Image by R. Schahinger

Asplenium trichomanes subsp. *trichomanes*

dolerite spleenwort

TASMANIAN THREATENED SPECIES LISTING STATEMENT

Scientific name: ***Asplenium trichomanes*** L., *Sp. Pl.* 2: 1080 (1753) **subsp. *trichomanes***

Common name: dolerite spleenwort (Wapstra *et al.* 2005)

Group: vascular plant, pteridophyte, family **Aspleniaceae**

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

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

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

Tasmanian NRM Region: **North**

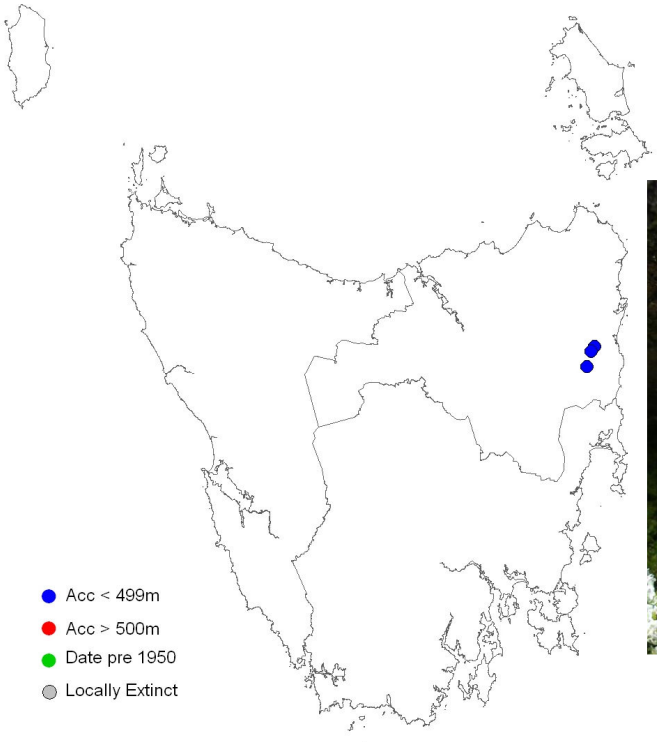

Figure 1. Distribution of *Asplenium trichomanes* subsp. *trichomanes* in Tasmania

Plate 1. *Asplenium trichomanes* subsp. *trichomanes* (Image by R. Schahinger)

IDENTIFICATION AND ECOLOGY

Asplenium trichomanes subsp. *trichomanes* is a fern with clusters of 5 to 25 cm long fronds arising from a short, thick rhizome. The small pinnae curl under in dry times though the fern quickly recovers when moisture becomes available. When fertile, ripe sporangia can cover the lower surface of the pinnae (Duncan & Isaac 1986). The fern can resprout from its thick rhizome following fire or other damage. *Asplenium trichomanes* subsp. *trichomanes* can be identified year round.

Description

Asplenium trichomanes subsp. *trichomanes* arises from a short, thick rhizome covered with very dark, shiny, coarse, lattice-like scales. Fronds are clustered, erect and 5 to 25 cm long. The stipe is short, brittle, shiny, black and flattened above, with a tuft of scales at its base. The lamina is deep green, linear, pinnate and firm in texture. The rachis is shiny, blackish, brittle and grooved with narrow, fragmented wings. There are 15 to 40 pairs of shortly stalked pinnae arranged asymmetrically. The pinnae are oblong to oval, 4 to 10 mm long with deeply crenate to almost entire margins. The veins are obscure but minor veins branch pinnately from the midvein. After 6 to 12 months, the lower pinnae are often deciduous leaving small projections. Sori on the undersurface of pinnae are arranged in 3 to 6 pairs along the minor veins, oblique to the midvein. Each sorus is protected by a pale, thin indusium with an irregular margin, opening towards the centre of the pinna.

[description from Duncan & Isaac (1986)]

Confusing species

This taxon is quite distinctive and is easily distinguished from *Asplenium trichomanes* subsp. *quadrivalens* in that the pinnae are quite widely spaced, rounded and scarcely longer than they are wide. *Asplenium trichomanes* subsp. *quadrivalens* is usually associated with limestone whereas *Asplenium trichomanes* subsp. *trichomanes* occurs on non-calcareous rock, in Tasmania, always dolerite. *Asplenium trichomanes* subsp. *quadrivalens* has twice as many chromosomes as *Asplenium trichomanes* subsp. *trichomanes* (Duncan & Isaac 1986).

DISTRIBUTION AND HABITAT

Asplenium trichomanes subsp. *trichomanes* occurs in Tasmania, Victoria and New South Wales (where it is rare), and is also known from Indonesia, Asia, Europe and North America (Garrett 1997).

Within Tasmania, *Asplenium trichomanes* subsp. *trichomanes* has been recorded from three sites in the northeast: Mt Durham, Huntsmans Cap, and Valley Road on the northern flanks of the Fingal Tier (Figure 1; Garrett 1995, 1996 & 1997). The linear extent of the sites is about 13 km, the extent of occurrence 7 to 8 km^2, and the area of occupancy approximately 1 ha.

