

# *The Orchadian*

Volume 14, Number 8

www.anos.org.au

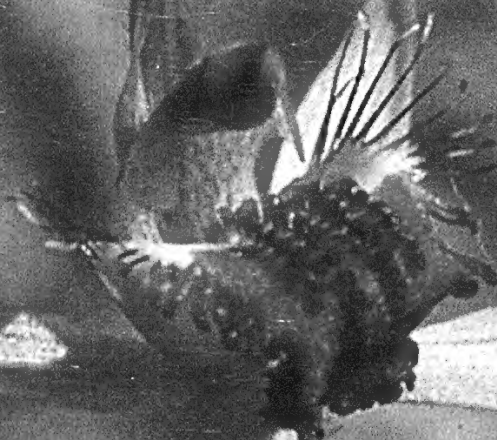
June 2004

Official Journal of the Australasian Native Orchid Society

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Melbourne

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*Caladenia heberleana*

Photo Andrew Brown

## June 2004

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# The Orchadian

Official Journal of The Australasian Native Orchid Society Inc.

Founded August 1963

[www.anos.org.au](http://www.anos.org.au)

Dedicated to the Study and Conservation of Australasian Native Orchids

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Patron; Walter T. Upton

**Volume 14 Number 8**

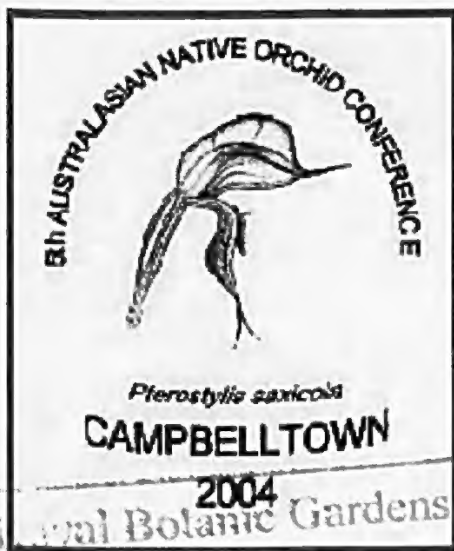
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To be held at  
 The Campbelltown RSL Club  
 Carberry Lane, Campbelltown  
 16th - 19th September, 2004

Set up on 15th September, 2004

Hosted by  
 ANOS Macarthur Group

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Expressions of Interest or Updates

Can be found on the ANOS website [www.anos.org.au](http://www.anos.org.au) then click on Conference or simply send your details to:

ANOS Macarthur Group.  
 c/o 23 Wordsworth Ave, LEUMEAH, NSW 2560 or  
 email us at [karen.winch@bigpond.com.au](mailto:karen.winch@bigpond.com.au)

## Speakers

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James Indsto	Diuris Pollination
John Woolf	Sarcochilus Breeding
Geoff Stocker	Papua New Guinea Orchids
Kevin Western	Roles for tissue culture enthusiasts and hobbyists in modern orchid culture
Peter McCaulay	Native Orchid Conservation Through the use of Aseptic & Asymbiotic Techniques
Ray Clement	Introduction to Australian Native Orchids
Gary Yong Gee	Taxonomy and the orchid grower
Phil Spence	Australasian Hybrids with a Future
Michael Harrison	Twig Epiphytes
Ed De Vogel	Ecology of New Guinea Orchids, Demonstration of PNG cd-rom
Andrew Dille	Orchids and rescue program of Victoria
Peter Tonelli	Orchids in Isolation
Ron Parsons	An American view on Australian Orchids
	Oxyglossum orchids of PNG

### Inaugural

Hermon Slade Trophy (Best Australasian Native Species)  
 Hermon Slade Trophy (Best Australasian Native Hybrid)

[www.anos.org.au](http://www.anos.org.au)



## Vale - Ron Heberle (1913-2004)

The Australian orchid fraternity recently lost a forthright and knowledgeable member with the passing of Ronald Heberle (popularly known as Ron) on 5th February, 2004.

Ron, born on 24th December 1913, grew up in Leederville, Perth. His mother, Eva Heberle loved wildflowers and collected and pressed them. His father, Les, was a fisherman and Ron and his brothers spent much of their early childhood in coastal areas along the south coast of Western Australia. At various times the family was based at Esperance, Hopetoun and Albany and fresh fish were delivered on weekly runs to many adjacent towns, often involving arduous travel and with numerous escapades. Ron became heavily involved in the family fishing business and in 1941 was called up into the RAAF as a Lancaster pilot and served in England until 1946. After this he resumed professional fishing and developed resourceful techniques to net schools of salmon from various southern beaches for delivery to the cannery.

When Ron's family were young at Primary School in Albany, he met two teachers, Ron Oliver and Noel Hoffman, who also had an interest in orchids. They would display local wild flowers at the Spencer Park Primary School and Ron and his wife Pauline would help by collecting plants, especially orchids, for the display. At the Agricultural Show each year (November) Ron would also display orchids. Ron, Pauline and their six kids would help set up the collection in long-necked "pop" (lemonade) bottles, which were all clearly labelled with both scientific and common names. The display would also be assembled for the wildflower show in Albany each spring, and not only would Ron set up the display, but he would talk for hours to anyone who wished to know more about the orchids. At the end of the shows, the bottles and name tags would be stowed away ready for use the following year.

Ron was an extremely observant person and as he spent so much time outdoors in the bush he assimilated a competent



knowledge of his natural surroundings. He became very interested in native orchids from an early age and specialised in them for much of his life. When he semi-retired from fishing, approximately twenty five years ago, he took up a detailed study of Western Australian orchids and became quite an authority, especially of those species found in the lower south-west. He took a special interest in the early botanists who had collected from the vicinity of King Georges Sound and, when combined with his knowledge of local orchids, was able to elucidate the correct identities of local species such as *Diuris setacea* and *Prasophyllum triangulare*. He always felt his knowledge was undervalued by professionals who, he believed, viewed him as being underqualified. "Only a fisherman" was a common phrase uttered by Ron. But he was far more than that; he was receptive to modern botanical techniques such as molecular studies and he really was an orchid authority which many people, including professional botanists, learnt from. Ron readily mastered the scientific names of orchids and developed a deep appreciation of the species in the south-west. He collected plants, flowers and seeds and had a keen eye for any morphological differences between similar species. He also had a great appreciation of the natural systems involving orchids, particularly the influence of fire.

Ron had a passion for photography

and spent hours photographing orchid specimens, often using ingenious or way-out techniques, some of which resulted in excellent photos. Ron had a special interest in natural hybrids and he spent hours working out the parental combinations of novelties he discovered. Once these were elucidated he would painstakingly arrange the flowers of the parents and hybrid together for comparative shots. His photographic library is full of such photos.

Ron not only developed a commanding knowledge of the orchids of the southern coastline of Western Australia, but he also spent much time chasing orchids around Perth and in inland areas of the west. Over the years he established contact with numerous farmers who had areas of natural bush containing orchids on their land. Ron was also keen to learn about orchids from other areas and he visited southern Queensland, New South Wales, Victoria and Gove in the Northern Territory in his pursuit.

Ron had a very forceful personality and, to the chagrin of some botanists, would often challenge current thinking in taxonomy. But he was very well respected in the orchid world and he regularly wrote for

*The Orchadian* and communicated with other people interested in orchids. He sent orchid specimens to herbaria in Perth, Canberra, Germany and the USA. He was heavily involved in promoting orchids and happily spent hours of his time using a semi-permanent display of his photos set up on boards. He was not interested in remuneration for his work, just recognition of his knowledge and expertise. He will be greatly missed in the orchid fraternity. His contribution to Australian orchidology is recognised by two species named in his honour, *Diuris heberlei* D.L.Jones and *Caladenia heberleana* Hopper & A.P.Brown.

Ron was lovingly supported in his work by his wife Pauline, who also had a great knowledge of the native orchids and other wildflowers. She was younger than Ron (born 20th February, 1922) but sadly passed away six weeks before Ron on 20th December, 2003. She is honoured by *Prasophyllum paulineae*, named by David Jones and Mark Clements in 1996.

David L. Jones and Christopher J. French  
18th March, 2004.



Ron looking for *Caladenia arenicola*

Photos Christopher French



## Editorial.

Volume 14, Issue 8, has a first for *The Orchadian*, a Scientific Supplement. ANOS Council felt that this would be a more appropriate way of informing members, of the large number, of new species and taxonomic changes to our native orchids. This will allow space for the more horticultural style articles to be published, which many of us enjoy reading. The funds for printing the supplement were gratefully donated by the Australian Orchid Foundation.

This issue starts with an obituary, from David Jones and Christopher French, for an orchid icon, Ron Heberle of Western Australia. In my two years as Editor I received two papers from Ron, one on *Caladenia filamentosa* and one on *Rhizanthella gardneri*. Although the article was typed Ron hand wrote letters accompanying his papers, with Rons poor hand writing and my failing eyes we still managed to communicate well enough.

Alan Stephenson, of Nowra, has a paper on the orchids found in his area and the experiences he has had. Bernice Burgess, Linda Rogan and Garry French have papers on orchid conservation in the areas where they live. Phil Ritchie discusses the wonderful flowering season for *Dendrobium speciosum*, in 2003 with other growers. We finish with some taxonomic papers from Stephen Hopper and Andrew Brown, David Jones and Mark Clements and Paul Ormerod.

In September many of us will come together for the 5th ANOS Show and Conference. The ANOS Council and Conference Committee have told me that the September issue has to be ready well before the Conference. This means any readers wanting to have material published in this issue will need to have it to me by the end of July!

This year three Groups celebrate their 40th Anniversary, so I will have pictures of these in the next issue!

See you all at the conference, Peter.

## Annual General Meeting of ANOS Inc.

The 41st Annual General Meeting of ANOS Inc will be held at the  
**MACLIN LODGE MOTEL,**  
38 Queen Street  
Campbelltown on SUNDAY  
19th September, 2004  
in the Dining Room at 10am.

Any Group or individual member who has matters to be included on the agenda, along with any nominations for positions on Council, should have these with the Secretary no later than one week prior to the AGM. Send these items to: The Secretary, ANOS Inc.

PO Box 318  
Willoughby, 2068

## Tinonee Orchids Open Day & Show Sunday 11th July, 2004

For a Show Schedule or further information  
please contact the nursery at  
768 Tinonee Road, Tinonee. 2430  
Phone/Fax 02 6553 1012  
email. [clement@tpg.com.au](mailto:clement@tpg.com.au)

**ANOS members are  
invited to join us for a  
Bushwalk on  
Saturday 10th July, 2004.  
No charge, lunch provided.**

# 5<sup>th</sup> Australasian Native Orchid Conference and Show

16<sup>th</sup>-19<sup>th</sup> September 2004

[www.anos.org.au/conference](http://www.anos.org.au/conference)

Australasian Native Orchid Conferences are held every three years and the next one is in Campbelltown NSW.

ANOS Macarthur Group is hosting this conference and the venue, Campbelltown RSL Club, was chosen by them for its great design and recent completion of their magnificent Caresele function centre. The conference will be located on the upper level of the RSL club.

Campbelltown RSL Club is located in Carberry Lane just off the Moore Oxley Bypass. It is situated in the centre of the CBD, with easy walking distance from public transport; adjacent is ample parking, also accommodation is within a few minutes drive. Campbelltown is an estimated forty five minutes from Sydney.

Features of the Conference will be fourteen guest speakers, a huge display area for orchids, photographs, and arts and crafts. With an estimated fifteen vendors in the sales area, this will be a great opportunity for you to purchase from the premier orchid suppliers. Stalls will also include books, arts, craft and other plants.

Tours available: A day tour to Mount Annan Botanic Gardens, then on to Warrimbirra Sanctuary where you will see native flora and fauna plus more. A winery tour and guided bushwalks (pending drought conditions being kind to us) to view orchids in their natural habitat, at the doorstep of urban development.

One of these bushwalks will feature the conference logo *Oligochaetochilus saxicola*, better known as *Pterostylis saxicola*, found in a remote area near Campbelltown.

The social programme of the show will start with an official opening at the cocktail party, held Thursday evening at the Campbelltown RSL.

The Mayor, along with Campbelltown City Councillors will be hosting a Civic Reception for all registrants and officials on the Friday evening. This will be located in the historic grounds of Glenarvon situated next door to the RSL.

The Conference dinner will be held at the RSL on Saturday evening and will start with pre-dinner drinks at 6.30pm. A three course meal will be served in the Crystal auditorium amongst the orchid displays. During this evening you can meander through the most beautiful plant displays ever created. What an ideal atmosphere. This evening will also include the presentations of prizes to the winners.

This conference will also have the inaugural Hermon Slade Trophy for Best Australasian Species and the Best Australasian Hybrid, this trophy is organised through the Ira Butler committee. Further details will become available on the ANOS website, shortly.

The focus of this conference is to showcase our wonderful native orchids, meet new and old friends, and learn new strategies in conservation and cultural techniques.

ANOS Macarthur Group along with the Conference Committee and ANOS Inc wish everyone a great and successful Conference. See you there!

More information and registration online are available from the Conference Web site.

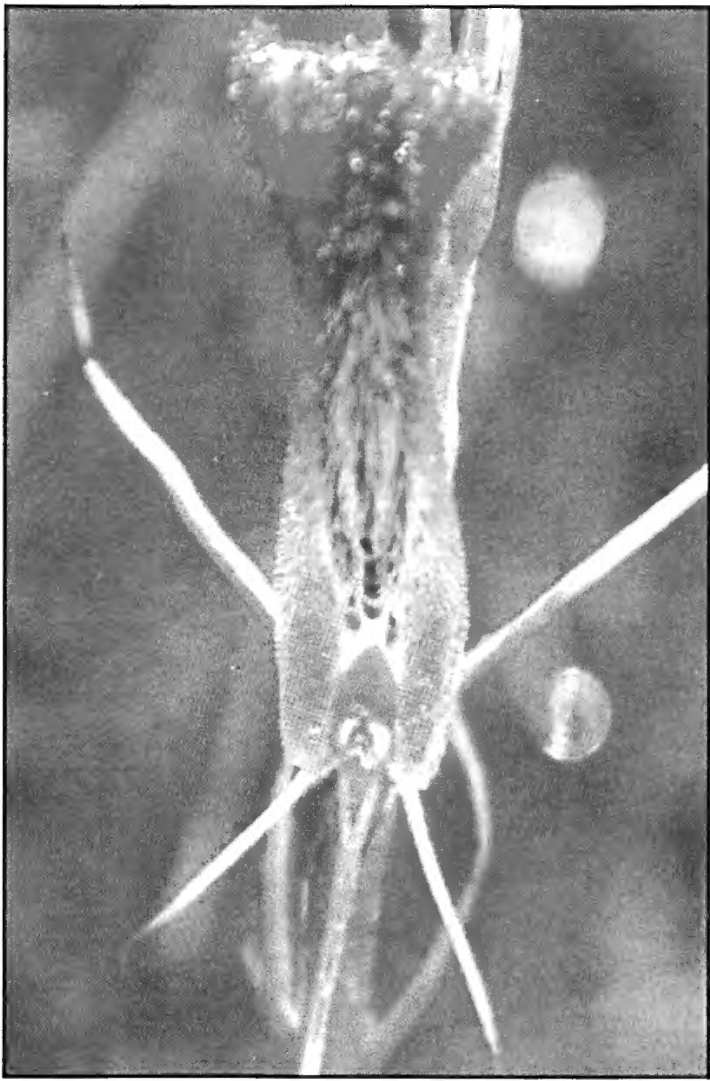
[www.anos.org.au/conference/index.html](http://www.anos.org.au/conference/index.html)

Or contact Les Winch at  
C/- 23 Wordsworth Avenue,  
Leumeah NSW 2560  
Ph. (02) 4628 1406

Email. [karen.winch@bigpond.com.au](mailto:karen.winch@bigpond.com.au)

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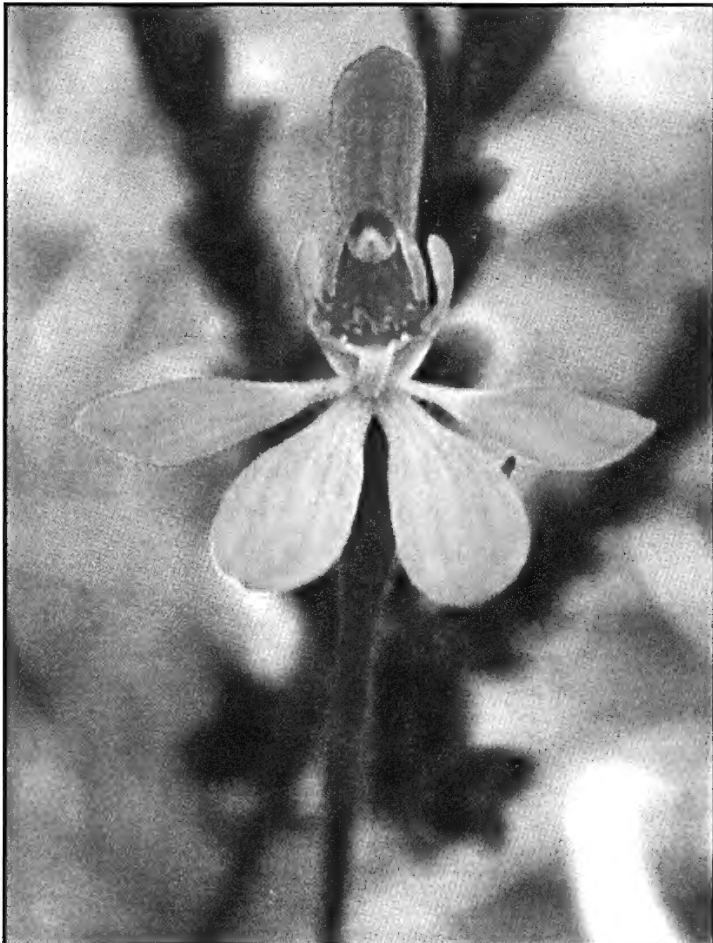




*Cryptostylis hunteriana*



*Calanthe triplicata*



*Petalochilus mentiens*  
(syn. *Caladenia mentiens*)



*Genoplesium baurei*, Yarron Road 2003

Photos Alan Stephenson



## Mistakes, morality, mistruths and misconceptions.

Alan W Stephenson  
astephenon@vtown.com.au

All people involved with orchids make mistakes. If we did not we would never learn anything, either at home in a cultural sense or in the real world, out there beyond the front gate. I have been learning for quite some time so one would assume I have made plenty of mistakes. I still tend to use too much water on some plants, but fortunately this article is not written from a cultural viewpoint. Heaven forbid I should be the last to go along that track. No, this is written from the perspective of one who was encouraged (told) to get off his backside and have a look around at what is out there. I know they are out there as I can hear them rustling in the breeze, or is that just another reptile moving through the leaf litter.

In the early days the main disease from which I suffered was misidentification and occasionally that flaw still surfaces. As for mistruths, I have never claimed to have found anything, which I could not prove actually existed at the site claimed. I certainly have not been involved in the massacre of species in the manner of some of the well-known English orchid houses of the 1800's and 1900's. The beautiful and unique Paphiopedilum species *P. fairrieanum* after being originally discovered in Assam, first found its way to England in 1857, but due to the excesses of English heated glasshouses and stale air the species became unavailable, both in England and in situ. A reward of 1000 pounds was offered for its rediscovery and the exclusive knowledge of its origin and a frenzied hunt began. It was rediscovered three months later and instructions were given to the collector "get what you can and throw the rest in the river". To add insult to this wanton destruction, only half the reward was paid but then again that's business. I would like to think the standards of morality ran a little higher in modern Australia and it seems our three levels of government are the only bodies permitted to destroy our botanical treasures via building permits for all manner of enterprises, but then again that might be a misconception. Sorry, but I cannot come to grips with the notion of development and consent authority being invested in the one government or semi-government body.

When I first became actively involved in going out to have a look and to see what I could find, I never thought I would actually see some of the things I have. All of the epiphytic and lithophytic species are easily seen and apart from mistakenly identifying

*Sarcochilus olivaceus* for *Sarcochilus falcatus* the first time I saw it, I have had no trouble finding all eighteen locally occurring species. However, the discovery and identification of terrestrial species proved to be (and still is) a more difficult task. Here I am, about ten years later, still looking and more importantly still finding species which I have longed to see since my humble beginnings after finding my first terrestrial species, *Microtis unifolia*. How things have changed. At this point I should note my area is mostly limited to the Shoalhaven Shire, on the New South Wales south coast. This shire covers an area of 4660 square kilometres of widely differing habitats and I feel this is sufficient for one pair of short legs and one pair of eyes. The shire has the town of Nowra as the main population centre with numerous coastal villages and a few other small non-coastal settlements.

After my initiation into the world of terrestrial orchids I became more and more interested in the amazing variety of different habitats in which I encountered them. In 1989 I joined ANOS Illawarra and came into contact with people who were well versed in terrestrial orchids and began to gain more knowledge.

At this juncture the orchid findings became more numerous, I was on a roll and I thought how good it would be if I could manage to see a few new species each year. Occasionally, this is where my misconceptions led me astray. When the *Field Guide to the Orchids of NSW and Victoria* was published (Bishop 1996) I thought, this is fine as it has descriptions and photos and it will fit in the backpack with the camera gear. Unfortunately these misconceptions stayed with me for several

years. The misconceptions were, I won't find this as we don't have that type of habitat and I completely misunderstood the sometimes subtle differences between sea level and those species alleged to exist at higher altitudes. Where does one habitat finish and the other begin? I read in *The Orchadian* (Vol 10 No 1 Spring 1990) about *Chromatotriccum aemulans* (syn *D. aemulum*), which Gerry Walsh mentioned he had not seen at sea level, yet it flourishes (albeit in only a few trees) around the top of Jervis Bay. Another example is *Cryptostylis leptochila*, which I had only seen at the same (montane) site as *Dipodium roseum*. I saw it early in 2004 and thought it special until I turned on the GPS to record the find and noticed I was 284 metres above sea level. Even though I had driven along this track many times to the gorge, which is the site of *Tetrabaculum tetragonum* (*Dendrobium tetragonum*), I had not checked the altitude at that precise location.

What really makes my day is when I find something different such as one plant of *Diplodium grandiflorum* (syn. *Pterostylis grandiflora*) with two good flowers. Previously I have seen several plants of *Glossodia major* and *G. minor* with two flowers but in all instances the top flower was of poor quality. Also *Calochilus campestris* in a clump of five plants is something I did not expect to see. Then other things began to appear. *Rhizanthella slateri* at sea level in two locations, *Tetrabaculum tetragonum* (syn. *Dendrobium tetragonum*) 40 km further south than previously recorded, *Diplodium pulchellum*, (syn. *Pterostylis pulchella*), not recorded for Nowra.

The first *Dipodium* species I saw was *D. punctatum* and I immediately thought it was the more common species but it is now obvious that *D. variegatum* has that honour as it is plentiful in areas around Jervis Bay. Until December 2002, the only plant of *D. roseum* I had seen was at 600 m above sea level and that's where it is supposed to grow (I thought), but in December 2002 I saw it at sea level in Batemans Bay and again at Jervis Bay in December 2003, another misconception shot to bits. Opposed to this I was led to believe *Cryptostylis hunteriana* was exclusively a sea level plant until I saw it at 600 m. That was in

January 2000 and it has not flowered at that site since. This has made me realise three things, firstly, don't always rely on a species to flower each year, particularly *C. hunteriana*, secondly in the drought of 2002 one local colony of about sixty plants produced an excellent percentage of flowers (90%) and finally, it is a species and will do what it pleases despite the expectations and protestations of people such as myself. The past year (2003) has resulted in an average rainfall of 910 mm for my area and the percentage of *C. hunteriana* in flower is very poor at about 10%. I have certainly realised it does not pay to have preconceived notions about where and when some species will surface, as *Thelychiton speciosus* (syn. *Dendrobium speciosum*) is, or was until the recent bushfires, happily growing on the trunk of a *Macrozamia*.

