Microtidium atratum

yellow onion-orchid

TASMANIAN THREATENED SPECIES LISTING STATEMENT

Image by Mark Wapstra

Scientific name: ***Microtidium atratum*** (Lindley) D.L.Jones & M.A.Clem. *Orchadian* 13(10): 463 (2002)

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

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

Name History: *Microtis atrata*

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, South**

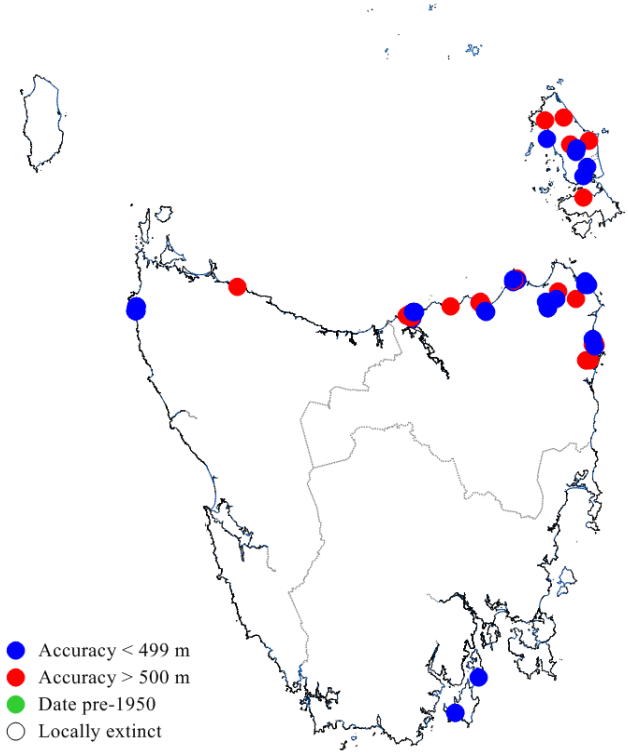

Figure 1. The distribution of *Microtidium atratum* within Tasmania

Plate 1. (LHS) *Microtidium atratum* from Black Bull Scrub. (Image by Mark Wapstra)
Plate 2. (RHS) Dried specimen from east coast. Note the very dark colour (almost black).

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. *Microtidium* is a monotypic (*Microtidium atratum*) and endemic to Australia. *Microtidium* differs from *Microtis* by very small yellowish-green plants (Plate 1), tiny flowers, a solid leaf (*Microtis* leaves are hollow) with an internal cavity where the inflorescence breaks through the leaf, a short stiff apical free lamina on the leaf, and the peduncle and the leaf completely fused over most of their length (Jones *et al.* 2002, Jones 2006). A characteristic feature of *Microtidium atratum* (especially compared to species of *Microtis*) is that pressed specimens dry very dark (Plate 2).

Microtidium atratum reproduces from seed and it forms vegetative colonies by production of extra tubers. It is self-pollinating (Jones 2006). The flowering period of *Microtidium atratum* on the mainland is September to December (Jones 2006) but in Tasmania most collections are from slightly later, mid-October through to December (Wapstra *et al.* 2008). Detection of leaves is virtually impossible in swampy grasslands and herbfields inhabited by this species, but although the plants and flowers are small, flowering plants are surprisingly easy to detect as they often grow in locally dense colonies where the yellow-green plants are conspicuous.

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

Description

Microtidium atratum has a filiform leaf that is yellowish-green, often with a dried blackened tip. The leaf is 3 to 9 cm long and 3 mm wide. The scape is 5 to 12 cm tall, thin and bears 3 to 40 flowers that are about 2 mm across. The flowers are yellowish green, ageing to black, and are faintly fragrant. The flowers are resupinate and are densely packed on swollen stalkless ovaries. The dorsal sepal is ovate, strongly hooded over the column, and 1 mm across. The lateral sepals are ovate-lanceolate, obliquely deflexed and widely divergent, and are 0.9 mm long and 0.5 mm wide. The petals are oblanceolate, widely spreading, and are 0.7 mm long and 0.4 mm wide. The labellum is elliptic-oblong, about 1.3 mm long and 0.6 mm wide, deflexed, with the margins and outer surface with lines of tiny beaded cells (papillae). The lamina callus consists of a single dark green basal mound.

