Hydrorchis orbicularis

swamp onion-orchid

TASMANIAN THREATENED SPECIES LISTING STATEMENT

Image by M.A. Clements

Scientific name: ***Hydrorchis orbicularis*** (R.S.Rogers) D.L.Jones & M.A.Clem. *Orchadian* 13(10): 462 (2002)

Common Name: swamp onion-orchid (Wapstra *et al.* 2005)

Group: vascular plant, monocotyledon, family **Orchidaceae**

Name History: *Microtis orbicularis*

Status: *Threatened Species Protection Act 1995*: **rare**

Environment Protection and Biodiversity Conservation Act 1999: **Not listed**

Distribution: Endemic status: **Not endemic to Tasmania**

Tasmanian NRM Region: **Cradle Coast, North**

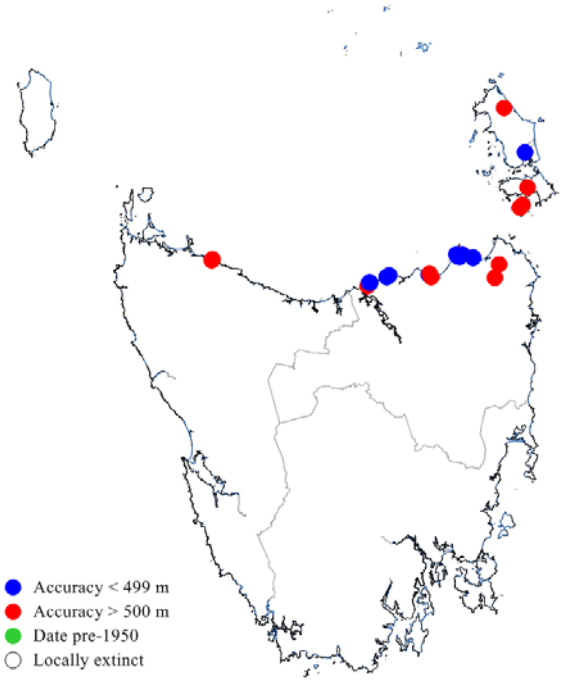

Figure 1. The distribution of *Hydrorchis orbicularis* within Tasmania

Plate 1. *Hydrorchis orbicularis* flowers from Albany, Western Australia (Image by M.A. Clements)

IDENTIFICATION AND ECOLOGY

The onion-orchid alliance comprises 3 genera: *Microtis* (in which all species were once included), *Microtidium* and *Hydrorchis*. All genera are terrestrial species having their flowers the right way up (as opposed to the upside-down flowers in *Prasophyllum*) and relatively crowded in spikes. *Hydrorchis* is represented by two species, both endemic in Australia, and is distinguished from *Microtis* by the solid leaf (*Microtis* leaves are hollow), the fused flower stem and leaf (the inflorescence emerges from the leaf in *Microtis*) and unlobed labellum without any calli (Jones 2006).

Species of *Hydrorchis* are deciduous terrestrials forming vegetative colonies. They reproduce by seed and by the production of extra tubers. Flowering plants consist of a thin leaf and a short inflorescence with small crowded flowers. The peduncle and the leaf are mostly fused and the flower spike breaks through the leaf after elongation of a short apical section of the peduncle. The flowers, each on a shortly stalked swollen ovary, have a concave partially hooded dorsal sepal and small lateral sepals and petals. The labellum is fleshy and lacks any calli (Jones 2006).

The flowering period of *Hydrorchis orbicularis* on the mainland is September to December (Jones 2006) but in Tasmania most collections are from November with a spread of collections from late October through to early January (Wapstra *et al.* 2008). Detection of leaves is virtually impossible in swampy grasslands and herbfields inhabited by this species, but although the flowers are small, flowering plants are surprisingly easy to detect.

Plants of *Hydrorchis orbicularis* may flower when partially or wholly submerged in swampy habitats (Plate 2). Flowering of *Hydrorchis orbicularis* is enhanced by fire, with substantial numbers recorded in a swamp burnt two years previously (Jones *et al.* 1999).

Description

Hydrorchis orbicularis has a leaf that is thread-like, and green or reddish. The leaf is 10 to 25 cm long and 3 mm wide. The scape is 15 to 30 cm tall, thin, and bears 3 to 30 well-spaced, shortly stalked flowers that are about 3 mm across. The flowers are green or reddish-brown, though the colouration is apparently unrelated to habitat or age of plants. The perianth segments spread widely and are thick-textured. The dorsal sepal is broadly ovate, partially hooded over the column, and are 1.8 mm long and 2 mm wide. The lateral sepals are narrowly lanceolate, deflexed and divergent and hidden behind the labellum, and 1.3 mm long and 0.6 mm wide. The petals are linear, obliquely erect and spreading with the tips often recurved, and are 1.5 mm long and 0.5 mm wide. The labellum is flat and orbicular, deflexed, and about 2.5 mm across. It is usually fleshy with smooth margins and lacks any calli

[description from Rogers 1907, Jones *et al.* 1999, Jones 2006]

Confusing Species: None

Plate 2. *Hydrorchis orbicularis* showing typically submerged base of plants
(Image by Les Rubenach)

DISTRIBUTION AND HABITAT

Hydrorchis orbicularis occurs in Victoria, South Australia, Western Australia and northern Tasmania. Within Tasmania it is uncommon and localised in coastal and near-coastal lowland areas, almost exclusively in the northeast and the Furneaux islands (Figure 1).

