iridescence and navy blue lines and a few small spots on the petals. **Column** blue to purple with a pink base, post-anther lobe short, brown, apex yellow, not hooded or winged but with a wrinkled apex, often lacerated or crown-like; column arms obliquely erect, trichomes sparse to dense, erect and adpressed to the front of the post-anther lobe, cream or yellow with some being red-based. Fragrance absent, flowers short lived, opening easily on hot days.



JN, Glencoe, Nov
*Note finger like projection on back of column

Flowering: Late Oct – Nov.

Similar Species: Related to all the other blue spotted sun orchids and resembling some forms of *T.* x *truncata,* especially the type form, and *T.* x *merraniae*.

Distribution: **SE; Tas.**
Restricted to the lower South East between Mount Burr and Mount Gambier; also in north western Tasmania.

Habitat: This sun orchid is restricted to low heath in peaty soils around swamps and rarely seen except after fire or slashing.

Distinguishing Features: The colourful column with the trichomes adpressed to the crenulate column apex and spotted petals.

- Differs from both ***T. x truncata*** and ***T. x merraniae*** which don't have adpressed hair tufts.
- Also differs from ***T. x merraniae*** in having the finger-like projection on the column.

Notes: Like most of the taxa in this group probably of hybrid origin but can set up large populations in ideal conditions. Needs annual slashing of its heathy habitat to stimulate larger populations.

On the mainland, usually flowers in the company of many other sun orchids.

The only known South Australia population remaining is in The Marshes NFR.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Not known but has probably become rare in recent times.



RB, *T. polychroma*, Mount Burr, SE

Thelymitra rubra Fitzg.

Common Pink Sun Orchid

Etymology: The name *rubra* red or flesh-coloured refers to the deep pink flowers which are actually very variable in tone.

Synonyms: *T. carnea* var. *rubra* (Fitzg.) Weber & Bates, *T. urnalis* Fitzg.

Description: **Leaf** linear-lanceolate, to 25 cm long, channelled, green, with a red base. **Flower stem** to 40 cm, slender and flexuose, purplish, with several sheathing bracts. **Flowers** 1-4, cupped, segments often apiculate, to 25 mm across, salmon pink, (rarely cream or yellowish); **column** to 6 mm high, pink, post-anther lobe short and broad, hardly hooded, yellow with a red basal collar, apex notched; column arms short, flat, broad, slightly incurved, the margins shortly fimbriate, or finely toothed, yellow and red, no hair tufts. The flowers are fragrant, opening freely in warm weather, all open at once, self-pollinating or out-crossing in different forms.



RB, Mt Gawler, Oct

Flowering: Sept – Oct.

Similar Species: *T. carnea* which is much rarer in South Australia*, T. luteocilium.*

Distribution: **FR, EP, NL, MU, SL, SE; NSW, Vic, Tas.**
Widespread in higher rainfall districts, especially in the ranges, on southern Eyre Peninsula, to the southern Flinders, Mount lofty Ranges and into the South East; also in the Eastern states.

Habitat: *T. rubra* is a clumping species of forest, woodland, scrubs and heath in a variety of acid soils particularly on ridges and upper slopes.

Distinguishing Features: An attractive and common species recognised from the cupped pink flowers on slender pedicels which don't form a spike, the column arms without hair tufts.

- The similar ***T. carnea*** has much smaller flowers with narrow lateral lobes to the column and slender smooth bright yellow column arms.
- ***T. luteocilium*** is an early pink-flowered species with yellow hair tufts.

Notes: Sometimes the flowers have a staminode or floral spur in front of the column and this feature once led to a separate name, *T. urnalis* Fitzg., being used for staminodal plants. Buds of *T. rubra* are yellow inside up until a day before opening, hence Fitzgerald's description of *T. urnalis* as having 'yellow flowers' an indication that he opened the flower buds manually before painting them.

Occasionally pale yellow flowers are found which may cause confusion with *T. flexuosa.*

The species rarely occurs singly; rather it forms small tight clumps or loose groups which can be quite spectacular after fires.

T. rubra hybridises with many sympatric species, notably *T. antennifera, T. juncifolia* and *T. nuda.* It also hybridises with *T. albiflora, T. alcockiae, T. glaucophylla, T. luteocilium, T. pauciflora* complex and many other taxa throughout its range.