*Prasophyllum affine* is, or should be known to most readers as it was thought to occur at one location only in the Shoalhaven area but in 1997 it became another first timer for me. The only problem was, I did not immediately recognise it for what it was for several reasons. It has small flowers, I had not seen this species before and I was not tuned in to *Prasophyllums* in general and so many different colour forms exist, making identification difficult for this amateur. Now because of this, a \$60 million shopping centre and 950 lot residential sub-division are in a holding pattern. For how long this will stay is anyone's guess, as the developers are a very aggressive company.

Proving myself to be a creature of habit (therefore human) is a regular event, as one of my favourite sites and one which I have visited countless times over ten years, has in the past two years produced another four terrestrial species which I had not previously seen. How could I miss *Pterostylis acuminata* (a common local species) *Taurantha concinna* (syn. *Pterostylis concinna*) *Glossodia minor* and *Cyanicula caerulea* (syn. *Caladenia caerulea*), after so many visits to the same location? I put it down to seasonal variations but it was probably just carelessness.

Some things escape your notice simply because you do not give them a long enough or close enough stare. *Microtis rara* is one



such species. I noticed it for the first time in October 2003 but have probably passed it over without a second glance on several occasions as *M. parviflora*. I am fortunate at times to have someone like Leo Cady looking over my shoulder saying, "Just have a closer look at that one Al."

However, some things are not always as bleak as they seem and occasionally good things happen at the most unexpected times, from unexpected directions. Main Road 92 is a road, which runs from Nowra on the coast to Canberra, via Nerriga and Braidwood. In recent years there has been a push to upgrade MR 92 because it is the shortest route between the national capital and the holiday dachas of the Canberran elite, but as always there are environmental and social problems.

In one of two submissions I made to the proposed plans for this road upgrade, I mentioned numerous orchids and their locations in relation to the preferred route and as luck would have it, the Roads and Traffic Authority (RTA) manager of the upgrade contacted me and asked if I could show him where these orchids were. Always suspicious but with some advance knowledge of his environmental credentials I accepted and arranged a day with him and an RTA environmental officer. They arrived with a car load of drawings and plans and after driving as far as Sassafrass (50 km west), we looked at four possible sensitive sites and I came to the conclusion that the orchids would do quite well. The species concerned are *Calochilus* sp. aff. *grandiflorus*, *Prasophyllum* sp. aff. *odoratum*, the type site for *Bunochilus tunstallii* (syn. *Pterostylis tunstallii*) the largest known population of *Pharochilum daintreanum* (syn. *Pterostylis daintreana*) and a site which contained less than a dozen plants of the newly named *Petalochilus mentiens* (syn. *Caladenia mentiens*) (Jones 1999). The latter species I had seen just a week prior. This site also contains *Corunastylis apostasioides*, which I had seen on Easter Saturday, 2003 in company with Dean Rouse of Canberra and Michael Duncan of Victoria. The unusual feature of this species is that it was in flower, a sight apparently rarely encountered but allegedly possible due to bushfires of the previous summer.

One feature of the past year was the sighting of a natural terrestrial hybrid, a *Calassodia*, which is a hybrid between *Glossodia major* and an unknown *Petalochilus* sp. (syn. *Caladenia*). Just to prove how fixed the mind can be, I did not immediately recognise it as a hybrid, having only species in my thoughts (misconceptions again). If the plant flowers next season I will collect the flower in an effort to determine its exact parentage. Prior to this I had seen only one natural terrestrial hybrid (locally) and it was *Thelymitra X irregularis*, a hybrid between *T. ixioides* and *T. carnea*.

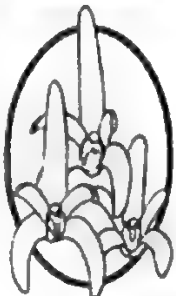
Finding one species for the second time and in another location has given me great pleasure. In November 1998 I found a bearded orchid near Huskisson, on the south coast of NSW. It was *Calochilus* sp. aff. *grandiflorus*, alleged to occur no further south in NSW than Gosford, which is about three hours north of Nowra. I was fortunate enough five years later to see it again 3 km south of the previous site. Those of you who have read my poetry in "Images of Preservation" will remember it as "My Special Beardie" and the last remaining plant in flower was sent for proper identification.

Finally, at home I have a plant of *Calanthe triplicata*, which had four main and two smaller flowering racemes. On two of the main racemes there were smaller flowering growths emerging from the leaf bracts. These are similar to aerals on epiphytes, without a root system (so far). There were two on one raceme and one on another. For me this was a first and after having seen more than my share of *Calanthe triplicata* I can say I have not noticed this occurring in situ. Some reader will prove me wrong but then I can accept this, as nobody has a mortgage on seeing unusual natural events.

The year 2003 finished with the finding of three species which I had not seen before (locally) *Dipodium roseum* and *Cryptostylis leptochila* have already been mentioned but *Prasophyllum flavum* also came along in December (probably another bushfire result) to round off 2003 in excellent style. Perhaps having such a big back yard is not so imposing, after all.

-oOo-

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Last year, 2003, was an excellent season for *Dendrobium speciosum* in Melbourne and that inspired me to talk to a number of growers, both local and up north, about their culture. A number of interesting things arose and I've attempted to draw the information together in this article. In all, I spoke to thirteen growers: eight in the Melbourne area, Denise & Phil Colquhoun, John Evans, Bill Franzke, Murray Harding, Stan Hill, Ken Roberts, Tony Slater and Wayne Turville; one in central Gippsland, Warren Simpson; one in the Sydney area, Bill Dobson and three in the mid North Coast NSW. David Rideout in Wauchope, Tony Blewitt and Ted Walmsley both in the Kempsey area. The questions I asked covered the number and types of *D. speciosum* people have, their experiences with these and what things work well, and from the past not so well, for them. Finally, I gauged peoples' response to the recent Clements and Jones name change proposals published in *The Orchadian* Vol.13, no11, pp484-497 (2002).

## **1. Growing experience, composition and size of collection.**

Most had been growing *D. speciosum* for a long time, fifteen years plus. The one relatively new grower had been growing them for a mere twelve years! Clearly, the group represents a lot of growing experience. Most were growing all six varieties (briefly from south to north on the east coast: *D. speciosum* var. *speciosum*, *D. speciosum* var. *hillii*, *D. speciosum* var. *grandiflorum*, *D. speciosum* var. *capricornicum*, *D. speciosum* var. *curvicaule* and *D. speciosum* var. *pedunculatum*). Most also had examples of both inter-varietal crosses (eg var. *speciosum* X var. *curvicaule*) and intra-varietal crosses (eg var. *speciosum* 'National White' X var. *speciosum* 'Windermere').

Sizes of collections varied from five flowering plants up to about two hundred and fifty flowering plants. With seedlings included these numbers are much larger. Nobody in the group was growing their plants under conditions of artificial heating or cooling although most were growing under some sort of impervious cover, clear plastic sheet or rigid clear plastic, with many using shadecloth as an addition during the summer months only.

## **2. Flowering.**

The question here concerned whether

some varieties flowered better and/or more frequently than others. The related question was whether inter or intra-varietal crosses were any better, worse or no different (i.e. was there any enhancement due to the crossing). Not surprisingly, the responses overall indicated that in Melbourne and probably Sydney that *D. speciosum* var. *speciosum* was the easiest to flower with *D. speciosum* var. *hillii* being a very close second. *D. speciosum* var. *grandiflorum* also responds well under Melbourne conditions but perhaps is more difficult to flower than the first two mentioned. The more northern varieties (var. *capricornicum*, var. *curvicaule* and var. *pedunculatum*) are not surprisingly harder to flower in Melbourne, particularly *D. speciosum* var. *capricornicum*. Obviously, conditions can play a big part in this as one Melbourne grower has done well with the northern ones by ensuring plants are hung up high close to the plastic shadehouse cover where the plants experience greater warmth and light.

My limited experience would also suggest that crossing a 'hot' (var. *curvicaule* or a var. *pedunculatum*) with a 'cold' (var. *speciosum*) does improve the chances of flowering in any particular year under Melbourne conditions. However, overall, the view was that inter/intra-varietal crossing did not influence the likelihood of flowering from one year to the next. The experience of one Melbourne grower was interesting; that flowerings of

the varieties vary from year to year – var. *pedunculatum* flowering well in 2002, while var. *speciosum* did well in 2003. Although that experience was only that of one grower, it would be interesting to start a log of flowerings to see how this might be true from one grower to another and from one year to the next.

### 3. Growth

This is another interesting area and opinions differed considerably. However, very broadly the experience parallels that of flowering; namely that the most southern varieties (in particular var. *speciosum* and var. *hillii*) show more growth vigour than the northern forms when grown under similar conditions in Melbourne. In New South Wales and Queensland all grew well. Forced to choose, the N.S.W., North Coast growers generally found that var. *curvicaule* grew the best (better than var. *speciosum* and var. *pedunculatum*). All the details, particularly the nuances of order of vigour, were hard for me to get my mind around. A complicating factor is that in Melbourne at least, plants do not necessarily produce new pseudobulbs every year. Furthermore, some plants are more vigorous than others within one variety, a statement which is true for both northern and southern growers. However, the very broad message is clear, the further north you are the better off you are for growth vigour across all the varieties.

On the question of whether or not there is additional growth vigour as a result of inter or intra-varietal crossing, opinion was divided. Of the nine growers who had an opinion about this, four thought there was extra vigour from crossing (2 Melb/2 NSW). Five, however, thought not (3 Melb/2 NSW). I for one think there may be, based on my limited experience with my var. *speciosum* 'National White' and 'Windermere', which are both slow growers for me. However two crosses between these, from both a Melbourne and a North Coast source, are quite vigorous. Flowering is something else as my 'Windermere' has flowered every year for the last three years, when I acquired

it. My 'National White' X 'Windermere', however, has also flowered regularly and has put on good growth as well.

## 4. Culture

### 4.1 Media.

I covered media in an earlier article [ref Bulletin July 2003 P11 and *The Orchadian* Vol.14, no6, pp250-255 (2003)]and nothing new came out of these discussions except some growers have had quite negative experiences with highly absorbent siliceous media.

### 4.2 Repotting.

Most deal with their plants in October/November, before the new growth starts. However, one NSW grower believes that the best time for him is when the plants have just finished their new pseudobulb growth, end of January/early February. The reasoning here is that following the new growth there is a further period of root growth from the new pseudobulbs. This root growth can occur in the new media thus establishing the plant before winter. The benefit claimed is that the new pseudobulbs, as they are growing, are less susceptible to cane rot and other disorders as the growth is supported by a well established plant.

### 4.3 Liming.

At least two growers like applying builders' lime (eg Limil® – an industrial grade of calcium hydroxide) to the top of the media around their plants. One of these growers, on the North Coast, applies lime every one to two months during the growing season. For a five cane division in a 250mm (10") pot this grower applies one heaped handful of lime, this is scaled up or down according to the size of the pot with seedlings getting just a broadcast of powder. All the plants are then watered thoroughly to wash away powder on the plants and to flush the powder right through the media. I cannot imagine plants experiencing anything like this high pH environment in the bush, but then again the health and vigour of this particular grower's plants is a testament that one can't argue with, I couldn't imagine plants in the bush looking



this good. However, I should also say that this grower does not use much in the way of fertiliser other than an occasional application of a very dilute potassium permanganate (Condy's crystals) and magnesium sulphate heptahydrate (Epsom salts) solution once every six to eight weeks during the growth season as a foliage spray.

I believe that if you used lime in this way and fed regularly with soluble fertilisers that you could wind up with clogged media due to insoluble precipitated salts. For example, solutions of both of the fertilisers I use at the recommended concentrations (Peter's Excel® Hi K/13:2.2:16.6 NPK: 5.0 Ca for October to January and Horticultural Solutions Native Orchid Food HSO-8/8:5:25 NPK for February to March) form precipitates with limewater. While this would not necessarily deprive the plant of the trace elements present in these formulations, it would greatly slow the rate at which the plants could take them up. For the grower concerned, however, magnesium sulphate does form a precipitate with limewater (magnesium hydroxide). The rate at which this happens is quite concentration dependent and uptake of magnesium by the plant could still occur. Potassium permanganate is unaffected by limewater and the manganese could be taken up by the plant over a long time scale.

Finally, it's important to note that the grower repots his plants every two, or at the most, every three years using new media (bark) and he uses one handful of a 50/50 mix of Blood & Bone and Hoof & Horn watering in lightly. The plants are then left dry for two to three weeks before normal watering is recommenced.

In short, liming your plants in the way described above gives excellent results under one set of conditions, but careful consideration must be given to what other fertilisers may be used. The choice here, I believe, is an important part of getting the right result.

#### 4.4 Watering.

One grower from up north remarked that

his var. *speciosum* are watered much less than his other varieties including var. *hillii*. Since he has cut water back to his var. *speciosum*, once a week during summer, he has achieved much better results. Seems reasonable to me given that much of the var. *speciosum* country would be south of the real monsoonal weather patterns. I didn't cross check this point with other growers.

#### 4.5 Negative & Positive Experiences

Apart from the comment on absorbent media above, the only other negative experience that people had to relate concerned leaving plants in one lot of media longer than around three years. One or two had also had bad experiences with over fertilising, lots of weak new growth unable to be sustained if conditions deteriorated slightly such as absence on holidays.

On the positive side, comments were made about the desirability of hanging plants or ensuring that air has easy access to both the bottom as well as the top of the pot or container. Fibre or shade cloth lined hanging baskets were seen by some as being very good in this respect. A plant on open mesh benches rather than impervious surfaces is another positive for plants in pots. Light was another very important issue, as much as the plant can take is good. For Melbourne if you want your plants to acclimatise to more light then expose them to full sun from mid April to give them time to adjust. However, full sun in summer will still damage leaves although won't upset good flowering. Fertiliser came a distant third although one grower who describes himself as a heavy waterer and feeder during the growth season had a contrary view.

### 5. Name Changes

Whatever the scientific arguments for the Clements & Jones name changes as they relate to the *Dendrobium speciosum* complex (ref *The Orchadian* Vol.13, no11, pp484-497 April 2002) the willingness to adopt such changes is not there amongst most of the growers I spoke to. The responses are

tabulated on the next page:

Table 1. Attitudes to Nomenclatural Changes as they relate to *Dendrobium speciosum* \*

	In verbal communication?	In any written and/or published communication?
Do you propose referring to your plants as genus <i>Thelychiton</i> rather than <i>Dendrobium</i> ?	<ul style="list-style-type: none"><li>• No. (12)</li><li>• Depends on the particular conversation. (1)</li></ul>	<ul style="list-style-type: none"><li>• No. (11)</li><li>• Yes. (1)</li><li>• Would use traditional names, but put new names in brackets. (1)</li></ul>
Do you propose referring to your plants in terms of the six new species names?	<ul style="list-style-type: none"><li>• No. (12)</li><li>• Depends on the particular conversation. (1)</li></ul>	<ul style="list-style-type: none"><li>• No. (11)</li><li>• Yes. (1)</li><li>• Would use varietal naming, but put new species names in brackets. (1)</li></ul>

\*Other comments: Will use previous names until I've seen more data/been convinced through published argument (1 person). The changes will likely be adopted, but not in my lifetime (1 person)

## 6. Acknowledgements

My heartfelt thanks to all the growers I spoke to for being so helpful and willing to talk to me about their methods and views. However, any errors or omissions are solely my responsibility.

-oOo-

## The *Dendrobium speciosum* Spectacular and Australian Species Show.

### ANOS Mid North Coast Group.

As we eagerly wait for the Spring, once again the *Dendrobium speciosum* Spectacular will be on in the Mid North Coast of New South Wales. This magnificent species of orchid, will entice us to Kempsey, to witness another spectacular show.

But the *Dendrobium speciosum* Spectacular is not just a show for the wonderful *Dendrobium speciosum*, but is a show for all Australian species

The Australasian Native Orchid Society, Mid North Coast Group in conjunction with Ted and Winsome Walmsley, will be hosting their annual Australian Native Species Show and *Dendrobium speciosum* Spectacular, at 57 Spooners Avenue, Greenhills via Kempsey, on the 28th, 29th and 30th August, 2004. The show will be open from 10am on Saturday and 9am on Sunday and Monday, and this show is shaping up to be the best one yet.

So don't be slow, and mark this event on your calendars now!

for more information contact:

Ted Walmsley on 02-65627150

or

The Secretary

ANOS Mid North Coast Group.

P.O.Box 128 ; Taree 2340 NSW.



*Dendrobium speciosum* var. *speciosum* 'Julian'.



*Dendrobium speciosum* var. *grandiflorum* 'Alfred William'.

Photos and grower Murray Harding



## The re-introduction of Australian native orchids to The Wetlands Centre, Australia.

Bernice Burgess  
C/- The Wetlands Centre  
P.O. Box 292  
Wallsend NSW 2287

Each year A.N.O.S. Newcastle Group participates in the 'Wildflowers at the Wetlands' weekend mounting a display and providing native orchids in flower for sale. This weekend is co-ordinated by the Australian Plant Society Newcastle Group, but located at The Wetlands Centre (TWC) at Shortland, in New South Wales. Two years ago, at this display, some A.N.O.S. members floated the idea of re-introducing Australian native orchids to the site of the TWC. When the idea was put to a general meeting and accepted our project commenced.

It is necessary to give a little background to this project. The Centre commenced operating in 1985 as a community owned reserve dedicated to restoring the Shortland Wetlands, so that the functions and values of the wetlands could be achieved. The site was very degraded having been previously burnt by bushfires, cleared for farming, filled with garbage by the local council, converted to playing fields and finally used to agist horses. However, the most significant destruction of the natural vegetation resulted from the construction of floodgates on Ironbark Creek in the early 1970's and a drainage channel to the north of the wetlands. When The Centre finally commenced operating there was not a single orchid to be found on the site.

The Wetlands Centre occupies forty five hectares of floodplain wetlands at the edge of Hexham Swamp and incorporates a mixture of remnant wetlands and re-constructed wetlands. The Melaleuca, Water Ribbon and Reed Marsh Ponds are protected by SEPP14 with the water in these ponds varying from brackish to fresh. The drainage channel has been incorporated into the canoe trail which links TWC to Ironbark Creek. The entire site is in the process of being rehabilitated with most of the work being carried out by volunteers. Over forty thousand trees and shrubs have been planted, most of these being endemic to the lower Hunter.

A.N.O.S. Newcastle Group elected a small committee (L. Field, G. Hillman, J. Mc Kone and B. Burgess – Co-ordinator) to oversee the project. The Committee surveyed the site on 10th April, 2002 to confirm that orchids could no longer be found. The very first task was to review literature to establish which orchid species would have been found on site before human interference. A list of these orchids was commenced, this list being available in the report on the project as an appendix. Some former residents of Shortland remembered seeing orchids such as *Dockrillia linguiformis*, *Dockrillia striolata*, *Dockrillia teretifolia*, *Pterostylis* spp. and *Petalochilus* spp. in the area when they were children. These were added to the list.

Fortunately for us the CSIRO had mapped the Hunter Valley in 1963 for lithologic and physiographic boundaries and the distribution of soils and vegetation. TWC belongs to the Beresfield Land System on the lower ground and the Elrington Land System on the higher and drier ground. Review of the orchids found in these land systems made it possible to derive a list of orchids that were probably endemic to the site.

At this point the Committee decided to survey the site again and armed with our list of suitable orchids we selected possible locations for specific orchids. As only part of

the forty five hectares has been completely rehabilitated, the Committee decided to concentrate planting in the rehabilitated areas. Even so, growth of weeds and native grasses is still a problem. *Pterostylis* species such as *P. curta*, *P. nutans*, *P. pedunculata* and *P. baptistii* were planted on Butcherbird Hill and along the Sensory Trail.

The epiphytic orchids were attached to the *Casuarina glauca* trees which line the Canoe Trail. It was decided to concentrate the epiphytes in this area as eastern Australia has been experiencing a severe drought and we felt the orchids would benefit from the evaporation of water from the Canoe Trail. These epiphytes included *Dockrillia teretifolia* and *Dockrillia linguiformis*. The Demonstration Rainforest although carefully rehabilitated, could not be used for planting as there were problems with a watering system. It may be possible to commence planting in this area in 2004 as a rainwater tank has been installed to collect water from the outdoor classroom.

A number of species appearing on the list have not been recommended for planting because the Committee believes they would be too difficult to cultivate, or the site has been altered to such a degree that conditions are no longer appropriate. It is also considered that some of the orchids listed as being present in the area as early as 1862 were incorrectly identified and unlikely to have been present in that locality.

In late Spring, 2002 some trees bearing *Dockrillia teretifolia* in flower were found on Kooragang Island and in 2003 one tree carrying *Dockrillia linguiformis* was found. Kooragang Island, too, was thought to have been denuded of native orchids as a consequence of dairy farming. A.N.O.S. Newcastle is attempting to breed from these plants, with the seedlings raised to be re-introduced back into the area.

Shortland Wetlands was jointly listed with

Kooragang Nature Reserve as the Hunter Estuary Ramsar site in November 2002. Being listed as a Ramsar site recognises the wetlands as having international significance. The Convention on Wetlands (known as the Ramsar Convention) was signed in Ramsar, Iran on 2<sup>nd</sup> February 1971 with the aims of protecting and encouraging wise use of wetlands internationally. Migratory birds depend on these wetlands for stopover points on their long flights.

Discovery of the orchids is very important for The Wetlands Centre. Kooragang Island is included in the Kooragang Nature Reserve which in turn is linked with the Shortland Wetlands to form the Hunter Estuary Ramsar site. As it is believed that both Kooragang Island and the Shortland Wetlands are parts of the same wetlands system, the DNA of the plants would probably be the same for both sites. If breeding is successful these plants could be re-introduced to TWC.

A detailed report (Burgess 2003) on the project documenting each step has been written. Copies are held by A.N.O.S. Newcastle Group, The Wetlands Centre Australia and A.N.O.S. Inc.

#### References.

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The Wetlands Centre.



View from the Wetlands Centre.





*Dockrillia linguiformis* tied to *Casuarina glauca*.



*Dockrillia teretifolia* tied to *Casuarina glauca*.



Tony Clarke from Newcastle Group tying orchids to the trees.



Bernice Burgess.

Photos Len Field

## Saint Helena's Bushland Reserve, an island in a sea of suburbia.

By Linda Rogan  
16 Marden Drive  
Greensborough, 3088  
Australia

"In ten years time you'll have a patch of weeds! This area is too small for the ground flora to survive." The forgotten speaker didn't deter us.

In the late 1980s I was part of a small but determined action group that lobbied for the establishment of a flora reserve in an area near my home. I had become aware of the presence of a large population of *Pterostylis* aff. *longifolia* (now *Pterostylis* or *Bunochilus smaragdina*) at the same time that I learned a housing development was in the final stages of approval for this site, a site known to botanists and orchidophiles as rich in orchids and flora diversity.

The action group included keen local residents, some ANOS members and others with an interest in native flora, and was supported by a sympathetic shire councillor and encouraged by local botanists. Green and naïve, we spent hours in meetings, writing letters and dropping leaflets in letterboxes, speaking to shire officers, council and local residents. It seemed a race against the bulldozers.

