

Centrolepis pedderensis

pedder bristlewort

TASMANIAN THREATENED FLORA LISTING STATEMENT



Image by Richard Schahinger

Scientific name: *Centrolepis pedderensis* W.M.Curtis, *Brunonia* 7: 299 (1984)

Common name: pedder bristlewort (Wapstra et al. 2005)

Group: vascular plant, monocotyledon, family **Centrolepidaceae**

Status: *Threatened Species Protection Act 1995:* **endangered**
Environment Protection and Biodiversity Conservation Act 1999: **Endangered**

Distribution: Endemic status: **Endemic to Tasmania**
Tasmanian NRM Region: **South**

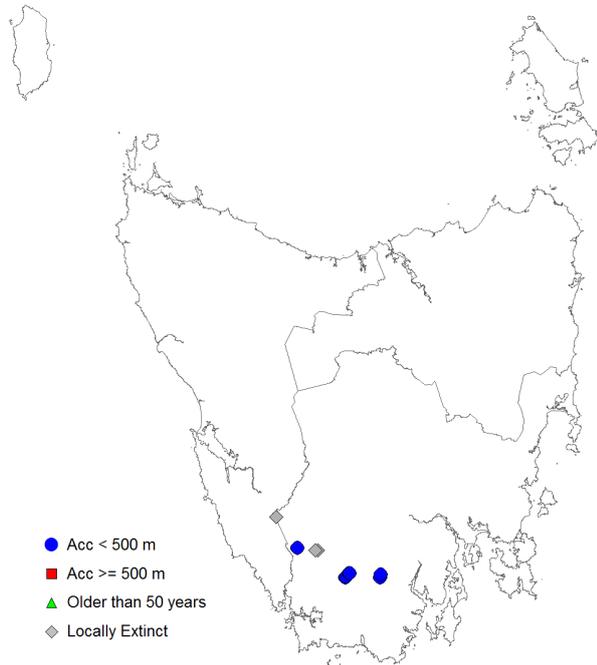


Figure 1. Distribution of *Centrolepis pedderensis*, showing Natural Resource Management regions



Plate 1. *Centrolepis pedderensis* in flower (image by Richard Schahinger)

SUMMARY: *Centrolepis pedderensis* is a diminutive cushion-forming species in the Centrolepidaceae family, endemic to southwestern Tasmania. The species grows at the margins of lakes and rivers in areas subject to seasonal inundation and drying. It has been recorded from several locations, though two of those — Lake Pedder and Gordon River — are now presumed extinct due to the flooding of the lake in the 1970s and the onset of a regulated flow regime. Hydrological changes represent the main threat to the species, along with climate change and stochastic events.

IDENTIFICATION AND ECOLOGY

Centrolepis pedderensis is a summer-growing perennial or a facultative annual in less favourable sites. The species is likely to be self-fertilising, with pollination being effected by wind (Cooke 1992). Dispersal of seed may occur passively when shaken from its flower heads, the small size of the seed allowing transport via water or in mud on the feet of birds (Cooke 1992). Vegetative fragments have been observed to break away from the main clumps, leading to floating remnants — such fragments may also function as disseminules. Flowering has been recorded between November and March (Cooke 1992).

Survey techniques

Extension surveys should be undertaken in the early stages of flowering to ensure a positive identification based on the character of the stigmatic surfaces, November to March depending on altitude.

Description

Centrolepis pedderensis forms tufts or cushions up to 7 or 8 cm high and 15 to 20 cm across. The cushions are composed of densely packed, very narrow leaves that are overtopped by solitary flower heads. The hairless leaves are numerous, distichous and suberect in a fan-shaped cluster, with a hyaline sheath 3 to 10 mm long that passes abruptly into a subterete keeled lamina 3 to 20 (to 30) mm long. Each flower head consists of 2 to 6 'pseudanthia' enclosed within a pair of overlapping hairless bracts (Plates 2 & 3). Individual pseudanthia include 0 to 1 stamens and 3 to 6 bright green ovaries, each

ovary having a style topped by a crimson stigma with prominent, usually 3-lobed stout receptive hairs along their adaxial side (Plate 2). The fruit is a compound structure of follicles, each dehiscing by a longitudinal slit.

(description based on Cooke 1992, Curtis & Morris 1994 and pers. obs.).



