annual fern

Anogramma leptophylla

TASMANIAN THREATENED FLORA LISTING STATEMENT

Scientific name: ***Anogramma leptophylla,*** (L.) Link, *Fil. Spec.* 137 (1841).

Family: Adiantaceae

Common Name: annual fern (Wapstra *et al.* 2005)

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

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

Regional Forest Agreement: **Priority species**

Distribution: Tasmanian NRM Regions: **North & South**

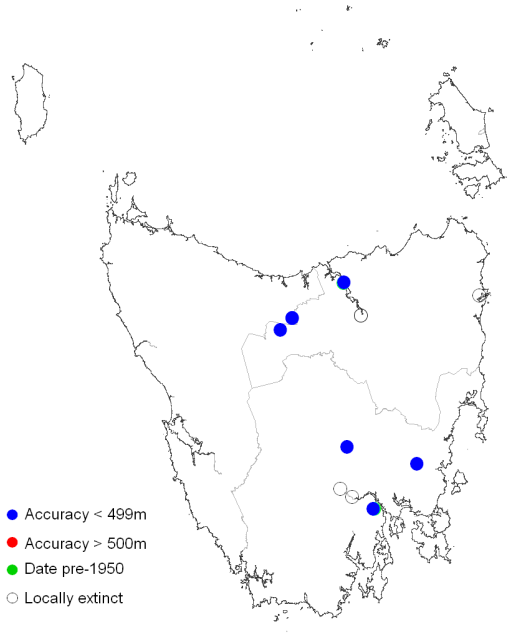

Figure 1. Distribution of *Anogramma leptophylla* in Tasmania.

Plate 1. Fronds of *Anogramma leptophylla* (Photograph: Chris Lang).

DESCRIPTION

Anogramma leptophylla is a small annual fern of the Adiantaceae, and is known from several disjunct sites in northern and southern Tasmania. The parsley-like fronds of the species die down during summer, with new fronds growing from a perennial gametophyte in spring.

Identification

The following description is adapted from Duncan & Isaac (1986).

Fronds are parsley-like, tufted, 5 to 12 cm long and erect or spreading. Plants occasionally produce a shorter, fan-shaped, basal barren frond. The stipe is slender, pale to reddish-brown, shiny, and glabrous except for a few hairs at the base.

The **lamina** is yellow-green, hairless and with very deep lobes. The lamina may be bipinnate or oblong-triangular in outline. Pinnae are rather distant and stalked. Pinnules are wedge-shaped at the base, rounded and deeply lobed. Veins are forked several times and free.

Sori are located on the under-surface of the pinnae lobes, are unprotected, and clustered in bands along the veins, sometimes coalescing.

Confusing Species

Anogramma leptophylla may be confused with young plants of *Cheilanthes austrotenuifolia*. The rachis of the latter species has scattered pale scales: these are absent in *Anogramma leptophylla*.

DISTRIBUTION AND HABITAT

Anogramma leptophylla occurs in Tasmania, Victoria, South Australia, New South Wales and Western Australia, as well as New Zealand, South America, India Africa and Europe (Duncan & Isaac 1986, Entwisle 1994, Bostock *et al.* 1998).

Anogramma leptophylla has a disjunct distribution across Tasmania, being known from the eastern side of the River Tamar near Spring Bay, Sensation Gorge and the Mersey River (both near Mole Creek), the Clyde and Bluff Rivers in the south, and Glenorchy near Hobart. The linear extent of the extant sites in Tasmania is 111 km, the extent of occurrence 9 070 km^2, and the area of occupancy estimated to be less than 1 ha.

There are also historic records of *Anogramma leptophylla* at Cataract Gorge near Launceston, Georges Bay in the northeast, Macquarie Plains (Bushy Park), and Back River near New Norfolk (Garrett 1997, Rodway 1903).