The result was a partial win at the time. Plans for a footy oval on Scone Close Reserve were changed to a small play area in the most degraded part of the reserve. Some 4911 m<sup>2</sup> (five housing blocks) were excised from development and added to the existing open space for a bush reserve of approximately 2.1 hectares. More land would have been desirable but this compromise was judged to significantly increase the chance of survival of the orchids and ground flora on this site.

The minimum size for successful orchid survival in a suburban bush reserve was unknown. This article looks at how the reserve has survived the past decade. The predominant vegetation community is dry sclerophyll of the type that was once typical of most of the higher ridgelines in the general area. Nearly all other local ridgelines are now developed or fully cleared for pasture.

The Report on the Management of the Saint Helena's Bushland Reserve in August 1992 stated "A total of one hundred and fifty six vascular plant species were recorded for the reserve. Of these ninety two are considered locally native to the site with a further sixty four either introduced exotics or introduced natives." Woody weeds such as *Genista linifolia* and *G. monspessulana* (broom) and *Chrysanthemoides monilifera* (Boneseed) were present. However, *Briza maxima* (Quaking grass) was the only weed species with significant cover. It was present in most of the reserve but those areas where it was absent were basically weed free.

The 1992 report identified the following aspects for consideration and action:

- Proliferation of tracks – need for rationalisation and definition
- High quality fencing to control or restrict access
- Plantings at entrances to be replaced with local species sourced from the reserve
- Some thinning of *Acacia pycnantha* and *Cassinia longifolia* on a trial basis observing the effects on orchid abundance
- Avoidance of any drainage from the developed area into the reserve
- Erosion control along natural drainage lines within the reserve

by increasing the ground cover of indigenous herbaceous plants.

- Fire management
  - Fuel reduction – This also required the removal of wood stacks and such by neighbours utilising the edge of the reserve
  - As a tool for vegetation management in controlling exotics and aiding indigenous species

This report has guided the shire (originally Diamond Valley Shire and then Banyule Shire after local government reorganisation) in management of the area. Also essential has been the ongoing interest and actions by the Friends of Saint Helena's Bush Reserve. Two individuals have been the consistent core of this group: keen and dedicated local resident Lawrie Rigg and local naturalist Garry French.

Both have spent time each month weeding, clearing rubbish and monitoring the reserve in a sustained effort over the years. The small size of the reserve made some degree of hand weeding feasible. Garry has been able to provide expertise to guide actions by the friends group and to coordinate with the shire efforts. He has been carefully monitoring this area and now has ten years of data on the *P. smaragdina* (see accompanying article).

So what has changed over the ten plus years?

- Ninety two indigenous plant species were listed in 1992. At present, one hundred and twenty six have been verified. This increase is due to more thorough investigation of the flora but is impressive in a suburban bush remnant previously well known to botanists.
- Thirty five orchid species are now listed on the reserve. No species (confirmed within the reserve) have

been lost and the list has grown due to confirmation of an additional species and the splitting of Green comb spiders and *Thelymitra pauciflora*.

- Knowledge has been gained about the management of *Pterostylis smaragdina* and bushland reserves.
- Community awareness of bushland values has been raised.
- Bushland conservation has been reinforced as a function of the local shire.

Botanist Cam Beardsall has been engaged by Banyule Shire Council to review the management plan. Not having visited the reserve in nearly ten years, he was impressed by the lack of woody weeds and stated the Friends Group and the local council management, were to be congratulated. In a survey of a quadrat last checked in the early 1990s, he was amazed to find all indigenous species still present. The reserve is significantly changed from what it was in 1992 but many of these changes are positive. It is likely Cam's report will suggest new direction and clearer focus in management and utilisation of resources, as well as a recognition of all that has been done well. This would be expected to result in better coordination of efforts and best results for core areas and species.

Ongoing efforts will be required to ensure that the reports in another ten and twenty years show continued progress rather than decline of this reserve. For the present, let's take heart and celebrate a good news story in orchid conservation.

References.

Report on the Management of the Saint Helena's Bushland Reserve by Randall W. Robinson and Zoe Carmichael.

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*Pterostylis smaragdyna* close up of flower and plant.



Saint Helena's Bushland Reserve habitat.

Photos Garry French

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### Miscellaneous New Species, New Genera, Reinstated Genera and New Combinations in Australian Orchidaceae

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**Abstract:** Sixteen new species are described for Australia - *Arthrochilus apectus*, *A. aquilus*, *A. corinnae*, *Calochilus caesius*, *C. cleistanthus*, *C. imperiosus*, *C. metallicus*, *C. russeus*, *Eriochilus petricola*, *Eucosia umbrosa*, *Eulophia pelorica*, *Flickingeria clementsii*, *Peristylus chlorandrellus*, *Phoringopsis lavarackiana*, *Tropidia territorialis* and *Vrydagzynea grayi*. Eight genera, either newly erected (*Chiloterus*, *Demorchis*, *Mecopodium*, *Rhipidorchis*) or reinstated (*Diteilis*, *Empusa*, *Plexaure* and *Salacistis*) are applied to Australian Orchidaceae and the necessary new combinations made. Two new combinations are made each in *Corunastylis*, *Diuris* and *Microtis*.

**Introduction:** The first part of this paper includes the formal description of sixteen new taxa from Australia, most from the tropics. Four of these species were discovered in 1992 during a wet season collecting trip in the Heathlands area of Cape York Peninsula (Jones & Broers 1993). Ongoing morphological and molecular studies into the Australian Orchidaceae continues to reveal new information and the second part of the paper deals with nomenclatural adjustments resulting from these studies.

#### NEW SPECIES

1. *Arthrochilus apectus* D.L.Jones sp. nov.; affinis *A. sabuloso* D.L.Jones, sed floribus minor; labello callis gracillimus, rubido; et glande principali calli sine punctis, differt.

Type: Queensland: Cook District; Old slaughterhouse area, Heathlands Reserve, Cape York Peninsula, 25 Jan. 1992, *D.L.Jones 8940 & C.H.Broers (CBG9220228)* (holo CANB).

**Description:** Rosette separate or on a lateral growth; leaves ground-hugging, 2-3, narrowly elliptic, 2-5cm long, 4-10mm wide, dark green, paler and shiny beneath, acuminate. Inflorescence 18-26cm tall; rhachis and peduncle very slender green, the rhachis sometimes zig-zagged. Sterile bracts closely sheathing, 2-3, ovate-lanceolate,

5-10mm long, c.3mm wide, acute to acuminate. Flowers 3-c.7, pale green with reddish-yellow glands on the labellum callus. Fertile bracts closely sheathing, linear-ovate, 3-5mm long, c.2mm wide, acute. Pedicels obliquely erect, c.5mm long, very slender. Ovary narrowly ovoid, c.3mm long, c.1mm wide, curved. Dorsal sepal linear-oblong when flattened, 9-11mm long, c.1.3mm wide, conduplicate, decurved, closely embracing the proximal quarter of the column; apex obtuse. Lateral sepals reflexed against the ovary, oblong, 7-8.5mm long, c.1.3mm wide, falcate, distal margins conduplicate; apex acute. Petals reflexed against the ovary, filiform, 8-9mm long, c.0.6mm wide, falcate; distal margins conduplicate; apex obtuse. Labellum hinged at the base on a claw c.0.1mm long. Labellum

lamina c.3.5mm long, c.1mm wide at the base, pale green with a prominent dark purplish-black basal blotch, connate with basal stalk of the callus for c.1mm; free cauda ligulate, c.2mm long, 0.7mm wide, recurved, pale green, obtuse. Callus plus main gland c.3.5mm long, c.1.8mm across, c.1mm high, prominently insectiform; central band inconspicuous, reddish, covered with sessile and shortly stalked, very thin, linear-clavate calli; lateral surfaces appearing untidy, loosely covered with shiny reddish-yellow, very thin, linear-clavate calli c.0.5-1mm long; basal stalk c.3.5mm long, c.1.4mm wide at the base; main gland c.2mm long, straight or slightly curved, base with thin linear-clavate calli similar to those on the main part of the callus; apex broadly emarginate, c.1mm across, black, shiny, irregularly ruminant. Column c.8mm long, at a steep angle to the ovary for the proximal 1.5mm then curved forwards in a semi-circle, light green, the anterior surface shortly pubescent and with a few dark purple spots. Column foot c.4mm long; apex anvil-shaped, c.1mm across. Column wings in 2 pairs; proximal wings broadly triangular, c.2.5mm long, c.1.5mm wide, projected forwards, translucent with a few purplish spots; apex linear-filiform, upcurved; distal wings linear-tapered, c.1.5mm long, 0.5mm wide, slightly falcate, divergent above the anther. Stigma elliptical, c.1mm across, sunken. Anther c.1mm long, obtuse. Pollinia 4, more or less boomerang-shaped, c.0.9mm long, yellow, mealy. Capsules not seen.

**Distribution and Ecology:** Apparently endemic to northern parts of Cape York Peninsula, Queensland. This species forms colonies in open forest dominated by *Asteromyrtus brassii* and *Welchiodendron longivalve*. The soil is a well-drained gravelly loam. Flowering: November to February.

**Notes:** This species and the following one (*A. aquilus*) were growing in the same general locality, but this species favoured low ridges and rises, whereas *A. aquilus* grew close to streams. Both species can be readily distinguished by the glands on their callus. *Arthrochilus apectus* is recognised by its long (0.5-1mm long), extremely thin reddish-yellow glands which have a very unkempt or untidy appearance. By contrast *A. aquilus* has short (0.2-0.5mm long), dark reddish-black glands imparting a neat compact appearance. Both species have similar large rosette leaves.

**Conservation Status:** Confused with other taxa but conserved on Heathlands Reserve; suggest 1Kc by criteria of Briggs & Leigh (1996).

**Etymology:** From the Greek, *apektos*, disorderly,

unkempt, untidy, in reference to the appearance of the labellum glands.

**2. *Arthrochilus aquilus*** D.L.Jones sp. nov.  
*A. sabulosum* D.L.Jones, affinis sed floribus minoribus tepalis brevioribus angustioribus, labello multo angustiore, et callis brevissimis, gracillimis atro-rubris, differt.

Type: Queensland: Cook District; Old slaughterhouse area, Heathlands Reserve, Cape York Peninsula, 25 Jan. 1992, *D.L.Jones 8941 & C.H.Broers (CBG9220229)* (holo CANB).

**Description:** Rosette separate or on a lateral growth; leaves ground-hugging, 3-4, elliptic, 2-5cm long, 7-14mm wide, dull green, paler and shiny beneath, acuminate. Inflorescence 20-35cm tall; rhachis and peduncle very slender green. Sterile bracts closely sheathing, 2-3, ovate-lanceolate, 5-10mm long, c.4mm wide, acute to acuminate. Flowers 3-c.15, pale green with dark reddish-black glands on the labellum callus. Fertile bracts linear-ovate, 3-5mm long, 2-2.5mm wide, acute, closely sheathing. Pedicels c.5mm long, very slender, obliquely erect. Ovary c.3mm long, c.1.5mm wide, narrowly ovoid, curved. Dorsal sepal linear when flattened, 7-8.5mm long, c.1.3mm wide, conduplicate, decurved, closely embracing the proximal quarter of the column; apex obtuse with a short dorsal ridge. Lateral sepals reflexed against the ovary, more or less lanceolate, 6-7.5mm long, c.1.3mm wide, falcate, distal margins conduplicate; apex obtuse. Petals reflexed against the ovary, narrowly linear, 6.5-7.5mm long, c.0.5mm wide, falcate; distal margins conduplicate; apex obtuse. Labellum hinged at the base on a claw c.0.1mm long. Labellum lamina c.4mm long, c.1mm wide at the base, green with a prominent dark purplish-black basal blotch, connate with basal stalk of the callus for c.1mm; free cauda ligulate, c.1.5mm long, 0.6mm wide, recurved, pale green, obtuse. Callus plus main gland c.3mm long, c.1.3mm across, c.1mm high, prominently insectiform; central band inconspicuous, covered with dark sessile and shortly stalked, very slender, linear-clavate calli; lateral surfaces densely covered with shiny dark reddish-black, very slender, linear-clavate calli c.0.2-0.5mm long; basal stalk c.2mm long, c.0.5mm wide at the base; main gland c.1.5mm long, straight or slightly curved, base with linear-clavate calli similar to those on the main part of the callus; apex broadly emarginate, c.1.2mm across, black, shiny, irregularly ruminant. Column c.7.5mm long, at a steep angle to the ovary for the proximal 1.5mm then curved forwards in a semi-circle, light green, the anterior surface shortly



pubescent and with a few dark purple spots. Column foot c.3mm long; apex anvil-shaped, c.1mm across. Column wings in 2 pairs; proximal wings broadly triangular, c.3mm long, c.3mm wide, projected forwards, translucent with a few purplish spots; apex linear-filiform, upcurved; distal wings linear-tapered, c.2mm long, 0.5mm wide, slightly falcate, divergent above the anther. Stigma elliptical, c.1mm across, sunken. Anther c.0.9mm long, obtuse. Pollinia 4, more or less boomerang-shaped, c.0.9mm long, yellow, mealy. Capsules not seen.

**Distribution and Ecology:** Apparently endemic to northern parts of Cape York Peninsula, Queensland. This species forms scattered colonies in well-drained gravelly loams close to small streams, in stunted open forest and treed heathland dominated by *Acacia rothii*, *Asteromyrtus brassii* and *Welchiodendron longivalve*. Flowering: November to February.

**Notes:** A very distinctive species which is readily recognised by its labellum callus which is densely covered with very short, extremely thin, dark reddish-black calli in a compact tidy arrangement (see also the previous species). The large rosette leaves are also notable.

**Conservation Status:** Confused with other taxa but conserved on Heathlands Reserve; suggest 1Kc by criteria of Briggs & Leigh (1996).

**Etymology:** From the Latin, *aquilus*, dark-coloured, in reference to the labellum glands.

**3. *Arthrochilus corinnae*** D.L.Jones, sp. nov. affinis, *A. sabulosum* D.L.Jones et *A. oreophilum* D.L.Jones, sed foliis multo minoribus in rosula minori, glandibus labelli nitentibus flavis clavatis, et basi labelli multo angustiore, differt.

Type: Queensland: Cook District; Swamp on south bank of Dulhunty River, Old Telegraph Road crossing, Cape York Peninsula, 23 Jan. 1992, *D.L.Jones 8888* & *C.H.Broers (CBG9220175)* (holo CANB, iso BRI, MEL).

**Description:** Rosette separate or on a lateral growth; leaves ground-hugging, 2-3, narrowly ovate to narrowly lanceolate, 5-25mm long, 3-7mm wide, dull bluish-green, paler and shiny beneath, acute to acuminate. Inflorescence 15-30cm tall; rhachis and scape very slender, green. Sterile bracts 2-3, ovate-lanceolate, 4-6mm long, c.4mm wide, subacute to acuminate, closely sheathing. Flowers 3-c.12, pale green with shiny yellow glands on the labellum callus. Fertile bracts closely sheathing, linear-ovate, 3.5-5mm long, 2-3mm wide, subacute. Pedicels c.2mm long, slender, obliquely erect close to the rhachis. Ovary narrowly ovoid, c.4mm long, c.1.5mm wide, curved. Dorsal sepal

linear-obovate when flattened, 8-10mm long, c.2.4mm wide, conduplicate, decurved, closely embracing the proximal third of the column; apex obtuse, more or less cymbiform. Lateral sepals reflexed against the ovary, more or less oblong, 5-6.5mm long, c.2mm wide, falcate; distal margins conduplicate; apex obtuse. Petals reflexed against the ovary, linear, 6-7 mm long, c.1mm wide, falcate, obtuse to subacute. Labellum hinged at the base on a claw c.0.1mm long. Labellum lamina c.5.5mm long, 0.8mm wide, c.1.4mm across at the base, green with a prominent dark purplish basal blotch, connate with the basal stalk of callus for c.2mm; free cauda ligulate, c.2.5mm long, c.0.8mm wide, recurved, pale green, obtuse. Callus plus main gland c.4mm long, 2.2mm wide, 1.3mm high, prominently insectiform; central band inconspicuous, covered by sessile and shortly stalked, shiny yellow clavate calli; lateral surfaces densely covered with shiny yellow, linear-clavate calli 0.6-1mm long; basal stalk c.1.6mm long, c.0.5mm wide at the base, dilated towards apex; main gland c.2mm long, straight, the base with a few linear-clavate calli similar to those on the callus; apex c.1.6mm across, broadly emarginate, greenish with prominent discrete glands appearing as spots, irregularly runcate, somewhat shiny. Column c.7mm long, at a steep angle to the ovary for the proximal 2.5mm, then curved forwards in a semi-circle, light green, the anterior surface shortly pubescent and with a few purplish spots. Column foot c.2mm long, apex anvil-shaped, c.1.5mm across. Column wings in 2 pairs; proximal wings broadly triangular, c.3mm long, 3mm wide, projecting forwards, translucent with a few purplish spots; apex linear-filiform, upcurved; distal wings linear-tapered, c.2mm long, c.0.4mm wide, slightly falcate, divergent above the anther. Stigma elliptic, c.1mm across, sunken. Anther c.0.8mm long, obtuse. Pollinia 4, more or less boomerang-shaped, c.1mm long, yellow, mealy. Capsules not seen.

**Distribution and Ecology:** Apparently endemic to northern parts of Cape York Peninsula, Queensland. This species grows in seasonally wet low-lying swampy areas dominated by paper-barked *Melaleuca* species, particularly *M. viridiflora*, and *Pandanus* species. The soils are dark grey to blackish sandy loams. Flowering: November to February.

**Notes:** This species is most similar to *A. sabulosus* D.L.Jones and also has similarities with *A. oreophilus* D.L.Jones. The new species can be distinguished from both by the smaller bluish rosette leaves, the densely clustered shiny yellow clavate glands on the labellum callus

and the much narrower base on the labellum lamina. The habitats occupied by each species are very different with *A. sabulosus* growing in deep, coarse, well-drained sands, *A. oreophilus* growing in open forest in the ranges and tablelands and *A. corinnae* growing in seasonally inundated swamps. The new species has similar leaves to those of *A. rosulatus* D.L.Jones but the latter flowers from the centre of the rosette and has sparser, dark-coloured labellum glands.

**Conservation Status:** Confused with other taxa and not known to be conserved; suggest 2K by criteria of Briggs & Leigh (1996).

**Etymology:** Named after Corinna H. Little (nee Broers), former technician in the Orchid Research Group who discovered the species.

**4. *Calochilus caesius*** D.L.Jones, sp. nov.; affinis *C. psedni* D.L.Jones et P.S.Lavarack, sed marginibus loborum lateralium labelli 5-7 paria dentium brevissimum linearium ferentibus, pagina ventrale labelli callis caeruleis confertis tecta; petalis angustioribus incurvis; et columna triangulare, differt.

Type: Northern Territory. Yarrowonga Swamp, c. 20 km E of Darwin, 15 Dec. 1984, *D.L.Jones* 1739 (holo DNA 25711).

**Illustration:** plate 110, Brennan 1986.

**Description:** Tubers ovoid, 1.5-2cm long, 0.8-1.2cm wide, fleshy. Leaf absent at anthesis, linear, 10-20cm long, 3-5mm wide, erect, dark green, fleshy, shallowly trigonous, margins bluntly rounded, apex acute. Inflorescence 20-40cm tall, very slender, wiry, dull green. Sterile bracts 2-3, lanceolate, 1.5-3cm long, 4-8mm wide, closely sheathing, subacute. Fertile bracts lanceolate, 4-10mm long, 3-5mm wide, closely sheathing, subacute. Pedicels 8-10mm long, slender, obliquely erect. Flowers lasting about half a day, 1-5, 12-15mm long, 10-12mm across; outer tepals pale green; labellum green with bluish calli; perianth segments spreading widely at temperatures above c.20°C, obliquely erect. Dorsal sepal ovate, 5-6mm long, 3-4mm wide, cucullate, concave, gibbous towards base, green with a few dark lines on the anterior surface, subacute. Lateral sepals asymmetrically lanceolate, 6-7mm long, 4-4.5mm wide, widely divergent, slightly carinate, obtuse to apiculate. Petals narrowly ovate-lanceolate, 5-6mm long, 1.5-2.5mm wide, asymmetrical, obliquely deflexed close to the lateral sepals, tips slightly incurved, with a few lines on the anterior surface, obtuse. Labellum projected obliquely downwards, oblong-elliptical, 12-13mm long, 3.5-5.5mm wide, flat, obscurely 3-lobed, the margins of the lateral lobes with 5-7 pairs of very short, linear

teeth, apex obtusely apiculate; ventral surface pale green with reddish suffusions, the proximal three-quarters densely adorned with appressed curved, linear-terete, bluish calli 0.5-2mm long, the distal quarter devoid of calli; basal pair of labellum calli prominently raised, c.2mm long, 0.5mm wide, fleshy, shallowly incurved, bluish, shiny; dorsal surface pale green with reddish suffusions, glandular-dotted. Column c.4mm long, c.4.5mm wide, green, strongly gibbous and glandular-papillate behind the anther; wings broad, obtuse, protruding, with a few small purple spots. Anther c.1.8mm long, c.2mm wide, green with cream flaps, obliquely erect, surface minutely colliculate. Pollinia c.2mm long, curved, cream to white, mealy. Stigma oblong, c.1.8mm across, sunken. Capsule narrowly ovoid, 1-1.2cm long, 3-4mm wide, ribbed.

**Distribution and Ecology:** Endemic in the Northern Territory where known from near Darwin, Jabiru and on Melville Island. This species grows in low-lying semi-swampy sites, among sedges in grey sandy soil. These areas may be inundated during the wet season. Flowering: December to February

**Notes:** Distinguished from other *Calochilus* species by the following combination of features: leaf undeveloped at anthesis; short to moderately tall (20-40cm tall), slender, wiry habit; few-flowered (1-5 flowers) raceme; small (15 x 12mm), fugacious flowers; a narrow, obscurely lobed labellum with 3-5 pairs of marginal lobes; labellum ventral surface adorned with crowded, bluish calli; column lacking anterior eye-spots. *Calochilus caesius* is a very distinctive species readily recognised by the dense covering of short, blue hairs on the labellum. Its closest congener is perhaps *C. metallicus* D.L.Jones but that species has a much narrower labellum with hardly any marginal lobes, longer, reddish to purple labellum hairs, broader widely divergent petals and a porrect anther. Plants of *C. caesius* are leafless at anthesis, the leaf maturing as capsules shed seed. The flowering period lasts about 7-10 days, with a single flower open at once. Flowers open early in the morning and are finished by midday.

**Conservation Status:** Moderately widespread but not known to be conserved; suggest 3R by criteria of Briggs & Leigh 1996.

**Etymology:** Derived from the Latin, *caesius*, pale blue with a mixture of grey, in reference to the colour of the labellum calli.

**Specimens Examined:** NORTHERN TERRITORY: c. 15km S of Snake Bay, Melville Island, 31Jan.1984, *D.L.Jones* 1290 (DNA); Emau Plains, Melville Island, 6Dec.1984,

*D.L.Jones 1691* (DNA); Jabiru, swamp N of airport, 11Dec.1984, *D.L.Jones 1714* (DNA).

**5. *Calochilus cleistanthus*** D.L.Jones, sp. nov.; affinis *C. psednus* D.L.Jones et P.S.Lavarack, sed ut videtur foliis carente, omnino pallide viride; floribus minoribus cleistogamis; labello minore integro nudo oblongo-lanceolato; et columna antheraque rectae rigidae, differt.