Plate 2. *Centrolepis pedderensis*: pseudanthia at centre, anther at right (image by Alex Buchanan)



Plate 3. *Centrolepis muscoides* & *C. pedderensis* at the fruiting stage (image by Richard Schahinger)

Confusing species

The following combination of features distinguishes *Centrolepis pedderensis* and the closely-allied *Centrolepis muscoides* from the other *Centrolepis* taxa in Tasmania (Cooke 1992, Baker & de Salas 2017): leaves and bracts glabrous, leaves arranged distichously and forming slightly curved fans, floral bracts without conspicuous awns. *Centrolepis muscoides* has flowering scapes that tend to be shorter than the leaves (Plate 3), and its stigmatic surfaces are papillose rather than having stout hairs (Curtis & Morris 1994). Note that *Centrolepis*

pedderensis would have been included in the broad sense of *C. muscoides* prior to the former's formal description (Curtis 1984).

DISTRIBUTION AND HABITAT

Centrolepis pedderensis is endemic to southwest Tasmania, having been recorded from the original Lake Pedder, Gordon River, Sanctuary Lake in the Frankland Range, and the margins of the Huon and Picton Rivers (Figure 1). The species is believed to be extinct at the Lake Pedder and Gordon River sites (Gilfedder 1989, Lynch & Wells 1994).

Centrolepis pedderensis grows at the margins of lakes and rivers in areas subject to seasonal inundation and drying (Bayly et al. 1972, Cooke 1992, Curtis & Morris 1994). At Sanctuary Lake the species grows on quartz gravels in areas that flood to depths of up to 40 cm (Plate 4), while sites along the Huon and Picton River sites are prone to periodic flooding (Plates 5 & 6).

The altitude range of recorded sites is 45 m to 640 above sea level, with a mean annual rainfall of c. 1300 mm at Tahune and c. 3000 mm at Sanctuary Lake.

POPULATION PARAMETERS

Centrolepis pedderensis is currently known from three subpopulations, two representing discrete sites (Sanctuary Lake and the Picton River), and the other along the Huon River encompassing occurrences over a 34 km reach (Table 1). The linear range of the extant subpopulations is 59 km, extent of occurrence 300 km² (the majority of which is unsuitable habitat), and area of occupancy c. 2 to 3 hectares.

A number of surveys have been undertaken for *Centrolepis pedderensis* since it was described in 1984 (Threatened Species Section 2011, Schahinger 2014 & 2018). The species' presence at Sanctuary Lake was confirmed in 1989 (Gilfedder 1989), with additional sites discovered along the margins of the Huon River near Tahune in 2013, the lower reaches of the Picton River in 2014, and the mid to upper reaches of the Huon River in 2018 (being an occasional presence over almost a kilometre). It is considered highly likely that additional sites

will be uncovered along the Huon and Picton rivers given a targeted and well-resourced survey effort, while a number of glacial tarns in the Frankland and Wilmot Ranges support potential habitat.



Plate 4. Habitat at Sanctuary Lake, March 2005
(image by Justine Shaw)



Plate 5. Habitat along the Huon River near Tahune, February 2014 (image by Richard Schahinger)

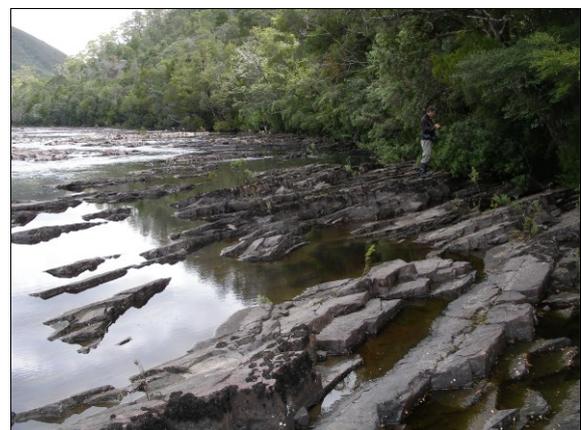


Plate 6. Habitat along the upper reaches of the Huon River, February 2018
(image by Richard Schahinger)

Table 1. Population summary for *Centrolepis pedderensis*

	Subpopulation	Tenure	NRM Region	1:25 000 mapsheet	Year last (first) seen	Area occupied (ha)	Number of clumps *
1	Sanctuary Lake (Frankland Range)	Southwest National Park	South	Solitary	2018 2005 (1980s)	< 0.1	100 to 150
2	Lake Pedder	Southwest National Park	South	Solitary	1971 (1953)	–	Presumed extinct
3	Gordon River (The Splits)	Franklin-Gordon Wild Rivers National Park	South	Serpentine	1977	–	Presumed extinct
4a	Huon River (Tahune)	Informal Reserve on Permanent Timber Production Zone Land	South	Picton	2017 (2013)	< 0.1 (150 m)	10 to 20
4b	Huon River	Southwest National Park	South	Razorback	2018	1 (500 m)	Several 100
4c	Huon River	Southwest National Park	South	Razorback	2018	1 (400 m)	100s
5	Picton River	Picton River Conservation Area	South	Picton	2014	0.002	50 to 60