The various colour forms and many hybrids of this species make for great photographic essays.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Widespread and secure. This is one of our most common sun orchid species.



MH, *T. rubra,* Mt Barker, SL

Thelymitra rubricaulis R.J.Bates

Peat bog Sun Orchid

Etymology: From *rubra* red and *caulis* a stem reflecting the deep pink stem of the species.

Synonyms: May have previously been lumped in *T. pauciflora*.

Description: **Leaf** linear, caniculate to flat, erect with reddish to purple base sheathing the stem from 5- 10 cm. F**lower stem** deep red to purple 15-35 cm tall with a single deep maroon sterile bract, both of which have a pale bloom which can be easily rubbed off. **Flowers** 1-8, blue to purple, less than 12 mm wide, with thin textured segments which may be strongly veined darker blue. **Column** to about 5 mm, purplish, the post-anther lobe dark reddish with a neat yellow cleft apex; trichomes white, in dense tufts held in front of the column but not obscuring the cleft top of the post-anther lobe. The flowers rarely open so it is usual to see plants in bud or in fruit.

Flowering: Oct.

Similar Species: *T. crenulata* which flowers later.

Distribution: **SE**

Restricted to an area north of Glencoe in the lower South East of South Australia; apparently not extending into Victoria.

Habitat: Swampy heathland; mostly found on slashed fire breaks and tracks on the edge of seepages in peaty sands but likely to appear in un-slashed heath after bush fires.

Distinguishing Features: Whole plant strong red to purple-maroon, slender but rigid; narrow leaf with high fistula and early flowering.

- ***T. crenulata*** has a tiny cleft in the post anther lobe which is usually obscured by the trichomes in that species. In seed *T. crenulata* may also have reddish stems.
- The post-anther lobe is similar to ***T. holmesii*** in its neatness, but the latter has larger flowers with sparse, more colourful hair tufts.

Notes: This species was first observed by a NOSSA member in 2006 and found at a dozen sites in native forest reserves between Glencoe and Mount Burr but probably extending as far as Penola and Nangwarry in smaller numbers. Identified and named in 2010.

Flowering time is very brief as the flowers are self pollinated.

Conservation Status:

Status in Legislation: Not Listed.

Suggested Status: Nationally vulnerable unless management improves.



JN, *T. rubricaulis,* The Marshes NFR, SE

Thelymitra x truncata R.S.Rogers

Blue Spotted Hybrid Sun Orchid

Etymology: The name *truncata* refers to the truncate or straight-topped column mid-lobe, a feature lacking from most collections other than the Type.

Synonyms: *Thelymitra ixioides* var. *truncata* (R.S.Rogers) Nicholls, *T. truncata.*

Description: **Leaf** linear-lanceolate, to 30 cm long, channelled, and ribbed, dark green, red based. **Flower stem** to 40 cm, with several reddish sheathing stem bracts. **Flowers** few to many, to 25 mm across, pale blue with a few darker spots, mostly on the petals; sepals reddish, brown-green or grey outside. **Column** to 5 mm, pale blue; post-anther lobe tubular, truncate, bright yellow with a dark collar which may or may not be tuberculate, the tube short in some forms (i.e. the Type) or long and horizontal in others, (the common form); column arms flat, ending in bushy white horizontal hair tufts. Flowers self-pollinating, rarely fragrant but in most forms not perfumed, opening several at once.



JN, Bakers Gully, Oct

Flowering: Oct – Nov.

Similar Species: *T. juncifolia, T. x merraniae*. Also confused with *T. decora* from the Eastern States and New Zealand.

Distribution: **MU, SL, KI (rare), SE; Eastern states.** Limited to wherever members of the *T. ixioides-T. juncifolia* complex occur; collections have been made only from the Mount Lofty Ranges and the South East and also in the Eastern States. Once reported from Eyre Peninsula.

Habitat: Mostly in disturbed sites in woodland, heath and forest clearings.

Distinguishing Features: Easily recognised as it is the only blue spotted species with a tubular column mid-lobe.

- *T. x truncata* as *T. bracteata* x *T. ixioides* has the longer stem and floral bracts of ***T. bracteata*** and is self perpetuating in places like Scott Creek CP; see image next page.

