

An Overview of Orchid Conservation Activities in Tasmania

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Tasmania has 212 orchid species, with 68 listed in the state *Threatened Species Protection Act 1995*, and 32 listed under the *Commonwealth Environmental Protection and Biodiversity Conservation Act 1999*. The majority of the work being done to study, record and protect these orchids is coordinated under The Threatened Flora Link. This is a partnership between the Wildcare group Threatened Plants Tasmania (TPT), Department of Primary Industries, Parks, Water and Environment (DPIPWE) Threatened Species Section, the three Tasmanian National Resource Management bodies (NRM North, South and Cradle Coast), and the Royal Tasmanian Botanical Gardens and Friends of the Royal Botanical Gardens group to engage and encourage volunteers in conservation activities for priority threatened plant species. It has a current focus on approximately 20 orchid species.

TPT is a volunteer group that conducts survey and monitoring field trips for Threatened Flora Link projects. It has several long term orchid monitoring sites, with transects to collect data and add to the Tasmanian Natural Values Atlas. I am an executive member of TPT and often coordinate and lead orchid field trips and surveys. I am also a member of two orchid societies and Conservation Officer for Orchids Tasmania, the overseeing body for the four Australian Orchid Council societies.

It has been a long hot and dry summer in Tasmania, best highlighted by the historically low levels in the Hydro dams and an impending energy crisis in the state. During the height of summer there were over 80 bushfires burning across the state, many uncontrolled in remote inaccessible bushland that were started by dry lightning strikes. The largest of these fires burnt more than 100,000 hectares, including 19,000 hectares (approximately 1.2%) of the World Heritage Area. Interstate fire crews were brought to Tasmania to assist fighting this massive fire. It is too early to know what effects these fires will have long term, especially in the highland areas that haven't been burnt in recorded history but its generally agreed some of the areas burnt in the Arthur Pieman Conservation Area will

benefit from the fires as they were becoming very overgrown. None of TPT's monitoring transects were affected by the bushfires.

Threatened Plants Tasmania Group Projects

The extended dry spell in Tasmania has confirmed that orchid emergence and flowering is adversely affected by dry weather, and TPT's long term monitoring projects confirm this, with low numbers of plants recorded at most sites.

The exception was Henry Somerset Conservation Area (HSCA) at Latrobe, where the critically endangered *Caladenia tonellii* (robust fingers) produced the most flowering plants since monitoring began in 2009. HSCA is a privately owned area set aside and managed by the owners Forico for its diverse flora values. It is the type location and main population for *Caladenia tonellii*. A transect was set up in 2009 to monitor populations, and the high flower count is mostly due to one half of the transect being burnt in autumn 2013 and the other half in 2014, creating ideal flowering conditions. Results indicate that burning encourages flowering, but the cleared understory also encourages grazing of the flower stems. It is estimated one quarter of plants flowered, putting the population estimate of 150 plants attempted to or flowering as good news.

HSCA also contains a transect to monitor *Caladenia caudata* (tailed spider orchid). The transect has remained undisturbed for many years, and flowering plant numbers have fallen each year. In 2015 no flowering plants were seen in the transect and low numbers seen across the park, but Forico plans to burn the area this year as part of its ongoing management.

Thelymitra atronitida (blackhood sun orchid) is known from only a few sites in Tasmania, one being an overgrown remnant bush block in suburban Hobart. Until recently the privately owned block was prime for development. Fortunately an agreement was reached that allowed the owner to develop a section of the block, with the remainder handed over to the local council as a reserve. I coordinated a survey of the



Caladenia tonellii



Caladenia dienema



Caladenia saggicola



Prasophyllum milfordense



Thelymitra malvina



Pterostylis rubenachii

block in 2014 and found a number of unrecorded plants had sprung up in the cleared firebreak between the reserve and the housing subdivision, including some plants growing inside one of the new house blocks. I led the follow up survey in 2015 but the dull weather conditions on the day didn't allow for any of the sun orchids to open so most flowers needed some gentle assistance to reveal their identity. We were only able to locate one flowering plant, and given that there were a number of plants in fruit at the same GPS location as a group of plants that were recorded last year, it would seem this year's survey may have been a week late. Our day wasn't wasted however, as our survey revealed a good number of orchids including the first few open *Caleana major* (flying duck orchid) and lots more buds, similar numbers of *Paracaleana minor* (small duck orchid), a number of *Calochilus platytilus* (purple beard orchids), a few *Caladenia alata* (fairy fingers) and both the green and darker red *Prasophyllum concinnum* (trim sun orchid), proving once again what an important orchid rich area this is.

