

Small raspfern

Doodia caudata

TASMANIAN THREATENED FLORA LISTING STATEMENT



All images by Richard Schahinger

Scientific name: *Doodia caudata* (Cav.) R.Br., *Prodr.* 151 (1810)

Common name: small raspfern (Wapstra *et al.* 2005)

Name history: now *Blechnum rupestre*

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

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

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

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

Tasmanian NRM Regions: **Cradle Coast & North**

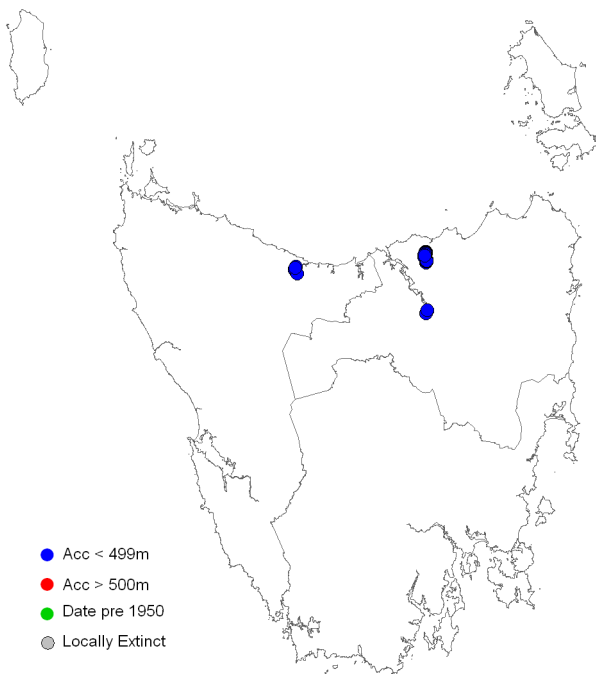


Figure 1. Distribution of *Doodia caudata* in Tasmania



Plate 1. *Doodia caudata* habit with dimorphic barren and fertile fronds

IDENTIFICATION & ECOLOGY

Doodia caudata is an erect tufted fern in the Blechnaceae family, known from a few rivers in northern Tasmania. The species is strictly riparian in habitat, occurring amongst boulders and along shaded banks of rivers and creeks. Recruitment may be from spores or horizontal runners. Reproductive material is required for identification of the species (December – April).

Description

Doodia caudata produces a short rhizome covered with long, light brown scales and persistent stipe bases. Its fronds are clustered, spreading and dimorphic (Plate 1), with short barren fronds (10 to 25 cm long) and longer, erect, harsher fertile fronds (15 to 40 cm long). The stipe is short, pale but dark towards the base and smooth. Scales are scattered, sessile, light brown and narrow. The lamina is mid-green, pinnate, with pinnae in the lower half attached by their midribs only and clearly separate, and in the upper part they are sessile with wide decurrent bases. The rachis is pale, often with short hairs and a few linear scales. The pinnae in the lower part of frond are stalked, small, broadly oblong with rounded tips and often with strongly lobed bases. The others are much longer than broad and have margins thickened with strongly curved teeth. The pinnae on fertile fronds are very narrow. Veins are well separated with a single row of narrow areoles on each side of the mid-vein. Sori are narrowly oblong, each longer than 1.5 mm, in a single row on each side of the mid-vein and close to it and are often confluent. The indusium is membranous, with small hairs (Duncan & Isaac 1986).

Confusing Species

Doodia has now been allocated to the genus *Blechnum* with *Doodia caudata* now known as *Blechnum rupestre*. This species can be distinguished from *Doodia australis* (now *Blechnum parrissii*), by the following features: pinnae are attached by the midrib only in lower half of lamina (cf. less than one third of lamina for *Doodia australis*); the stipe and rachis are smooth and more or less glabrous (cf. rough with dark-brown scales); the sori are more than

1.5 mm long in a single row either side of the pinna midrib, becoming confluent (cf. sori less than 1.5 mm long and in a single or double row, not confluent). There is reported to be some overlapping of characters between the two species, particularly with the rock forms of *Doodia australis* (Duncan & Isaac 1986, Garrett 1996, Chambers & Farrant 1998). *Doodia caudata* can be distinguished from *Doodia aspera* (now *Blechnum neohollandicum*) by pinnae in the lower part of the lamina that are stalked (cf. winged bases) and *Doodia aspera* may have a second row of sori on each side of the mid-vein (cf. always a single row for *Doodia caudata*).