Notes: Most of the South Australian plants are formed as direct hybrids between *T. juncifolia* and members of the *T. pauciflora* complex. There is a good deal of variation from location to location, most of which is thought to be due to the influence of the different *T. pauciflora* complex parents which include *T. albiflora*, *T. arenaria*, *T. bracteata*, *T. brevifolia*, *T. cyanapicata*, *T. pauciflora* as well as the *T. nuda* complex. Some forms are clearly self perpetuating and may out-number the parents. The *T. pauciflora* complex specie involved in the Type form is not known but as the exact form has not been seen since, it is likely to have been a rare swamp species, perhaps no longer extant.

Conservation Status:

Status in Legislation: Not Listed.

Suggested Status: Widespread and secure.



JS, *T. x truncata*, Scott Creek CP, SL

Thelymitra sp. Glen Shera (R. Bates 66742)

Tiny spotted Sun Orchid

Etymology: Named for the area where it was first located.

Synonyms: Long thought distinct, but treated at times as a possible *T. cyanapicata x T. juncifolia*.

Description: Small spindly plants with **flower stem** to 20 cm tall, very dark coloured, with a single purplish sterile bract and floral bracts similar and sub acute; **leaf** purple based to 5 cm long, linear and channelled.; **flowers** 1-5 on purplish ovaries, dark blue, spotted, with short, dark purple buds which are white edged, tiny, to less than 1 cm across and rarely opening; **column** to 4 mm long, pale blue, the post-anther lobe truncate, dark based with a red apex; trichomes on very slender arms thrust forward and upward, white, strictly terminal and rather sparse; anther with white crumbly pollinia. No fragrance was noted.

Flowering: Nov.

Similar Species: *T. polychroma, T. x truncata*.

Distribution: **SL, SE.**
Found on the Fleurieu Peninsula and at The Marshes in the lower South East.

Habitat: Leached white or grey sands in heath-land near swamps or waterholes.

Distinguishing Features: The tiny plants with tiny flowers, the purplish truncate post-anther lobe, sparse spots and tiny trichomes set the species apart.

Notes: It is possible that this is the true *T. x truncata* R.S.Rogers as the post-anther lobe is certainly truncate, the flowers are spotted and the type collections of both were from the same area and in the same habitat.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Suggest 3 Eci, nationally endangered.



RB, *T.* sp. Glen Shera, SL

Thelymitra sp. Papillose

Sea anemone Sun Orchid

Etymology: The phrase name refers to the papillae on the post-anther lobe.

Synonyms: None

Description: A slender species with a **flower stem** to 30 cm tall, **leaf** narrow linear to 20 cm long, with a purple base. **Flowers** 2-7, freely opening, about 3 cm across, lilac to blue with scattered dark blue spots on any segments; **column** colourful, pale blue in front darker above, the post-anther lobe bright yellow, semi tubular, somewhat ornamented with finger like papillae and with a narrow orifice, side lobes obliquely erect; the trichomes white, mop-like, held erect in front of the column. The flowers are not fragrant.

Flowering: Late Oct – Nov.

Similar Species: Similar to several blue spotted taxa like *T. x merraniae, T. x truncata* and *T. decora*.

Distribution: **SE.**
Probably restricted to the lower South East between Mount Burr and Mount Gambier.

Habitat: Restricted to peaty sands on the damp heath-land flats frequented by many other sun orchids. Does best on slashed fire breaks.

Distinguishing Features: Differs from all similar taxa in its papillose post-anther lobe and mop like hair tufts.

Notes: This species was first observed south of Glencoe in 1999 but not collected until 2008. Further collections are required before it can be recognised as a species. So far only a handful of plants have ever been seen.

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: Rare.



RB, *T.* sp. Papillose, The Marshes, SE

South Australia's Native Orchids

Undescribed Thelymitra

Introduction: From 1990 onwards the author predicted that there were would be many more *Thelymitra* species recognised in the so called *T. nuda-T. pauciflora* complex.

Jeanes (2004) agreed and added some ten new species to the South Australian list. Since 2003 NOSSA members have carried out a detailed study of sun orchids in the field which firstly supported Jeanes' new species and secondly indicated there were several more blue sun orchids, some cryptic, some rare and localised and others common and widespread.



KB, *T. x chasmogama,* Clare

Bates named seven new members of the *T. pauciflora* complex in Journal of the Adelaide Botanic Gardens, 2010 December issue.

Jeanes' work on the *Thelymitra nuda* complex has not yet been published even though the names are commonly used i.e. in Native Orchids of Australia 2006 hence these species were treated in the main text.

