

COMMUNITY INVOLVEMENT IN ORCHID CONSERVATION

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In 2000 the Australasian Native Orchid Society, Victorian Group Inc. (ANOS Vic) made the decision to become proactive in orchid conservation. It was apparent that government organisations were over stretched when it came to devoting the resources needed to protect our native orchids and that as a society we could assist in many ways. Through working with the authorities responsible for orchid preservation we have been able to make a substantial contribution, in some cases taking a primary role, in the management and recommendations for the preservation of habitats and orchid species. The activities we have been involved with include monitoring, searching, cultivation, propagation, rescue digs, translocation, associated species mapping, reintroduction, environmental management and public education.

Collectively our members have a wide range of skills. Many members are skilled in orchid identification in the field, others have developed cultivation skills from many years experience and many have brought skills from their various professional backgrounds. These skills can be used to assist in identifying associated and invasive plant species, population mapping and monitoring, and promoting public awareness, amongst others.

Many members have retired and can be called upon to assist at short notice. As a volunteer group that is dedicated to native orchids, we provide continuity to a project that is not necessarily present in official organisations. Employees can leave to find other employment or be transferred to other projects as the need arises, whereas people that undertake this work as a passionate hobby tend to actively participate for many years. This paper looks at the various projects and activities that ANOS Vic. members have participated in.

Monitoring

Monitoring orchid populations in the field can be an invaluable asset to understanding the life cycles of endangered orchids over extended periods of time. Without this information it is difficult to assess whether an orchid population is truly endangered or is just being influenced by current meteorological conditions. It is

work that needs to be conducted regularly and depending upon the species, several times of year at critical stages of the plants development. ANOS Vic has been regularly monitoring several orchid species throughout Victoria.

We have been responsible for monitoring *Pterostylis despectans* (Lowly Greenhood) since 2000, an endangered terrestrial orchid that grows in the goldfields of Victoria. Monitoring is undertaken twice a year, followed up by seed collection. The first monitoring is undertaken in late July when the rosettes have emerged. This is the best time to find the orchids as the leaves can be readily identified, whereas later in the year when the orchids are in flower the leaves die back and the flower tends to blend in with the surrounding ground. We have established three monitoring sites where we count all rosettes, pinpoint their location and measure rosette size and number of leaves. We also visit all known sites within the state and count all the rosettes we can find. This is something that requires a large group of people who are skilled in identifying the orchids from the rosettes. In December we return to the three monitoring sites to record the progress of the rosettes to see if they have flowered, withered away or have been dug up by White Winged Choughs, a native bird that regards these orchids as a delicacy. We also undertake hand pollination of the flowers as natural pollination rates are low. The seed is then collected and preserved in storage or used to help establish ex-situ populations.

During the period of our monitoring the area has been impacted by an extended drought. This has resulted in an average decline at our three monitoring sites at an average of 12% per annum. It is essential that we continue this monitoring through this period so that we are able to record what the true impact of the drought has been on the orchids when it eventually breaks.

Since undertaking the responsibility of monitoring *Pterostylis despectans* we have since been involved in other monitoring programs. Our monitoring programs now include *Pterostylis woollsii* (Long-tail Greenhood), *Pterostylis basaltica* (Basalt Rustyhood), *Pterostylis maxima* (Large Rustyhood), *Pterostylis cucullata* (Leafy

Greenhood), *Prasophyllum suaveolens* (Fragrant Leek-orchid), *Diuris fragrantissima* (Sunshine Diuris), *Diuris basaltica* (Small Golden Moths) and *Diuris punctata* (Purple Diuris), all orchids that are classified as endangered or vulnerable and a list which grows each year.

Searching

This is another activity that is well suited to large groups of volunteers that know what they are looking for. We tend to concentrate on orchids that are classified as endangered. Most of these orchids are known to exist at only one or two locations, but in many cases no concerted effort has been made to verify this, principally because of the large areas involved and the amount of time it takes to conduct searches. ANOS Vic now conducts regular annual searches, targeting particular species. Our searches are based upon previous records of unconfirmed sightings, as well as searching the state Flora Information System (FIS) for areas similar to the currently known sites. To improve our results we have also undertaken associated species surveys at known sites and fed this information into the FIS to help refine our searches. This technique has had very encouraging results. When we first started monitoring and searching for *Pterostylis despectans* the population was estimated to be around 500 plants based upon four known colonies within a 24 km area. We have now discovered around 40 sites over a 70 km area that contains over 4,500 plants.

The searching technique we employ is to visit the regions that the FIS indicates a match to the vegetation profile. We then drive through the regions looking for areas that look "right" as compared with our known sites. We used to then sweep through an area in a line undertaking a thorough search. This approach worked to some extent, but the line gradually broke down as people wanted to follow their instincts. Now we break the main group up into smaller groups of between 2 and 4 people each, making sure that each group has a hand held GPS unit so they do not get lost and so they can record the position of any findings. This then allows the groups to follow their instincts and search in spots which they believe to be favourable conditions for the particular orchid. This seems to be more productive and more satisfying for the searchers.

