

Our Wet season started off with a bang and we had 64 inches of rain in the 16 days that followed Christmas. After that the sun re-appeared and we've since sweltered in a lowland tropical heat bath with sunshine every day and no rain. How the plants cope with such wild swings in their environment is one of Nature's miracles, but the native orchids seem to take it all in their stride.

Our regular correspondent, Mary Gandini of Cairns, wrote to us on 11th December: I've had lots of lovely flowers this year, probably because they did get the occasional dose of fertiliser. The piece de resistance a fortnight ago was the first flowering of *Dendrobium wassellii* with three sprays of flowers - typical pencil orchid style. The new plant list from the Queensland Herbarium now names all of the pencil-type orchids *Dockrillia* so your *Dendrobium teretifolium* is now *Dockrillia teretifolia*. Strangely though they have left *wassellii* as *Dendrobium*. Also they seem to have accepted most of David Jones' splitters that he named in his book, e.g., *Dendrobium capitis-york*.

I have observed a spray of potential flowers emerging from my *Vanda hindsii*. The first time - exciting! *D. kingianum* did nothing this year. *D. jonesii* did well as did *D. bifalce*. I had some lovely flowers on *Pterostylis baptisti* and they set seed but I missed directing it to where I wanted it. The goldens (*D. discolor*) set lots of seed pods this year - never seen so many. *Nervilia plicata* has sent up a solitary leaf so I am waiting to see if there will be a flower.

After noticing that the author of an article in the *Australian Orchid Review* was a SGAP member, Pauline wrote to Sue Walter last year, and Sue very kindly provided us with the following article. (Sue's original article, entitled "Growing Media", which attracted attention is printed in two sections in the April and June, 1997, issues of the *A.O.R.* and is highly recommended to anyone interested in cultivating orchids in pots.)

NATIVE ORCHIDS: WILD V. CULTIVATED

Susan Walter, B. Ag. Sc. (Hons.) & SGAP Vic. Research Officer

Despite having a nearly all-native garden I have never really stopped to think about the concepts of hybridization and the development of cultivars in the context of my own orchid collection. I guess it is not a bad time to start, given that SGAP Vic is currently evaluating whether we are a conservation society interested in cultivation, or a cultivation society interested in conservation. In my own mind SGAP is the latter, but when making up your own minds, perhaps the following points should be considered.

As growers of indigenous orchids, do we really have a role in the conservation of Australian orchids? I like to think we do, but only if we consider two things: Firstly, we must ensure that the plants we receive or purchase have been legally collected. If we don't we will eventually be cutting our own throats. We must ensure that collected plants are from sites that are in danger of being destroyed. By this I don't just mean sites that are earmarked for development and for which the authorities will issue permits to allow controlled collection. It is often too late to wait until the bulldozers start their engines, especially on private land.

As SGAP members we should be fully aware of what species grow where, including recognised sub-species or variations, and keep an eye on them at all times. This way we will be prepared to fight for their protection before the earthworks begin. I do not suggest any illegal collection unless it is obvious that "the powers that be" have total disregard for our native flora and development is imminent. Please do not encourage anyone to collect illegally even if there is a dollar to be made: (it will take more dollars to restore the ecological balance of a raided site).

Secondly, regardless of whether collection is legal or not, at all times we should endeavour to faithfully record the date and place of collection (including any host plant) of the orchid just in case our precious specimens become the sole remaining survivors and are needed for revegetation. I am guilty of purchasing epiphytic orchids from orchid nurseries where the only labelling is "*Dendrobium tetragonum*" (or similar) with a pretty photo and no details as to where the plant had been collected. If we are to be true collectors of indigenous orchids these basic details are vital in their long-term survival. Notes on host plants are also needed to ensure that the orchids do not become endangered because their hosts are under threat.