There are other undescribed taxa yet to be sorted out, some of which will be mere colour variants, forms or hybrids; others could be named at sub-species level. Others are thought to be true species which were once locally common in South Australia but due to land clearance, changing climate, altered fire regimes, and weed invasions some will have become extinct or be so rare that only DNA testing will show their status and relationships.

Recognition: Recognition of new species requires that the observer look at many more features of morphology than had been seriously considered before. These are used in combination with features such as flowering time, favoured habitat, perfume, degree of out-crossing, plant habit and so on.

Important diagnostic features (some long overlooked) include vegetative characters:

- **Leaf** – such as colour of plant base, height of leaf fistula above soil, leaf shape in terms of blade being flat or channelled, back of leaf keeled or rounded, leaf long or short, fleshy or thin textured, broad or narrow, apex rigid or floppy, leaf green or red, secondary ribs present or absent, presence or absence of bloom on leaf, intensity of purple pigment if present.
- **Flower stem** – length of scape, number, size and shape of sterile bracts on the scape, presence or absence of bloom on scape,
- **Flower** – Then there are floral features such as size, colour and shape of the floral bract, ovary short or long, bud shape rounded or elongate, colour of buds, average number of flowers, presence or absence of bloom on buds, flowers freely opening or not, shape of each segment, presence or absence of mucro on sepal tips, colour of flower, colour intensity, degree and intensity of venation, presence or absence of spots, dots or blotches and iridescence;
- **Column** – angle, shape, and size, colour, presence or absence of column appendages, features of post-anther lobe, column arms, trichomes; pollen type, size of viscid disc.

Often it is far more useful to use leaf and bud features than flower features simply because the self-pollinating species open their flowers so rarely, hence colour and shape of buds is so much more important in recognition of self-pollinating sun orchids than in any other native orchids.

To help validate a new species one needs to check if it re-appears in the same habitat at as many different locations as possible. Unfortunately, due to fragmentation of habitat and in some cases almost total destruction or loss of a particular habitat, it is not possible to locate many populations of the most endangered taxa.

Thelymitra sp. Laterite R. Bates 63950

Laterite Sun Orchid

Etymology: The phrase name '*Laterite*' reflects the fact that the species is restricted to laterite-capped hills of the Fleurieu Peninsula.

Synonyms: None.

Description: Rather robust clumping plants with a **flower stem** usually 25-30 cm tall but up to 40 cm; **leaves** broadly linear to 15 cm long by 2 cm broad, flat and shining green, hardly sheathing the scape, one main rib and several smaller ribs, apex decurved and subacute; scape not as robust as the leaves, wholly green, sterile bracts 2 or 3, thick textured. **Flowers** 3-10, small for the size of the plant, rarely expanding, to 1 cm across, bright blue, fertile bracts pale green, segments thin textured and brittle, lowest petal the smallest; **column** erect broadly quadrate, pale, post-anther lobe somewhat horizontal, short and fleshy, yellow with a gaping, emarginate apex, the lateral lobes with sparse pale, untidy trichomes. The flowers are not fragrant.

Flowering: Oct

Similar Species: *T. brevifolia, T. viridis* from Tasmania.

Distribution: **SL, ?KI.**
Known only from lateritic hills of the Fleurieu Peninsula but probably once in similar country on adjacent parts of Kangaroo Island.

Habitat: Grows in windblown stringy bark scrubs.

Distinguishing Features: The wide open, cut off post-anther lobe and sparse trichomes serve to separate it from other blue sun orchids.

- The broad leaves of ***T. brevifolia*** are similar but red based.
- Although this species has the pale green floral bract of ***T. viridis*** it has quite a different column.

Notes: *T.* sp. Laterite appears to be a relict species; its habitat is now highly fragmented and at each of the known sites only a handful of plants survive.

The species was not collected until 2004. It is not to be named without larger populations being found.



KB, west of Victor Harbor, SL

Conservation Status:
Status in Legislation: Not Listed.
Suggested Status: 2Eci nationally endangered.



