

Blechnum neohollandicum

prickly raspfern

TASMANIAN THREATENED SPECIES LISTING STATEMENT



Image by Hans Wapstra

Scientific name: *Blechnum neohollandicum* Christenh., *Phytotaxa* 19: 20 (2011)

Common name: prickly raspfern

Name history: *Doodia aspera*

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

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

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

Distribution: Biogeographic origin: **not endemic**

Tasmanian NRM Regions: **North**

Tasmanian IBRA bioregions (V6): **Flinders**

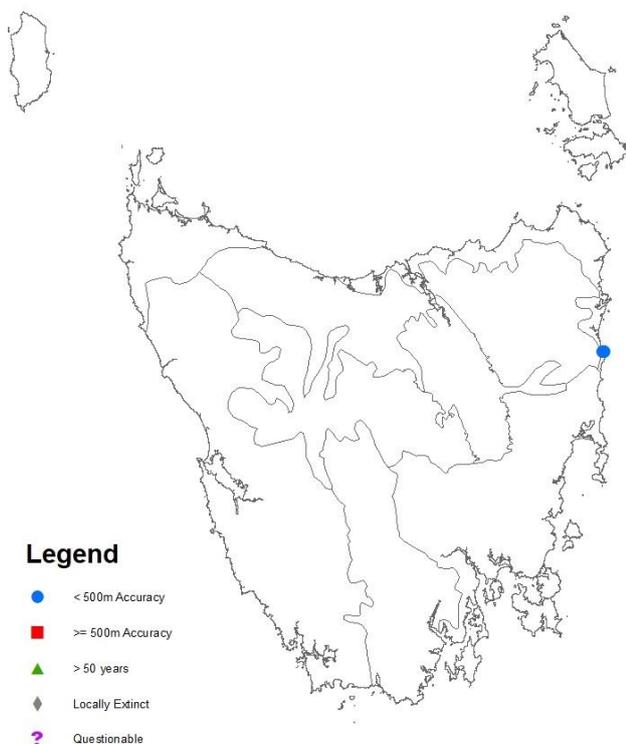


Figure 1. Distribution of *Blechnum neohollandicum* in Tasmania, showing IBRA bioregions (V6)



Plate 1. Habit of *Blechnum neohollandicum* (image by Hans Wapstra)

SUMMARY: *Blechnum neohollandicum* (prickly raspfern) is a terrestrial fern, known in Tasmania from a single near-coastal site in the State's northeast. The species grows in damp shrubby eucalypt woodland on alluvial flats and adjacent slopes. The population consists of about 100 plants occupying 0.5 ha, the small size increasing its susceptibility to chance events. The main threats to the species are clearing of potential habitat, changes to hydrological processes exacerbated by upstream land clearance and climate change, browsing by native animals, and increasing frequency and severity of drought.

IDENTIFICATION AND ECOLOGY

Blechnum neohollandicum is a small terrestrial fern that has the capacity to form extensive colonies via long underground runners. Recruitment may also occur by wind-borne spores. The species may recover vegetatively after fire or physical disturbance such as slashing, the new fronds being a striking rosy-pink colour.

Blechnum is the only genus in the Blechnaceae family that is native to Tasmania, with *Blechnum neohollandicum* being one of 12 native Tasmanian *Blechnum* species (de Salas & Baker 2019), three of which are listed on Schedules of the Tasmanian *Threatened Species Protection Act 1995*.

Survey techniques

Blechnum neohollandicum may be identified at any time of year due to its distinctive frond morphology.

Description

Blechnum neohollandicum is a terrestrial fern with clustered, erect fronds, 20 to 45 cm high (Plate 1). Sterile and fertile fronds are similar in shape and are harsh, and prickly at their edges. The stipe (stalk) is much shorter than the lamina, and is black and very rough, with broad, black and shiny scales growing from fleshy tubercles which harden and persist. The lamina is pinnate, up to 50 cm long and 30 cm wide and dark green. The pinnae are sessile and close-set with winged bases that are contiguous in the upper part of the lamina.