Should we get involved in the hybridization of our native orchid species? I am in two minds as to whether this has any long term benefits, other than to create something that is pleasing for our eyes. Firstly, we need to consider production which makes more plants of the same species. If we have collected our parent plants from the wild and we have not recorded the source of them, how will they ever be of use if we have to rely on their genetic stock for revegetation. Take for example the various forms of *Dendrobium speciosum*. I do not think we should be allowing them to be used in the production of further commercial stock of this species unless the hybridization occurs between two plants from the same geographic location and we can be sure that the two plants are not simply two divisions of the same original plant. I would hazard a guess that most lovers of our indigenous orchids can't state the place of origin of most of their plants let alone whether it was seed or plant material collected from the wild or commercially produced seed, mericlones or kiekies. If we want to play a role in conserving the gene pool of our native orchids we need to encourage collectors, nurserymen and gardeners to record in good faith the origin of their material to avoid both inbreeding and outbreeding.

To get a good idea of what I am suggesting, we should draw a correlation between our native orchids and, say, a chance *Correa* hybrid that occurs in a home garden. I would ask myself the following questions:

If my garden wasn't here, would the two parents of the hybrid have a chance to cross pollinate between the species? If there is normally a geographic barrier (water, temperature) between the two species (or subspecies) the chance of a naturally occurring hybrid is slim without man's intervention. A collection of plants in a cultivated garden removes these physical barriers and thus allows a gene pool to become impure.

If I leave plants to their own resources, can they breed successfully on their own? To a large extent orchid growers are aware that it is uncommon for their plants to be naturally pollinated, and that there are poor odds for self-sown seed from such plants to survive to adulthood away from their natural environment. I have seen it happen a few times with my own *Pterostylis nutans* and *P. pedunculata* plants, and despite telling myself that I must isolate the various species and provenance during the flowering season, I now have pots of terrestrials with self-sown *P. nutans* in them, and my pots of the green form of *P. pedunculata* now has the normal maroon form growing in them. Luckily for us, orchids are not like some plants (*Kennedia nigricans* is one example I can think of) that, despite being natives, take over your garden (unless you are an addict!) I must admit that if my *P. nutans* escaped into my garden beds I would be ecstatic, but we must still consider whether our cultivated plants have the chance to breed with, or escape into, a local provenance.

I might sound as if I am very anti-cultivation of our native orchids, but I do believe that gene purity has a role in the survival of our indigenous flora. Take for example the recent news that the site of the Wollemi Pine was disclosed to the press by some idiot. Despite the work that was done to mass-produce this rare plant, there is always the risk that someone with more money than sense will have a natural population raided purely for reasons of vanity, selfishness and self-importance.

If mass cultivation of our native orchids will make them so cheaply available as to satisfy the general population, then I support this activity. All I ask is that someone out there is carefully preserving the gene pools of various provenances before it is too late.

My father can tell me stories about how expensive orchids used to be when he was a lad, and these days he is trying to make a living out of producing and selling them to the public. He probably won't like to hear me say this, but in order to preserve our native flora, nurseries have the role of producing the plants for sale as cheaply as possible. It is obviously not good business sense to make your product so cheap you can't make a living from it, but it makes sense to a greenie like me, who enjoys seeing our native flora in situ as well as in cultivation. I am disgusted when I see someone who has raided a site of uncommon terrestrials.

Will the species benefit from mixing gene pools of other species and provenances? If I were breeding roses and a new species found to be aphid resistant was discovered in some unexplored corner of the world, I could hardly wait until these genes were incorporated into our current cultivated gene pool. On the other hand, if we are talking about a native Australian plant, are we doing our ecosystems a favour by incorporating "new" genes into other ecosystems? Much as we all might hate various garden pests and diseases, they still have a role to play in the environment. Would we want to be

responsible for native insect or fungus species to become extinct? Remember that it is often the stress of growing our plants in unnatural environments that can make them more susceptible to pest and disease attacks in the first place. A well-nurtured, hardy plant is the best defence against the creepy crawlies.