KB, *T.* sp. Laterite (L) with *T. brevifolia* (R), Wilson Hill, SL

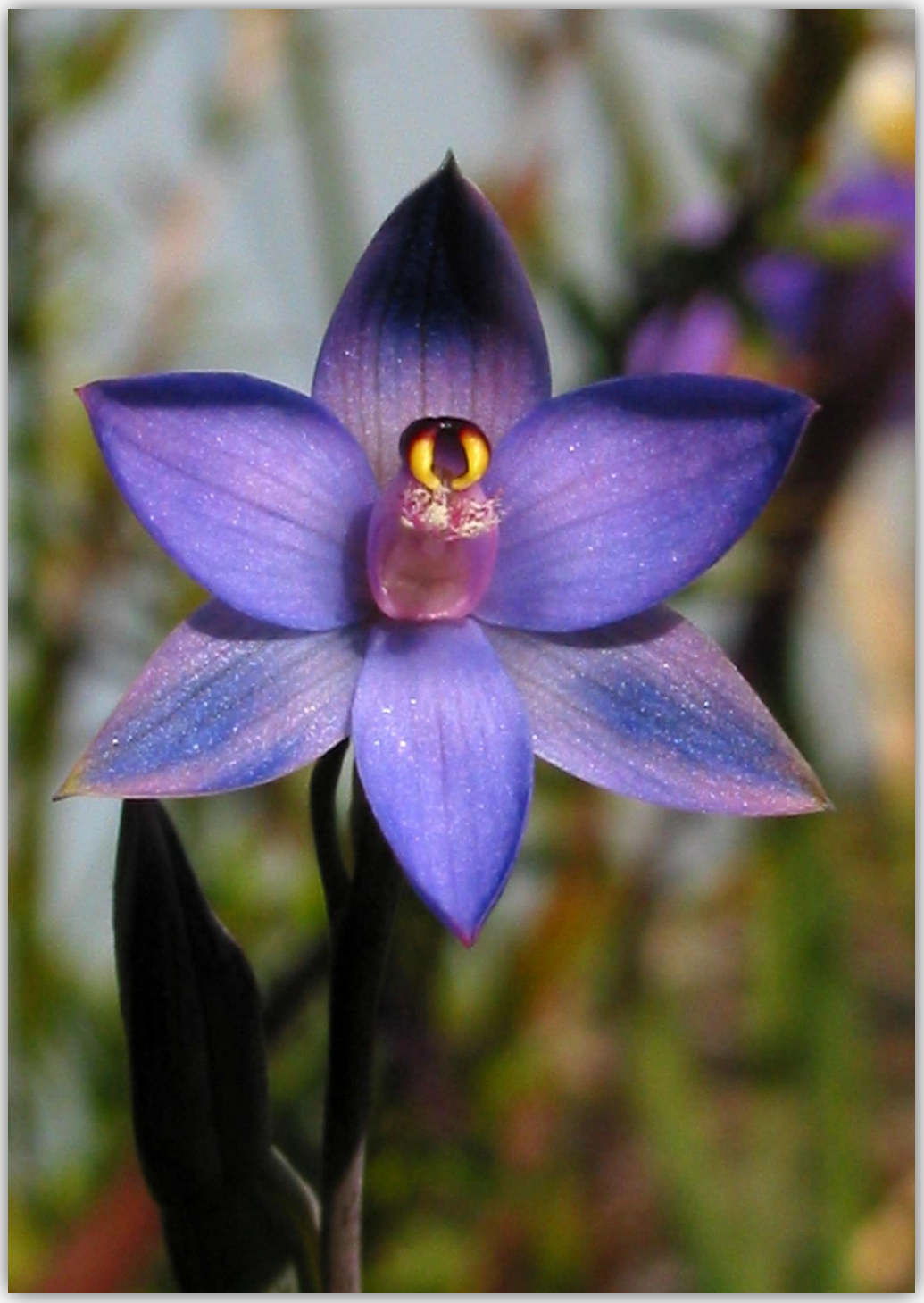
Gallery



BB, the rare hybrid *T. carnea* x *T. rubra*, Scott CP, Oct



KB, *T. holmesii*, Topperwein NFR, late Oct



KB, *T. holmesii*, Honan NFR, Nov



RB, *T. albiflora* (L) with *T. batesii* (R), Para Wirra NP, SL



RB, *T. brevifolia*, Clare, NL



KB, mauve *T. brevifolia*, SL



MH, *T. pauciflora,* Mt Barker, SL
* Note differently coloured sepals compared with petals



MH, *T.* hybrid with parents *T. pallidifructus* (L) and *T. albiflora* (R)



