

# *Blechnum neohollandicum*

prickly raspfern

TASMANIAN THREATENED SPECIES NOTESHEET



Image by Hans Wapstra

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

**Common name:** prickly raspfern

**Name history:** *Doodia aspera*

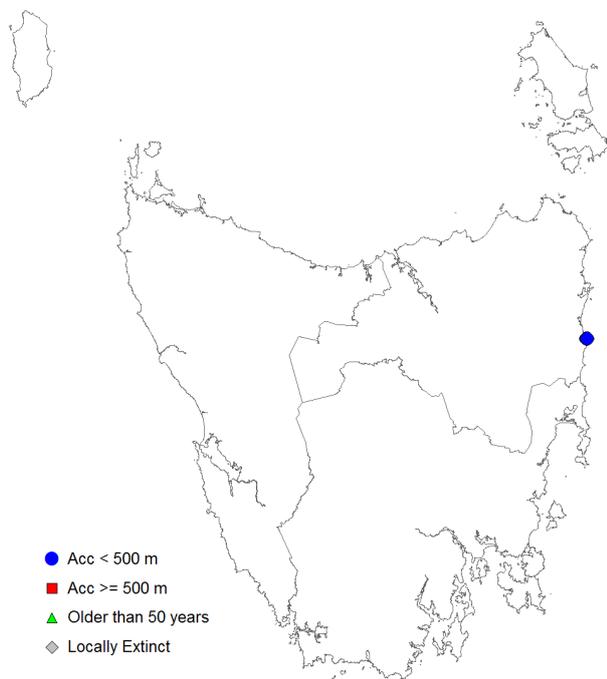
**Group:** vascular plant, pteridophyte, family **Blechnaceae**

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

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

**Distribution:** Endemic status: **not endemic**

Tasmanian NRM Region(s): **North**



**Figure 1.** Distribution of *Blechnum neohollandicum* in Tasmania, showing Natural Resource Management regions



**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 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.

### 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. Their length is irregular and strongly reduced towards the stipe, the lowest pair of pinnae usually isolated and shortly stalked (Plate 2). 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* 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 parrissii* (was *Doodia australis*) and *Blechnum rupestre* (was *Doodia caudata*), have pinnae in the lower part of the lamina that are stalked (Plate 2). *Blechnum neohollandicum* and *Blechnum parrissii* 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 parrissii* (right)  
(scanned images by Richard Schahinger)

### DISTRIBUTION AND HABITAT

*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), 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 site occurs from 120 to 380 m of the coast, with plants growing in several discrete areas within 60 m of the creek itself. Altitude 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). The underlying substrate is Devonian granodiorite. The mean annual rainfall at the site is 750 to 800 mm.



**Plate 3** *Blechnum neohollandicum*: habitat at Old Billys Creek

(image by Richard Schahinger, April 2015)

The majority of plants at Old Billys Creek were in quite poor condition in April 2015, with the loss of about half of the population's potential reproductive material, a consequence of

periodic flood damage and heavy browsing by native animals.

### POPULATION PARAMETERS

*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 km<sup>2</sup> (1.2 ha). The area occupied by the species is about 0.5 hectares.

The presence of *Blechnum neohollandicum* in Tasmania first came to light in May 2010, in an area subjected to botanical scrutiny for many years, ferns being a particular focus (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 parrissii*. Garrett (1996) described the latter's habitat 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 in Tasmania is considered to be low, with any such occurrences likely to be very localised.

### RESERVATION STATUS

The entire 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:

**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*	North	Ironhouse	2015 (2010)	0.5	c. 100

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

- total population with an area of occupancy less than one hectare, 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 within a very short time period.

#### THREATS AND LIMITING FACTORS

Clearance of habitat and changes to hydrological processes pose the greatest threat to *Blechnum neohollandicum* in Tasmania. Additional threats include heavy browsing by native animals, climate change and stochastic events.

**Land clearance:** Large areas of suitable habitat for *Blechnum neohollandicum* along Tasmania's northeast coast have been cleared since European settlement, with the loss of an unknown number of plants. The bulk of the known site is covered by a covenant and is under no threat of clearance. However, further clearance of potential habitat remains possible, as much of the area is private property, 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, be it for agricultural, forestry or residential purposes, is likely to exacerbate the severity of such episodes, with the deposition of smothering flood debris 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 inevitably lead to a decline in vigour and eventual mortality.

**Climate change:** Climatic trends for the 21<sup>st</sup> century in areas in Tasmania supporting *Blechnum neohollandicum* are predicted to include warmer temperatures and more extreme events (Grose et al. 2010). This may lead to a diminution of potential habitat and may affect the species' ability to colonise new sites or to recolonise sites from which it has been lost.

**Stochastic events:** The small size 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. However, any losses incurred during these activities are likely to have been offset by the creation of habitat suited to the species through the elimination of competitive shrubs. *Blechnum*

*neohollandicum* is capable of regenerating vegetatively after physical disturbance such as slashing (Plate 4), meaning it is likely to flourish under such a management regime provided the disturbance is not too frequent.

**Inappropriate fire:** The Old Billys Creek site was burnt during wildfire in December 2006, with plants presumed to have recovered vegetatively in its wake. Too frequent fire may be to the species' detriment, though given the area's fire history this is 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 realised for 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;
- monitor compliance with existing covenants to ensure that prescriptions are appropriate for the species;
- undertake extension surveys of potential habitat in northeastern Tasmania;
- encourage landowners to retain buffering vegetation around creeklines supporting the species;
- establish an ex situ population at the Royal Tasmanian Botanical Gardens (Hobart).

## BIBLIOGRAPHY

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