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In our final issue for 1998 we have a range of articles: a preview of Some Terrestrial orchids of the Royal National Park; some hints gleaned from a visit to Coleman's Orchid Nursery at Kuranda (North Queensland); more news on Pseudovanilla foliata; and a lesson learned that there are treasures to be found close to home if one looks hard enough.

We mentioned Envirospray in last issue. As yet we have had no reports, so if you've been meaning to drop us a line, please do. We'd love to hear from you; indeed, if not about Envirospray, then just about anything orchidaceous for our next letter.

We also mentioned that Bill Payne, the editor of *Australian Plants*, had offered to help our Study Group. We've had very good result - Margaret Bradhurst's article on Royal National Park terrestrials is scheduled to appear in the March, 1999, issue of *Australian Plants*, and a promo for our Study Group will be in the December, 1998, issue. Bill has also asked for information about the cultivation of Thelymitra. If any reader has experience of this genus, could they please let us know and we can pass on to Bill whatever we receive.

While we are on *Australian Plants* I must mention the new index, *Australian Plants Reference*, published by SGAP NSW, a complete index to all issues of our magazine. This index is an invaluable reference tool which makes the magazine much easier to access. I can recommend it unreservedly.

SOME TERRESTRIAL ORCHIDS OF THE ROYAL NATIONAL PARK

An Article for *Australian Plants*, by Margaret Bradhurst

Photographs by Margaret will accompany her article in the magazine. The text is presented here as a 'special' for Study Group members.

The Royal National Park, south of Sydney, is Australia's oldest National Park (first gazetted in 1879) and covers an area of 15,014 hectares. It has a great range of features and scenery, from heathland on the plateaux, to woodlands on the upper slopes, tall open forests, and rainforest in the gorges and deep gullies. It is home to a wide variety of vegetation and many species of native orchids.

Some of the terrestrial orchids to be found in the Royal National Park include:

1. Pterostylis nutans is also known as the Nodding Greenhood or Parrot's Beak Orchid. It is a common widespread species and can be found in all eastern Australian states and South Australia. It can form quite large colonies in a variety of habitats including moist forest and shady heathland. It flowers from May to October.

The pollination of a greenhood orchid is a fascinating process. The visiting insect will land on the protruding lip of the orchid, known as the labellum, and start to descend into the flower. The labellum is attached to the flower by a very irritable hinge and when it feels the insect it immediately snaps shut and the insect finds itself trapped inside the body of the flower. The only escape route is through a narrow opening, and in order to reach that opening the insect must brush past the pollinia. This pollen is sticky and is transferred to the departing insect and then carried with it on to the next flower. As a result, pollination will have occurred. It takes about 30 minutes for the labellum to reset.

2. Caleana major is known as the 'Flying Duck Orchid' because of its remarkable resemblance to a duck in flight. It is an example of an orchid which is upside down - the head of the duck is the labellum and the body, the dorsal sepal. Normally when an orchid flower is in the bud stage, the labellum points up and as the flower opens it twists around and the labellum points down. It becomes the attractor or landing pad for the insects which come to pollinate the flower.

The labellum of the Flying Duck Orchid is also on a very irritable claw and it will snap shut and so imprison an insect in the body of the 'duck' (dorsal sepal). In the ensuing struggle to escape, the pollinia is transferred to the back of the departing insect. Caleana major grows in loose colonies in open forest and heathlands in sandy soils and often amongst rock outcrops. It is found in the eastern states and South Australia and flowers from September to January.

3. Prasophyllum elatum is the Tall Leek Orchid and is one of Australia's tallest terrestrial orchids, often reaching one metre in height. It can bear numerous flowers in a dense spike and is found in all Australian states except the Northern Territory. It flowers from August to December in a range of habitats, usually damp coastal heath and forest.

The Tall Leek Orchids are said to mimic the Xanthorrhoeas or grasstrees. Both are pollinated by the same insects; both flower well after bushfires and, seen from a distance, they seem to have a similar cream flowering spike. The Prasophyllum is another example of an orchid which is upside down.

4. Spiranthes sinensis or Austral Ladies Tresses has its tiny pink and white flowers arranged in a dense spiral spike. It likes damp, swampy situations in heath and open forest and is found in all Australian states except Western Australia and the Northern Territory. It is a summer flowering orchid and loses its leaves for only a short period of time.

Most other terrestrial orchids have a dormant period over Summer. The leaves and flowering stem will begin to wither after the flowering period and the plant will remain underground during the Summer months, living off nourishment stored in its tuberoids. After good Autumn rains the leaves and flowering stem will begin to shoot and prepare for the next flowering season.

5. Thelymitra media is quite a robust plant and is known as the Tall Sun Orchid. It flowers from October to December in New South Wales, Victoria, and Tasmania, and can be found in damp open forest and coastal scrub.

As the name implies, Sun Orchids need the sun to fully open their flowers and many species will only open on a very hot still day. Some species have the ability to self-pollinate and are very reluctant to open. In Sun Orchids it is the column in the centre of the flower which needs to be examined for identification purposes. The column varies from species to species. Some have projecting arms, hair tufts, colourful hoods or finger-like projections.