CH, *T. x irregularis* as *T. carnea x T. juncifolia,* Ironbank, SL



RB, hybrid between *T. bracteata* and *T. albiflora*, Mount Panorama NFR, Oct
*Note the green buds of this species and its hybrids



KB, *T. cyanea*, albino flower, Nangkita, SL



RL, *T. luteocilium*, Warren CP, SL



RB, *T. luteocilium,* Kimba, EP



RB, pale *T. glaucophylla* left with *T. x macmillanii* right, SL



JS, albino *T. juncifolia,* Scott Creek CP, SL
*Note the finger in the background – gives an idea of size



JN, *T. occidentalis,* Mt Wedge, EP



RB, *T.megcalyptra,* Kimba, EP

South Australia's Native Orchids



JN, yellow *T. rubra*, Scott CP, SL



KB, pale *T. flexuosa*, SE



JN, *T. lucida*, SE
*Note absence of bloom



RB, pale pink *T. flexuosa*, The Marshes NFR, SE
*Note eye like features on column



RB, *T. ixioides*, SE, Nov



RB, *T. inflata* with *T. albiflora,* Mt Panorama NFR, SL
*Note the steely grey buds and erect hair tufts of *T. inflata*



KB, *Thelymitra* species, Carrapee Hill, EP
*A species seen well inland, often on rock outcrops, generally lumped under *T. arenaria*



KB, colourful *T. holmesii*, Topperwein NFR, Nov



RB, a pale *T. lucida*, The Marshes NFR, SE
*This specimen from peaty waterholes has minimal bloom



CH, *T. juncifolia,* Kuitpo Forest, SL, Oct



KB, pale *T. luteocilium*, sometimes encountered



JN, *T. azurea,*
There are at least two subspecies of T. *azurea* in South Australia
Compare these with images in the main text,



JN, *T. orientalis*, The Marshes NFR, SE



RB, *T.* x *chasmogama* (L), Emu Rock, with *T.* sp. Horse Manure (R), NL
a hybrid derived from *T.* sp. Horse Manure and *T. rubra*



MH, *T. grandiflora,* Mt Barker, SL
*Note this specimen was over a metre high



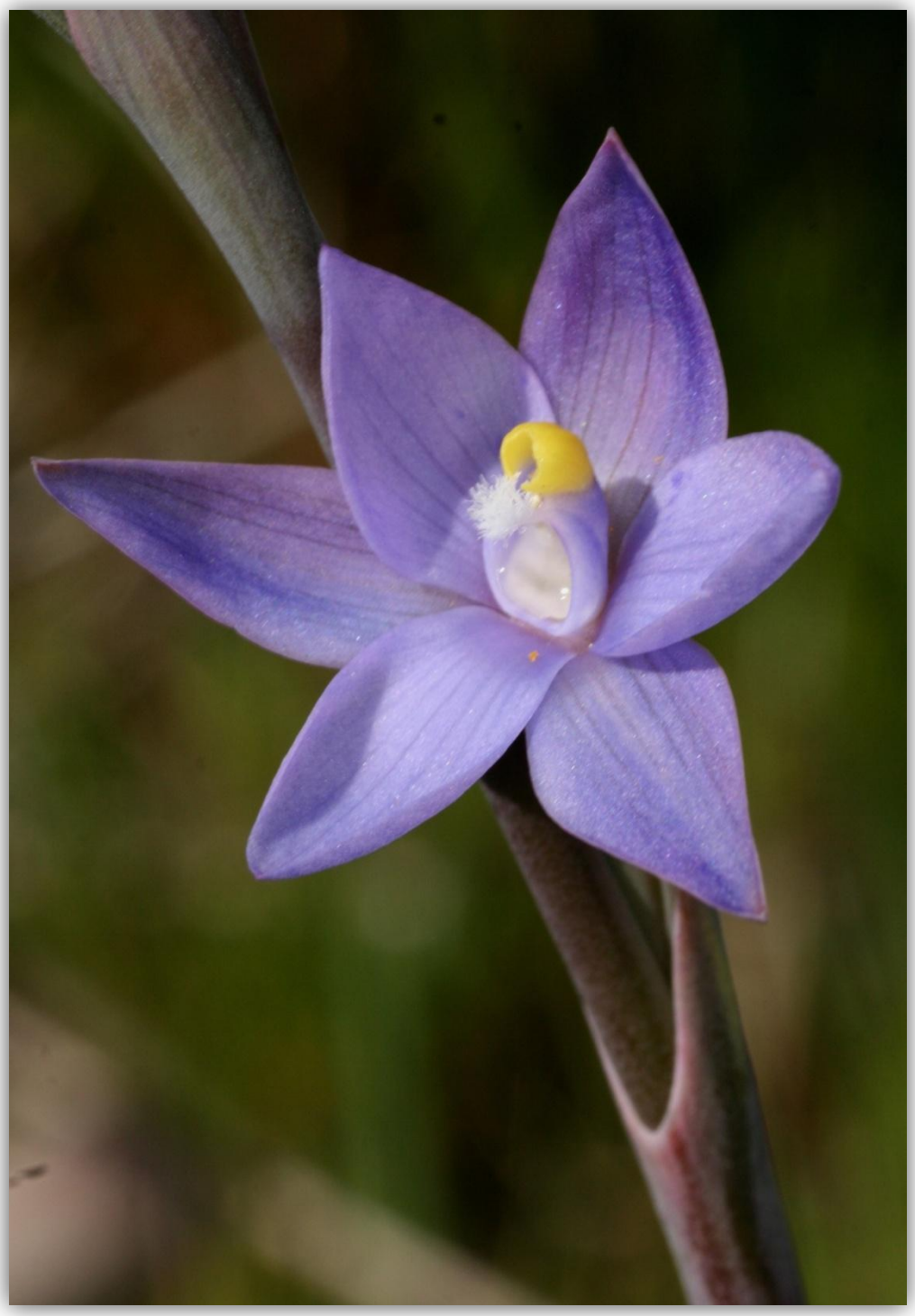
RB, *T.* sp. Pale buds, Knott Hill NFR area, SL