DISTRIBUTION & HABITAT

Doodia caudata is known from Tasmania, New South Wales, Queensland and Victoria, and extends westward into South Australia (the only raspfern to do so). The species also occurs on Lord Howe Island (Garrett 1996), and has been recorded from New Caledonia and New Zealand (Duncan & Isaac 1986, Walsh & Entwisle 1996, Chamber & Farrant 1998).

In Tasmania, *Doodia caudata* is known to be extant at three locations: River Leven, Pipers River and the lower reaches of the South Esk River near Launceston. The species had been collected at Launceston's Cataract Gorge in 1833 and 1841, but had been presumed to be extinct along the South Esk River until a small colony was discovered near Duck Reach in 2001 (North Barker & Associates 2001), with subsequent sightings just downstream of First Basin in 2006 and 2010. The species was first collected from the River Leven in the 1980s, where it is now known to occur discontinuously over a 9 km stretch of river. The Pipers River population was discovered in early 2007 and has a patchy occurrence over at least 10 km (ECOtas 2007).

Garrett (1996) noted that there were also early collections of the species at Georges Bay and an unknown location named 'Bates Ford', though both collections have since been determined to be attributable to *Doodia australis* (Garrett 2005, pers. comm.).

Table 1. Population summary for *Doodia caudata* in Tasmania

	Subpopulation	Tenure	NRM region	1:25 000 mapsheet	Year last (first) seen	Area of occupancy (ha)	Number of mature plants
1	River Leven	Sith Cala Nature Reserve, State Forest and Private	Cradle Coast	Kindred & Ulverstone	1996 (1980s)	c. 5	1000–2000 *
2a	Duck Reach, South Esk River	Trevallyn Nature Recreation Area	North	Prospect	2001 (1833)	0.0001	< 10 #
2b	First Basin, South Esk River	Launceston City Council	North	Launceston	2010 (1833)	0.01	25–30 ^
3	Pipers River	State Forest & private	North	Retreat	2007 (2007)	c. 5	600–700 %

* = Garrett (1997, pers. comm.); # = North Barker & Associates (2001); % = ECOtas (2007); ^ = TSS 2010 surveys.



Plate 2. *Doodia caudata* habitat at Cataract Gorge

Doodia caudata is a riparian species that grows in rich moist soil amongst boulders and along the shaded banks of streams, or sometimes in the crevices of rock outcrops (Plates 1 & 2). Along the River Leven the fern grows on the exposed margin of mixed forest, where *Eucalyptus obliqua*, *Eucalyptus delegatensis*, *Acacia melanoxylon*, *Nothofagus cunninghamii*, *Atherosperma moschatum* and *Pomaderris apetala* are the dominant overstorey species. The species occurs on the mossy riverbanks and occasionally at sites where disturbance has created a near-vertical substrate.

POPULATION ESTIMATE

The River Leven and Pipers River subpopulations consist of at least 1000–2000 and 600–700 plants, respectively, although their

full extent remains to be determined. There are fewer than 50 plants known from the lower South Esk River near Duck Reach and First Basin. The linear extent of the extant *Doodia caudata* sites in Tasmania is 94 km, with an extent of occurrence 2050 km² and an area of occupancy of about 10 hectares.

There is considered to be a reasonable likelihood of new subpopulations being found in catchments east of the Tamar given the recent discovery of the Pipers River subpopulation.

RESERVATION STATUS

Doodia caudata is reserved within Sith Cala Nature Reserve and Trevallyn Nature Recreation Area.