The length of the pinnae is irregular but is strongly reduced towards the stipe (Plate 2). The lowest pair of pinnae are usually isolated and shortly stalked. The rachis is rough on lower surface, with dark and scattered scales and hairs absent. The sori are oblong to crescent-shaped, about 1 mm long and occur in 1 to 2 rows on each side of the mid-vein. The indusium is membranous, with small hairs.

[Description based on Duncan & Isaac 1986, Walsh & Entwisle 1994, Parris 1998]

Confusing species

Blechnum neohollandicum (previously *Doodia aspera*) has pinnae in the lower part of the lamina that are much reduced and with winged bases. The other two species previously attributed to *Doodia* in Tasmania, *Blechnum parrisiae* (was *Doodia australis*) and *Blechnum rupestre* (was *Doodia candata*), have pinnae in the lower part of the lamina that are stalked (Plate 2). *Blechnum neohollandicum* and *Blechnum parrisiae* may have a second row of sori on each side of the mid-vein, whereas *Blechnum rupestre* always has a single row (Duncan & Isaac 1986).



Plate 2. *Blechnum neohollandicum* (left) and *Blechnum parrisiae* (right) (scanned images by Richard Schahinger)

DISTRIBUTION AND HABITAT

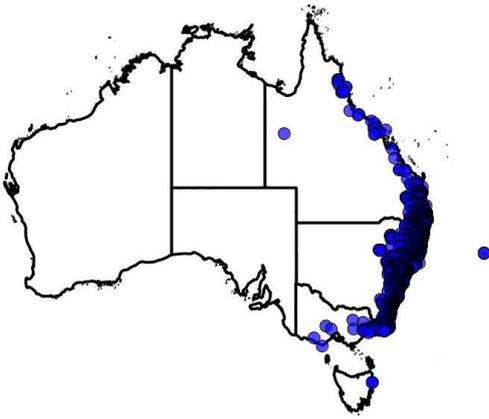


Figure 2. Distribution of *Blechnum neohollandicum* in Australia (Atlas of Living Australia 2019)

Blechnum neohollandicum is known from Queensland, New South Wales, Victoria and Tasmania, and also New Zealand (Parris 1998). In Tasmania *Blechnum neohollandicum* has been recorded from Old Billys Creek in the State's northeast (Figure 1, Table 1), where it grows on narrow alluvial flats and an adjoining shallow basin.

The species occurs in woodland dominated by *Eucalyptus globulus* or *Eucalyptus viminalis*, with a shrub layer that includes *Pomaderris apetala*, *Olearia lirata*, *Acacia dealbata* and *Zieria arborescens*. Additional species include the fern *Pteridium esculentum*, and the graminoids *Lepidosperma elatius*, *Lomandra longifolia* and *Gabnia radula*. A single patch of the vulnerable *Blechnum cartilagineum* (gristle fern) co-occurs with *Blechnum neohollandicum* at the downstream end of the site.

The species' occurrence at Old Billys Creek is consistent with its cited habitat in Victoria, where it frequently forms extensive colonies, particularly on forested stream banks (Duncan & Isaac 1986).

The Old Billys Creek subpopulation occurs 120 to 380 m from the east coast, with plants growing in several discrete areas within 60 m of the creek itself. Elevation ranges from 5 to 20 m above sea level, and slope from flat to about 10 degrees. The species grows in relatively deep sandy loam soils, with a variable surface rock cover (Plate 3).



Plate 3 *Blechnum neohollandicum*: habitat at Old Billys Creek (image by Richard Schahinger, April 2015)

The underlying substrate is Devonian granodiorite. The mean annual rainfall at the site is 750 to 800 mm.

The majority of plants at Old Billys Creek were in quite poor condition during survey in April 2015. Flood damage and heavy browsing by native animals reduced potential reproductive material.