RB, *T. rubra* x *T. albiflora*, Williamstown, SL



RB, *T. pallidifructus* hybrid, Chain of Ponds, SL



KB, *T. x truncata,* Kuipto Forest, SL



BB, *T. cyanapicata* x *T. nuda*, Chookarloo NFR, SL



BB, unusual *T. rubra*, Emu Flat, Clare, NL

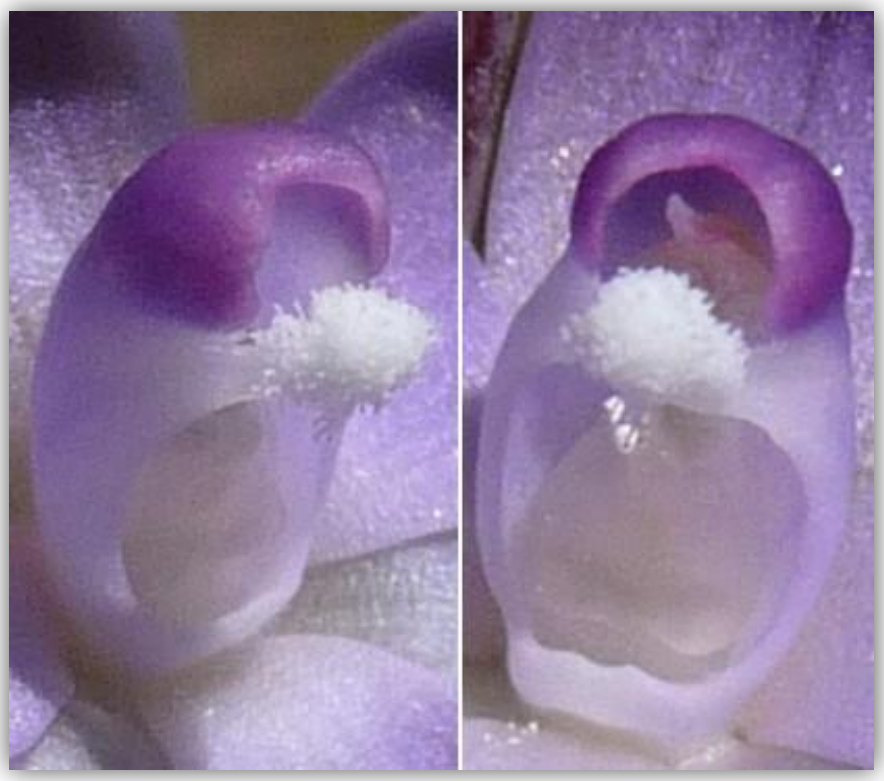


CH, *T. rubra,* Mt Barker, SL
* Note clumping habit



JS, *T. hygrophila* x *T. odora*, Scott Creek, SL

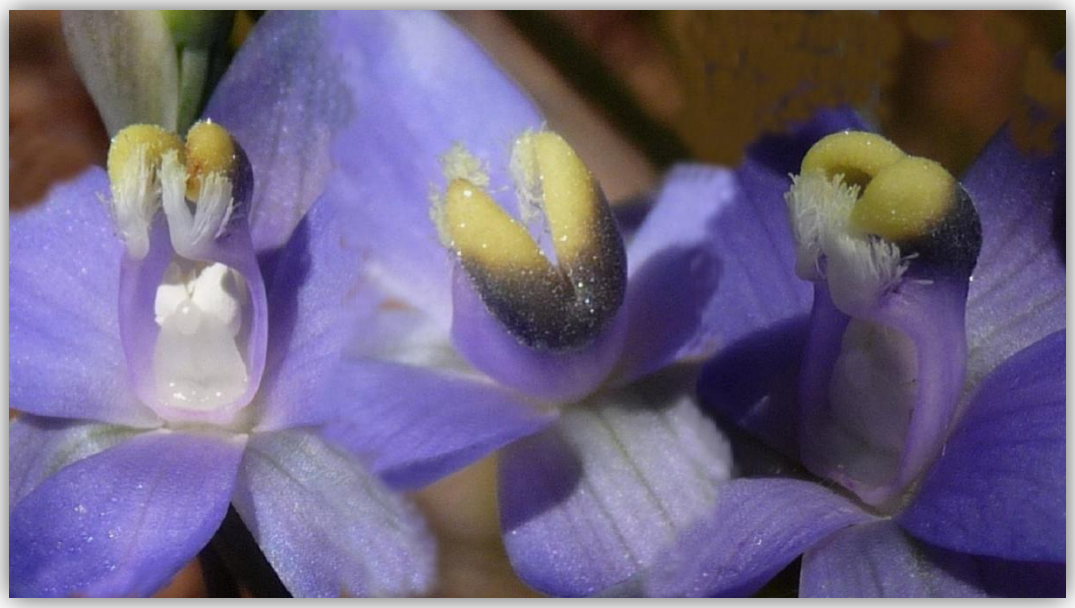
Thelymitra Column Gallery



BB, *T. cyanapicata*, Knott Hill NFR, SL



JN, column of *T. crenulata*, side and front views, note small orifice



BB, *T. inflata* column composite, Scott Creek CP



JN, *T. peniculata*, close ups of column side and front
*Note collapsed pollinia



KB, *T. batesii* columns, Wirrabara NFR
* Note columns covered with pine pollen



JN, *T. alcockiae*, column details,
* Note small sub-globular tufts



BB, column of *T. rubra*,
* Note anther extension



KB, column of *T. alcockiae*,
* Note viscid disc



JN, From left *T. aristata, T. grandiflora, T. epipactoides*



