



# *Leptorhynchos elongatus*

lanky buttons

TASMANIAN THREATENED FLORA LISTING STATEMENT

Image by Richard Schahinger

**Scientific name:** *Leptorhynchos elongatus* DC., *Prodr.* 6: 160 (1838)

**Common name:** lanky buttons (Wapstra et al. 2005)

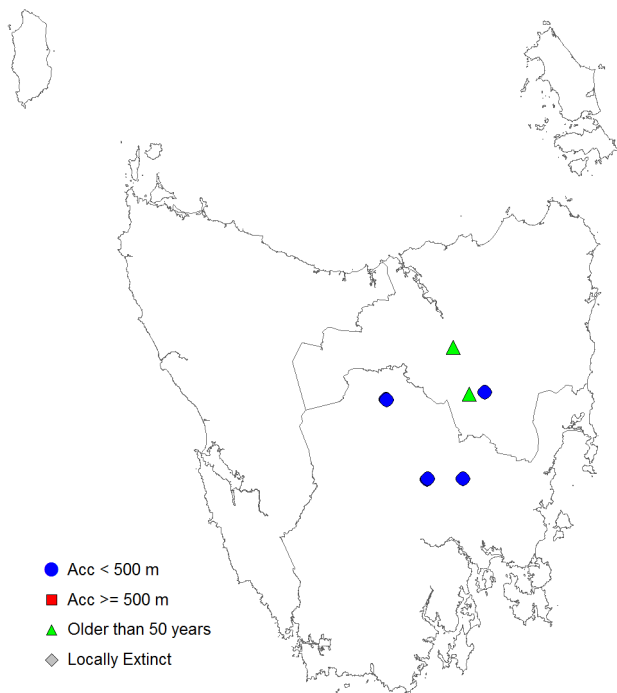
**Group:** vascular plant, dicotyledon, family **Asteraceae**

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

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

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

Tasmanian NRM Region: **North, South**



**Figure 1.** Distribution of *Leptorhynchos elongatus* in Tasmania, showing Natural Resource Management regions

**Plate 1.** *Leptorhynchos elongatus*: habit (image by Richard Schahinger)

**SUMMARY:** *Leptorhynchos elongatus* (lanky buttons) is a perennial herb in the daisy family. It is known in Tasmania from two cemeteries in the Southern Midlands, one site in the Northern Midlands of 4 to 5 hectares, and one site on the Central Plateau where only a few plants have been seen to date. The species grows in grasslands or grassy shrublands, mostly on Tertiary basalt, and is believed to have suffered a significant decline since European settlement due to habitat clearance and browsing by stock. Plant numbers can fluctuate significantly from year to year, with recruitment probably from freshly shed seed only, and only occurring in patches of bare ground. This puts the small Tasmanian occurrences at particular risk from losses from chance events and weed invasion, combined with successive years of browsing or mowing/slashing that reduces seed production, a lack of gap-forming disturbance to provide recruitment niches, and unfavourable climatic conditions for germination and seedling establishment.

## IDENTIFICATION AND ECOLOGY

*Leptorhynchos elongatus* flowers from October to December, extending into January at higher altitudes. Plants die back to a deep rootstock by mid-to-late summer, new leaf growth begins in mid-autumn, and flowering stems commence growth in early spring, with peak seed production in December (Dorrough & Ash 2004). The age to reproductive maturity has been estimated at two years, and plants may be relatively long-lived (about 20 years) (Dorrough & Ash 2004). The fruit of *Leptorhynchos elongatus* have a feathery appendage (pappus) that assists dispersal by wind. Based on studies of closely-related herbs, any soil-stored seed bank is likely to be transient or short-term (Lunt 1995, Wood 2012, pers. comm.). Preliminary results of germination and viability trials indicate that seed is highly viable (Wood 2011), appears to be non-dormant and may not form a soil seed-bank, though the latter is speculative only at this stage (Wood 2012, pers. comm.). The main requirement for the regeneration of the species is the availability of bare ground, and freedom from stock grazing (or mowing/slashing) during its flowering and fruiting period.