I read a theory a few years ago now on the benefits of inbreeding in humans. In days of old when travel between towns was limited, cousins married cousins and their children married their cousins ad infinitum. If you consider rare genetic diseases, this initially has a devastating toll on the village and a large proportion of the population develops the genetic disease which is often life threatening. But there is one advantage to this: If the individuals with the genetic disease die out before reproducing, then over a period of several generations, the "bad" gene begins to die out, leaving the rest of the population "clean". The problem with our current system where people who are worlds apart intermarry is that a greater percent of the population becomes a "carrier" for the bad gene without suffering its consequences. The net result is that there becomes a higher risk of two unaffected carriers marrying and having affected children who die as a result of the bad gene. This same principle does, however, apply to genes which give us "immunity" to disease. It is a bit of a double-edged sword really - damned if you do, damned if you don't - but please keep this in mind when producing new orchid hybrids.

Is bigger better? My observations of the world of orchid hybridization tell me that to be successful as an orchid grower you have to produce the biggest and most brightly coloured orchid which produces 100 flowers per spike and which flowers for 12 months of the year. What ever happened to pest and disease resistance (ignoring my comments earlier)? Are we allowing a gene pool to develop that will see our natural pollinators ignore the flowers because of their altered colour, size, shape and smell? If this happened we can say goodbye to our orchids unless we want to have a work-for-the-dole scheme for people to wander the bush pollinating all our orchids by hand. I have seen some lovely *Dendrobium* hybrids in my time, but I cannot remember many of them having as lovely a perfume as species such as *D. falcorostrum*.

One important role that cultivation does play in the preservation of our indigenous orchids is to expand our knowledge of just what conditions are needed to ensure plants can survive away from their natural habitat. A lot of work has been done by both ANOS members and other growers to disseminate knowledge on how to cultivate native orchids successfully. In some cases, removal of plants from the wild may be the last chance of allowing a species to survive, and it is important that a minimal number of specimens is lost to "experimentation". I have seen some very selfish growers who won't divulge their "secret formulas" in case someone beats them to a prize in an orchid show. Please give the orchids first priority and be generous with your knowledge with what does and doesn't work. You might just save a life.

Sue goes on to say -- To show you that I practise what I preach, I have listed below a few types of growing media that John and I have tried over the years and our level of success with each. -- However, we'll keep this for another time as Sue has raised a number of points in her article thus far for us to consider; we would like members to discuss her ideas and write and tell us how they feel. We'll put a selection of them in next issue.

From S.G.A.P. Journal, Nov.1997, South Australian Region

*Pterostylis arenicola* (Sandhill Greenhood Orchid) occurs on sandy soils in the Murray mallee and western Adelaide. Weed competition, especially from Bridal Creeper (*Myrsiphyllum asparagoides*) is a threat to the orchid. The Threatened Plant Action Group and the Australian Trust for Conservation Volunteers have assisted in the control of Bridal Creeper by applying Roundup using weed wands. This has proved to be quite a successful technique, as there is minimal soil disturbance and minimal risk of herbicide coming in contact with non-target species. The Native Orchid Society of South Australia, The Adelaide Plains Flora Association and more recently, SGAP, have assisted in the hand removal of Perennial Veldt Grass (*Ehrharta calycina*) that threatens one *P. arenicola* population. Field trials have indicated that rabbits graze on the pedicels, hence the orchids are unable to set flowers and seed. Rabbit-proof enclosures were erected around two populations to protect them from rabbit grazing.

FEATURE ORCHID: *Apostasia wallichii*

We have come across this orchid several times in recent weeks and feel that it is worth a mention. The *Apostasia* genus is included in the family *Orchidaceae* as a taxonomic convenience rather than as of right. It may not really be an orchid, but it is not really anything else, and so it is classed as a Primitive Orchid. Dockrill states that the distinguishing feature is the column, which has two erect anthers on short stalks. Also, the pollen occurs as dusty granules rather than being fused into pollinia as in other orchids.