Type: Queensland. Cook District, Cape York Peninsula, c. 5.5 km north of Cockatoo Ck, Old Telegraph road, 21 Jan. 1992, *D.L.Jones 8862* & *C.H.Broers (CBG9220149)* (holo CANB).

**Description:** Tubers to 3cm long, c.1.5cm wide, ovoid, brown, fleshy. Leaf absent at anthesis. Inflorescence 15-40cm tall, very slender, wiry, pale green, pinkish at the base. Sterile bracts 2 or 3, lanceolate to oblanceolate, 1.5-3cm long, 4-5mm wide, subacute, closely sheathing. Fertile bracts ovate to lanceolate, 5-12mm long, 4-5mm wide, acute, closely sheathing. Pedicels c.5mm long, slender, curved at anthesis. Ovaries narrowly obovoid at anthesis, c.1cm long, 2mm wide. Flowers 1-4, 6-7mm long, cleistogamous, pale green, held at right angles to the scape at anthesis, quickly becoming erect. Dorsal sepal broadly ovate, c.6mm long, c.5mm wide, cucullate, pale green, with 3 faint lines, apiculate. Lateral sepals narrowly ovate-lanceolate, c.7mm long, c.3mm wide, with 3 faint lines, apex cymbiform. Petals narrowly ovate-lanceolate, c.5mm long, c.2mm wide, with 1-3 faint lines, obtuse to subacute. Labellum oblong-lanceolate, simple, entire, c.6mm long, c.2.4mm wide, pale green with 3 faint reddish lines, unornamented except for a few sessile glands in the proximal quarter, apex acute to acuminate. Column c.3mm long, c.2mm wide, green, erect, dorsal surface longitudinally wrinkled; wings narrow, erect, hardly protruding, verrucose, lacking eye spots and an anterior ridge. Anther c.2mm long, c.1.7mm wide, erect, green with cream flaps, surface minutely colluviate. Pollinia c.1.8mm long, white, very mealy and incoherent. Stigma c.1mm across, quadrate, sunken. Capsule narrowly obovoid, 1.8-2cm long, c.5mm wide.

**Distribution and Ecology:** Known only from the type locality where it grows among rushes and sedges in sparse woodland in well-drained sandy soil. Flowering: December and January.

**Notes:** *Calochilus cleistanthus* is not readily confused with any other, being characterised by its very slender habit; overall pale green colouration; small cleistogamous flowers; an oblong-lanceolate, entire, unadorned labellum; and, a stiffly erect column and anther. The affinities of *C. cleistanthus* are unclear and it is

tempting to pass the taxon off as a peloric form of another species. However none of the Australian tropical species is even remotely similar and no other *Calochilus* species is known to grow in the habitat.

Flowering plants of *C. cleistanthus* are leafless and it is unknown if a leaf develops later. One transplanted specimen died without producing a leaf and the species may be saprophytic, which is consistent with the overall pale colouration of the plants. Anthesis lasts about one day at which time the flowers are held nearly at right angles to the scape on a curved pedicel. This soon straightens after anthesis and the capsule matures in an erect position.

**Conservation Status:** Known only from the type collection and not conserved; suggest 1K by the criteria of Briggs and Leigh 1996.

**Etymology:** Derived from the Greek, *cleistos*, closed, shut, *anthos* a flower, in reference to the cleistogamous flowers.

**6. *Calochilus imperiosus*** D.L.Jones, sp. nov., *C. holtzei* F.Muell. affinis, sed folio sub anthesin non evoluto, pagina anteriore plana; racemo multifloro; sepalo dorsali oblique recto, ab columna late patenti; petalis late patentibus; callis labelli rufo-roseo; et columna post antheram valde gibbosa, differt.

Type: Queensland. Cook District: Shiptons Flat, S of Cooktown, 30 Mar. 1993, *C.H.Broers 406* & *L.J.Roberts (CBG9306358)* (holo CANB).

**Illustration:** Bottom plate, page 25, Lavarack & Gray 1992, as *C. holtzei*.

**Description:** Tubers ovoid, 3-5cm long, 1.5-2.5cm wide, fleshy. Leaf about half developed at anthesis, 12-20cm long, 5-10mm wide, maturing to c.58cm long, c.22mm wide, bright green, glossy, shallowly channelled to nearly flat on the anterior surface, sharply keeled on dorsal surface, smooth, acute to acuminate, slightly reddish at the base. Inflorescence 40-70cm, tall, stout, glossy green, dark reddish brown at the base. Sterile bracts two, ovate-lanceolate, 2-6cm long, 7-10mm wide, closely sheathing, lowest sharply keeled dorsally, apex acuminate. Fertile bracts ovate-lanceolate, 1-2cm long, 5-8mm wide, erect and incurved, apex acuminate. Pedicels 8-12mm long, slender, straight or curved at the apex. Ovaries narrowly oblong-obovoid, 10-14mm long, 2-2.5mm wide, dull green. Flowers 5-15, 25-28mm long, 15-18mm across, sepals dull green with a purple internal patch, petals green heavily marked with red-brown in the distal half, labellum dark purple at the base, calli pinkish-red. Dorsal sepal broadly ovate, 10-12mm long, 8-8.5mm wide, obliquely



erect to erect, concave, cucullate, apex acute to subacute. Lateral sepals asymmetrically ovate-lanceolate, 10-12mm long, 5-5.5mm wide, divergent, concave, apical margins incurved, apex acute. Petals oblong-lanceolate, 9-10mm long, c.4mm wide, widely spreading, apices recurved, glandular, apex obtuse. Labellum lamina more or less obovate in outline when flattened, 2-2.2cm long, 8.5-9.5mm wide, c.3mm across at the base, obliquely deflexed, with a gentle sigmoid curve in the distal half when viewed from the side, concave and margins incurved in distal third; proximal quarter of ventral surface dark purple, shiny, the margins with two, narrow, shallowly curved, wall-like ridges to 2mm high, between these a series of narrow, appressed, linear calli, distally a narrow central band of short, very slender, erect, sparse, purple calli, the main area covered with narrowly linear, minutely glandular, porrect and spreading, pinkish-red calli to 5mm long, distal quarter naked, with irregular reddish markings; dorsal surface of the lamina purple at the base, striate medially, densely glandular in the distal third, the glands reddish and in irregular rows; margins of proximal quarter entire, central half cut into numerous, crowded, simple, very narrow, tapered, acuminate, obliquely deflexed, minutely glandular lobes 1-5mm long, distal quarter entire or slightly irregular. Column set at about 50 degrees to the ovary, 6-7mm long, c.4mm wide, pale green with dark purple spots at the base, narrowly winged above, broadly flared at the base, strongly gibbous behind the anther, the margins dorsal to the anther with a glandular excrescence; false eyes and central ridge absent. Anther pale green, porrect, mostly hidden within the column. Pollinarium c.4 mm long; pollinia narrowly clavate, c.3mm long, 0.3mm wide, curved, pale yellow, mealy; viscidium ovate, c.1mm across. Stigma transversely ovate, c.4mm across, projected forwards at right angles to the column. Capsule 15-19mm long, 7-9mm wide, green.

**Distribution and Ecology:** Known from Kapalga in the Northern Territory and between Cooktown and Herberton in north-eastern Queensland. Probably more widespread in Queensland than this, but specimens have not been collected further north on wet season trips undertaken by the author and others. Two habitats have been noted for this species. These are flat moist areas in grassy woodland and much drier sites on slopes in open forest and woodland. Soils in the former are well-structured, grey to brown clay loams, in the latter shallow, stony loams. Altitude: c. 200-1000 m. Flowering: December to February.

**Notes:** This species is similar to *C. holtzei* but readily distinguished by the widely spreading petals, the reddish pink labellum calli and the labellum recurved in the distal half. Other differences include: leaf partially developed at anthesis; anterior leaf surface shallowly channelled to flat; perianth segments larger (dorsal sepal 10-12mm x 8-8.5mm, lateral sepals 10-12mm x 5-5.5mm, petals 9-10mm x 4mm, labellum 20-22mm x 8-8.5mm); dorsal sepal obliquely erect, spreading widely from the column; and, column very strongly gibbous behind the anther.

**Conservation Status:** Widely but disjunctly distributed and conserved in National Parks.

**Etymology:** Derived from the Latin *imperiosus*, imperial, imposing, domineering, in reference to the tall stature and impressive flowers.

**Specimens Examined:** QUEENSLAND: upstream from Davies Creek Falls, *P.Hind* 2930 (NSW). NORTHERN TERRITORY: Kapalga, 30Dec.1983, *C.R.Dunlop* 6620 (CANB, DNA, MEL, NSW).

**7. *Calochilus metallicus*** D.L.Jones sp. nov. Affinis *C. pzedni* D.L.Jones et P.S.Lavarack, sed labello angustiore, linearo-oblongo trichomatibus longioribus (2-3mm longis), rubescentibus ad purpureis; petalis latioribus; et anthera valde porrecta papillato-verrucosa, differt.

Type: Queensland, Cook District, Bramwell Swamp, c. 28 km S of Heathlands junction, 25 Jan. 1992, *D.L.Jones* 8945 & *C.H.Broers* (CBG9407975) (holo CANB).

**Description:** Tubers ovoid, to 2.5cm long and 1cm wide, fleshy. Leaf partially developed at anthesis, linear, 8-18cm long, 3-4mm wide, shallowly trigonous, margins bluntly rounded, fleshy. Inflorescence 20-30cm tall, very slender, wiry, dull green. Sterile bracts 2 or 3, lanceolate, 1-6cm long, 4-7mm wide, closely ensheathing, subacute to acuminate. Fertile bracts ovate-lanceolate, 4-8mm long, 3-5mm wide, closely ensheathing, acute to acuminate. Flowers 1-4, lasting about one day, 13-16mm long, 7-9mm across, pale green with reddish or purplish, metallic labellum hairs, the perianth segments spreading widely above 20°C., obliquely erect, on slender curved pedicels c.1cm long. Dorsal sepal broadly ovate, 5-6mm long, 5-5.5mm wide, cucullate, concave, green with a few dark lines on the anterior surface, subacute to apiculate. Lateral sepals asymmetrically ovate-lanceolate, 5.5-6.5mm long, 3-3.5mm across, divergent, shallowly concave, slightly carinate, obtuse to apiculate. Petals elliptical-lanceolate, 5.5-6.5mm long, c.2.5mm across, asymmetrical,

divergent, tips slightly incurved, with a few lines and suffusions on the anterior surface, obtuse. Labellum linear-oblong, 12-14mm long, 4.5-5mm across, mostly flat, very obscurely 3-lobed, the margins of the lobes entire or with 1-3 pairs of very short, linear teeth, projected obliquely downwards, apex obtuse; ventral surface green, heavily suffused with red, the proximal three-quarters adorned with appressed, curved, linear-terete, reddish to purplish, metallic trichomes, 2-3mm long, those towards the margins longest and densest, centrally the trichomes short (c.0.5mm long) and sparse, in more or less a narrow band; basal pair of labellum calli c.4mm long and 0.6mm wide, prominently raised, fleshy, shallowly incurved, entire or margins irregular, reddish or purplish; dorsal surface pale green with reddish suffusions and lines. Column c.4mm long, c.3mm wide, green, strongly gibbous and papillate-verrucose behind the anther; wings broad, obtuse, protruding, with a prominent dark purple apical spot and purplish suffusions on the central ridge. Anther c.1.6mm long, 2mm wide, green with cream flaps, porrect, surface minutely colliculate. Pollinia c.2mm long, linear-clavate, strongly curved, cream to white, mealy. Stigma c.2mm across, oblong, sunken. Capsule linear-obovoid, 1-1.3cm long, 3-4mm across, erect.

**Distribution and Ecology:** Endemic in north-eastern Qld where widely distributed but disjunct, being known from Moa Island in Torres Strait and Cape York Peninsula (near Bamaga and Bramwell Station). This species grows close to small ephemeral streams and among grasses and sedges in low-lying areas in *Melaleuca viridiflora* woodland. Soils are sandy loams and sandy-clay loams which are inundated during the wet season. Flowering: December to February.

**Notes:** *Calochilus metallicus* is a very distinctive species with its closest congener perhaps being *C. caesius*. It can be readily distinguished from that species by its narrower labellum, longer reddish to purple labellum trichomes, those in a more or less narrow central band being shortest and widely spaced, and a strongly gibbous column with a porrect anther and prominent anterior eye-spots on the base of the wings. *C. psednus* is also similar but has much shorter, very sparse trichomes on the labellum.

*Calochilus metallicus* is somewhat variable with flowers from the type locality having purple labellum calli, whereas specimens from Moa Island and near Bamaga have reddish calli. Few good collections of this species exist and further field work is needed to clarify this variation in labellum calli colour.

Plants of *C. metallicus* have a partially developed

leaf at anthesis, the leaf maturing as capsules shed seed. This contrasts with the habit of *C. caesius* whereby the leaf is absent at anthesis and develops later. The flowering period of *C. metallicus* appears to last about 2-4 weeks, with a single flower open at once. Flowers open early in the morning and are finished by late afternoon.

**Conservation Status:** Widespread but disjunct and not known to be conserved; suggest 3R by the criteria of Briggs & Leigh 1996.

**Etymology:** Derived from the Latin, *metallicus*, metallic, in reference to the dark shiny labellum calli.

**8. *Calochilus russeus* D.L.Jones, sp. nov.** Affinis *C. robertsonii* Benth., sed florescentia posterior, et labello trichomatibus longis rubis dense contactis, differt.

Type: New South Wales. Northern Tablelands, Biscuit Creek crossing, Guyra-Ebor Rd, 31 December 1993, *D.L.Jones 12793 & B.E.Jones* (holo CANB).

**Description:** Leaf fully developed at anthesis; linear-lanceolate, 25-35cm long, 12-18mm wide, trigonous, dark green, pruinose; base dark red; anterior surface deeply channelled; dorsal surface keeled dark green. Inflorescence 40-70cm long, stout, pruinose. Sterile bracts 2-3, narrowly ovate-lanceolate, 3-13cm long, 6-10mm wide, stiffly erect, pruinose; margins incurved; apex long-acuminate. Fertile bracts narrowly ovate-lanceolate, 0.7-3.5cm long, 4-6mm wide, closely sheathing; apex acuminate. Pedicels 8-18mm long, slender, curved. Ovaries obovoid, 8-10mm long, 4-5mm wide, pruinose. Flowers 4-12, 2.5-3cm long, c.2cm wide; sepals and petals greenish boldly marked with red lines; labellum calli red. Dorsal sepal broadly ovate-elliptical, 12-14mm long, 8-9mm wide, obliquely erect, shallowly concave; apex acuminate. Lateral sepals oblong-obovate, 12-14mm long, 5-5.5mm wide, divergent; distal margins involute; apex acuminate. Petals asymmetrically ovate, 8-9mm long, 5-5.5mm wide, porrect; apex abruptly upcurved, acute to apiculate. Labellum lamina 28-30mm long, 10-11mm wide, c.4mm wide at the base, broadly obovate-elliptical with a ligulate apex; distal surface sparsely glandular; ligulate portion 16-18mm long, c.4mm wide at the base, tapered throughout. Labellum margins with numerous, crowded, simple or bifurcate, linear, non-glandular, spreading, acuminate lobes 1.5-6mm long; ligulate portion with a few widely spaced, simple, linear, glandular, spreading, acuminate to obtuse lobes 1-6mm long; apical 6-7mm entire, glandular. Labellum

calli covering most of the ventral surface; proximal sixth towards the margins covered with short, thick, appressed, reddish calli; central area densely covered with small reddish calli; main area covered with linear, non-glandular, porrect and spreading red calli to 8mm long; ligulate portion with paler, sparse, sinuous, glandular, porrect and spreading, ribbon-like calli to 6mm long; calli glands dark red. Column porrect from the end of the ovary, 5-6mm long, c.4mm wide, pale green, the dorsal surface near the anther smooth to slightly irregular; wings broad, with 2 anterior dark purple-black eye-spots connected by a faint ridge. Anther pale green, porrect to obliquely erect. Pollinia narrowly clavate, c.4mm long, 0.6mm wide, curved, pale yellow, mealy. Capsules obovoid, 14-18mm long, 6-8mm wide, erect, ribbed.

**Distribution and Ecology:** Currently known only from a small population at the type locality. This species grows among bracken, grass and low shrubs in peppermint forest. The soil is a grey clay loam. Flowering: Late December to February.

**Notes:** *Calochilus russeus* is a robust species of similar general habit to *C. robertsonii* but later flowering and with reddish labellum calli. It is also similar to *C. gracillimus* but readily distinguished by its reddish labellum calli (purple in *C. gracillimus*). It also has a much broader labellum lamina (11 mm versus 6 mm), which is broadly obovate in the proximal half (ovate-lanceolate overall in *C. gracillimus*), then tapered suddenly to the ligulate apical portion (gradual taper in *C. gracillimus*). In addition the distal half of the ventral surface of the labellum lamina is covered sparsely with glandular calli whereas these are dense and numerous in *C. gracillimus*. The apical tail of *C. russeus* is sparsely glandular whereas that of *C. gracillimus* is densely glandular.

**Conservation Status:** Known only from the vicinity of the type locality where one small population occurs in the Cathedral Rocks National park; suggest 1RC by the criteria of Briggs & Leigh 1996.

**Etymology:** Derived from the Latin, *russeus*, reddish, in reference to the colour of the labellum calli.

**9. *Eriochilus petricola*** D.L.Jones et M.A.Clem., sp. nov.; affinis *E. cucullato* (Labill.) Rchb.f., sed praesentia folii sub anthesi; folio parvo, ovato, acuminato, inferne magento; et floribus minor, in longitudinem et latitudinem circa aequanti, differt.

Type: New South Wales. E side of Yaramba Lagoon, Henry Lawson Drive, Picnic Point, 19

Apr. 1999, *J.Riley* (ORG 2202) (holo CANB, iso AD, BRI, K, MEL, NSW, HO, PERTH).

*Eriochilus autumnalis* R.Br., *Prod.* 323 (1810), *nom. inval.* Type: '(J. D. M.) v.v.' [Port Jackson; between Sydney and Parramatta', Mar.-May 1805, *R.Brown s.n.*] (lectotype specimen (a) BM!, *fide* Clements (1989); isolectotype AD!, BM!, G!, K!, K-LINDL!, L!, P!, W!); Syntypes: '(J. D. M.) v.v.' [Port Phillip, *R.Brown s.n.*] (BM!, K!); [Port Dalrymple, *R.Brown s.n.*] (BM!, K!); [Sydney, *R.Brown s.n.*] (BM!, K!).

**Description:** Leaf well developed at anthesis, prostrate, ovate, 8-16mm long, 7-12mm wide, dark green adaxially, sometimes with red suffusions, reddish purple abaxially, usually glabrous but occasionally with a few short hispid hairs; apex acuminate. Flowers 1-3, 8-10mm long, 6-12mm wide, greenish with prominent white lateral sepals and a white labellum with clusters of red trichomes. Dorsal sepal incurved, narrowly obovate-spathulate when flattened, 5-8mm long, 1.8-2.3mm wide, the central margins recurved, greenish, often with red margins and red towards the apex. Lateral sepals deflexed, divergent, elliptic, 9-12mm long, 2.5-3.5mm wide, asymmetric, tapered to a thin basal stalk c. 2mm long; apex acute. Petals obliquely erect to outcurved, linear with a dilated apical portion, 5-7mm long, c. 0.6mm wide, expanded to c. 1mm wide at the apex, greenish, often with red margins and a red apex. Labellum erect in the proximal half then strongly recurved, obscurely three-lobed, ovate or elliptic with an oblong basal limb; limb closely adherent to the column, 3-3.5mm long, c. 1.3mm wide, the margins incurved, yellowish green with red margins; lamina 2-3mm long, c. 2mm wide, fleshy, covered with clusters of separate white and red trichomes. Column at an angle to the ovary, 5.5-6.5mm long, c. 2mm wide, yellowish green with red markings, a patch of short trichomes on the anterior surface. Anther c. 1mm long, c. 1mm wide, verrucose, reddish. Pollinarium consisting of two hemipollinaria, each with a small viscidium and 4 pollinia c. 1mm long. Stigma quadrate, c. 1.2mm across, deeply saccate. Capsules erect, ellipsoid, 8-10mm long, c. 3mm across, glandular-hairy.

**Distribution and Ecology:** This species is basically restricted to the sandstone formations of the Sydney Basin between Kuringai Chase and Nowra, extending inland to the Blue Mountains. It commonly grows in shallow moss-covered sandy soil on rock ledges and in crevices between rock plates. Flowering March-May.

**Notes:** This species was originally described as *Eriochilus autumnalis* by Robert Brown (Brown 1810), however it was rendered invalid when, in



the original publication, Brown listed *Epipactis cucullata* Labill. (= *Eriochilus cucullatus* (Labill.) Rchb.f.) as a synonym. Brown's species is redescribed here as *E. petricola*. It can be readily recognised by its leaf being well-developed at anthesis. The leaf itself is small, ovate, reddish-tinged, reddish purple beneath with an acuminate apex. Unlike *E. cucullatus* its leaf is well-developed at anthesis.

**Conservation Status:** Locally common and well conserved in National Parks.

**Etymology:** Derived from the Greek *petra*, rock shelf or rock ledge and *-cola*, dweller, in recognition of its favoured habitat.

**10. *Eucosia*** Blume, *Bijdr.* 415 (20 Sept.-7 Dec.1825). Type species: *Eucosia carnea* Blume.

***Eucosia umbrosa*** D.L.Jones et M.A.Clem, sp. nov.; affinis *E. carnea* Blume, sed floribus viridibus differt; et affinis *Goodyera viridiflorae* (Blume) Blume sed sepalis lateralibus late ovatis; labello late ovato marginibus expansis; et labello callis longioribus, differt.

Type: Queensland. Mount Lewis road, c. 29 km from main road, 29 April 2003, *B.Gray* 8579 (holo QRS).

*Goodyera viridiflora* auct., non (Blume) Blume: Benth., *Flora Australiensis* 6: 313 (1873).

**Description:** Rhizome creeping, fleshy, c. 4mm diam., erect at the apex where leafy. Leaves 4-8 in a loose rosette, petiolate; petioles 5-20mm long, channelled; lamina broadly ovate to ovate-lanceolate, 3-8cm long, 1-3cm wide, thin-textured, bright green, with prominent veins; margins undulate; apex acute. Inflorescence terminal; peduncle of similar length to or longer than the rachis, shortly hairy, bearing 3-5 loosely sheathing, acuminate bracts. Flowers 3-10, 8-12mm long, 10-15mm wide, usually pale green, sometimes pinkish. Dorsal sepal ovate-lanceolate, 8-9mm long, 3.2-3.7mm wide, forming a galea with the petals. Lateral sepals widely divergent, broadly ovate, 8-9mm long, c.3.5mm wide. Petals erect, broadly elliptic, 7.5-8.5mm long, c.4mm wide, forming part of the galea. Labellum porrect, broadly ovate when flattened, 7-7.5mm long, 7-7.5mm wide, deeply saccate with erect to incurved margins, tapered to an obtusely acute apex. Callus consisting of an ovate central plate bearing linear calli c.1mm long. Column erect, including the rostellum, 6-7mm long, c.2.5mm wide. Stigma c. 2.3mm wide, pouched or deeply saccate. Anther erect, c.2.5mm long, c.1.8mm wide, with a narrow rostrum c.2mm long.