## Survey techniques

Surveys for *Leptorhynchos elongatus* should ideally be undertaken during the early stages of its flowering period, October to November. Detection of the species at lowland sites becomes increasingly difficult later in the season due to the obscuring growth of native grasses such as *Themeda triandra* (kangaroo grass) or *Austrostipa* species (speargrasses).

## Description

*Leptorhynchos elongatus* is a perennial herb with a tuft of erect branched stems to 40 cm high, with sparse septate hairs. It has a basal rosette of leaves that are narrow-linear or lanceolate, and up to 8 cm long, with alternate stem-clasping leaves that become progressively shorter, grading into small hyaline bracts below the solitary flower head. The leaves have recurved margins, acute apices and septate hairs, especially on the upper surface. The flower heads are more or less hemispherical and 1 to 2 cm in diameter, with numerous yellow tubular florets surrounded by rows of imbricate bracts (phyllaries). The inner phyllaries are 9 to 12 mm long, each with a narrow-linear glandular-hairy green 'claw' and a lanceolate scarious tip. The outer phyllaries are shorter and hyaline, grading into the inner phyllaries and into the hyaline bracts of the flowering stem. The fruit is an achene and is 3 to 5 mm long, cigar-shaped gradually tapering to an obscure beak, and papillose. The pappus is 5 to 8 mm long and white, with numerous, barbellate bristles.

[description based on Curtis 1963, Walsh & Entwisle 1999]

## Confusing species

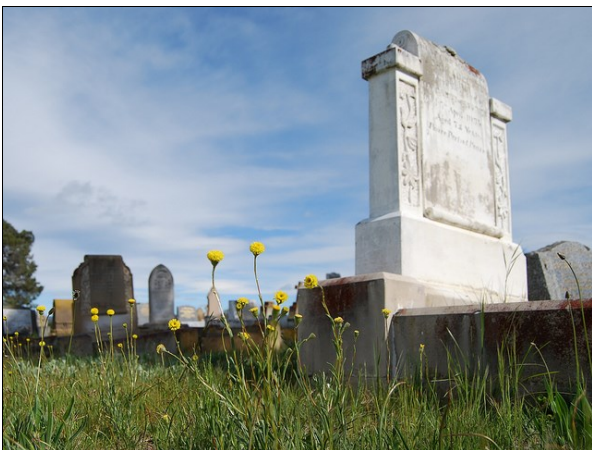
Two other species of *Leptorhynchos* occur in Tasmania and can be distinguished by their phyllaries. Those of *Leptorhynchos elongatus* have entire margins, whereas those of *Leptorhynchos squamatus* are ciliate. The phyllaries of *Leptorhynchos elongatus* are lanceolate with acute apices, whereas those of *Leptorhynchos nitidulus* are ovate to orbicular with obtuse apices (Curtis 1963, Walsh & Entwisle 1999).



## DISTRIBUTION AND HABITAT

*Leptorhynchus elongatus* occurs in Western Australia, South Australia, Victoria and New South Wales (Walsh & Entwisle 1999). In Tasmania, the species is known to be extant at two cemeteries in the Southern Midlands (Bothwell and Jericho), one site in the Northern Midlands (Wanstead), and a higher altitude site on the Central Plateau (Liawenee Moor). There are also two 19<sup>th</sup> century collections from the Northern Midlands (Figure 1, Table 1).

At the two cemeteries *Leptorhynchus elongatus* grows on Tertiary basalt or Quaternary sediments within native grassland dominated by *Themeda triandra* (Plate 2) a facies of the ecological community 'Lowland Native Grasslands of Tasmania' that is listed on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. Associated species include the herbs from the daisy family *Chrysocephalum apiculatum*, *Craspedia rosulata*, *Leptorhynchus squamatus* and *Podolepis jaceoides*, with an array of introduced herbs and grasses (Leonard 2002a, 2002b). The Wanstead site is also on basalt, and in 2015 was characterised by a high cover of bare ground (Plate 3), co-occurring herbs including *Craspedia rosulata* and *Podolepis decipiens*, with *Poa labillardierei* also present in more poorly-drained areas.