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

Confusing Species: None

Plate 3. Habitat of *Microtidium atratum* at Black Bull Scrub (Image by Mark Wapstra)

DISTRIBUTION AND HABITAT

Microtidium atratum 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 with outliers in the far northwest and Bruny Island in the south (Figure 1).

Microtidium atratum occurs in habitats subject to periodic inundation such as swamps, depressions and soaks. 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 (Plate 3). *Microtidium atratum* has also been recorded from roadside drains and winter-wet pastures.

Table 1. Population summary for *Microtidium atratum*.

	Subpopulation	Tenure	NRM Region *	1:25000 Mapsheet	Year last seen	Area occupied (ha)	Number of mature plants
1	Tanners Bay tinfield, Flinders Island	Mount Tanner Nature Recreation Area	North	Tanner	1967	Unknown	"100s"
2	Five Mile Road, Flinders Island	Foochow Conservation Area?	North	Wingaroo	?	Unknown	Unknown
3	Allports Beach, Flinders Island	Emita Nature Recreation Area	North	Emita	2005	Unknown	3
4	Stony Lagoon, Flinders Island	Patriarchs Conservation Area	North	Patriarchs	1985	Unknown	Unknown
5	3 km NE Mt Leventhorpe (Liapootah Creek)	Private property	North	Leventhorpe	1990	Unknown	Unknown
6	2 km E Mt Leventhorpe (Liapootah Creek)	Private property	North	Leventhorpe	2000	Unknown	Unknown
7	Shag Lagoon, Flinders Island	Shag Lagoon Conservation Area	North	Logan	1992	Unknown	Unknown
8	Unavale Creek, Flinders Island	Private property	North	Fisher	2000	Unknown	Unknown
9	Deep Bay, Cape Barren Island	Private property	North	Puncheon	1988	Unknown	Unknown
10	WSW Cape Naturaliste	Mount William National Park	North	Naturaliste	1983	Unknown	"rare"
11	Stumpys Bay (4 sites)	Mount William National Park	North	Naturaliste	1983 1992	Unknown	"occasional" localised
12	Eddystone Road east of Gladstone	Unknown	North	Gladstone	1973	Unknown	Unknown
13	Waterhouse Road near Dryden Creek	Crown	North	Gladstone	2007	2 x 2 m	c. 10
14	Bonser Creek (W Mount Cameron)	Cameron Regional Reserve	North	Monarch	1983	Unknown	Unknown
15	Picketts Plain (north of)	Crown	North	Pioneer	1983	Unknown	Unknown
16	Waterhouse area including sites near main road, One Tree Hill and Hardwickes Hill (6 sites)	Waterhouse Conservation Area	North	Waterhouse	1980 1983 1991 1993	Unknown	"rare" "occasional" "common"
17	Great Northern Plain (Tin Mine Creek)	Cameron Regional Reserve	North	Musselroe	1986	Unknown	Unknown
18	Bridport (3 sites)	Granite Point Conservation Area	North	Bridport	1952 1979 1992	Unknown	Unknown
19	Bridport Road, south of Bridport (3 sites)	Crown?	North	Bowood	2005	Unknown	Unknown
20	Weymouth	Unknown	North	Tam O'Shanter	1972	Unknown	Unknown
21	Bell Buoy Beach area	Private property	North	Low Head	1921	Unknown	Unknown