JN, From left *T. rubra*, *T. carnea*, *T. flexuosa*, *T. antennifera*, *T.* x *macmillanii*



JN, *T. juncifolia* (L) and *T. ixioides* (R)



JN, from L to R
T. lucida, *T. holmesii*, *T. inflata*, *Thelymitra* species, *T.polychroma*



JN, Columns side-views of other *T. pauciflora* complex in the South East
From left *T. latifolia*, *T. brevifolia*, *T. peniculata*, *T palidifructus*,*T.albiflora*.



JN, Column pairs
From left *T. orientalis*, *T. polychroma*, *T.* sp. Thomas Gully, *T.* x *truncata*



JN, Column pairs
From left *T. orientalis, T. inflata, T. lucida*



BB and KB, *T. circumsepta*, column collage, Mt Lofty, SL
*Note the wonderful mix of colours found in a single flower.



KB, *T. megcalyptra* column detail, Telowie Gorge



JN, column pairs, from top left
***T. brevifolia, T. cyanapicata, T. pauciflora* complex,**
***T. crenulata, T. pauciflora* complex, *T. pauciflora* complex,**
T. pallidifructus, T. rubricaulis, T. latifolia



JN, *T. rubricaulis* column views



KB, *Thelymitra* species,
Kangaroo Flat NFR
*Note friable pollen fallen on stigma