Anogramma leptophylla grows in shallow soil layers over rock, on exposed or semi-exposed outcrops in dry or damp sclerophyll forest. Plants are mostly found on rock ledges, often on, or just inside, the drip line of the overhead rock-face. The substrate is variable, including dolerite, basalt and sandstone. Co-occurring species include the ferns *Asplenium flabellifolium, Cheilanthes austrotenuifolia* and *Pleurosorus rutifolius*, various herbs, notably *Poa labillardierei* and *Bulbine bulbosa*, as well as a plethora of mosses, lichens and liverworts. The altitudinal range of extant sites is 60 to 320 m above sea level, in areas of low to moderate rainfall.

RESERVATION STATUS

Anogramma leptophylla is reserved in Mole Creek Karst National Park and Wellington Park.

POPULATION ESTIMATE

There are estimated to be approximately 130 to 170 mature individuals in Tasmania, across four of the six populations believed to persist (Table 1). One of the populations for which abundance is unknown has been estimated to cover an area of just 12 m^2. This suggests a relatively low abundance. Another site last seen in 1998 on private land requires further assessment to determine abundance.

CONSERVATION ASSESSMENT

Anogramma leptophylla was listed as rare on the TSP Act in 1995, and up-listed to **vulnerable** in early 2008 as part of the Act's 5-year review. The species qualifies for vulnerable under the following criteria:

(B). Area of occupancy is less than 2 000 km^2, the species is known to exist at no more than 10 locations, and a continuing decline is inferred in the area and quality of habitat.

(D) The total population estimated to number less than 1 000 mature individuals.

Table 1. Population summary of *Anogramma leptophylla* in Tasmania.

Popn.	Location	Tenure	NRM region	1:25 000 mapsheet	Year last (first) seen	Area occupied (ha)	Number of mature plants
1	Sensation Gorge	Mole Creek Karst National Park	North	Mole Creek	1996 (1996)		20–40*
2	Glenorchy	Wellington Park	South	Collinsvale	1985 (1890s)		20–40*
3	Mersey River	Private	North	Gog	1998 (1997)		
4	Spring Bay	Private	South	Beaconsfield	1996 (1874)	2 patches 400 m apart *	c. 40*
5	Clyde River	Private	South	Cawood	2005$ (2004)	3 by 4 m$	
6	Bluff River Gorge	State Forest	South	Woodsdale	2005$ (2005)	30 by 40 cm $	c. 50$
7	Cataract Gorge	Launceston Council	North	Launceston	1984 (1874)		Presumed extinct*
8	Georges Bay		North	St Helens	1900?#		Presumed extinct
9	Back River		South	New Norfolk	1900?#		Presumed extinct
10	Macquarie Plains		South	Bushy Park	1840$		Presumed extinct

NRM region = Natural Resource Management region.* = Garrett (1997) and unpublished data, % = TSS 2005 surveys, $ = RTBG data, # = Rodway (1903).

THREATS

Threats to the species include competition from exotic plants, trampling by stock, inappropriate fire regimes and stochastic risks. These are detailed below.

Plant competition: Competition from native and introduced species may be a major threat to *Anogramma leptophylla* given its extremely small and delicate habit, and the deciduous nature of its sporophyte, combined with the fragile nature of its 'rootstock'. The species produces only a small and poorly developed rhizome. These characteristics make the plant susceptible to changes in its immediate environment. Plant competition via excessive shading, deprivation of soil moisture and nutrients, or smothering of the rootstock may lead to suppression of the sporophyte.

Most of the known *Anogramma leptophylla* sites are threatened by weed invasion. The degree of weed infestation appears to reflect the proximity of populations to areas of major disturbance. The presumed extinct sites at Cataract Gorge and Macquarie Plains are both heavily infested with weeds, with briar rose (*Rosa rubiginosa*) prominent at the latter site. The Glenorchy site is now heavily infested with introduced grasses and herbs such as cleavers, fumitory and chickweed, and the status of the population is uncertain (Threatened Species Section 2005 surveys). Weeds are also affecting sites with an apparently large buffer of native vegetation, with potential habitat being colonised by introduced species that have wind-dispersed seeds, such as thistles at the Bluff River Gorge site.