**Notes:** This species has been placed in

*Goodyera* and included with *G. viridiflora* from Java. Molecular studies show its correct placement is in *Eucosia* Blume, which is here reinstated. Morphological examination of the types of *G. viridiflora* and *G. finetiana* Kraenzl., as well as flowers of *G. brachiorrhynchos* Schltr and others from New Guinea show the Australian species to be distinct. The new species can be distinguished from *G. viridiflora* by its dorsal sepal pinched in near the apex (evenly tapered in *G. viridiflora*), broadly ovate lateral sepals which are c.3.5mm wide (narrowly oblong-elliptic and c.2.5mm wide in *G. viridiflora*), broadly ovate labellum, c.7-7.5 x 7-7.5mm, with widely flared margins (ovate, c.7 x 5mm in *G. viridiflora*) and longer labellum calli. It also has similarities with *E. carnea* Blume, which has pinkish brown to brown flowers.

**Distribution and Ecology:** Probably endemic in north-eastern Queensland between Mt Finnigan and the Cardwell Range. This species grows as a terrestrial in gravelly soil and litter or an epilith on granite boulders, always in moist sheltered situations.

**Etymology:** The Latin *umbrosus*, shady - based on its preferred habitat.

**11. *Eulophia pelorica*** D.L.Jones et M.A.Clem, sp. nov. affinis *E. pulchra* (Thouars) Lindl., sed labello sine lobis; et calcari et callo absentibus, differt.

Type: Queensland. Adjacent to Rocky Claudie River crossing, 14 May 2003, *B.Gray* 9624 & *D.L.Jones* (holo QRS).

**Description:** See Lavarack (1977): page 68.

**Notes:** This taxon is genetically distinct from *E. pulchra* and can be immediately recognised by its peloric flowers in which the labellum is simple, petal-like and lacks any callus or spur. All collections made in Australia are identical and reproduce via autogamy.

**Distribution and Ecology:** Occurs in north-eastern Queensland, in the McIlwraith Range, Macrossan Range and Iron Range area on Cape York Peninsula. This species grows among rocks and litter in dense rainforest. Flowering: May-July.

**Etymology:** From the Greek *pelorus*, freak, monster, in reference to the petal-like labellum.

**12. *Flickingeria clementsii*** D.L.Jones, sp. nov.; affinis *F. comatae* (Blume) A.D.Hawkes, sed lobis lateralis labelli lunari grandioribus; medilobo labelli brevioribus, angustato; et callo cristis multo minoribus flexuosis, differt.

Type: Queensland. Cultivated Australian National Botanic Gardens, 22 Mar. 1989, ex

"North of road to Tozers Gap", [1976] *J.Wrigley* 271 (CBG761222), (holo CANB).

**Illustrations:** Page 315, Dockrill (1969) - as *Ephemerantha comata*; page 502, Jones (1988) - as *Flickingeria comata*; page 335 Dockrill (1992) - as *F. comata*.

**Description:** Epiphyte with straggly stems to 1 m long, lacking aerial roots. Pseudobulbs reducing in size along the stems, 15-30cm long, 0.3-0.5cm wide. Leaves reducing in size along the stems, elliptic to obovate, 15-22cm long, 7-10cm wide, dark green, apex often decurved. Flowers fugacious, arising in groups from a pseudobulb apex, 2-2.5cm diam., cream, sometimes with some purple spots, with a purple labellum. Dorsal sepal oblong, 10-12mm long, 4-5mm wide, erect. Lateral sepals linear, 10-12mm long, 4-5mm wide, spreading. Petals linear, 10-12mm long, 1-1.5mm wide, spreading. Labellum porrect, 11-15mm long, 5-6mm wide, 3-lobed; lateral lobes crescentic, 7-8mm long, broad, with shortly fringed margins; mid-lobe tapered, 5-6mm long, c.3mm wide at base; basal margins undulate; apex obtuse, with a dense cluster of irregularly kinked, hair-like lobes 4-5mm long. Callus of two yellow ridges which become weakly and irregularly sinuate on the mid-lobe. Column 4-5mm long; column foot 5-6mm long, obtuse.

**Distribution and Ecology:** Restricted to the Iron Range and McIlwraith Range on Cape York Peninsula, growing on rocks and trees in rainforest at 100-500 m alt. Flowering occurs in sporadic pulses throughout the year.

**Notes:** This species has been confused in Australia with *F. comata* (Blume) A.D.Hawkes, which is restricted to Indonesia and Malaysia, the type of which is from Java. In *F. comata* the labellum has short angular lateral lobes about 4mm long, a long, linear mid-lobe 7-10mm long and strongly zig-zagged reddish callus ridges which cover most of the ventral surface of the mid-lobe. By contrast in *F. clementsii* the labellum has large elliptic lateral lobes 7-8mm long, a tapered mid-lobe 5-6mm long and callus ridges which are much straighter, usually with only a few irregular sharp bends or kinks on the mid-lobe. *Dendrobium thysanochilum* Schltr. has similarities with *Flickingeria clementsii* but can be distinguished by its larger flowers heavily spotted with purple, straight labellum lateral lobes (margins not curved) and larger (to 8mm long) hair-like lobes on the labellum apical fringe.

**Etymology:** Named after my friend and colleague, Mark Alwin Clements (1949-), distinguished scientist who has been studying

various groups of Orchidaceae world-wide for over 20 years, most recently publishing detailed phylogenetic and taxonomic studies into the *Dendrobium* alliance.

**13. *Peristylus chlorandrellus*** D.L.Jones et M.A.Clem., sp. nov.; affinis *P. papuano* (Kraenzl.) J.J.Sm., sed sepalo dorsali ovato, latiore; sepalis lateralibus longioribus glande apicale absque; petalis longioribus; et labello medilobo et calcare latiore, differt.

Type: Queensland. Stewart Creek, Portion 24, Parish of Whyanbeel, 16 July 1983, *B.Gray* 3160 (holo QRS).

**Description:** Tuberos terrestrial herb. Stem erect, fleshy, 5-12cm long, 3-5mm wide, with numerous, reduced, closely sheathing bracts. Leaves 4-7, in a loose rosette, sessile; lamina narrowly ovate-lanceolate, 4-15cm long, 1-3cm wide, dark green, thin-textured, 1-3 veins prominent; margins entire or undulate; apex acuminate. Inflorescence 10-30cm long; peduncle more or less equal to the rachis, thin, wiry, with 3-5 closely sheathing sterile bracts. Flowers 5-35, 4-5mm long, 6-7mm wide, green. Dorsal sepal and petals forming a galea. Dorsal sepal erect, ovate, c.2.5mm long, c.2mm wide, obtuse. Lateral sepals obliquely erect, oblong-elliptic, c.3mm long, c.1.4mm wide, divergent. Petals obliquely erect, broadly ovate, c.3.2mm long, c.2mm wide, blunt. Labellum porrect at the base then decurved, deeply 3-lobed; mid-lobe oblong-ovate, c.3mm long, c.2mm wide, obtuse; lateral lobes linear-tapered, c.5mm long, c.0.5mm wide; tips upcurved. Column porrect from the end of the ovary, c.1.5mm long, c.1.5mm wide. Auriculae erect, c.1mm long; apex swollen. Stigmaphores obliquely erect, c.0.8mm long; apex swollen. Pollinia ovoid, c.0.7mm long, sectile, yellow.

**Notes:** This new species has been included in *P. papuanus* (Kraenzl.) J.J.Sm., but can be distinguished by a broader dorsal sepal (2mm wide in *L. chlorandrellus* vs 1mm in *P. papuanus*) which is ovate (linear-elliptic in *P. papuanus*), longer lateral sepals (3mm long in *L. chlorandrellus* vs 2.5mm in *P. papuanus*) which lack an apical gland (prominent in *P. papuanus*), longer petals (3mm long in *L. chlorandrellus* vs 2mm in *P. papuanus*); broader labellum mid-lobe (1.5mm wide in *L. chlorandrellus* vs 2mm in *P. papuanus*) and broader spur (1mm wide in *L. chlorandrellus* vs 0.5mm in *P. papuanus*).

**Distribution and Ecology:** Probably endemic in north-eastern Qld between the McIlwraith Range and the Herbert River growing in dense rainforest. Flowering: May-July.

**Derivation:** Greek, *chloros*, green; *andros*, man; *-ella*, diminutive suffix; reference to the flower resembling a little green man.

**14. *Phoringopsis lavarackiana*** D.L.Jones, sp. nov.; affinis *P. dockrillii* (Lavarack) D.L.Jones et M.A.Clem., sed folio glauco; et callo callis penicillatis accesoriis longiore, tenuiore, dense tectis, differt.

Type: Queensland. Cultivated Australian National Botanic Gardens, 16 May 1990, ex "Moa Island, c. 1 km NE of airport, Kubin", *D.L.Jones 6006 (CBG9010305)* (holo CANB).

**Description:** Leaves erect, usually one, rarely 2, linear to linear-lanceolate, 5-20cm long, 0.5-1.5cm, thin-textured, bluish green; apex acute. Inflorescence 10-30cm long, thin, wiry, 3-15-flowered. Flowers well-spaced, 14-16mm long, greenish with some red in the labellum. Pedicels 2-4mm long, thin. Dorsal sepal incurved close to the column, linear-spathulate, 8-9mm long, 1.5-2mm wide; margins incurved. Lateral sepals sharply deflexed, linear-oblong, 6-7mm long, c. 1mm wide, tapered, acute; base decurrent on the column foot. Petals sharply reflexed, linear, 7-8mm long, c.0.5mm wide, falcate, obtuse or bidentate. Labellum articulate on the apex of the column foot; claw vestigial. Labellum lamina ovate-oblong, 6-7mm long, 2-2.3mm wide; apex recurved, notched. Callus mounded with an attenuate appendage; mound c.2.5mm long, c.1.5mm high; callus appendage linear, c.3mm long, projecting basally; apex swollen, bifid; the whole callus covered densely in penicillate accessory calli 0.5-0.75mm long, c.0.05mm thick. Column 7-8mm long, incurved. Column foot at right angles to the column base, c.2mm long. Column wings in 2 pairs; larger pair porrect, divergent, oblong, falcate, c.2.5mm long, c.1mm wide; smaller pair attached behind anther, erect, linear, c.1.5mm long, c.0.3mm wide. Anther cap c.1mm long, erostrate.

**Notes:** Similar to *P. dockrillii* but distinguished by its more northerly distribution, glaucous leaf and the labellum callus much more densely covered with penicillate accessory calli and these structures longer and thinner than in *P. dockrillii*.

**Distribution and Ecology:** Occurs on Moa Island, Torres Strait, and on northern parts of Cape York Peninsula, north of Shelburn Bay. This species grows in Epacrid Scrub and open forest in well-drained sandy and gravelly loams. Flowering: January-May.

**Etymology:** Named after Peter Stanley (Bill) Lavarack, retired botanist and orchid specialist who has discovered and named many new species of orchids from north-eastern

Queensland.

**15. *Tropidia territorialis*** D.L.Jones et M.A.Clem, sp. nov.; affinis *T. curculigoidi* Lindl., sed foliis parvioribus et apicibus brevibus et subacutatis; floribus parvioribus; et periantho apicibus segmentorum brevibus et acutatis, differt.

Type: Northern Territory. Wagait Reserve, 17 Dec. 1983, *C.R.Dunlop 6390* (holo DNA).

**Description:** Evergreen terrestrial herb. Stems erect, sparsely branched, 10-21cm long, c.2mm thick, wiry, nodes swollen, the basal parts covered with scarious bracts. Leaves plicate, alternate, 3-6 per stem, ovate to lanceolate, 6-12cm long, 1-2cm wide, dark green, with 5 main longitudinal veins, ridged beneath; margins entire. Racemes terminal, 1-2cm long, 10-22-flowered. Flowers opening widely, crowded, c.8mm wide, bright green, whitish towards the base. Dorsal sepal narrowly ovate, 4-5mm long, 2.5-3mm wide, spreading to recurved. Lateral sepals connate in the proximal half, gibbous, ovate, 4-5mm long, 2.5-3mm wide, recurved distally; apex acute. Petals connate at their bases with the lateral sepals, ovate, 4-5mm long, c.3mm wide, spreading. Labellum fused basally with the column, erect; lamina more or less obovate, 5-6mm long, 3.5-4mm wide; apex shallowly notched; base saccate, forming a deeply bilobed spur, narrowed and recurved near the apex where expanded into a small lobe. Callus consisting of two raised basal lobes. Column porrect from the end of the ovary, c.5mm long, c.2-2.5mm wide.

**Distribution and Ecology:** Restricted to a few sites in the Northern Territory growing in deep shade in evergreen monsoon forests developed on surface springs or where there is subsoil moisture. Flowering period: December-January.

**Notes:** This species was originally recorded from Australia as *T. curculigoides* Lindl. (Jones & Dunlop 1988) but examination of the types shows significant departure from the Australian material. The type collection of *T. curculigoides* (Lindley 1840) consists of two syntypes in the Lindley herbarium, one from mountains in Sylhet [now in northern Bangladesh] and the other from Zeylona (now Sri Lanka). The former specimen consists of a single stem with an immature terminal inflorescence. The second specimen consists of two flowering stems and associated sketches of the flowers and floral parts. Two obvious features from these specimens are the large leaves (to 20 x 2.5cm) with very long-acuminate to attenuate apices (Lindley records them as "*acuminatissima*") and the peduncles covered with imbricate bracts. By contrast the



Australian plants have shorter leaves (to 12 x 2cm) with very short, subacute apices and the peduncles are bractless. Additionally the plants of *T. curculigoides* exhibit lateral inflorescences whereas the racemes are exclusively terminal in the Australian plants. Comber (1990) illustrates a species from Java as *T. curculigoides* which is clearly incorrect as the ovaries are covered with scurfy brown scales (Lindley when describing *T. curculigoides* clearly states "all parts glabrous" and there is no indication of scales on the ovaries he sketched). Three further similar Javan species described by Blume (1859), viz. *T. graminea*, *T. pedunculata* and *T. squamata*, are also distinct from the Australian material, the former having narrow, 3-veined ovate-lanceolate leaves with long-acuminate apices, *T. pedunculata* having broad, 7-veined, elliptic leaves with acuminate apices and *T. squamata* having elliptic leaves, papillate ovaries and different floral characters. Significantly no species illustrated by Schlechter (1982) is a match for the Australian plants. It seems apparent from examination of the literature and herbarium specimens that *Tropidia* is a specialised group that has been used as a botanical dumping ground and the genus is well overdue for a comprehensive revisionary treatment.

**Etymology:** From the Latin *territoralis*, territory, alluding to the Northern Territory.

**16. *Vrydagzynea grayi*** D.L.Jones et M.A.Clem., sp. nov.; affinis *V. paludosa* J.J.Sm., sed habitu parviore; foliis paucioribus; floribus parvioribus; labello ovato; calcaris cylindrico glandibus longicaulibus papillatis interne, differt.

Type: Queensland. Stewart Creek, Portion 24, Parish of Whyanbeel, 16°20'S, 145°14'E, 20m, 16 July 1983, *B.Gray 3162* [*R.Collins & D.L.Jones*] (holo QRS).

**Description:** Terrestrial herb. Stems fleshy, 2-4mm thick, with swollen nodes, rooting from basal nodes, the basal part prostrate, apical part erect, 4-12cm long. Leaves 3-7 in a loose rosette; petiole 3-15mm long, sheathing at the base; lamina asymmetrical, elliptic to ovate, 15-40mm long, 7-15mm wide, dark green, glossy, thin textured; margins wavy; apex acute. Inflorescence 3-6cm long, erect, spicate. Peduncle 15-30mm long, fleshy, hairy. Fertile bracts ovate to deltate, 3-5mm long, c.2mm wide. Flowers 1-13, scarcely opening, c.3.5mm long, c.3.5mm wide, white with green tips. Ovary swollen at anthesis, ellipsoid, 8-9mm long, 2.5-3mm wide. Dorsal sepal ovate, c.3mm long, c.3mm wide; ventral surface irregularly verrucose; apex truncate to emarginate. Lateral

sepals porrect, asymmetrically ovate-lanceolate, c.3mm long, c.1.8mm wide; apex obtuse. Petals porrect, ovate, c.2.2mm long, c.1.4mm wide; apex subacute. Labellum broadly ovate when flattened, c.4mm long, c.3.5mm wide, obscurely 3-lobed, saccate; margins erect to incurved; ventral surface of the mid-lobe with a central groove between two mounds, sparsely papillate; apex obtuse; spur occupying the proximal third of the labellum, c.3.5mm long, containing two glands attached to the proximal margins; glands c.2mm long, each with a basal stalk c.1.5mm long, c.0.2mm thick, the apex swollen into an ovoid-globose, verrucose-papillate head c.0.4mm wide. Column porrect from the end of the ovary, 2-2.6mm long, c.1mm wide; column wings linear, c.1mm long, c.0.4mm wide, curved, truncate. Anther cap ovate, c.1mm long, c.0.7mm wide, acute. Stigma sunken, c.0.5mm wide. Pollinia not seen. Capsules erect, ellipsoid, c.5mm long, c.2mm wide, smooth, fragmenting after dehiscence, the ribs protruding unevenly.

**Distribution and Ecology:** Known from only two collections in the Upper Stewart Creek area, Daintree Region, north-eastern Queensland at 20-40 m alt. The species grows among litter close to small streams in dense lowland rainforest. The soil is a grey to brown shaley loam. Flowering period: July-August.

**Notes:** This species was originally recorded from Australia as *V. paludosa* J.J.Sm. (Jones 1988, Clements 1989), the type of which is from Netherlands New Guinea. The new species is clearly different from *V. paludosa* which is a much more robust plant to 28cm tall with up to 11 leaves, larger flowers (8mm long) and a larger, much more swollen, laterally compressed spur. With its glabrous flowers, unlobed petals, ovate labellum and long-stalked, papillate glands in the labellum spur, the species does not match any others from New Guinea (Smith (1909, 1915, 1932, 1936, Schlechter 1982, Ormerod 1998).

**Conservation:** The original locality where this species occurred was cleared prior to the introduction of World Heritage Legislation in 1985; The species has not been found in any other locality and may well be extinct.

**Etymology:** Named after Bruce Gray (1939-), former timber worker, retired technical officer from CSIRO, botanist and naturalist with an extensive knowledge of plants and animals in north Queensland.

**Other Specimen Examined:** Queensland. Upper Stewart Creek, Daintree, 17 Aug. 1986, *Gray 4327* (QRS).

**New and Reinstated Genera and New**

## Combinations.

Molecular research using the internal transcribed spacer (ITS) region of the 18-26S nuclear ribosomal DNA, on representatives of many subtribes of Orchidaceae, has provided independent support, in addition to morphological and biological data, for various phylogenetic reassessments. These results compare favourably with many others already published by other research groups working in the Orchidaceae, confirming that the most phylogenetically informative morphological characters are vegetative rather than floral. The following taxonomic and nomenclatural changes to Australian taxa are undertaken to reflect the results of these phylogenetic studies.

1. **Chiloterus** D.L.Jones et M.A.Clem., gen. nov.; affinis *Prasophyllo* R.Br., sed folio haud cavo; pedunculo et folio per sua longitudinem plerumque adnato; sepalis lateralibus connatis ubique, sacco basali parvo; et podio columnae longo, differt.

Type species: *Prasophyllum cucullatum* Rchb.f., here designated.

**Chiloterus cucullatus** (Rchb.f.) D.L.Jones et M.A.Clem., **comb. nov.** Basionym: *Prasophyllum cucullatum* Rchb.f., *Beitr. Syst. Pflanzenk.* 59 (1871).

**Chiloterus gibbosus** (R.Br.) D.L.Jones et M.A.Clem., **comb. nov.** Basionym: *Prasophyllum gibbosum* R.Br., *Prod.* 318 (1810).

**Notes:** This genus has affinities with *Prasophyllum* R.Br. but differs by its immature plants having a solid leaf with an internal cavity where the inflorescence breaks through the leaf, the upper free part of the leaf being hollow and with incurved free margins; the peduncle and leaf completely fused together over much of their length; the inflorescence breaking through the leaf after elongation of a short apical section of the peduncle; the ovaries subtended by large floral bracts; the lateral sepals completely fused throughout to form a synsepalum which has a small basal pouch-like structure which encloses the column foot and labellum base; and, the presence of a long column foot with the labellum attached directly to its apex.

**Derivation:** From the Greek *Chiloter*, nose-bag, in reference to the small pouch-like

structure at the base of the synsepalum which encloses the column foot and labellum base.

2. **Corunastylis** Fitzg., *Austral. orch.* 2(3): [t.1] (1888). Type species: *Corunastylis apostasioides* Fitzg.

**Corunastylis laminata** (Fitzg.) D.L.Jones et M.A.Clem., **comb. nov.** Basionym: *Prasophyllum laminatum* Fitzg., *J. Bot.* 23: 136 (1885).

**Corunastylis trifida** (Rupp) D.L.Jones et M.A.Clem., **comb. nov.** Basionym: *Prasophyllum trifidum* Rupp, *Victorian Naturalist* 58: 21 (1941).

3. **Demorchis** D.L.Jones & M.A.Clem., gen. nov.; affinis *Gastrodiae* R.Br., sed apice rhizomatis radicibus filamentosis exorientibus; floribus brevibus inflatis; sepalis crassis; et pedunculis et pedicellis spissentis et protentis, differt.

Type species: *Gastrodia queenslandica* Dockr., here designated.

**Demorchis papuana** (Schltr.) D.L.Jones et M.A.Clem. **comb. nov.**, Basionym: *Gastrodia papuana* Schltr., in *Rep. Spec. Nov. Regni. Veg. Beih.* 1: 45 (1911).

**Demorchis queenslandica** (Dockr.) D.L.Jones et M.A.Clem., **comb. nov.** Basionym: *Gastrodia queenslandica* Dockr., *North Queensland Naturalist* 32 (136): 6-8 (1964).

**Notes:** Distinguished from *Gastrodia* R.Br. by the presence of filamentous roots which arise from the apex of the rhizome (no roots in *Gastrodia*), by its short inflated flowers (long tubular flowers in *Gastrodia*), by its very thick fleshy sepals and, by the peduncle and pedicel thickening and increasing in length after fertilisation (absent in *Gastrodia*).

**Derivation:** Derived from the Greek, *demos*, plump, fat, bulky, corpulent and *Orchis*, another genus of Orchidaceae, but also applied generally to orchids.

4. **Diteillis** Raf., *Herb. Raf.* 73 (1833). Type species: *Diteillis nepalensis* Raf., *nom. illeg.* (*Liparis bituberculata* (Hook.) Lindl.)

*Dituilis* Raf., *Fl. Tellur.* 4: 49 (1836), *orth. var.* Type species: *Dituilis nepalensis* Raf., *nom. illeg.* (*Liparis bituberculata* (Hook.) Lindl.)

**Diteillis collinsii** (B.Gray) M.A.Clem. et D.L.Jones, **comb. nov.** Basionym: *Liparis*

*collinsii* B.Gray, *Austrobaileya* 3(4): 581-583, f.1 (1992).

***Diteilis simmondsii*** (F.M.Bailey) M.A.Clem. et D.L.Jones, **comb. nov.** Basionym: *Liparis simmondsii* F.M.Bailey, *Bot. Bull. Dept. Agric. Queensland* 3: 18 (1891).

**Notes:** *Diteilis* differs from *Liparis* by its elongate above-ground pseudobulbs and prominent spur-like basal calli on the labellum.

**5. *Diuris* Sm.,** *Trans. Linn. Soc. London* 4: 222 (1798). Type species: *D. aurea* Sm.

***Diuris daltonii*** (C.Walter) D.L.Jones et M.A.Clem., **comb. et stat. nov.** Basionym *Diuris punctata* var. *daltonii* C.Walter, *Victorian Naturalist* 23: 240 (1907).