Apart from the clinical floral distinctions, *Apostasia* doesn't even look much like an orchid - more like a little piece of grass. It is one of the rainforest terrestrials, and the genus numbers about seven species which occur from India to Japan, Indonesia, and New Guinea and we in Australia have one species. This mostly grows in rainforest at low altitudes from about Ingham on the Queensland coast to the tip of Cape York.

The first specimen we saw was identified by Rob Jago during a SGAP field excursion a couple of miles south of our home. This was an unremarkable small, grassy bundle of leaves on a stalk about 10 cm tall, growing on a small flood plain of a rainforest creek. It was noted as a sighting of an unusual plant that was hardly interesting to look at.

In late December '97 I was checking my water supply when I noted a pretty flowering plant right beside the pipeline. I have walked along this area literally hundreds of times over the last 18 years or more, and have never previously noticed this plant. A closer look dug up the memory of the little orchid which Rob had enthused about a few years ago. After Pauline and I made a good examination of the plant we consulted Dockrill & Jones and were convinced that we had the correct identification. A search of the area turned up about fifty or more plants spread in several colonies up a steep hill side, growing in shallow, granitic soil with cyclone/storm damaged rainforest dominated by large Johnstone River Hardwood trees (*Backhousia bancroftii*). Quite a few plants were flowering; some carried green fruiting capsules as well as buds and opened flowers.

We believe the previously mentioned very heavy rain may have precipitated the good flowering. The flowers are quite small, about 1 cm diameter in a regular, star shape, with the sepals and petals all looking alike. The labellum is not differentiated as in most orchids. The flowers are a pretty, bright yellow, and flowering plants carried up to 15 flowers on a plant about 20 cm high. We had a tentative excavation of the roots of one specimen and found that the root system is extensive and very much intertwined with other roots in the soil, so that any attempt to extract a plant would inevitably result in much damage to both the orchid roots and the general area. We saw no sign of the plant's storage tubers attached to the roots, but were reluctant to do more excavation.

The *A. wallichii* we have seen would be easy to miss when not in flower; they share their niche with plants of similar appearance - *Oplismena* grass and also tiny Mountain Pandanus (*Pandanus monticola*) could be mistaken for *Apostasia* at a cursory glance. We were very pleased to have found such a good population so close to home, then just a few days later I was scrub bashing with a neighbour on his place about a mile south of home and found another small colony. These were growing on the scoured bed of an old logging track, last used 20 years ago. The soil was red metamorphic, the slope quite steep once again, and again the dominant trees were *Backhousia bancroftii*. There were just two flowering plants and only a couple of others in this colony. A run down to view the original plant found years ago revealed that it had no others nearby, was not in flower and looked quite miserable. This could well be because previous owners had relentlessly burned the creek area (to suppress vermin!), or because the current owner has turned the property into a tree farm so that the creek flat is becoming heavily shaded. Maybe it was that we had four inches of rain that afternoon; we probably looked pretty bedraggled ourselves.

A trip to Mossman Gorge north of Cairns a few weeks later revealed two, non-flowering *Apostasia*. Mary Gandini reports that **they** grow on the hills west of Cairns and that she also saw some in **a** rainforest refuge creek on the Gillies Highway south of Cairns this week. Hence, it would appear that our primitive orchid is well established in the Cairns area.

PAULINE'S PAR: At some time during the torrential rain I became aware that my *D. Baileyi* had been flowering for the first time. As the flower lasts for a short time - such as how long a downpour takes - I have still never seen a flower, but I have four very healthy seed pods to admire. However, I have managed to keep some new pseudobulb growths on other plants and an exotic flower unchewed long enough to photograph it. Although I was not able to see any insects causing damage, I noticed some little black ants, so I applied ant powder and reapplied it each time the rain washed it off. I am, of course, only using it against ants.

SGAP Queensland Region Conference will be held in Townsville from 28th June this year; we are planning to attend our first ever SGAP regional conference, as a preliminary to The Big One in Brisbane next year. We hope to meet some of the luminaries in SGAP Qld, and particularly to meet some of our Orchid Study Group members.