Introduced herbivores: Three of the extant *Anogramma leptophylla* populations occur on

private land and may be potentially impacted upon by a range of activities including trampling by stock. However, the preferred cliff-face habitat of the species does reduce the likelihood of long-term, intense grazing.

Inappropriate fire regimes: The rocky outcrop habitat for *Anogramma leptophylla* tends to be well protected from the direct effects of wildfire. However, fire in surrounding forest may impact upon plants through changes to local hydrology and microclimate, and increased likelihood of physical disturbance from falling trees.

Stochastic risk: The extremely localised nature of the *Anogramma leptophylla* populations also exposes them to the risk of extinction through unforeseen stochastic events.

MANAGEMENT STRATEGY

The main objectives for recovery of *Anogramma leptophylla* are to minimise the probability of extinction of wild populations by ensuring habitat protection, and to secure all key populations under effective management regimes within the next five years. These objectives are consistent with the Draft Tasmanian Recovery Plan for threatened ferns (Threatened Species Section 2008).

What has been done?

Anogramma leptophylla is listed as a priority species requiring consideration in the development of the private land component of the Tasmanian reserve system (DPIWE 1998).

The species is also included in a draft recovery plan for threatened Tasmanian ferns (Threatened Species Section 2008).

What is needed?

Recovery actions necessary to improve the conservation status of *Anogramma leptophylla* include:

- Negotiation with private landowners to ensure protection of the Spring Bay, Clyde River and Mersey River sites, via land management agreements or formal conservation covenants under the *Nature Conservation Act 2002*.
- Extension surveys, notably at Bluff River Gorge, Sand River Gorge, Coal River Gorge.

ADVICE FOR LANDOWNERS/MANAGERS

The following actions will assist to conserve *Anogramma leptophylla* in Tasmania:

- Retain all areas of known habitat for the species.
- Avoid any activities that may impact upon the species' habitat. Ensure stock is excluded, invasive weeds removed, and avoid burning.
- Actively search for new populations if visiting potential habitat and forward site details to the Threatened Species Section.

It is important to remember that there may be site specific management requirements. Please contact the Threatened Species Section for further advice.

BIBLIOGRAPHY

Bostock, P.D., Chambers, T.C., and Farrant, P.A. (1998). Adiantaceae, *Flora of Australia* 48: 224–286.

DPIWE (1998) *Strategic plan for the private land component of the CAR reserve system.* Department of Primary Industries, Water and Environment, Hobart.

Duncan, B.D., and Isaac, G. (1986). *Ferns and allied plants of Victoria, Tasmania and South Australia.* Melbourne University Press, Carlton, Victoria.

Entwisle, T.J. (1994) *Ferns and Allied Plants* (Psilophyta, Lycopodiophyta, Polypodiophyta) in: N.G. Walsh & T.J. Entwisle (eds.) *Flora of Victoria Volume 2*, Inkata Press, Melbourne.

Garrett, M. (1997). *Rare or Threatened Tasmanian Forest Ferns*. Report to the Tasmanian RFA Environment and Heritage Technical Committee.

Rodway, L. (1903) *The Tasmanian Flora.* Government Printer, Hobart.

Threatened Species Section (2008) *Draft Flora Recovery Plan: Tasmanian Ferns 2008–2012*. Department of Primary Industries and Water, Hobart.

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

Prepared in 2006 under the provisions of the Tasmanian *Threatened Species Protection Act* 1995. Reviewed in 2008.

Cite as: Threatened Species Section (2008) *Listing Statement for* Anogramma leptophylla *(annual fern),* Department of Primary Industries & Water, Tasmania.

View:
http://www.dpiw.tas.gov.au/threatenedspecieslists

Contact details: Threatened Species Section, Department of Primary Industries & Water, GPO Box 44 Hobart Tasmania Australia 7001. Ph (03) 6233 6556 fax (03) 6233 3477.

Permit: It is an offence to collect, disturb, damage or destroy this species unless under permit.