**Plate 2.** Grassland habitat of *Leptorhynchus elongatus* at Bothwell cemetery (image by Natalie Tapson)



**Plate 3.** *Leptorhynchus elongatus* at Wanstead, October 2015 (image by Richard Schahinger)

At Liawenee Moor *Leptorhynchus elongatus* occurs in open grassy shrubland. Associated species include the shrubs *Grevillea australis*, *Leucopogon montanus* and *Olearia algida*, the grasses *Poa biemata* and *Poa fawcettiae*, the herbs *Craspedia coolaminica*, *Leptorhynchus squamatus*, *Microseris lanceolata* and *Podolepis jaceoides* (Bridle & Kirkpatrick 1999), and the threatened orchid *Pterostylis pratensis*.

## POPULATION PARAMETERS

*Leptorhynchus elongatus* is known to be extant in Tasmania at four sites, with total plant numbers in excess of 20,000 (Table 1). The sites at Bothwell and Jericho were first recorded in the mid-1980s, at which stage plant numbers were estimated at about 100 (Kirkpatrick et al. 1988). The Bothwell site has been monitored since 2008, with plant numbers ranging from 500 to 600 in 2008 and 2009 to about 1200 in 2011 (Tapson & Wood 2012, pers. comm.). At this stage it is unclear how much of this increase is attributable to the change in mowing regime designed to favour the species, and how much to favourable rains from 2009 to 2011 after several years of drought.

**Table 1.** Population summary for *Leptorhynchus elongatus* in Tasmania

	Subpopulation	Tenure	NRM region	1:25 000 mapsheet	Year last (first) observed	Area of occupancy (ha)	Number of plants
1	St James cemetery, Jericho	private land	South	Stonor	2011 (1984)	0.2	150–200
2	St Lukes cemetery, Bothwell	Central Highlands Council *	South	Bothwell	2011 (1986)	0.3	c. 1200
3	Liawenee Moor	private land	South	Miena	2011 (1997)	unknown	unknown
4	Wanstead	private land **	North	Conara	2015 (2014)	4 to 5	20,000+
5	Macquarie River	private land?	North	Conara?	1892	status unknown	
6	SE of Perth	private land?	North	Longford	1800s	status unknown	

\* covered by a vegetation management agreement under the Tasmanian *Nature Conservation Act 2002*

\*\* covered by a stewardship agreement with Australian Bush Heritage and the Tasmanian Land Conservancy

The Liawenee site was first recorded in 1997 (Bridle & Kirkpatrick 1999); the full extent of this population has yet to be determined, with only a few plants noted thus far (Bridle 2012, pers. comm.).

The linear range of extant sites in Tasmania is 72 km, extent of occurrence 2400 km<sup>2</sup>, and area of occupancy c. 6 ha (Table 1). The Wanstead site lies 200 m above sea level, the Jericho and Bothwell sites 340 to 350 m asl, with annual rainfalls of 530 to 540 mm; the respective figures for the Liawenee site are 1050 m above sea level and about 1050 mm.

Curtis (1963) described *Leptorhynchus elongatus* as being ‘local near the Macquarie River in the midlands; recorded by J. D. Hooker as “not uncommon in various parts of the Colony”’. The sparse collection history of the species gives few clues as to its former abundance, but the likelihood of additional sites being found in Tasmania’s Midlands was considered to be low given the considerable survey effort since the mid-1980s (Kirkpatrick et al. 1988), though the discovery of the species at Wanstead in 2014 demonstrated that there is a chance that other remnant patches may still be extant. Liawenee Moor may represent the best prospects for increasing the number of known plants, with at least 1500 ha of seemingly suitable habitat, though the lack of sightings in botanical surveys undertaken in recent years indicates that the species is less than abundant.