Hydrorchis orbicularis occurs in habitats subject to periodic inundation such as swamps and depressions. The base of the plants is usually immersed in water and plants can be wholly submerged in wet years. It has been recorded from herbfield, sedgeland, grassland and heathland on peats and sandy loams.

POPULATION ESTIMATE

Virtually all herbarium collections and database records are unaccompanied by demographic information, making estimating the total population within Tasmania difficult. Locally high numbers can be recorded in years after a fire but in other years the species will appear to be absent.

The broad vegetation type (i.e. lowland near-coastal poorly drained habitats) potentially supporting *Hydrorchis orbicularis* is widespread in Tasmania (although, historically, large areas have been cleared) and also well surveyed by orchid enthusiasts and botanists because of its tendency to support orchids and its floristic richness. In particular, recently burnt sites in near-coastal areas along the north, east and west coasts are often targeted by orchid enthusiasts and specialists, and several sites in the Rocky Cape National Park, Freycinet National Park and Arthur-Pieman Conservation Area have been particularly well surveyed due to the presence of other threatened orchids.

Table 1. Population summary for *Hydrorchis orbicularis*.

	Subpopulation	Tenure	NRM Region *	1:25000 Mapsheet	Year last seen	Area occupied (ha)	Number of mature plants
1	Wingaroo, Flinders Island	Foochow Conservation Area?	North	Wingaroo	2003	Unknown	Unknown
2	Shag Lagoon, Flinders Island	Shag Lagoon Conservation Area	North	Logan	1992	Unknown	Unknown
3	Cape Barren Island	Private property?	North	Kerford	1970	Unknown	Unknown
4	Clarke Island (2 sites)	Private property	North	Preservation	1979 1994	Unknown	Unknown
5	Tomahawk Recreation Ground	Crown	North	Tomahawk	2007	Unknown	5
6	Waterhouse area including sites near main road, One Tree Hill, Hardwickes Hill and Croppies Point	Waterhouse Conservation Area	North	Waterhouse	1983 1991 1993	Unknown	"rare" "occasional" "common"
7	Great Northern Plain (Tin Mine Creek)	Cameron Regional Reserve	North	Musselroe	1986	Unknown	Unknown
8	South Mount Cameron	Crown?	North	Gladstone	1970	Unknown	Unknown
9	Bridport (3 sites)	Granite Point Conservation Area	North	Bridport	1952 1979	Unknown	Unknown
10	Aerodrome Road (Cimitiere Creek)	Private property	North	Low Head	1970	Unknown	Unknown
11	Long Flat north of Aerodrome Road (4 sites)	Private property	North	Low Head	1970 1971 1992 2005	Unknown	Unknown
12	Fords Plain near Rocky Cape	Private property	Cradle Coast	Rocky Cape	1964 1973	Unknown	Unknown

* NRM region = Natural Resource Management region.

Since 1995, there have been a limited number of new subpopulations recorded and the majority of previously known sites have not been monitored. The discovery of a new colony in 2007 at Tomahawk fills in the range of the species between sites represented by older records and suggests that there may be other opportunities for discovery. However, it seems unlikely that subpopulations of *Hydrorchis orbicularis* large enough to influence its conservation status will be discovered in the future.

RESERVATION STATUS

Hydrorchis orbicularis occurs in the Waterhouse Conservation Area (several wetland sites), Cameron Regional Reserve and Shag Lagoon Conservation Area. Due to the precision of most other records and the lack of detailed collection information it is difficult to associate a tenure with most records for *Hydrorchis orbicularis* However, records are likely to lie within the following reserves: Foochow Conservation Area, Granite Point Conservation Area, and some Crown land blocks managed for different reasons including conservation.

CONSERVATION ASSESSMENT

Hydrorchis orbicularis was listed in 1995 as rare on schedules of the Tasmanian *Threatened Species Protection Act 1995*, due to the occurrence of the species in 20 or less 10 x 10 km Australian Map Grid Squares in Tasmania (FAC 1994).

THREATS, LIMITING FACTORS & MANAGEMENT ISSUES

Clearing of potential habitat: Clearing of near-coastal native vegetation may have resulted in, and may still be contributing to, the loss of potential habitat for *Hydrorchis orbicularis*. The low precision of many records, combined with the practical limitations of detecting the species, means that even dedicated surveys have likely overlooked subpopulations.