CONSERVATION ASSESSMENT

Doodia caudata was listed as vulnerable on the Tasmanian *Threatened Species Protection Act 1995* in 1995, and up-listed to endangered in early 2008 as part of the Act's 5-year review. The species qualifies for endangered under criterion B:

- occupies less than 10 ha;
- occurs in no more than 5 locations;
- an observed and projected continuing decline in the area and quality of habitat.

THREATS, LIMITING FACTORS & MANAGEMENT ISSUES

Regulated flows and weed invasion: The integrity of the *Doodia caudata* sites along the lower reaches of the South Esk River has been impacted by changes to natural flow regimes following construction of the Trevallyn Dam in the 1950s, compounding changes associated with the earlier Duck Reach power station. The regulated flow regime and associated changes to riverbank scouring are likely to have had a significant impact on recruitment opportunities for species such as *Doodia caudata*. In addition, there has been a serious decline in habitat quality due to invasion by weeds such as willow (*Salix* sp.), gorse (*Ulex europaeus*) and umbrella sedge (*Cyperus eragrostis*) (North Barker & Associates 2001).

The *Doodia caudata* subpopulation along the River Leven is also threatened by weeds (blackberry), with the potential for smothering of the fern and competition for habitat. Blackberry and willow infestations pose a threat to plants growing along Pipers River.

Land clearing: The River Leven and Pipers River subpopulations are under threat from land clearance along their upper and middle reaches, respectively. Likely consequences include an increase in flooding, higher nutrient and sediment loadings, and possible herbicide contamination. Substantial areas of the River Leven catchment upstream of the known sites are devoted to plantation forestry and agriculture, with the potential for the adverse downstream impacts noted above.

Climate change: Long-term climate change is likely to lead to an eventual contraction of suitable habitat for *Doodia caudata* as conditions become warmer and drier than at present.

MANAGEMENT STRATEGY

What has been done?

Surveys were conducted and management prescriptions prepared for *Doodia caudata* in preparatory studies for the Regional Forest Agreement (Garrett 1997), and targeted surveys were undertaken in 2007 under the auspices of an NRM-funded threatened flora project (ECOTas 2007). The latter resulted in a

significant range extension along the Pipers River.

Limited weed works have been undertaken along the lower reaches of the South Esk River, with willow being targeted in the area between Duck Reach and Second Basin (North Barker & Associates 2001; Parks & Wildlife Service 2008), and Launceston City Council have been active in the Cataract Gorge Reserve in the vicinity of the First Basin site. There has also been some willow removal on private property along the lower reaches of Pipers River.

Collections from the River Leven site have been cultivated at the Royal Tasmanian Botanical Gardens, with several plants now growing in the Gardens' fernery.

Management Objectives

The main objective for the recovery of *Doodia caudata* is to reduce the risk of extinction of the species through improved management and protection of populations and *ex situ* conservation measures. This is consistent with the objectives of the Draft Recovery Plan for Threatened Tasmanian Ferns (Threatened Species Section 2010).

What is needed?

Recovery actions necessary to improve the conservation status of *Doodia caudata* include:

- provide information and extension support to the Cradle Coast and Northern Natural Resource Management committees, local councils, government agencies and the local community on the locality, significance and management of known *Doodia caudata* subpopulations and areas of potential habitat;
- control weed infestations at known sites;
- pursue conservation covenant or management agreements for occurrences on private land;
- ensure that streamside reserves of appropriate width are in place for those occurrences on State Forest along the River Leven and Pipers River;
- undertake extension surveys in the River Leven and Pipers River areas;

- monitor known subpopulations at two-yearly intervals to determine trends and any new threats.

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Prepared in 2006 under the provisions of the Tasmanian *Threatened Species Protection Act 1995*. Reviewed in 2008 & April 2010. Name change added in December 2015.

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View:

www.dpipwe.tas.gov.au/threatenedspecieslists

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