POPULATION PARAMETERS

Number of subpopulations: 1

Number of locations: 1

Extent of occurrence: 1.2 ha

Linear extent: 270 m

Area of occupancy: 0.5 ha

Area of occupancy (as per IUCN criteria): 4 km²

Number of mature individuals: c. 100 plants

Blechnum neohollandicum is currently known in Tasmania from a single subpopulation (Table 1). Estimates of mature plant numbers are problematic given the species' stoloniferous character. If plants were to be defined as a discrete cluster of fronds arising from one basal point, then the total number at the Old Billys Creek site would be in the order of 1000. Genetically, however, the number of individual plants is likely to be fewer than 100 (Table 1). The linear range of the *Blechnum neohollandicum* subpopulation at Old Billys Creek is 270 m, and the extent of occurrence 0.012 km² (1.2 ha). The area occupied by the species is about 0.5 ha.

Table 1. Population summary for *Blechnum neohollandicum* in Tasmania

	Subpopulation	Tenure	NRM Region	1:25 000 mapsheet	Year last (first) seen	Area occupied (ha)	Number of mature plants
1	Old Billys Creek	private land* & Crown land	North	Ironhouse	2020 (2010)	0.5	c. 100

* mostly covered by a conservation covenant under the Tasmanian *Nature Conservation Act 2002*

Blechnum neohollandicum was first recorded in Tasmania in May 2010, in an area subjected to botanical scrutiny for many years (Garrett 1997). The identification of *Blechnum neohollandicum* requires a close inspection of the basal section of the fronds, and it is possible that in the past plants may have been assumed to be *Blechnum parrisiae*.

Garrett (1996) described the habitat of *Blechnum parrisiae* in creek situations to be the rubble-soil matrix of the creek bank, though it is now known to occur on alluvial flats not dissimilar to those at Old Billys Creek (e.g. several kilometres to the south at Little Marsh Creek). The likelihood of additional sites being found for *Blechnum neohollandicum* in Tasmania is low, with any such occurrences likely to be very localised.

RESERVATION STATUS

Most of the population in Tasmania occurs on private land of which 90% is covered by a conservation covenant under the Tasmanian *Nature Conservation Act 2002*.

CONSERVATION ASSESSMENT

Blechnum neohollandicum was listed as endangered on the schedules of the Tasmanian *Threatened Species Protection Act 1995* in October 2016, meeting criterion D2:

- D: Total population extremely small or area of occupancy restricted, and
- total population with an area of occupancy less than 1 ha 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 extinct in a very short time period.

THREATS, LIMITING FACTORS AND MANAGEMENT ISSUES

The Tasmanian distribution of *Blechnum neohollandicum* is an edge-of-range occurrence, being the southernmost in Australia. The main threats to the species in Tasmania are listed below.

Land clearance: Large areas of suitable habitat for *Blechnum neohollandicum* along Tasmania's northeast coast have been cleared since European settlement, however, the magnitude of past losses of plants is unknown.

Most of the single known site is covered by a conservation covenant and is under no threat of clearance. However, further clearance of potential habitat remains possible, as much of the surrounding area occurs on private land, and the growth of tourism, residential and agricultural developments has accelerated in recent years.

Hydrological changes: The site at Old Billys Creek is in an area characterised by short periods of excessively heavy rainfall in summer, followed by flash flooding. Garrett (1997) noted that creeks in the area are '... in a state of constant change and over a period of time there is alternating deposition on, and scouring of, creekside flats. Thus, the growing conditions for creekside inhabitants are also constantly changing'. Clearance of vegetation in the upper catchment of Old Billys Creek, for agricultural, forestry or residential purposes, is likely to increase the severity of such flood events. The deposition of smothering flood debris poses an additional threat to the survival of *Blechnum neohollandicum*.