	Subpopulation	Tenure	NRM Region *	1:25000 Mapsheet	Year last seen	Area occupied (ha)	Number of mature plants
22	Aerodrome Road including Cimitiere Creek and aerodrome gate	Private property	North	Low Head	1955 1961	Unknown	Unknown
23	Long Flat north of Aerodrome Road (3 sites)	Private property	North	Low Head	1971 1992 2005	Unknown	Unknown
24	Low Head	Unknown	North	Low Head	1921	Unknown	Unknown
25	George Town	Unknown	North	Low Head	1921	Unknown	Unknown
26	Cosy Corner on The Gardens Road	Bay of Fires Conservation Area	North	Binalong	1987	Unknown	Unknown
27	Swimcart Beach area	Bay of Fires Conservation Area	North	Binalong	1986	Unknown	Unknown
28	Jeanneret Beach area (2 sites)	Bay of Fires Conservation Area/Private property?	North	Binalong	1976 1990	Unknown	Unknown
29	Round Hill	Bay of Fires Conservation Area	North	Binalong	1970	Unknown	Unknown
30	Sloop Lagoon	Bay of Fires Conservation Area	North	Binalong	2004	4 x 4 m	120+
30	Fords Plain near Rocky Cape	Private property	Cradle Coast	Rocky Cape	1973	Unknown	Unknown
31	Black Bull Scrub	Arthur-Pieman Conservation Area	Cradle Coast	Marrawah	2007 2008	c. 0.5 ha	100+
32	Bluff Hill Road (5 sites)	Arthur-Pieman Conservation Area	Cradle Coast	Bluff	2008	< 1 ha	500-1000
33	Airstrip, North Bruny Island	Private Property	South	Great Bay	1975	Unknown	Unknown
34	Stinking Beach (500 m E), South Bruny Island	Private property	South	Cloudy	2001	Unknown	Unknown

* NRM region = Natural Resource Management region.

POPULATION ESTIMATE

Most 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. Terms such as "locally abundant", "common", "rare" and "discontinuous" often accompany collection records.

The broad vegetation type (i.e. lowland near-coastal poorly drained habitats) potentially supporting *Microtidium atratum* 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.

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 new colonies in 2007/2008 in the Arthur-Pieman Conservation Area (which represents a significant range extension) is of particular note because this area has been especially targeted by orchid enthusiasts for many years, suggesting that there may be other opportunities for discovery. The contemporary disjunct distribution with substantial areas of remaining high quality potential habitat is difficult to explain satisfactorily. For example, the reasons for the species being absent from St Helens to Bruny Island on the east coast are unclear, as is the apparent absence of the species from further sites in the greater Waterhouse area. However, it seems unlikely that subpopulations of *Microtidium atratum* large enough to influence its conservation status will be discovered in the future. The relatively high number of subpopulations (Table 1) and widespread distribution (Figure 1) gives a false picture of the highly localised and disjunct nature of the distribution of *Microtidium atratum* in Tasmania.

RESERVATION STATUS

Microtidium atratum occurs in the Waterhouse Conservation Area (several wetland sites), Cameron Regional Reserve, Mount Tanner Nature Recreation Area, Shag Lagoon Conservation Area, Emita Nature Recreation Area, Patriarchs Conservation Area, Mount William National Park, Bay of Fires Conservation Area and Arthur-Pieman Conservation Area. Due to the precision of many records and the lack of detailed collection information it is difficult to associate a tenure with several records for *Microtidium atratum*. However, records are likely to lie within the following reserves: Foochow Conservation Area, Granite Point Conservation Area, Mount Pearson State Reserve, and some Crown land blocks managed for different reasons including conservation.

CONSERVATION ASSESSMENT

Microtidium atratum 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 *Microtidium atratum*. 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 have contributed to the disjunct contemporary distribution of *Microtidium atratum*. 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 species 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 *Microtidium atratum* is enhanced by fires (Jones 2006). Fire management in its potential habitat 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 *Microtidium atratum* have been subject to grazing (e.g. Fords Plain near Rocky Cape) and it is likely that intensive grazing pressure and development of exotic pasture will eliminate the species. Historically, significant areas of potential habitat on Flinders Island and in the northeast (e.g. in and around Mount William National Park) have been, and continue to be, subject to varying degrees of stock grazing, including in "natural" wetland habitats and wet pasture sites. 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).

Climate change: While *Microtidium atratum* 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.

Microtidium atratum 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 *Microtidium atratum* 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;
- include the ecological requirements of *Microtidium atratum* in any management plans for the reserves known to support the species including the Waterhouse Conservation Area, Arthur-Pieman Conservation Area and Mount William National Park;
- 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.

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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