The site near South Mount Cameron (Blue Lake area) has an imprecise location but is most likely from the broad flats on Crown land, which may be threatened by proposed mining activities.

Historically, significant areas of potential habitat (i.e. lowland near-coastal poorly-drained habitats) have been cleared and this may explain the disjunct contemporary distribution of the species. Any clearing of potential habitat has the potential to disturb and/or eliminate as yet undetected subpopulations. At least one subpopulation is likely to be locally extinct due to development of land for primary production (Fords Plains near Rocky Cape). Substantial areas of broad flats near Low Head have been developed for intensive agriculture since the original recording of the *Hydrorchis orbicularis* from this area. However, the recording of the species in this area in 2005 suggests that pockets of potential habitat still exist amongst otherwise intensively managed land.

Inappropriate fire regime: The flowering of *Hydrorchis orbicularis* is enhanced by fires (Jones 2006). Fire management in potential habitat for *Hydrorchis orbicularis* is usually directed towards preventing the type of high intensity broadscale fires considered ideal to stimulate flowering. A more frequent lower intensity fuel reduction fire regime is unlikely to directly benefit the species and in the long term may reduce habitat quality.

Inappropriate disturbance regime: Some sites supporting *Hydrorchis orbicularis* have been subject to grazing (e.g. Fords Plains near Rocky Cape) and it is likely that intensive grazing pressure and development of exotic pasture will eliminate the species. Localised or periodic grazing may be compatible with maintenance of subpopulations, depending on the timing (i.e. outside the peak flowering and seed set time).

The recently discovered subpopulation at the Tomahawk Recreation Ground suggests that some level of disturbance is compatible with maintaining subpopulations of *Hydrorchis orbicularis* but the nature and timing of disturbance will significantly affect the longer term viability of localised subpopulations.

Climate change: While *Hydrorchis orbicularis* occurs in parts of the State with relatively naturally low rainfall, climatic warming has the potential to further exacerbate the precarious position of the species, particularly if the rainfall pattern changes. This may be further

complicated by changed fire regime pressures linked to changes in climatic conditions.

MANAGEMENT STRATEGY

What has been done?

No sites within gazetted reserves are actively managed to maintain and/or enhance the habitat for the species.

Hydrorchis orbicularis was formally included in the *Flora Recovery Plan: Threatened Tasmanian Orchids 2006–2010* (TSU 2006), with a priority (albeit low) noted for the requirement for baseline surveys of subpopulations.

Management objectives

The main objective for the management of *Hydrorchis orbicularis* is to ensure that there is no decline in known subpopulations.

What is needed?

- undertake additional surveys of known sites to determine the precise location, extent, condition and management needs of subpopulations, and to enable reassessment of the conservation status of the species;
- include the ecological requirements of *Hydrorchis orbicularis* in any management plans for the reserves known to support the species, including the Waterhouse Conservation Area;
- undertake extension surveys of potential habitat close to known sites during the flowering period of the species, especially in the years after fire events;
- provide information and extension support to relevant Natural Resource Management committees, local councils, government agencies and the local community on the locality, significance and management of known subpopulations and potential habitat;
- implement the threatened orchid recovery plan (TSU 2006) and include the species in any revision of the plan.

BIBLIOGRAPHY

FAC (Flora Advisory Committee) (1994). *Native Higher Plant Taxa which are Rare or Threatened in Tasmania.* Parks & Wildlife Service, Tasmania.

Jones, D. (2006). *A Complete Guide to Native Orchids of Australia including the Island Territories.* New Holland Publishers (Australia), Sydney.

Jones, D.L., Clements, M.A., Sharma, I.K., Mackenzie, A.M. & Molloy, P.B.J. (2002). Nomenclatural notes arising from studies into the Tribe Diurideae (Orchidaceae). *The Orchadian* 13(10): 437-468.

Jones, D., Wapstra, H., Tonelli, P. & Harris, S. (1999). *The Orchids of Tasmania.* Melbourne University Press, Carlton South, Victoria.

Rogers, R.S. (1907). A new *Microtis*. *Transactions and Proceedings of the Royal Society of South Australia*. 31:63-64.

TSU (Threatened Species Unit) (2006). *Flora Recovery Plan: Threatened Tasmanian Orchids 2006–2010*. Department of Primary Industries and Water, Hobart.

Wapstra, M., Roberts, N., Wapstra, H. & Wapstra, A. (2008). *Flowering Times of Tasmanian Orchids: A Practical Guide for Field Botanists*. Self-published by the authors (April 2008 version).

Wapstra, H., Wapstra, A., Wapstra, M. & Gilfedder, L. (2005). *The Little Book of Common Names for Tasmanian Plants*. Department of Primary Industries, Water and Environment, Hobart.

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