Often searches are undertaken at the leaf or bud stage. This may not lead to positive identification of the particular species required but it does mean that we generally find more plants as some may wither and die back before flowering, depending upon the amount of rainfall received. Any potential plants are recorded on GPS and sometimes caged if we are concerned about the plants being grazed. A couple of people can then return at the

peak flowering time to positively identify the orchid and record its status.

Another very successful search was conducted in September 2006. Conservation officers from the Department of Sustainability and Environment were aware of a small colony of 16 *Diuris basaltica*. ANOS Vic were called upon to assist them with the searching and monitoring for this orchid. Despite a very dry season our members were able to discover over 500 plants by undertaking a thorough search of the area, a very satisfying result for all involved.

Propagating

ANOS Vic members have built up many skills over the years in native orchid cultivation. This has required careful study of the plants requirements and the development of a potting mix suitable for terrestrial native orchids in cultivation. The society has also published its own book the "Cultivation of Australian Native Orchids". This book has been written by members and all proceeds from the book go back into the society to help finance our activities and conservation work.

There has been a great deal of study undertaken in the propagation of epiphyte orchids from seed, but much less work in the cultivation of Australian native terrestrial orchids from seed. In 1999 a seed propagation group was formed to develop techniques suitable for terrestrial orchid propagation. The Australian Orchid Foundation donated a lamina flow cabinet to the society and one of our members, Dick Thomson, turned one of the rooms in his house into a propagating laboratory that members could use. This laboratory has recently been expanded to two lamina flow cabinets as the demand by members to use the facility has grown.

After developing our techniques on orchids that are reasonably easy to grow we have since expanded to try to propagate orchids that are endangered and have not been grown in cultivation before. By obtaining seed collection permits we have been able to experiment with growing endangered species with the aim of establishing ex-situ populations that can later be used to produce seed for sowing in the wild or to produce plants to return to the wild.

Our efforts have had mixed success. One particular success story has been with *Diuris fragrantissima*. This orchid was quite common on the grassland plains west of Melbourne. Because of loss of habitat, due to urban development, the orchid has become highly endangered with only about 20 plants now known to exist in the wild. This orchid was adopted by Melbourne Zoo, which has a conservation charter for plants as well as animals. The orchid was grown from seed and dedicated shade houses were built to house the plants. As it turned out these orchids were relatively easy to grow from seed and grew

well in cultivation. ANOS Vic members regularly assist the Zoo when it comes to deflasking and potting up the seedlings. Our members are also growing the orchid in their own shade houses so that the entire collection is not held at one location, as this could prove fatal if a virus was to establish itself in the only ex-situ population.

After several years of building up this collection, plants are now being reintroduced to the wild at reserved sites. Our members have assisted with the planting and now members that live close to the site keep a regular eye on them and also assist with watering the orchids while they are becoming established. About 700 plants have now been reintroduced and between 60% and 70% of them emerged in 2006.

We have also experimented with collecting orchid material from damaged orchids and planting it to establish new plants. The *Pterostylis despectans* we have been monitoring come under regular attack from White-Winged Choughs. These birds dig down, pull the plant out of the ground, eat the tuber and leave the remainder of the plant to die on the surface. When we conduct our monitoring we collect these scraps and plant them in our native orchid potting mix. Quite often the plant material will send out a root which will go on to form a tuber which becomes part of our ex-situ population.

Environmental Management

Having a membership of around 450 gives us a substantial work force. We have undertaken many weeding activities at various sites ranging from confined areas to much larger sites. Some sites require one or two visits to eradicate particular weeds, while others require ongoing annual visits to remove seedlings germinating from seed that can stay viable in the soil for many years.

One project that we started in 2000 was with *Prasophyllum suaveolens*, growing in a country cemetery in Western Victoria. When this orchid was brought to our attention only 39 plants could be found and the area where it grows was overgrown with *Watsonia* and surrounded by Broom seedlings. The area was also being mown every spring just as the plants were coming into flower, so no new seed was being dispersed. In conjunction with the Cemetery Trust who were not aware of the presence of the orchid, the Department Sustainability and Environment which had classified the cemetery as a remnant of native grasslands and the local municipal council who were responsible for mowing the cemetery a management plan was established to protect the orchid and yet still enable the cemetery to operate.

ANOS Vic established a monitoring program to record all the orchids. We then conducted a complete topographic survey of the entire site, plotting the position of the orchids with respect to the graves. This enabled us

to draw up a plan of areas safe to mow which also allowed access to all the graves. Since establishing the project three controlled burns have been conducted. These were conducted in early autumn and were to promote orchid growth and at the same time weaken the *Watsonia* and Broom. ANOS Vic members then followed up with hand weeding of the Broom as the fire causes the seed to germinate. We also hand paint the *Watsonia* with herbicide as it emerges. This program has had substantial results. The number of recorded orchids is now at 277. Unfortunately not everything goes to plan and to some extent our efforts have had too great an effect. By the end of 2004 the native grasses were thriving, becoming the dominant species. It was intended to conduct a controlled burn in early April 2005. Unfortunately it was considered too dry and therefore too dangerous to conduct the burn considering the amount of combustible material. By the spring of 2005 when we conduct the monitoring, the grasses were so long and thick that it was impossible to locate the orchids without risking potential damage because of trampling. In April 2006 it was considered safe to conduct a burn. This was followed up by a period of severe drought. The orchids that emerged during the winter then all aborted and died back in the spring, leaving nothing to monitor. However on the good side the Broom seedlings that germinated after the fire all died due to lack of water and the remaining *Watsonia* had been substantially weakened.