6. Calochilus paludosus with its glistening red hairs is the most common of the Calochilus species and can be found in moist heathland or drier open forests. It only opens widely in hot sunny conditions. It can be found in all Australian states except Western Australia and is in flower from September to December.

PSEUDOVANILLA FOLIATA

We have reported on this remarkable orchid in the last two issues, and now at last can reveal that we have seen it in flower, after years of searching every rotten log in the rainforest. Although exciting, and rewarding with the use of binoculars, the flowering was a little disappointing. Instead of the hundreds we were led to expect, there were only a few dozen high against the sky. We were lucky to see any flowers since the plant was severely damaged following excessive rain on 30 August. We estimate that the creek must have risen a couple of metres causing an overflow of extremely swift, sand-laden water which scoured the roots and stem of the orchid off a young living tree, and also severely scoured the roots of the orchid on the main host, a dead Harungana tree. It is doubtful that the stump will withstand another wet season.

The excessive water flow had one benefit; it flattened the large clump of wild raspberry into which a broken piece of tree had fallen, perhaps a year ago. The exposed dead branch, about two metres in length and 20 cm diameter, had numerous Pseudovanilla roots on the outside, extending to the centre of the branch on one end, and a couple of growing stems. Reasoning that the next downpour would carry this branch away forever, on the 5th October we decided to take it home, a distance of about 3 km, in the same piece of rainforest, with the same western exposure. We placed the branch against a large fallen Sarsaparilla (Alphitonia petriei) beside a tall Whitfield Ash (Trichospermum pleiostigma) where a small gully provides air flow and moisture, and watched it like anxious parents.

The damaged stem on one end died off, and the three-branched one on the other didn't look too promising either when the tips started to discolour, but one curled around to the trunk of the Whitfield Ash, and commenced to climb! Ten days later it was 30 centimetres up the trunk. As it progressed it threw out roots at regular intervals - it is a leafless orchid - and on November 24 the stem had reached a height of 4.6 metres and is still growing strongly. It will soon be in what passes for sunlight in our forest, and we have great hopes that it will then branch and even produce flowers, since it is not too late in the season for such an event. Needless to say, we are cock-a-hoop about all this. The saga will continue.

As a footnote. a word on our climate. In mid-November we passed the 200 inches of rain mark for this calendar year, with rain falling on 184 days. Apart from the odd overnight 18^0, our minimum shadehouse temperature was in the low 20s for the last three months - it was 26^0 for the second half of September - with a maximum of 42^0.

COLEMAN'S ORCHIDS - KURANDA.

This year we were treated to a flowering from our Dendrobium nindii for the first time. This orchid was discovered during the first penetration by European explorers into what was to become the Innisfail area, about 40 km south of our home. D. nindii still is found occasionally in our area though, like many others, collected almost to extinction. Our specimen grows happily on a palm tree and as well as flowering it produced a fat fruit. Pauline was very keen to propagate from this fruit and enquiries all recommended that we take it to Brian Coleman of Kuranda, who operates an extensive service of orchid seed propagation. Unfortunately, one of our many insect predators chewed a great hole in the fruit when it was almost ready to pick and our plans came to nothing, for this year at least. We found ourselves passing the Kuranda area last week and saw Coleman's sign, so popped in on the off chance.

A couple of hours of rapture followed: Brian treated us to a VIP tour, tirelessly explaining his techniques, and dropping pearls of wisdom that could only be gained by years of practical orchid growing. His benches were stocked with hundreds of orchids of all sorts. Great spikes of flowers beckoned us with colour and perfume that was irresistible. I understand that the Arabic word Paradise really means a garden, and this was Paradise to us.

I managed to make some notes and trust that they will be of interest: Brian and Lorraine have two main shade houses which are fully enclosed with shade cloth, with steel mesh benches, overhead watering and weed mat or gravel floors. Everything is squeaky clean as a result of constant vigilance. Long nosed pliers are used to pull tiny little weeds as soon as they appear. I usually let them grow till I can get at them, by which time I rip a hole in the potting mix and disturb the roots. Emerging weeds on the floor are treated with Round-up (glyphosate) with added 'Tek' oil, an emulsified Canola oil, to minimise spray drift and also ensure that the spray sticks to the weeds.

We mentioned that the trace elements we use don't dissolve very well, and Brian recommended chelated trace elements which dissolve far more effectively. He makes his own brew, buying ingredients in bulk, and mixing with the deft touch of a manufacturing pharmacist. Most people we know use Quinkan gravel (a volcanic scoria from the Atherton Tableland) as their basic potting item for orchids, but Brian uses plain blue metal. Size ranges from 10 to 16 mm, and has the advantage over scoria that it dries more quickly and doesn't harbour mould and fungus. Scoria is an excellent water absorber, but in a constant warm climate it automatically attracts mould organisms. Even with plain blue metal, Brian uses Alginox at the rate of 1ml/litre to combat suffocating algae. Even with the overhead watering system, much watering is still done by hand. It is obvious that the secret to successful orchid growing is constant care and attention.