A TPT field trip to an area burnt in 2014 at Coles Bay to survey for *Thelymitra atronitida* (blackhood sun orchid) and *Thelymitra malvina* (mauve tuft sun orchid) found flower numbers were down from pre burn counts but confirmed that both species had recovered well. No plants were recorded the first year after the burn, suggesting that recovery may only be evident after a few seasons. The group was fortunate to have a visiting *Thelymitra* expert, Lars Nauheimer from James Cook University, join the field trip and take collections for his research which is using next generation sequencing to understand the evolution of *Thelymitra* and maybe resolve taxonomic questions about these two species.

The Campbell Town Golf Course is a significant site for threatened species, including herbs, shrubs and three orchid species, *Prasophyllum incorrectum* (golfers leek-orchid), *Prasophyllum olidum* (pungent leek-orchid) and *Caladenia anthracina* (black tipped spider-orchid). TPT has a long term monitoring project and an established transect for *Prasophyllum olidum*. Despite checking the transect, known plant GPS locations and a general walk around, no plants were found again this year, the poor result attributed to the extremely dry season. As part of the Threatened

Flora Link, a Green Army team was also onsite attacking a significant gorse problem and erected new signs highlighting the threatened species values on the course.

Volunteer members assisted James Dick from Forico, the owners of Westwing Plain, at their Surrey Hills Forestry Estate to install individual cages on a random selection of *Prasophyllum crebriflorum* (crowded leek-orchid) plants. The cages were made on site from discarded chicken wire and secured by metal stakes. The aim was to see whether cages will reduce the high level of grazing during the growing season. While installing the cages, emerged leaves and vegetation height were measured. The grassland vegetation height surrounding the orchid does not significantly affect whether plants emerge, but it was found the height of the vegetation plays a significant role in protecting the plant from grazing. The caged plants were much less likely to be grazed than uncaged plants, resulting in far greater numbers of plants reaching flowering stage.

Volunteers assisted Dr Richard Schahinger from DPIPWE for the seventh year of monitoring *Caladenia saggicola* (sagg spider orchid), known from only one site on private property near Hobart, where a transect was established in 2006 and is rescored annually. Counting didn't take long this year, with only 57 flowering plants found, down from 428 in 2014. The same property is also home to *Prasophyllum milfordense* (milford leek orchid) which has been monitored since 2009. Only 13 plants were found this year, the lowest number of flowering plants since monitoring began. This is probably due to the dry winter and spring, with most of the plants smaller than usual.

Members from Hobart turned the November Hobart Show long weekend into an extended orchid hunting trip. We joined a survey for threatened *Caladenia lindleyana* (lindley's spider orchid) and *Caladenia pallida* (rosy spider orchid) on private property in the Midlands. The area was very dry but seemed ideal after a burn last year. *Caladenia carnea* (pink fingers), *Caladenia clavigera* (club spider orchid) and *Diuris pardinia* (leopard orchid) were reasonably common, but neither of the target species was seen. Dr Nigel



Diuris lanceolata

Geoff has a mechanical engineering background. He lived on Cape York in the 1970s, where he often found dendrobiums in the bush, but his main focus has shifted to the conservation of terrestrial orchids.



Caladenia caudata

Swartz collected some spider orchid flowers and caught their pollinators for later identification.

As the group travelled towards Arthur River, the different species we passed were collected and a trial was conducted by setting the collected flowers in an open area, waiting for the pollinator to arrive and recording which flower they were attracted to. The pollinating wasps are attracted by a pheromone emitted by the flower. I was surprised how quickly the wasps appeared once the flowers were set out, and they would be clearly attracted to one flower over the others. The pollinators are small agile male wasps and Nigel entertained the group as he attempted to catch them in his butterfly net for later identification.

Arthur Pieman Conservation Area (APCA)

This area has recorded human habitation for millenia, and differs from typical Tasmanian west coast habitat as it has been shaped by fire, resulting in an area that contains many threatened orchid species. Over the weekend we had a full programme, starting with a survey of the 2 known populations of *Prasophyllum* sp. Arthur-Pieman, discovered by a local family in 2012. We measured the physical attributes of the plants for formal identification and provided the measurements

in the new species formal description. This new species differs markedly from all other species of *Prasophyllum* by its unornamented and entire labellum, an elongated anterior lobe of the column, and pollinia that readily fragments. Its single waxy yellow colour makes it very difficult to photograph.