**Notes:** Distinguished from *D. punctata* by smaller darker purple flowers, longer petal claws which often have a small lateral spur near the apex and a prominent neck on the labellum between the lateral lobes and the mid-lobe.

***Diuris minor*** (Benth.) D.L.Jones et M.A.Clem., **comb. et stat. nov.** Basionym: *Diuris punctata* var. *minor* Benth., *Fl. Austral.* 5: 327 (1973).

**Notes:** Part of the complex surrounding *D. dendrobioides* and distinguished by its spring-flowering period, small cuneate petals and a small labellum with a small callus.

**6. *Empusa* Lindl.** in Edwards', *Bot. Reg.* 10: sub t. 825 (1 Sept.1824). Type species: *Empusa paradoxa* Lindl.

***Empusa habenarina*** (F.Muell.) M.A.Clem. et D.L.Jones, **comb. nov.**

Basionym: *Sturmia habenarina* F.Muell., *Fragm.* 4: 131 (1864).

**Notes:** *Empusa* differs from *Liparis* by its narrow, conduplicate leaves, rounded basal calli with an extended central plate and well-developed column wings..

**7. *Mecopodum*** D.L.Jones et M.A.Clem., gen. nov.; affinis *Prasophyllo* R.Br., sed florescentia in autumnno hiemeque; folio haud cavo; pedunculo et folio per sua longitudinem plerumque adnato; podio columnae longo et curvo; et rostello hamulo et alis columnae omnibus elongatis, differt.

Type species: *Prasophyllum parvifolium* Lindl., here designated

***Mecopodum parvifolium*** (Lindl.) D.L.Jones

et M.A.Clem., **comb. nov.** Basionym: *Prasophyllum parvifolium* Lindl. in Edwards', *Bot. Reg.* 1-23: Swan Riv. Append. liv (1840).

***Mecopodum striatum*** (R.Br.) D.L.Jones et M.A.Clem., **comb. nov.** Basionym: *Prasophyllum striatum* R.Br., *Prod.* 318 (1810).

**Notes:** This genus has affinities with *Prasophyllum* R.Br. but differs by its autumn to winter flowering period; very slender, almost wiry habit; a solid leaf with an internal cavity where the inflorescence breaks through the leaf after elongation of a short apical section of the peduncle; the peduncle and leaf completely fused together over most of their length; the presence of a long, curved column foot with the labellum attached directly to its apex; elongate column wings; and, a greatly elongated rostellum and hamulus.

**Derivation:** Derived from the Greek *mekos*, length and *pous, podos*, foot, in reference to the long column foot, elongated column wings and elongated rostellum.

**8. *Microtis*** R.Br., *Prod.* 320 (1810). Type species: *Microtis rara* R.Br.

***Microtis eremicola*** (R.Bates) D.L.Jones et M.A.Clem., **comb. & stat. nov.** Basionym: *Microtis media* R.Br. subsp. *eremicola* R.Bates, *J. Adel. Bot. Gard.* 17:123 (1996).

***Microtis quadrata*** (R.Bates) D.L.Jones et M.A.Clem., **comb. & stat. nov.** Basionym: *Microtis media* R.Br. subsp. *quadrata* R.Bates, *J. Adel. Bot. Gard.* 13: 54 (1990).

**9. *Plexaure*** Endl., *Prodr. Fl. Norfl.* 30 (1833). Type species: *Plexaure limenophylax* Endl.

***Plexaure crassiuscula*** (Nicholls) M.A.Clem. et D.L.Jones, **comb. nov.** Basionym: *Phreatia crassiuscula* Nicholls, *Victorian Naturalist* 61: 151-3, f. (1945).

***Plexaure listeri*** (Rolfe) M.A.Clem. et D.L.Jones, **comb. nov.**

Basionym: *Phreatia listeri* Rolfe, *J. Proc. Linn. Soc., Bot.* 25: 358 (1890).

**Notes:** *Plexaure* differs from *Phreatia* by its monopodial growths, fleshy leaves and the presence of a column foot.

**10. *Rhipidorchis*** D.L.Jones et M.A.Clem., gen. nov.; affinis *Phreatiae* Lindl., sed habitu monopodiali; folio disticho; inter vaginam et laminam zona abscissiona presenti; et columna pede presenti, differt. Type species:



*Oberonia micrantha* A.Rich., here designated.  
***Rhipidorchis micrantha*** (A.Rich.) D.L.Jones et M.A.Clem., **comb. nov.** Basionym: *Oberonia micrantha* A.Rich., *Voy. Astrol., Bot.* t.3 (1833) 7 (1834).

**Notes:** The placement of these orchids has been somewhat controversial. Hallé (1977) included them in *Rhynchophreatia* but they lack the long rostellum and fleshy, backward-projecting callus of that genus. Other authors have retained them in *Phreatia* from which they can be readily distinguished by their monopodial growth habit, leaves arranged in two ranks, the presence of an abscission zone between the leaf sheathing base and the lamina, and the presence of a column foot.

**Derivation:** From the Greek *rhipidos*, fan and *Orchis* another genus of Orchidaceae, but also applied generally to orchids.

**11. *Salacistis*** Rchb.f., *Xenia Orchid.* 1: 214 (21 Nov.1856). Type species: *Salacistis novembrilis* Rchb.f.

*Goodyera* R.Br. sect. *Otosepalum* Schltr., *Repert. Spec. Nov. Regni Veg. Beih.* 1: 47-48 (1 Oct.1911), *pro. parte. max.* Type species: *Goodyera rubicunda* (Blume) Lindl., here designated.

***Salacistis ochroleuca*** (F.M.Bailey) M.A.Clem. et D.L.Jones, **comb. nov.** Basionym: *Goodyera ochroleuca* F.M.Bailey, *Bull. Dept. Agric. Queensland* 14: 15. f. (1902). Type: cultivated Brisbane Botanic Gardens, 1896 ex New Guinea, *W.MacGregor s.n.* (holo BRI!).

**Notes:** Although the name *Goodyera ochroleuca* is based on a specimen cultivated in the Botanic Gardens in Brisbane, and reportedly collected in British Papua (Papua New Guinea), considerable doubt exists about the authenticity of the actual origin of the collection. The drawing accompanying the specimen is a very good match for the Australian species previously known as *Goodyera rubicunda*, but is quite different from New Guinea plants. Apart from the type, no other New Guinea specimen of this species could be found in the collections examined from all relevant world herbaria, and it is concluded that there was a mix-up in collection details and the specimen was originally collected from Queensland.

## Validation of two names

Errors occurred in the publication of two names; these are corrected here. The official date of publication for these species is the date of publication of this issue of this journal.

***Caladenia porphyrea*** D.L.Jones. The word isotype was omitted from the type citation thus rendering publication invalid (Jones 1999). The name is validated here by identifying the holo- and isotypes. The type of *Caladenia porphyrea* D.L.Jones is here designated : New South Wales. Norah Head, 6 Oct. 1996, *B.Branwhite* (ORG 294)(holotype CANB, isotype NSW).

***Habenaria vatia*** D.L.Jones. Two collections were listed as holotypes thus rendering publication invalid (Jones 2002). The type of *Habenaria vatia* D.L.Jones is here designated. Queensland. Cook District: cultivated Australian National Botanic Gardens ex c. 1 km NE of airport, Kubin, Moa Island, Torres Strait, 24 Oct. 1990, *D.L.Jones 6792* (holo CANB, iso BRI).

## Orthographic errors

Two orthographic errors occurred in recent publications which are corrected here. *Stelbophyllum* D.L.Jones et M.A.Clem. (Clements & Jones 2002a) should be spelt ***Stilbophyllum*** (Greek *stilbos* glitter, *phyllon*, leaf) and *Karorchis* D.L.Jones et M.A.Clem. (Clements & Jones 2002b) should be spelt ***Kaurorchis*** (Greek *kauros* brittle, *orchis* an orchid).

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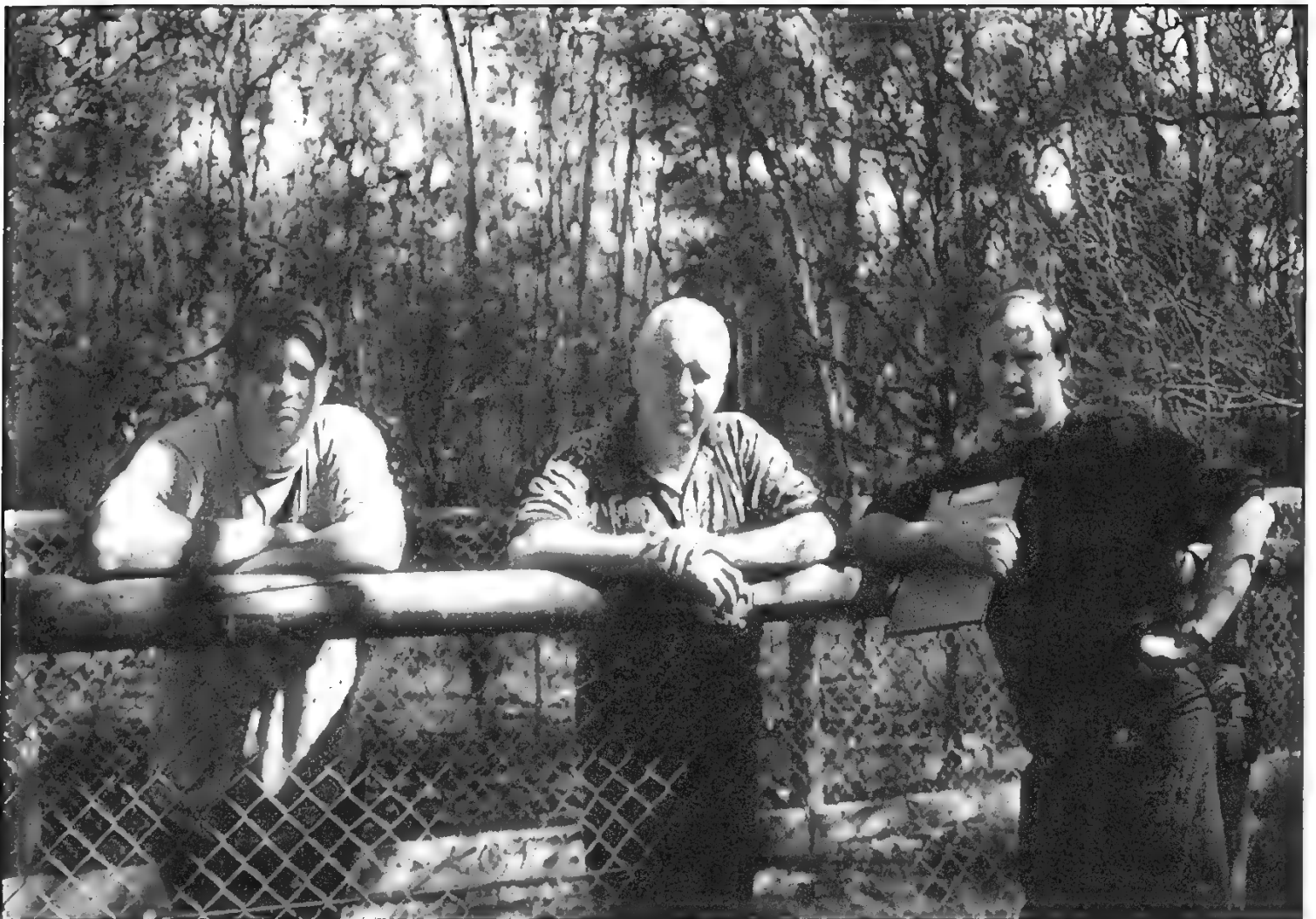
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Friends of Saint Helena's Bush Reserve weed burning.

Photo Garry French



Volunteers Adam and Lawrie Rigg and Garry French.

Photo Linda Rogan



***Pterostylis smaragdyna* D. L. Jones et M. A. Clem.  
Monitoring in North-East Melbourne.**

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*Pterostylis smaragdyna* (Emerald-lip Greenhood) is a fairly recently described taxon (1993) that is part of the tall greenhood complex. It has been recognised as distinct since the early 1930's when W. H. Nicholls illustrated a plant collected from "Were's Paddock" in the Greensborough/Montmorency area. Until 1993 it was referred to as the Tall Greensborough Orchid. It occurs in dry open woodlands/forest and tends to be restricted to the upper slopes and ridgelines. *Pterostylis smaragdyna* is classified as being rare in Victoria.

In north-east Melbourne many colonies have disappeared due to urban growth and settlement pressures, while the remaining known populations are fragmented and generally confined to small bushland reserves surrounded by housing. These small remnants are under threat due to use/misuse by people (trampling, BMX tracks, etc.), weed invasion from neighbouring gardens and the dumping of rubbish. Its statewide distribution is not well known, mainly due to confusion with other similar species.

Across north-east Melbourne the species is in decline and known to have disappeared from a number of locations over the last ten years. The population in the St. Helena Bushland Reserve (SHBR) is by far the largest in north-east Melbourne with in excess of five hundred plants. The other six sites being monitored contain only a handful of plants each, with the Plenty Gorge Parklands population being the next largest with only ten plants. Simply put, the St. Helena population is vitally important to the long-term survival of this species in north-east Melbourne.

Monitoring at SHBR commenced in 1994

when vacant land to its east was being subdivided and fewer juvenile plants were being observed. This small (2 ha) linear Council reserve is divided into eight management zones by fences and as the population is widespread, transects at ten (10) metre intervals were established across each of these management zones. Monitoring is undertaken in early July each year at the peak of flowering, which is generally prior to the flowering of the similar species *Pterostylis melagramma*, also found in the reserve. As it is difficult to distinguish between juvenile plants of *Pterostylis smaragdyna* and *Pterostylis melagramma*, only flowering plants are recorded. Monitoring of populations at all other sites are on an annual census basis where plants are simply counted and recorded. This is due to their small numbers and very restricted distribution within these other sites.

Monitoring at SHBR was first undertaken to ascertain the size, distribution and trends in the population across the reserve, refer to figure 1 for the population trends. While its numbers have increased since monitoring commenced its distribution across the reserve has

reduced over the same period. Due to the way in which the monitoring has been designed, on-ground management can be critically analysed by relating works back to the transects impacted upon. The most notable change in population trends has been in areas where fire has been used as a management tool.

In December 1995 Banyule Council carried out a burn through a small area of management zone 5 to control the infestations of annual grasses, mainly *Briza maxima*. This fire impacted upon transects one to five through this management zone. The fire was successful in that 95% of the leaf litter was removed along with the shrubby layer and the infestation of annual grasses was significantly reduced.

The 1996 and 1997 monitoring recorded an immediate increase in plant numbers through the burnt area which is thought to relate to the removal of the leaf litter and shrub layer resulting in a reduction of invertebrate grazing pressure (i.e. more light and less cover). Also by 1997 the burn area contained a substantial number of juvenile plants. The number of flowering plants increased significantly in the third year after the fire (1998), with many plants flowering for the first time. The population size in this area has remained fairly stable over the last five years, however in 2003 numbers have reduced. It is notable that the leaf litter densities have returned to pre-fire conditions and that the shrub layer has re-established. Refer figure 2 for population trends along transect 1.

Banyule Council undertook other controlled burns for annual grass control in late November 1998 in management zone 2 and again in 2000 through zone 4 also in late November. It is interesting to note that similar responses to fire

by *Pterostylis smaragdina* are being recorded through the fire affected areas. In the autumn of 2002 Council undertook a burn in the April in management zone 7, transects 9 to 14. The 2002 monitoring indicated severely depleted numbers from the area that was burnt with flowering plants only being recorded from unburnt patches. The population through the fire affected area was reduced by 89% on the 2001 figures. The 2003 numbers were still 54% below that recorded pre-fire. Refer figure 3 for population trends along transect 10.

The information gained from the SHBR monitoring is now being applied by Parks Victoria to the Plenty Gorge population. While fire is not an option at present due to drought conditions and its isolated location, the shrub layer has been manually removed and the thick layer of leaf litter and mosses has been reduced around the plants.

While the monitoring at SHBR is providing valuable information about this species there are some key points to be mindful of. Firstly, if only population size was being considered then the data indicates that all is well, as the population has increased from the mid two hundreds's in 1994 to in excess of five hundred plants in 2003. However by relating transects to management activities a different story is unfolding. Secondly, and more importantly, while the data suggests that fire can be used to encourage recruitment of *Pterostylis smaragdina*, without the long-term health of the whole vegetation community its survival is not assured. In other words, the interval between fires should be based on the vegetation community needs not that of an individual species.

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Emerald Greenhood Population Trends

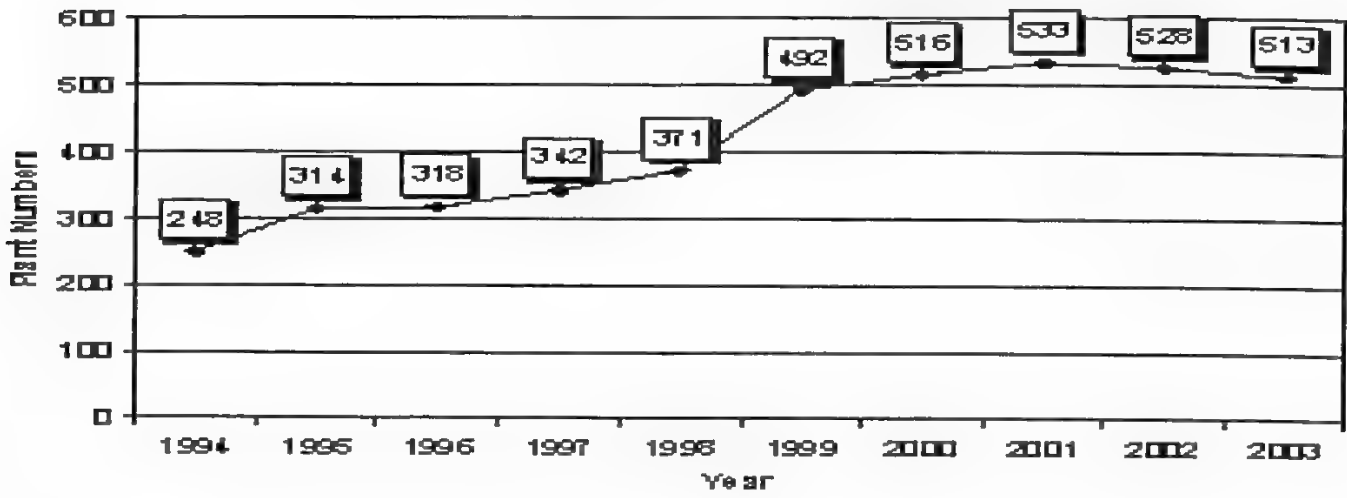


Figure 1

Transect No 1 - Management Zone 5

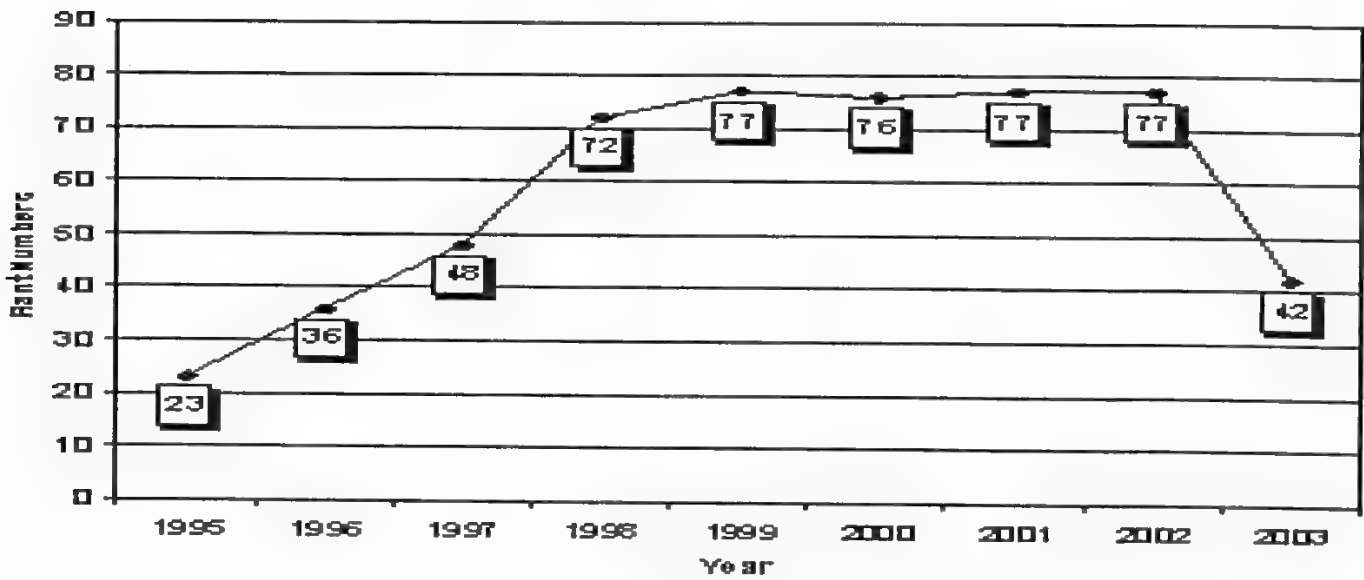


Figure 2

Transect No 10 - Management Zone 7

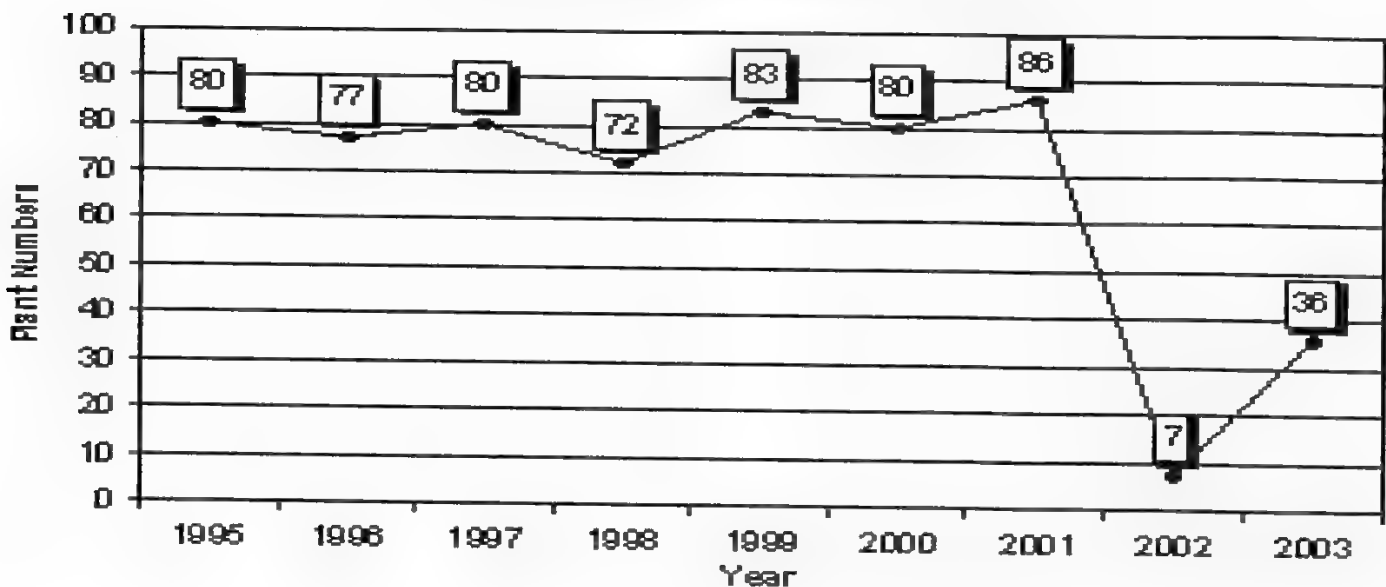


Figure 3



## Native Orchid Show – Brisbane.

Spring is eagerly awaited each year by native orchid enthusiasts everywhere, as this is the time when those dependable favourites present their wonderfully perfumed heads of flowers for us to enjoy for all too short a time. Each year seems to bring a significant improvement in the colour range and overall quality of these magnificent species and hybrids, as newer clones flower for the first time and previously previewed plants mature and show their best.