* Each clump may contain more than one mature plant

Moscal (1981) reported the presence of ‘*Centrolepis muscoides*’ at four sites along the Arthur Range (Lake Cygnus, Lake Juno, Lake Oberon and Lake Sirona); these records dated to the 1970s and lacked supporting collections. The distribution of *Centrolepis muscoides* in Tasmania is cited as the Central Highlands and Ben Lomond Plateau (Cooke 1992, Curtis & Morris 1994), raising the possibility that Moscal’s records on the Arthur Range may have been attributable to *Centrolepis pedderensis*. This notion was dispelled in February 2018 when targeted surveys revealed good *C. muscoides* to be abundant on the gravelly quartzite shore of Lake Cygnus.

Jarman et al. (1988) recorded ‘*Centrolepis pedderensis*’ from an alkaline pan in the Giblin Valley, though supporting herbarium specimens were lacking. Subsequent targeted searches of alkaline pans in the Giblin and Maxwell River areas failed to locate the species, and it has been presumed to have been a misidentification (Threatened Species Section 2011).

RESERVATION STATUS

Centrolepis pedderensis occurs in Southwest National Park and Picton River Conservation Area; both reserves are in the Tasmanian Wilderness World Heritage Area.

CONSERVATION ASSESSMENT

Centrolepis pedderensis was listed as endangered on the schedules of the Tasmanian *Threatened Species Protection Act 1995* when the Act came into effect. At that time the species qualified as endangered under criterion D2:

- 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

Hydrological changes: The construction of the Pedder Impoundment and the Gordon River power station in the 1970s and 1980s are believed to have led to the loss of two subpopulations and reduced the habitat available to the species though direct inundation and regulated flow regimes.

Inappropriate fire: Inappropriate fire regimes pose an indirect threat to the species at Sanctuary Lake through possible changes to hydrology and sedimentation rates. There is also a very small risk that long fire-free intervals may enable the foreshore vegetation to develop into forest that casts significantly increased shade and reduces the habitat for *Centrolepis*

pedderensis, which is likely to be dependent on low competition (Cooke 1992).

Survey: Inadvertent impacts from well-meaning scientific monitoring and research may include physical disturbance and the introduction of pests, weeds or plant pathogens. This is of particular concern for the remote Sanctuary Lake site.

Flood events: Flood events along the Huon and Picton Rivers may impact the species locally through scouring of plants and habitat, though such events may also transport seed and vegetative material downstream, allowing the establishment of new colonies provided suitable conditions are available.

Climate change: Climate change caused by the anthropogenic emissions of greenhouse gases may also impact upon the species through changes to hydrology, and hence loss of habitat, and an increased risk of fire (Threatened Species Section 2011).

MANAGEMENT STRATEGY

Management objectives

The main objectives for the recovery of *Centrolepis pedderensis* are to prevent the loss or degradation of the known subpopulations and increase numbers through habitat management and survey.

What has been done?

- A Recovery Plan was developed for *Centrolepis pedderensis* in 1994 (Lynch & Wells 1994), though the Commonwealth did not adopt the Plan. Tasmanian Government agencies have implemented a limited number of the recovery actions formulated in that Plan through targeted extension surveys in 2001 and 2005;
- A revised Recovery Plan has been prepared for the species that outlines actions required for the recovery of the species (Threatened Species Section 2011) — at the time of writing the only extant subpopulation was believed to be Sanctuary Lake;
- targeted surveys of potential habitat along the Huon River and Picton River near Tahune were undertaken in February and March 2014 (Schahinger 2014);

- the status of the Sanctuary Lake site was assessed in February 2018, along with targeted surveys of potential habitat along the upper reaches of the Huon River, with the species found in good numbers in both areas (Schahinger 2018).

What is needed?

- protect the Sanctuary Lake site through the application of appropriate mitigation measures, including fire management and the preparation of site access and monitoring protocols;
- monitor the status of the Huon and Picton River sites;
- survey for new populations: a number of small glacial lakes and tarns in the Frankland, Wilmot and Companion Ranges represent likely sites, while there is extensive potential habitat along the Huon and Picton Rivers;
- establish an ex situ population at the Royal Tasmanian Botanical Gardens (Hobart) for seed-orcharding purposes;
- 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 subpopulations and potential habitat.

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Contact details: Threatened Species Section, Department of Primary Industries, Parks, Water and Environment, GPO Box 44 Hobart Tasmania Australia 7001. Phone 1300 368 550. threatenedspecies.enquiries@dpipwe.tas.gov.au

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