Apart from weed work which has been conducted at many sites we have also been actively lobbying to have areas fenced off to protect special orchid areas. Fencing, as well as our other activities, requires funding. Since 2000 the society has raised over \$42,000 for orchid conservation through grant applications and from community and members donations. Part of this funding has enabled us to get two orchid rich areas fenced off from 4WD vehicles and motor cycles that were damaging the environment.

Orchid Rescue, Translocation and Reintroduction

Having established our credentials with various government organisations we find that we are now being called in for advice and assistance in rescuing and translocating orchids.

One example has been with Vic Roads who called us in to assist with translocating some *Diuris chryseopsis* (Golden Moths) that were in the path of a new freeway. These orchids could not be just dug up and replanted as there was no new site available for them to be translocated to. The plants had to be removed, kept alive for two years while the new site was purchased and prepared and then translocated. As our members have considerable experience in native orchid cultivation our society was

the natural choice. To assist with this project Vic Roads donated a portable shade house to the society that could be erected on a member's property to allow the orchids to be cared for. The plants were then dug up and placed in foam boxes with as much of the original soil around them as possible. Two years later when the new site was ready the orchids were in a very healthy state to be returned to the wild. As part of this project local residents were actively involved with the removal and planting, they then took over the responsibility of keeping an eye on the newly planted orchids and watering if necessary to assist them with re-establishment.

A similar project has been undertaken with *Pterostylis cucullata* which grows on the Mornington Peninsula. This is another case of an orchid losing its habitat due to development. On a private block of land in the area, the owners applied for a permit to build on it. It turned out that *Pterostylis cucullata* was growing on the site and one of our local members was called in by the municipal council and Parks Victoria to remove the orchids from the site. Over 2000 orchids were collected. These plants had to be maintained for one year while Parks Victoria selected a suitable site for translocation. The tubers were then introduced to the new site in early 2006 while they were dormant and approximately 70% emerged the following spring.

Public Education

Because the *Pterostylis cucullata* is growing in amongst residential development the council decided that it would try and map the extent of the populations. One of our members conducted door knocks to explain to residents about the significance of the orchid, how they could identify it and how they could manage it if it was on their land. The residents were also asked for permission to enter their properties and conduct a search to see if the orchid was growing there. In most cases the response was positive and through the use of hand held GPS a map was able to be built up of the colonies in the area. This has given the council a better idea of how to manage future development within the area.

ANOS Vic holds an orchid show each year and also attends other shows where we can meet the public. At these shows we now focus on conservation to a much

greater extent. The orchid display draws the general public in and then gives us the opportunity to talk to them about conservation and the plight of many of our orchids. We now find that many of our new members are joining primarily to actively participate in conservation rather than just to go out into the bush to look at orchids, or learn how to grow the best flowers.

Prime Minister's Banksia Award for the Environment

Each year the Prime Minister of Australia presents the Banksia Awards for the Environment. There are several categories in these awards and because of the large amount of successful work done for orchid conservation by several organisations working in collaboration, it was decided that a collective submission should be made in 2006. The submission, in the category of Land and Biodiversity, was made on behalf of the Department of Sustainability and Environment, Parks Victoria, Royal Botanic Gardens, Melbourne, Melbourne Zoo, Melbourne University, Victoria University, Royal Melbourne Institute of Technology University and of course the Australasian Native Orchid Society, Victorian Group. This is Australia's most prestigious awards for the environment and you can only imagine our pride in our achievements when renowned primatologist Dr. Jane Goodall announced that we had won. We certainly do not undertake this work for the awards, we do it for our love of orchids, but it is satisfying to get recognition for the work that been undertaken.

Conclusion

This paper has set out to demonstrate practical cases where community organisations can make an effective contribution to orchid conservation. In today's world, discussions about the environment are on everyone's lips and more and more people want to make a practical contribution to preserving our world. Individuals can't change everything, but if orchids are your passion then concentrate on what you love. I hope to inspire other individuals and community groups that have a love for orchids, to follow our example and to encourage official organisations to tap in to this valuable resource.

Andrew Dilley is the President of the Australasian Native Orchid Society (Victorian Group) Inc. From 2000 to 2005 Andrew was the society Conservation Officer where he initiated a proactive conservation program and with the help of the society's members, has watched it grow to an extremely enthusiastic active group. Andrew enjoys growing terrestrial orchids and experimenting with seed propagation. He loves being in the field looking for orchids and is an avid photographer. Andrew's academic background is in land surveying, which comes in handy when it comes to monitoring orchid populations. When he isn't working with orchids Andrew is a Director of Listech Pty. Ltd. a company which develops software for the surveying, mapping and civil engineering industries.