Browsing by native animals: Plants at the Old Billys Creek site have been heavily impacted by native browsers, with the loss of reproductive material and hence a reduced capacity for dispersal. The species is capable of vegetative recovery and spread, but repeated browsing will reduce regenerative capacity and leads to a decline in vigour and subsequent mortality.

Climate change: Climatic trends for the 21st century in areas in Tasmania supporting *Blechnum neohollandicum* are projected to include warmer temperatures and more extreme events (Grose et al. 2010). This may lead to a reduction of potential habitat and may affect the species' ability to colonise new sites or to recolonise sites where it previously occurred.

Stochastic events: The small geographic extent of the single subpopulation exposes it to a risk of extinction due to inadvertent or chance events.



Plate 4. Habit and (slashed) habitat of *Blechnum neohollandicum* (image by Hans Wapstra)

Physical disturbance: There has been minor disturbance to the known *Blechnum neohollandicum* site through clearance of vegetation and the construction of bush tracks. *Blechnum neohollandicum* is capable of regenerating vegetatively after physical disturbance such as slashing (Plate 4), which may favour removal of competitive species, leading it to respond positively under some low-frequency (and light) vegetation slashing regimes.

Inappropriate fire: The Old Billys Creek site was burnt during wildfire in December 2006, with plants recovering, presumably by vegetative means. Too frequent fire may negatively impact the species but is presently considered an unlikely scenario.

MANAGEMENT STRATEGY

Management objectives

The main objectives for the recovery of *Blechnum neohollandicum* are to prevent the loss or degradation of the known subpopulation, and identify new subpopulations through survey of potential habitat in northeastern Tasmania. These objectives are consistent with those in the *Flora Recovery Plan: Threatened Tasmanian Ferns* (Threatened Species Section 2011).

What has been done?

- A conservation covenant under the *Tasmanian Nature Conservation Act 2002* has been placed on one of the two private properties that support *Blechnum neohollandicum*. This was facilitated by the Tasmanian Land Conservancy and the Department of Primary Industries, Parks, Water and Environment.
- Targeted surveys of Old Billys Creek and nearby creeks were undertaken in March and April 2015, resulting in a better understanding of the species' distribution and ecological preferences.

What is needed?

Agencies, groups or individuals may assist with some or all of the following recovery actions. Coordinated efforts may achieve the best and most efficient results.

- provide information and extension support to relevant Natural Resource Management Committees, local councils, government agencies, development proponents and the local community on the locality, significance and management of the known subpopulation and potential habitat;
- monitor the health of the population at Old Billys Creek, especially the impact of native browsers, and if necessary, construct

wallaby-proof fencing around less flood-prone sections;

- ensure that prescriptions for management of the conservation covenant area continue to be appropriate for the species;
- undertake extension surveys of potential habitat in northeastern Tasmania;
- encourage landowners to retain buffering vegetation around creeklines upstream from the species, to reduce flood impacts;
- establish an ex situ population at the Royal Tasmanian Botanical Gardens (Hobart).

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- Prepared** in July 2015, updated in 2016 and 2020 under the provisions of the Tasmanian *Threatened Species Protection Act 1995*.
- Cite as:** Threatened Species Section (2021). *Listing Statement for Blechnum neohollandicum (prickly raspfern)*. Natural Resources and Environment Tasmania, Tasmania.
- View:** www.naturalvaluesatlas.tas.gov.au
www.nre.tas.gov.au/conservation/threatened-species-and-communities/lists-of-threatened-species
www.threatenedspecieslink.tas.gov.au
- Contact details:** Threatened Species & Private Land Conservation Section, Natural Resources and Environment Tasmania, GPO Box 44 Hobart Tasmania Australia 7001. Phone 1300 368 550.
ThreatenedSpecies.Enquiries@nre.tas.gov.au
- Permit:** A permit is required under Tasmanian legislation for any activity that disturbs a threatened species listed under the *Threatened Species Protection Act 1995*, on private, public and reserved land.