Last year's inaugural show lived up to its promise and produced a wonderful display of colourful, richly fragrant flowers for all to enjoy. The Champion Species of the Show went to *Dendrobium speciosum* var. *curvicaule* owned by Cedarvale Orchids and the Champion Hybrid of the Show went to *Dendrobium* (Yondi x Golden Nugget) owned by Brian Richards.

The Australasian Native Orchid Society (Qld) KABI Group Inc. will be hosting this year's Australasian Native Species and Hybrids Show at the Lion's Hall, Lawnton Showgrounds, Gympie Road, Lawnton from 9am on Saturday and Sunday the 28th and 29th of August, 2004. This show promises to be the major venue in Brisbane for exhibiting and viewing the best of native orchids in this area.

The latest seedlings and mature plants of species and hybrids of all native genera will be available for purchase from a number of top vendors and refreshments will be available. A full range of orchid books and publications will also be on sale and of course, advice will be freely available from many keen enthusiasts.

Please mark the date in your calendars now.



The Champion Species of the Show went to *Dendrobium speciosum* var. *curvicaule* owned by Cedarvale Orchids.

# Robert Brown's *Caladenia* and *Pterostylis* revisited.

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## Abstract

Resolution is needed of recent taxonomic upheaval and confusion in *Caladenia*, involving the application of up to four generic names to some species by the same authors. It is reasonable to segregate out a small number of species in genera that do not belong within a monophyletic core *Caladenia* as evidenced by phylogenetic analyses of DNA sequences. Rather than split the remaining core *Caladenia* into six genera, the least disruptive way forward is to retain a broad concept of the genus with six subgenera and two hundred and forty three species. A similar situation applies to *Pterostylis*, except that no segregate genera need be recognised to uphold monophyly. Very few taxonomists today split off segregate genera within a monophyletic named genus. The recent trend to do so with Australian orchids is counter to this international practice. There are no formal hindrances to orchidologists retaining use of broad concepts of *Caladenia* and *Pterostylis* as outlined above if this is preferred over the recent description of narrowly circumscribed genera.

## Introduction

In the bicentennial year of Robert Brown's historic Australian landfall with Matthew Flinders' *Investigator* expedition, three major accounts of Brown's (1810) *Caladenia* and allied genera were published independently by several workers (Szlachetko 2001a; Hopper & Brown 2001; Jones *et al.* 2001). While there is some commonality among these treatments, especially the latter two that draw upon recent DNA sequence studies, there were nevertheless significant differences in generic and some species concepts, as well as in typification, with the resultant publication of many conflicting names. Moreover, the situation was exacerbated when later published attempts to rectify mistakes made in earlier papers introduced greater complexity to an already challenging situation. Consequently, major nomenclatural confusion has been generated and is in need of resolution.

For a complex example, take *Caladenia filifera*, a well known Western Australian species. The extraordinary situation presently exists where, over a two year period, up to four generic names have been published recently for this species, namely:

- *Caladenia filifera* Lindl. (Jones 2001; Hopper & Brown 2001)
- *Calonema filiferum* (Lindl.) Szlach. (Szlachetko 2001a)
- *Calonema filiferum* (Lindl.) D.L. Jones & M.A. Clem. (Jones *et al.* 2001)
- *Calonemorchis filifera* (Lindl.) Szlach. (Szlachetko 2001b; Jones & Clements 2002a)
- *Jonesiopsis filifera* (Lindl.) D.L. Jones & M.A. Clem. (Jones & Clements 2003).

## A solution for *Caladenia*

As in previous works (Hopper & Brown 2000, 2001), in a recent paper we propose retaining *Caladenia* in the broad sense (Hopper & Brown 2004), largely reflecting Brown's (1810) original concept, save the removal of *Leptoceras* (R.Br.) Lindley, *Praecoxanthus* Hopper & A.P. Br., *Pheladenia* D.L. Jones & M.A. Clem., *Ericksonella* Hopper & A.P. Br., and *Cyanicula* Hopper & A.P. Br. Thus, in our view, with the above small genera removed, *Caladenia* remains best treated as a large Australasian genus of terrestrial orchids with six subgenera and two hundred and forty three species.

In contrast, while concurring with the removal of the above small genera, Jones *et al.* (2001) further reduced the genus *Caladenia* itself to just six species, and segregated the remaining two hundred and thirty seven species of our concept of *Caladenia* among five other genera. Szlachetko (2001a, b, 2003) independently also split our concept of *Caladenia* into several genera, of different composition to those proposed by Jones *et al.* (2001, 2002; Jones & Clements 2002a, 2003; Clements & Jones 2002; Clements *et al.* 2002)

We see much unwarranted nomenclatural upheaval in further splitting *Caladenia* as advocated by Szlachetko (2001a, b, 2003) and Jones *et al.* (2001; 2002; Jones & Clements 2002a, 2003; Clements & Jones 2002; Clements *et al.* 2002). There are no compelling phylogenetic reasons for such a split once the small genera *Pheladenia*, *Ericksonella*, *Cyanicula*, *Leptoceras* and *Praecoxanthus* have been removed from *Caladenia*.

The genus *Caladenia* as we circumscribe it has been affirmed in several DNA sequence studies as a monophyletic clade (all taxa included share a single common ancestor). Monophyly is regarded by most taxonomists today as an essential first criterion in the formal recognition of taxa if a predictive evolutionary classification is to be achieved.

While rigorous science enables the question of monophyly to be resolved in a given group, how to name groups of taxa within a monophyletic clade remains more art than science. For example, in the cases of our concepts of *Caladenia* and *Pterostylis*, the key question for the taxonomic community is whether there is merit in retaining a broad concept of each genus with subgenera and sections within, or in elevating these subgenera and/or sections to the rank of genus. This is the age-old question of to split or not to split.

Although favouring retention of a broad concept of *Caladenia* with six subgenera, we accept that history through democratic processes among orchidologists will be the final arbiter on such vexing questions of taxonomic rank. Hopefully our recent paper (Hopper & Brown 2004), by clarifying and correcting key points of typification and nomenclature, will be helpful for either choice, broad or narrow, relating to circumscription of the genus.

Key points at issue include that the valid type for *Caladenia* is *C. carnea* R. Br., not *C. flava* R. Br. as proposed by Jones *et al.* (2001), while that for *Caladenia* sect. *Calonema* is *C. longicauda* Lindl., not *C. filifera* Lindl. as proposed by Jones *et al.* (2001). The genus *Jonesiopsis* Szlach. and generic combination *Phlebochilus* (Benth.) Szlach. were validly published. The allied genus *Glychorchis* D.L. Jones & M.A. Clem. was invalidly published and is replaced by *Ericksonella* Hopper & A.P. Br. These conclusions, at variance to those of Jones *et al.* (2001 – with a subsequent retraction on *Jonesiopsis* by Jones & Clements 2003), render many of their taxa and combinations superfluous or invalid. Similarly, Szlachetko (2001a, b, 2003) has published taxa and combinations that require critical reconsideration. Synonyms of our concept of *Caladenia* include *Arachnorchis* D.L. Jones & M.A. Clem., *Calonema* (Lindl.) Szlach., *Calonemorchis* Szlach., *Calonema* (Lindl.) D.L. Jones & M.A. Clem., *Drakonorchis* (Hopper & A.P. Br.) D.L. Jones



& M.A. Clem., *Jonesiopsis*, *Petalochilus*  
R.S. Rogers, *Phlebochilus* and *Stegostyla*  
D.L. Jones & M.A. Clem. *Pentisia* (Benth.)  
Szlach. is a synonym of *Cyanicula*. The  
detailed technical arguments supporting our  
conclusions on these issues are published  
elsewhere (Hopper & Brown 2004).

#### Guidance from the international rulebook

How should circumstances pertaining to the proposed splitting into several genera of a monophyletic genus such as our concept of *Caladenia* or *Pterostylis* best be handled? We consider nomenclatural stability to be of fundamental importance to avoid discredit on the discipline of plant systematics for what is arguably perceived as needless change. For guidance, we turn to the Preamble of the *International Code of Botanical Nomenclature* (Greuter *et al.* 2000). This is the international rulebook for all botanical taxonomy, revised every six years at the International Botanical Congress. It advocates a conservative path of minimal taxonomic change consistent with the scientific evidence, which most botanists these days primarily equate to upholding the principle of monophyly. The same should apply to Australian orchids.

As stated in its Preamble, the *ICBN* "aims at the provision of a stable method of naming taxonomic groups, avoiding and rejecting the use of names which may cause error or ambiguity or throw science into confusion." It also proposes that "next in importance is the avoidance of the useless creation of names" and "The only proper reasons for changing a name are either a more profound knowledge of the facts resulting from adequate taxonomic study or the necessity of giving up a nomenclature that is contrary to the rules." Thus all taxonomic works should aim for stability, using validly published names consistent with scientific understanding (monophyly) wherever possible. To do otherwise is to indulge in the "useless creation of names" which the *ICBN* specifically seeks to avoid and reject.

Clearly, the contribution of science in delivering "a more profound knowledge of the facts" is central in considerations about nomenclatural change. The combined emergence of cladistic methodology and DNA sequence analysis have recently introduced unprecedented rigour and repeatability into the science of systematics, removing it from "a system that depends upon whim (masquerading as 'authority') and accidents of history." (Chase 1999). For example, the difficulty of character choice and definition, prevalent in all studies reliant on morphological, anatomical or ultrastructural characters, and undoubtedly the cause of much futile argument regarding systematic relationships, rarely applies in DNA sequence studies, except for the choice of DNA regions to be sequenced. The presence or absence of base pairs along aligned DNA molecules can be rigorously and independently tested, and has been in many studies. In the case of *Caladenia* and allied genera, similar patterns of relationships have emerged in a number of independent molecular phylogenetic studies that have investigated the same or different DNA sequences, both chloroplast and nuclear (e.g. Kores *et al.* 1997, 2000, 2001, in prep.; Cameron *et al.* 1999; Jones *et al.* 2001, 2002; Clements *et al.* 2002).

Thus, for *Caladenia*, we agree with the removal of species included in the segregate genera *Cyanicula*, *Ericksonella*, *Pheladenia*, *Elythranthera*, *Glossodia*, *Praecoxanthus*, *Leptoceras* and *Adenochilus*, all of whom are outside the monophyletic major radiation of core *Caladenia* as largely encompassed in Robert Brown's original concept of the genus (see cladograms published in Kores *et al.* 2000, 2001; Hopper & Brown 2001; Jones *et al.* 2001; Clements *et al.* 2002). Having removed the above genera, further splitting of *Caladenia* is not needed to satisfy the criterion of hypothesized monophyly, and depends therefore on a judgement of appropriate taxonomic rank.

Nothing new is gained in terms of scientific understanding of phylogenetic

relationships by elevating the six major clades of *Caladenia* to generic rank. Indeed, arguably the plethora of new generic names would obscure relationships, leading to a less predictive classification. In such circumstances, nomenclatural stability emerges as a most important consideration in our view, to minimize inconvenience to and confusion of the users of taxonomic names, and to maximise information retrieval and understanding from the literature. Freudenstein and Rasmussen (1999) aptly surmised: "As there are no rules for assigning rank to taxa, we can only follow a guideline of striving for an internally consistent system, hopefully one that will disturb the stability of past nomenclature as little as necessary."

As is evident from their recent series of publications in this journal and elsewhere, Jones and Clements clearly hold a different view on this fundamental point of taxonomic philosophy and practice, as does Szlachetko (2001a,b, 2003). Their approach is out of step with the vast majority of practising taxonomists, at a time when an unprecedented degree of international collaboration, agreement and consensus on flowering plant classification is developing (see, for example, the approach adopted in the latest classification of angiosperm orders and families by APG II 2003). Most taxonomists today would not split off segregate genera from within a named monophyletic genus. The recent trend to do so with Australian orchids is counter to this international practice.

### ***Pterostylis* – sixteen genera or one?**

Similar arguments to ours on *Caladenia* relate to the recent proposals to split *Pterostylis* into up to sixteen segregate genera (Szlachetko 2001b; Jones & Clements 2002b). Molecular data presented by Jones and Clements (2002b) demonstrate that *Pterostylis sens. lat.* is monophyletic. A classification based on the principle of nomenclatural stability would therefore argue for retention of *Pterostylis*

in the broad sense, with recently identified clades within the genus classified as subgenera/sections. The latter approach is again consistent with the Preamble of the *International Code of Botanical Nomenclature*, and is the one we favour. We intend submitting a manuscript on this issue for publication in an appropriately refereed systematic journal shortly.

### **Deciding by majority rule**

An Orchid Census Consensus Workshop on how best to handle competing classifications of Australian orchid genera in the Australian Virtual Herbarium project was convened by the Council of Heads of Australian Herbaria in Sydney in March 2003. Attendees included David Jones and Mark Clements, one of us (SDH), and several other representatives of Australia's taxonomic and orchid specialist communities. The workshop did not reach a consensus viewpoint on a preferred classification, nor on criteria by which such a consensus might be reached, but a majority of participants supported the democratic view that ultimately the classification of orchids adopted by the majority of Australia's herbaria would prevail. Readers may wish to consult with their local State or Territory herbarium to understand where these institutions sit in relation to generic concepts accepted for Australian orchids.

### **Conclusions**

There are no formal taxonomic hindrances to orchidologists retaining use of broad concepts of *Caladenia*, *Pterostylis* and other Australian genera if this is preferred over the recent description of narrowly circumscribed genera. For the reasons outlined above, we commend retaining broad concepts that uphold monophyly as the best approach to dealing with this extraordinary, complex and challenging situation in contemporary Australian orchid systematics.

Lastly, the debate over what generic names to apply to these Australian orchids, important as it is to ensure clarity, continuity

and ease of communication, should not diminish appreciation of the exciting concomitant advances in understanding orchid phylogeny through DNA sequence studies. We are in the midst of arguably the most significant steps forward in understanding the evolution of Australian orchids since such studies commenced. The outcome achieved, a robust phylogenetic hypothesis, will fuel ongoing research on the comparative biology of Australian orchids for decades to come.

There is broad agreement from different research groups on this unfolding phylogenetic story – such is the power of the scientific method. Many scientists are contributing to this major leap forward, including those on both sides of the present debate over generic names. It is hoped that a majority view develops quickly on which generic names to apply, so that appropriate focus and energy can be devoted by scientists towards discovering new facts about Australian orchid phylogeny and comparative biology.

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# Two new species of *Prasophyllum* R.Br. (Orchidaceae) from Tasmania.

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## Abstract

*Prasophyllum mimulum* and *Prasophyllum taphanyx*, both from Tasmania, are described as new.

## Key Words

Orchidaceae, *Prasophyllum mimulum*, *Prasophyllum taphanyx*, new species, Tasmania, Australian flora.

## Introduction

The Orchidaceae of Tasmania have been the subject of recent detailed studies (Jones 1998) and subsequently the taxonomy of two Tasmanian species similar to *P. correctum* has been clarified (Jones 2003). More recently specimens of a critically endangered species of *Prasophyllum* from the Tasmanian Midlands have been received from Hans and Annie Wapstra. These same collectors have also submitted excellent fresh specimens of an alpine *Prasophyllum* which I had previously identified as *P. alpestre* (Jones 1998). Studies show that the Tasmanian taxon is distinct from *P. alpestre* and in need of a name. These two species are described here as new.

## Materials and Methods

Descriptions of taxa were made from fresh specimens. Dried specimens of *Prasophyllum* were examined from the following herbaria: CANB, CBG, HO and MEL. Unless otherwise indicated, all types of *Prasophyllum* species relevant to this study (or photographs thereof) and collections cited have been seen.

## Taxonomy

***Prasophyllum mimulum*** D.L.Jones, sp. nov.; affinis *P. alpestri* D.L.Jones, sed spicis brevioribus et floribus paucioribus; floribus minoribus effusisque; sepalis lateralibus valde gibbosis basaliter; petalis parum dilatatis distaliter; labello brevior (5.5-8.5 mm x 3-5 mm), oblong-elliptico inferne marginibus undulato-crispatis; et callo brevi angustoque (3.5-4 mm x 1.6-2 mm), differt.  
**Typus:** Tasmania. Lake Baillie, 41°53'40"S, 146°29'54"E, 1140 m, 26 Jan. 2001, J.E. & A. Wapstra (ORG 3320) CANB 627597 (holo CANB, iso HO, MEL).

Tuberous terrestrial *herb* growing singly or in small, loose groups. *Tubers* not seen. *Leaf* terete, 15-30 cm long, 3-5 mm wide, bright-green, shiny; base c. 3 mm diam., reddish purple; free lamina erect, 5-12 cm long, often distally withered at anthesis. *Inflorescence* a diffuse, few-flowered

spike 3-5 cm long, consisting of c. 4-10 flowers. *Floral bracts* more or less ovate, c. 2 mm long, 2.5 mm wide, closely embracing the ovary; apex apiculate. *Ovaries* at about 30° to the rachis, narrowly obovoid, 3-4.5 mm long, 2-2.5 mm wide, green, shiny. *Flowers* subsessile, 5-8 mm diam., green with purplish markings in the dorsal sepal (sometimes brownish purple) and white and purple petals, labellum white. *Dorsal sepal* narrowly ovate-lanceolate, 5-8 mm long, 3-4 mm wide, porrect to decurved, with 3-5 fine darker stripes; apex subacute to acuminate. *Lateral sepals* obliquely erect, free or connate, more or less parallel, linear-lanceolate, 5-8 mm long, 1.5-2 mm wide, strongly gibbous, straight or slightly falcate; distal margins involute; apex entire. *Petals* porrect to spreading, narrowly linear-obovate to narrowly linear-spathulate, 5.5-10 mm long, 1-1.5 mm wide, with a purplish central stripe; distal margins entire or slightly irregular; apex obtuse. *Labellum* sessile, porrect in the proximal half, recurved at right angles in the distal half; apex erect or recurved, not projecting through the lateral sepals; *lamina* oblong-elliptic when flattened, 5.5-8.5 mm long, 3-5 mm wide, white; base slightly gibbous; proximal margins entire; distal margins weakly undulate/crispate; apex broadly obtuse. *Callus* more or less oblong, 3.5-4 mm long, 1.6-2 mm wide, yellowish green, with a darker central area towards the base; apex emarginate, papillate. *Column* porrect from the end of the ovary, c. 3.5 mm long, c. 3 mm wide, mostly purple; appendages narrowly lanceolate, c. 2.5 mm long, c. 0.5 mm wide, nearly straight; apex obtuse. *Anther* much shorter than the stigmatic plate, ovate, c. 2.5 mm long, c. 1.6 mm wide, brownish purple. *Pollinarium* c. 3 mm long; viscidium ovate (often vestigial), c. 0.2 mm long; hamulus ligulate, c. 1 mm long; pollinia c. 1 mm long, yellow, sectile. *Stigma* quadrate, c. 3.5 mm long, c. 2.8 mm wide, set very high on the column; rostellum higher than the appendages. *Capsules* obovoid, 5-8 mm long, 3-5 mm wide, suberect, green, shiny. **Fig. 1.**

## Distribution and Ecology

Restricted to subalpine areas of Tasmania growing in poorly drained, boggy soils which are often peaty, in tussock grassland, sedge grassland and moorland. Flowering occurs freely in the absence of fire. Altitude: 650-1150 m. Flowering period: January to March.

## Notes

This species was previously included in *P. alpestre* D.L.Jones (Jones 1998, Jones *et al* 1999), but further studies of fresh specimens from over a wide range in Tasmania show that the two are distinct and *P. alpestre* apparently does not occur in Tasmania. In general *P. mimulum* is less robust than *P. alpestre* with fewer, smaller, more widely spaced flowers. Overall it is characterised by short, few-flowered spikes with the flowers well spaced; greenish-brown flowers with prominent white petals and mauve suffusions, especially in the petals; lateral sepals strongly gibbous at the base; petals only slightly dilated distally; short (5.5-8.5 mm x 3-5 mm), oblong-elliptic labellum with weakly undulate/crispate margins; and, a short narrow (3.5-4 mm x 1.6-2 mm) callus. Similarities with *P. alpestre* include unscented flowers with mauve suffusions, especially in the petals, prominent white labellum, and lateral sepals usually (but not always) connate and forming an erect synsepalum behind the labellum. *Prasophyllum alpestre* can be readily distinguished from *P. mimulum* by its dense spike bearing numerous (5-25), usually crowded flowers; larger flowers (10-15 mm diam.); petals which are strongly dilated distally; short, broad, ovate-oblong (c. 6.5-10.5 mm x 4-6 mm) labellum with strongly undulate/crispate distal margins; and, a short, broad, ovate-oblong (c. 4.5-5.5 mm x 3-3.7 mm) callus.

*Prasophyllum mimulum* and *P. incurvum* will probably be confused by field workers since both occupy similar subalpine habitats and are generally alike in their overall appearance. *Prasophyllum mimulum* has connate or free lateral sepals which, when free, remain nearly parallel, whereas those of *P. incurvum* are usually free and widely divergent. *Prasophyllum mimulum* also has smaller flowers than *P. incurvum* and a much shorter inflorescence with fewer, well-spaced flowers.

## Conservation Status

Widely distributed, locally common and conserved.

## Etymology

From the Latin diminutive *mimulus*, imitating, mimicking, in reference to the overall similarities between the new species and *P. alpestre*.

## Other Specimens examined

TASMANIA: Pine Lake, 28 Feb. 1970, *Curtis* (HO); near Terry Tarn, 16 Feb. 2003, *Gilfedder* (ORG 4115) (CANB); near Lake Ball, Cradle Mtn, 15 Feb. 1952, *Gulline* (HO 65994); Devils Gullet, Mar. 1969, *Johnson* (HO); Mt Nelson Ra., Feb. 1902, *Rodway* (HO 66345); Mt Wellington, 1913, *Rodway* (HO 66348); Lake Explorer Tk, 3 Mar. 1997, *Tonelli* (ORG 611) (CANB); Dead Island, Mt Wellington, 5 Mar. 1997, *J.E. & A. Wapstra* (ORG 614) (CANB); Racecourse Plain, 4 Jan. 2001, *J.E. & A. Wapstra* (ORG 3290) (CANB); Westwing Plain, 4 Jan. 2001, *J.E. & A. Wapstra* (ORG 3291) (CANB); Lake Baillie, 26 Jan. 2001, *J.E. & A. Wapstra* (ORG 3321 & 3322) (CANB); Mt Wellington, 26 Jan. 2001, *J.E. & A. Wapstra* (ORG 3327) (CANB).

*Prasophyllum taphanyx* D.L.Jones, sp. nov.; affinis *P. morganii* Nicholls, sed floribus paucioribus parvulusque (5-6 mm); petalis patentibus, linear-oblongis vel obovatis, apicibus recurvatis; labello distincte 3-lobato; et callo brevi, transversim ovato, apice late obtuso, micropapillis paucibus instructis, differt.

**Typus:** Tasmania. St Michael's Catholic Cemetery, Campbell Town, 41°56'25", 147°29'25", 20 Oct. 2001, *Rae Glazik & Louise Gilfedder* (ORG 3742) CANB 634865 (holo CANB).