We searched a known area for the endemic and endangered *Diuris lanceolata* (large golden moths), without much success, finding only a few flowering plants in poor condition due to the dry conditions and the site becoming overgrown. A survey of the two sites for *Pterostylis rubenachii* (arthur river greenhood) confirmed that the coastal population is doing very well, but inland sites have become overgrown from lack of a disturbance, and only a few plants were found. This is an ongoing trend, so I'm hopeful the bushfires that swept through the area earlier this year burnt some of the areas that needed it.

As part of an ongoing study of the *Caladenia patersonii* complex, we surveyed likely and known sites for *Caladenia dienema* (windswept spider orchid) and *Caladenia patersonii* (paterson's spider orchid), in areas that have been burnt in recent years. Flower numbers were down, proving that even the west coast of Tasmania is in the grip of a long dry period. Over the weekend,

evening workshops were conducted by Phil Collier from Rubicon Sanctuary on *Thelymitra* identification, and Mark Wapstra from ECOtas expanded our knowledge of the *Caladenia patersonii* complex, and how *C. patersonii*, *C. dienema*, *C. echidnachila*, *C. anthracina* and *C. helvania* fit together.

It wasn't all doom and gloom, as we did find *Diuris palustris* (swamp diuris) growing in an unusual location, and although not an orchid, one of our eagle eye volunteers discovered a population of *Aphelia gracilis* (slender fanwort) a grass-like annual herb that likes damp, sandy ground and wet patches. The find resulted in a 165 km range extension, as it was previously only known from the Midlands and north-east of the state. A trip to APCA in spring isn't complete without finding the green variety of *Calochilus paludosus* (strap beard orchid), known only from the Arthur River area. It was amongst the list of about 30 species we saw for the weekend.

***Sarcochilus australis* project**

A group of volunteers coordinated from the Tasmanian Native Orchid page on Facebook are doing great work rescuing seedlings of *Sarcochilus australis* (gunn's tree orchid) that have fallen off their host, and reattaching them to the trunk of a suitable host tree. Indications are that most of the seedlings rescued last year have survived and are growing well. This is a true volunteer project to secure one population of Tasmania's only epiphytic orchid. The other good news is the discovery of rare *Pterostylis grandiflora* (cobra greenhood) on the site last year. The first surveys mapping and recording the extent of the population is revealing this as a major site for the species, and possibly the largest recorded population.

Royal Tasmanian Botanical Gardens

It has been a successful year in the laboratory and nursery where Dr Nigel Swarts and Dr Magali Wright are overseeing work on the Orchid Conservation Program. The outcomes of this year's trials, which tested a range of different potting media and introduced different biocontrol agents for fungus gnat, have led to much higher re-emergence rates for orchid seedlings after their

first summer dormancy. *Caladenia saggicola*, *Pterostylis ziegeleri* (grassland greenhood) and *Prasophyllum olidum* seedlings are now strong one year olds. *Prasophyllum olidum* and *Prasophyllum incorrectum* (golfers leek orchid) are already deflasked and four other species will be potted out over the coming months. Magali, Nigel and some of the volunteers have taken time out to work with film maker Sarah Abbott to produce a short video highlighting their work which can be viewed at:

<https://www.youtube.com/watch?v=66PPIRk62zc&feature=youtube>

This is a snapshot of the orchid work being undertaken in the state. I encourage anyone wanting to learn more about Tasmanian orchids to become involved or contact me for more information.

Further Reading

Link to *The Little Book of Common Names for Tasmanian Plants* by H & A. Wapstra et al. with 2009 addendum, this sets the convention for common names used in this article:

<http://dpiptwe.tas.gov.au/conservation/publications-forms-and-permits/publications/little-book-of-common-names-for-tasmanian-plants>

Link to *A Census of the Vascular Plants of Tasmania, including Macquarie Island*. MF de Salas & ML Baker. 2015:

http://www.tmag.tas.gov.au/collections_and_research/tasmanian_herbarium/tasmanian_herbarium_publications

Link to Threatened Flora Link:

http://nrmsouth.org.au/wp-content/uploads/2016/03/TFL-case-study_v2.pdf

Listing Statement link:

<http://www.environment.gov.au/cgi-bin/sprat/public/publicthreatenedlist.pl?wanted=flora>

Link to RTBG page on the research being undertaken at the gardens:

<http://gardens.rtbg.tas.gov.au/science-research/orchid-conservation-and-the-rtbg/>

Link to the case study on the broader threatened flora project:

http://8726-presscdn-0-66.pagely.netdna-cdn.com/wp-content/uploads/2016/03/TFL-case-study_v2.pdf

Link to Tasmanian Native Orchid Facebook page <https://www.facebook.com/groups/447398148693222/>