Asplenium trichomanes subsp. *trichomanes* occurs on exposed dolerite outcrops in dry sclerophyll forest in areas of low rainfall between 450 and 680 m above sea level (Garrett 1997). Plants grow on northwest to northeast facing outcrops in the shallow soil of crevices (Plate 2) or sloping rock platforms. Co-occurring ferns may include the xerophytes *Cheilanthes austrotenuifolia*, *Pleurosorus rutifolius* and *Pellaea calidirupium* (Garrett 1995).

POPULATION ESTIMATE

Approximately 230 plants have been recorded in total, with the majority of plants in the Mt Durham subpopulation which is composed of 2 sites (Table 1). Likely sites for *Asplenium trichomanes* subsp. *trichomanes* were identified in 1995 (Garrett 1995) and targeted surveys conducted in 1996 for the 1997 *Regional Forest Agreement* (RFA). No new sites have been identified since, despite the taxon having some priority given its status as an RFA priority species and searches by fern enthusiasts. The likelihood of sufficient new subpopulations or numbers of mature individuals being discovered to not allow the taxon to meet the criteria for vulnerable is considered low.

RESERVATION STATUS

The taxon is reserved in Huntsmans Cap Forest Reserve.

Table 1. Population summary for *Asplenium trichomanes* subsp. *trichomanes* in Tasmania

	Subpopulation	Tenure	NRM region *	1:25 000 mapsheet	Year last & (first)seen	Area of occupancy (ha)	Number of mature plants
1	Mt Durham (upper & lower)	State Forest	North	St Marys	2005 (1989)		139** & 46**
2	Valley Road	State Forest	North	St Marys	2005 (1992)		14** 6#
3	Huntsmans Cap	Huntsmans Cap Forest Reserve	North	Dublin Town	1996 (1996)		30**

* NRM region = Natural Resource Management region; ** Garrett (1997); # Threatened Species Section surveys

Plate 2. Rock crevice habitat *Asplenium trichomanes* subsp. *trichomanes*
(Image by R. Schahinger)

CONSERVATION STATUS

Asplenium trichomanes subsp. *trichomanes* was listed as vulnerable on the Tasmanian *Threatened Species Protection Act 1995* in 2009, meeting the following criterion:

D. total population very small or area of occupancy restricted, and;

1. total population estimated to number fewer than 1,000 mature individuals;
2. total population with an area of occupancy less than 0.05 km^2 (5 hectares), and typically in five or fewer locations that provide an uncertain future due to the effects of human activities or stochastic events, and thus capable of becoming endangered within a very short time.

Asplenium trichomanes subsp. *trichomanes* was identified as an RFA priority species in 1997.

THREATS, LIMITING FACTORS & MANAGEMENT ISSUES

Threats to *Asplenium trichomanes* subsp. *trichomanes* include:

- exposure to drying from operations such as quarrying and inappropriate timber harvesting techniques;
- competition from pine wildlings;
- an inappropriate fire regime;
- stochastic risk of extinction.

The Valley Road subpopulation occurs on State Forest near the face of a disused quarry. Garrett (1997) noted an apparent decline in numbers at this site since its discovery in 1992, attributing the decline to quarrying operations possibly over-exposing the site, with plants being lost during periods of subsequent drought (a view supported by Threatened Species Section surveys in 2005). A renewal of quarrying could have a further impact on the taxon.

The Mt Durham subpopulation also occurs on State Forest, with the base of the rock outcrop that supports the lower subpopulation being only 10 to 20 m from the boundary road of a mature *Pinus radiata* plantation. Garrett (1997) considered that the habitat of the taxon had not suffered as a result of nearby clearance during the plantation's establishment or from shading by the pines, though he did recommend that due care be taken during any future harvesting operations. However, surveys by Threatened Species Section personnel in 2005 revealed that a number of pine wildlings had established

themselves in areas of potential habitat for the taxon (Schahinger, pers. comm.). These pose an ongoing threat to the taxon if not removed.

Frequent fire has the potential to impact adversely upon *Asplenium trichomanes* subsp. *trichomanes,* though this is considered to be a relatively low risk due to the fire-protected nature of its rocky habitat and the ability of the taxon to resprout from its thick rhizome.

The localised nature of the *Asplenium trichomanes* subsp. *trichomanes* subpopulations also exposes them to the risk of extinction through stochastic events.

MANAGEMENT STRATEGY

What has been done?

Potential sites for the taxon were identified and surveyed for the *Regional Forest Agreement 1997*. Some sites were visited during surveys in 2005 by personnel with the Threatened Species Section (see Table 1).

Management objectives

- prevent the loss of known subpopulations;
- prevent the loss or degradation of potential habitat;
- find new subpopulations.

What is needed?

- include known sites on State Forest in Special Management Zones (Orr & Gerrand 1998);
- remove pine wildings from known sites and their vicinity;
- should forestry operations (including quarrying) be proposed within 5 km of known sites, survey for the taxon in potential habitat that may be impacted, in order to prevent impacts to presently undetected sites;
- avoid burning habitat in the vicinity of known sites if burnt less than 15 to 25 years earlier;
- as a priority, resurvey the Huntsmans Cap subpopulation;
- monitor known sites at least once every 3 to 5 years to determine population trend and whether management intervention is required;
- identify and survey potential habitat;
- provide information and extension support to the Northern Natural Resource Management committee, local councils, government agencies and the local community on the locality, significance and management of known subpopulations and potential habitat.

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