Slender tuberous terrestrial herb. Tubers not seen. Leaf erect, 20-30 cm long, 3-5 mm wide, terete, dark green, base 2-4 mm diam., white or purplish; free lamina suberect, c. 16 cm long, partly withered at anthesis. Inflorescence a moderately dense spike 5-6.5 cm long. Floral bracts oblong-elliptic, c. 2 mm long, c. 2.5 mm wide, closely embracing the ovary, with a dark central stripe, bluntly apiculate. Ovaries at about 40° to the rachis, obovoid, 3-4 mm long, c. 2 mm wide, bright green, shiny. Flowers opening widely, sessile, 15-25, 5-6 mm across, crowded, light green and pinkish cream with pinkish to purplish petals and labellum, strongly scented. Dorsal sepal ovate-lanceolate, 3.5-4 mm long, c. 2.5 mm wide, porrect to deflexed, with 3 indistinct darker veins, apex apiculate. Lateral sepals free throughout, divergent, narrowly linear-lanceolate, straight, 4-4.5 mm long, c. 1.5 mm wide, erect behind the labellum, base

not gibbous, distal margins involute, apex entire. *Petals* widely spreading, the tips recurving with age, linear-oblong-obovate, 3-3.5 mm long, c. 1.2 mm wide, green with a purple medial band or wholly purple; apex obtuse. *Labellum* very shortly stalked, obliquely erect in the proximal two-thirds, sharply recurved near the middle, the tip pointing back towards the lateral sepals but not projecting through them; basal claw much reduced, c. 0.4 mm long, c. 0.8 mm wide; lamina broadly ovate in outline when flattened, 2.8-3 mm long, 2.6-3 mm wide, greenish pink to purplish, strongly 3-lobed; base not gibbous; lateral lobes transversely ovate, broadly rounded, entire, contracted distally; mid-lobe ovate, the margins entire or with a few micropapillae, contracted abruptly to a subacute recurved apex. *Callus* transversely ovate, c. 3.5 mm long, c. 4.5 mm wide, fleshy, green to purplish, broadly channelled centrally; distal margins raised and minutely papillate; apex broadly obtuse, extending two-thirds the distance to the labellum apex, an obscure line of micropapillae continuing to the labellum apex. *Column* porrect from the end of the ovary, c. 1.5 mm long, c. 1.5 mm wide, partially exposed; appendages about as long as the stigmatic plate, oblong, c. 1.2 mm long, c. 0.5 mm wide, purplish, incurved; apex broadly obtuse. *Anther* ovate, c. 1.3 mm long, c. 0.9 mm wide, purplish, erostrate. *Pollinarium* c. 1 mm long; viscidium ovate, c. 0.2 mm long, white; hamulus c. 0.2 mm long; pollinia c. 0.8 mm long, yellow, sectile. *Stigma* quadrate, c. 0.7 mm long, c. 1 mm wide, the rostellum slightly higher than the appendages. *Capsules* not seen. **Fig. 2.**

### Distribution and Ecology

Known only from two specimens at the type locality at Campbell Town in the midlands of Tasmania. Grows in native grassland, which is frequently slashed, in well-drained basaltic loam. Altitude: 220 m. Flowering period: October and early November.

### Notes

Readily distinguished from all other Tasmanian species by the very small flowers (5-6 mm across) which are light green with pinkish cream or purplish markings in the petals and labellum; widely spreading linear-oblong-obovate petals with recurved tips; distinctly three-lobed labellum with transversely ovate, broadly rounded margins; short recurved mid-lobe; short, transversely ovate callus with a broadly obtuse apex bearing a few micropapillae.

This new species bears strong superficial similarities to *P. morganii* Nicholls from north-eastern Victoria, but that species has 50-80 flowers in a very dense spike; small flowers (7-8 mm across) of similar general appearance but heavily suffused with dark purple; strongly falcate, papillate lateral sepals curving upward and inward over the labellum; a small, broadly ovate labellum with irregularly crenulate margins; and, distally raised papillate labellum callus extending nearly to the labellum apex.

No other specimens of this remarkable new species occur in any herbarium collection that I have examined.

### Conservation Status

Critically endangered and teetering on the brink of extinction. I suggest a conservation status category of 1E according to the criteria of Briggs & Leigh (1996).

### Etymology

*Taphanyx*, applied as a noun in apposition, is derived from the Greek *taphos*, grave, and *antyx*, edge, border; literally "edge of the grave" in reference to its only known habitat (a cemetery) as well as the perilous predicament of this species.

### Acknowledgements

I thank Hans and Annie Wapstra for bringing *P. taphanyx* to my attention and for supplying specimens and photographs of *P. mimulum*, Mark Clements, Hans and Annie Wapstra and Karina Richards for reading the manuscript, Laurie Adams for the Latin diagnoses and Marion Garratt and Karina Richards for technical assistance.

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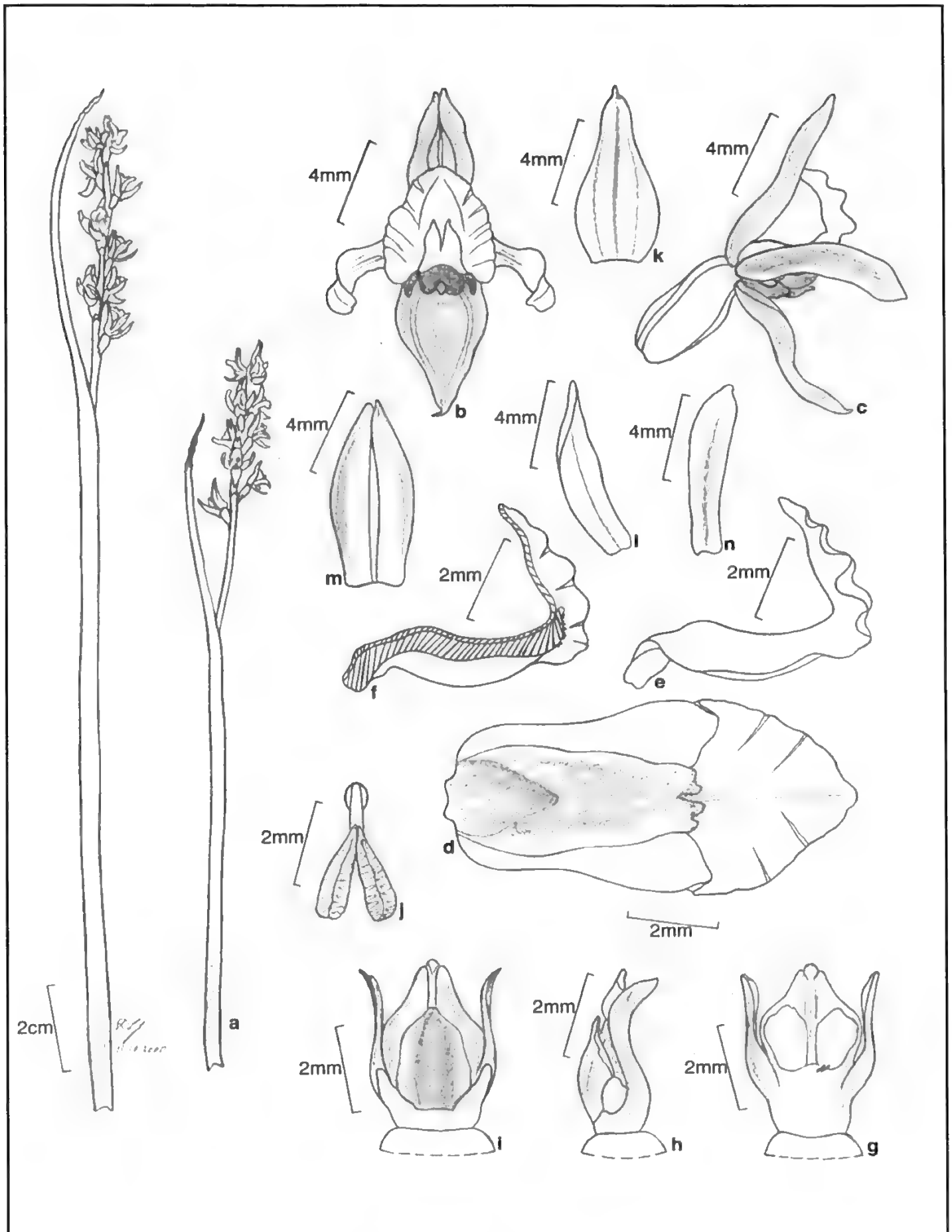


Fig. 1. *Prasophyllum mimulum*, Racecourse Plain, Tas., J.E. & A. Wapstra (ORG 3290). a. plants; b. flower from front; c. flower from side; d. labellum from above, flattened out; e. labellum from side; f. longitudinal section of labellum; g. column from front; h. column from side; i. column from rear; j. pollinarium; k. dorsal sepal; l. lateral sepal; m. synsepalum; n. petal.

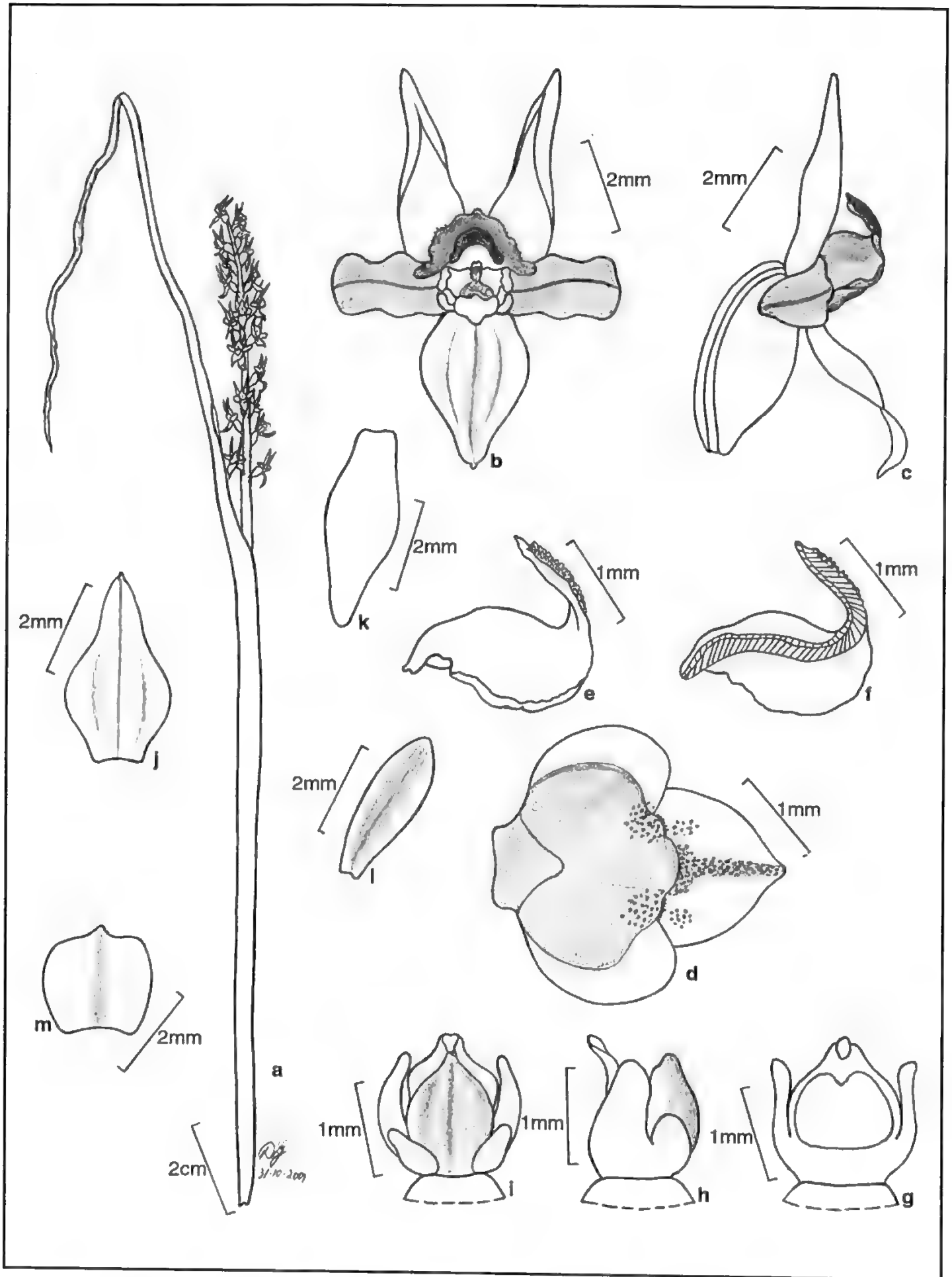


Fig. 2. *Prasophyllum taphanyx*, Campbell Town, Tas., R. Glazik & L. Gilfedder (ORG 3742) - from the type collection. a. plant; b. flower from front; c. flower from side; d. labellum from above, flattened out; e. labellum from side; f. longitudinal section of labellum; g. column from front; h. column from side; i. column from rear; j. dorsal sepal; k. lateral sepal; l. petal; m. fertile bract.



*Prasopyllum mimulum*,  
Racecourse Plains, Tasmania.



*Prasophyllum taphanyx*, Photos H&A Wapstra  
Campbell Town Cemetery, Tasmania



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# Nomenclatural notes on Papuan orchids.

Paul Ormerod,  
PO Box 8210,  
Cairns, 4870,  
Queensland.

## Abstract.

*Hippeophyllum microphyllum* S. C. Chen is transferred to the genus *Oberonia* Lindl. It is renamed *O. chenii* due to an earlier homonym. *Oberonia gladiata* A. Rich. and *O. micrantha* A. Rich. are found to have been transferred first to *Phreatia* by Lindley in 1858 rather than by Kraenzlin in 1911 or Schlechter in 1913. *Phreatia micrantha* Schltr., a homonym proposed in 1919, is renamed *P. vanimoana*.

## Key words.

Papuan, Orchids, *Oberonia*, *Phreatia*.

In a large flora like that of New Guinea with about two thousand, eight hundred orchid species it is not unusual for nomenclatural matters to arise, especially in respect to homonyms (i.e. giving different species the same name). Recent studies in the genera *Oberonia* and *Phreatia* indicated some unresolved nomenclatural problems including the presence of homonyms and changes in the attribution of authorship of two transfers. These problems are dealt with below.

## *Oberonia* Lindl.

New Guinea has about ninety recorded species, of which several more probably remain to be described. Nearly all *Oberonia* species have a short rhizome so that the plants often form tufts, however a small group of taxa have elongate rhizomes and these often resemble the genus *Hippeophyllum* Schltr. The latter genus differs from *Oberonia* in having a slender column with which the lip is subparallel and bears at its base a pair of small calli.

The following species has typical *Oberonia* flowers that bear a short column with a lip that lacks basal calli. It is closely related to three other New Guinean species, viz. *O. brevispica* Schltr., *O. repens* Schltr. and *O. rhizomatosa* J. J. Sm.

## *Oberonia chenii* Ormd., nom. nov.

Basionym: *Hippeophyllum microphyllum* S. C. Chen, Novon 13, 2:180, fig. 1, 2003 [not *Oberonia microphylla* (Blume) Lindl. 1830].

Type: West New Guinea – Vogelkop Peninsula, Ije River Valley, Banfot to Sudjak

path, 840m, 3 November 1961, *van Royen & Sleumer* 7662 (holotype: K).

Distribution: West New Guinea.

Notes: The above species was accidentally attributed to Papua New Guinea by Chen (2003). This can easily happen since West New Guinea has the Indonesian provincial name of "Papua".

## *Phreatia* Lindl.

New Guinea has about one hundred and thirty species. The first two to be described from Papuasia came from islands off the coast of New Guinea and were placed in the genus *Oberonia*. These were *Oberonia gladiata* A. Rich. (see below) from New Ireland and *Oberonia lindleyi* Brogn. from Waigeo Island (formerly Rawak, off West New Guinea). There are also nomenclatural problems associated with the latter taxon with which I hope to deal with at another date. Kraenzlin (1911) is generally credited with transferring *Oberonia gladiata* to *Phreatia*, whilst Schlechter (1913) is credited with transferring *O. micrantha* (from Vanikoro) to *Phreatia* but in fact it seems that Lindley (1858) was the first to do so in both cases.

*Phreatia gladiata* (A. Rich.) Lindl., J. Linn. Soc., Bot. 3, Index: vi, 1858.

Basionym: *Oberonia gladiata* A. Rich., Sert. Astrol., Atlas: t.12, 1833; *ibid.*, Bot.:6, 1834.

Synonym: *Eria gladiata* (A. Rich.) Rchb.f., in Seem., Fl. Vit.:300, 1868.

Type: New Ireland – near Port Carteret, *Lesson s. n.* (holotype: P).

Distribution: Papua New Guinea (Bismarck Archipelago).

Notes: Lindley (1858: 61) first mentions this species in a note under the Javanese *P. myosurus* (Rchb.f.) Lindl. [now *P. densiflora*



(Bl.) Lindl.] in which he says "The largest of the genus except A. Richard's two Oberonias, *O. gladiata* and *O. micrantha*, which Professor Reichenbach has pointed out to be *Phreatias*." When compiling the index for his 1858 paper Lindley stated that Reichenbach did not accept *Phreatia* as distinct from *Eria* Lindl. and he thus placed Richard's two taxa in *Phreatia*, clearly attributing the transfers to himself.

***Phreatia micrantha*** (A. Rich.) Lindl., J. Linn. Soc., Bot. 3, index: vi, 1858.

Basionym: *Oberonia micrantha* A. Rich., Sert. Astrol., Atlas: t.3, 1833; *ibid.*, Bot.:7, 1834.

Type: Solomon Islands – Vanikoro, 1828, Lesson s. n. (holotype: P, isotype: W, photo!).

Distribution: NE Australia; Papua New Guinea; Solomon Islands; Vanuatu; New Caledonia; Fiji and Samoa.

Notes: As noted above it was Lindley who first transferred this species to *Phreatia*, though the combination is usually attributed to Schlechter (1913).

***Phreatia vanimoana*** Ormd., nom. nov.

Basionym: *Phreatia micrantha* Schltr., Fedde

Rep. 16:128, 1919, non (A. Rich.) Lindl. 1858.

Type: Papua New Guinea – hinterland of Angriffshafen, *Kempter s. n.* (holotype: B\*).

Distribution: Papua New Guinea.

Notes: Due to an earlier homonym it was necessary to propose a new name for this species. I have renamed it after the town of Vanimo (formerly Angriffshafen) which is near the type locality.

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Tony Watkinson

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This is the first in a series of bulletins to let people in the orchid world know about the Conference. We hope to have updates at regular intervals between now and September 2005.

Could you please make these details known to your members?

(I have compiled a list of e-mail addresses from the internet, of people whom I believe will be interested in the Conference. However, I, like most of you, detest spam mail, so if you do not wish to receive any further updates, please let me know and I will remove your email address from our list. Just hit the reply button and put the word 'remove' in the subject line.)

Our lecture program is not yet completed, but so far we have had acceptances by;

Michelle Andriamanamihaja,	Madagascar,	Madagascan Orchids
Ray Clement	NSW,	Australian Native Epiphytes
Doug Matters	Queensland,	Phrags
Ron Parsons	California USA,	Rare Orchid Species
Norito Hasagawa	California USA,	Paphs
Kevin Western, South Aust.	Aust. Native Terrestrials	+ Flasking + Deflasking
John Robertson	Queensland,	Phalaenopsis
Geoff Stocker	Queensland,	PNG Species
Terry Poulton	Victoria,	Cymbidiums
David Banks	NSW,	Variation in Dendrobiums
Ross Maidment	Queensland,	Cattleyas
Kevin Hipkins	NSW	Odontoglossums

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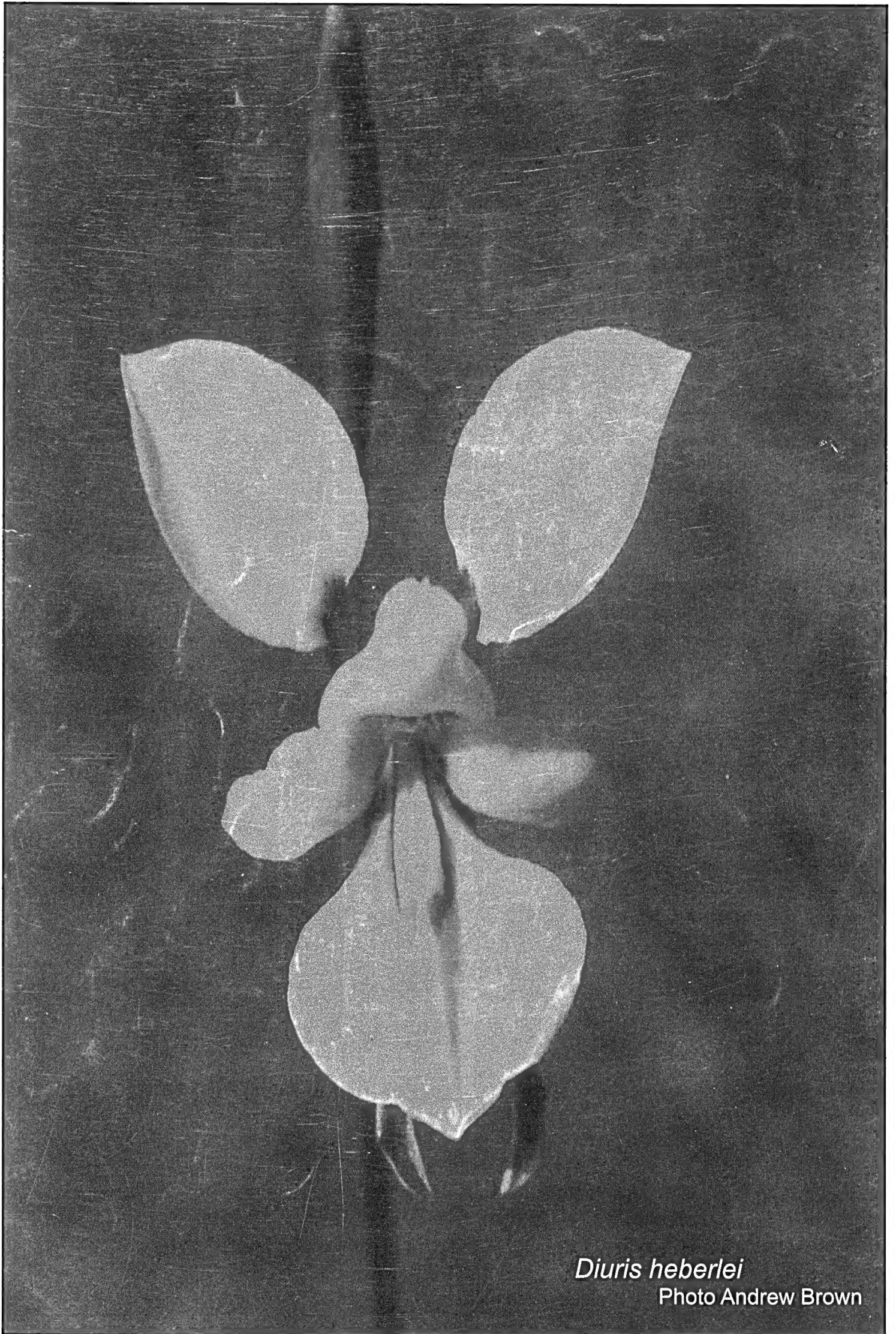
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*Diuris heberlei*  
Photo Andrew Brown