A couple of points to ponder: Hybrids are easier to grow than species because species have evolved to suit a particular set of conditions that are not always easy to replicate, whereas hybrids have the tolerance that comes from their various parents. Hard leaves on a plant indicate that they are accustomed to hard conditions. We can appreciate this by looking at a 'Golden' growing on a rock face in full sunshine.

Brian will accept orchid pods from anywhere and grow them to a stage where they are ready for deflasking, for a very reasonable fee. His operation is conducted with clinical hygiene and total efficiency. He also operates a mail order service, mostly of exotic hybrids, but occasionally has indigenous species. His address is: P O Box 57, Kuranda, 4872, and telephone is 07 4090 300. We bought a small Phalaneopsis rosenstromii for $4, a little treasure. Perhaps we lamented a bit too much on the demise of our nindii fruit, since on leaving, after having occupied two hours of his time and spending just $4, Brian gave Pauline a flask of D. nindii seedlings, as they needed immediate attention which he knew he could not give them, and a community pot of D. carronii because they were not up to his standard. (If I can keep any of them alive it sure beats extinction. P.) Encounters such as this are what makes life worthwhile. We've met this sort of person before in connection with orchids; does the Family Orchidaceae exert some beneficent influence on the human psyche?

DENDROBIUM KINGIANUM

Our member Richard Brackin of Cannon Hill, Brisbane, writes to us about his recent school camp which included a climb up Mt Warning, near Murwillumbah: "while doing so, I saw quite a number of native orchids, the most impressive of which was a Dendrobium kingianum on the rocks right beside the path quite near the top. Luckily for me, it was flowering else I would have been too tired to notice it." Sounds like one to look out for if any reader is contemplating a hike up that ancient mountain. (I have never managed to flower one, but in hope I have put a couple of pieces onto a rock. P.)

BABINDA BOULDERS: UNSUSPECTED TREASURES

We had a trip to Mossman Gorge earlier this year to look for the orchids which were reputed to be once plentiful but now scavenged beyond recognition. If that is so, it must have been a marvellous place, since there is still a great profusion of orchids and other epiphytes. The Mossman River runs swift and shallow between low hills covered with primary lowland rainforest and the stream-side hills bear hundreds if not thousands of orchids and ferns. We could not help but notice the similarity between conditions at Mossman Gorge (76km north of Cairns) and Babinda Boulders scenic area (65km south of Cairns). Babinda Creek at the Boulders is similar in size to the Mossman River at the Gorge. Babinda Creek has here just debouched from the eastern slope of Mt Bartle Frere, Queensland's highest mountain, via a spectacular waterfall, and the water runs swift and frothy between rainforest banks.

I have known the Boulders for most of my life. It's a pretty spot for picnicking, with deep pools for swimming and some good nature walks. I'd never looked at it from an orchid point of view. As is so often the case with public areas in Far North Queensland, all available orchids have long ago been taken, at least those plants which conform to the general idea of being orchids. In this case, Dendrobium discolor and Dockrillia teretifolium - 'Goldens' and 'Pencils' in local parlance - are the two most common and easily recognised, and are conspicuous by their total absence from the Boulders.

Following the Mossman experience, Pauline and I reasoned that there should be orchids to be found at the Boulders for those who cared to look past the standard species. We did a walk with open eyes and binoculars at the ready, and were rewarded by finding a good selection of plants. None was in profusion, but they were there and in most cases in plain sight of anyone with 'orchid eyes'.

Further investigations by Pauline over a period unearthed more species, particularly some ephemeral terrestrials when they flowered. Then the SGAP outing for November was scheduled for the Boulders, and eagle-eyed Rob Jago found a Robiquetia we had missed, only a couple of metres from the main track. A follow-up with Len and Kate Lawler added to our chagrin. Right at the beginning of the track, within metres of the picnic area, Len pointed out two species of Zeuxine, proliferating in the leaf litter of the rainforest floor. A little further on, within arm's reach of the track, Len spotted a small Corymborkis veratrifolia, a first for Pauline and myself. This orchid's undulating leaf margins, glaucous underleaf and lack of a midrib distinguish it from a similar rainforest plant Molineria capitulata, or Weevil bush, or Orchid Lily, formerly Curculigo capitulata.

Our Boulders Orchid List is now 14 species in 12 genera and still does not include a single Golden or Pencil. We'll continue to perform contortions and watch where we put our feet whilst scanning the highest trees in the hope that 'orchid-lovers' have missed some.

The point of all this is that there is often no need to travel for days to look for plants when we may have overlooked something at the bottom of our own garden. Members of this Study Group are spread throughout Eastern Australia (we'd love to extend our membership to South Australia, Western Australia, etc) which encompasses a wide range of climatic types. Have YOU missed an area similar to our Boulders in your vicinity? As a Christmas holiday exercise, I suggest that all readers take their binoculars and orchid books to their local picnic areas and have a really good look. Even in an urban area there just may be something to be seen. If there are no orchids, maybe your favourite bird book would be a good backup to make the day worthwhile. (We so often find if we are orchid hunting we see birds, and if we are looking for birds we find orchids. P.)