## RESERVATION STATUS

*Leptorhynchus elongatus* is not known from any formal reserve, though the Bothwell site is covered by a 20-year vegetation management agreement under the Tasmanian *Nature Conservation Act 2002* (in place since 2007), and the Wanstead site is currently under a stewardship agreement between the landowners and the Australian Bush Heritage and the Tasmanian Land Conservancy.

## CONSERVATION ASSESSMENT

*Leptorhynchus elongatus* was listed as endangered on the Tasmanian *Threatened Species Protection Act 1995* when the Act came into being, at which stage it was known to be extant at just the Bothwell and Jericho sites (with a total of about 100 plants known).

The species continues to qualify for listing as endangered under criterion B:

- area of occupancy less than ten hectares, known to exist at no more than five locations, and extreme fluctuations in the number of mature individuals.

## THREATS, LIMITING FACTORS AND MANAGEMENT ISSUES

Land clearance for agriculture and stock grazing would appear to have been the major factors in the apparent decline of *Leptorhynchus elongatus* since European settlement. Two of the four extant sites, Bothwell and Jericho, are in the

grounds of cemeteries that were established in the early 19<sup>th</sup> century, and are presumed to represent the vestiges of an originally more widespread population through Tasmania's Southern Midlands and Derwent Valley (Kirkpatrick et al. 1988). The main threats at these sites are inappropriate management, weed invasion and the stochastic risks associated with small sites. The Liawenee Moor site occupies a more natural setting, with considerable scope for expansion given an appropriate stocking regime. Vegetation clearance remains a potential threat as the land is privately owned, while dam proposals have been mooted for parts of the Moor in recent years. However, the tenuous nature of the Bothwell and Jericho sites means that Liawenee Moor may represent the species' best chance of surviving in the wild in Tasmania over a 50 to 100 year time-frame.

**Cemetery management:** The future of *Leptorhynchus elongatus* at the Bothwell and Jericho cemeteries is reliant upon ongoing sympathetic management by the respective landowners. In the case of St Lukes Cemetery at Bothwell, this was formalised in 2007 in a 20-year vegetation management agreement. However, the small size of the site means that even subtle changes in management may impact on the species, with the level of risk increasing with changes in ground-staff and the dilution of knowledge of the history of the site.

**Weed invasion:** Herbaceous weeds that colonise potential recruitment sites pose a threat to *Leptorhynchus elongatus* at the two cemetery sites if left untreated. The vegetation management agreement in place for Bothwell stipulates the control of weeds via appropriate methods, though with any herbicide application there is a risk of off-target damage if correct procedures are not followed.

**Stock grazing:** Kirkpatrick & Bridle (2007) noted that *Leptorhynchus elongatus*, along with *Craspedia coolaminica*, *Podolepis jaceoides* and *Velleia paradoxa*, is 'very sensitive to the grazing of introduced stock, being rarely seen in grazed paddocks'. Dorrough & Ash (2004) considered the impact of domestic stock (cattle and sheep) on *Leptorhynchus elongatus* in the basalt-derived grasslands on the Monaro Tablelands of New South Wales. They found that stock appeared to selectively target immature and mature

flowers and also seed-heads, with little apparent effect on leaf production, at least over the course of their two-year study. The latter authors postulated that *Leptorhynchus elongatus* may be relatively long-lived (about 20 years), helping to explain the paradox of a grazing-sensitive species persisting in grazed habitats.

Liawenee Moor has been subject to grazing by sheep since the early 19<sup>th</sup> century, stock generally being present from November through to May, with patch-burning carried out by graziers until 1978 (Bridle & Kirkpatrick 1999). *Leptorhynchus elongatus* has persisted at the Moor under this management regime, albeit in low numbers, surviving it would seem in protected microsites, and taking advantage of times of low grazing pressure and optimal climatic conditions to spread into nearby gaps via wind-dispersed seed (Dorrough & Ash 2004).

The threat posed by stock to *Leptorhynchus elongatus* across the Moor will continue to be a function of the level and intensity of stocking rates, with the presence of at least some stock-free areas enhancing the species' chances of survival in the short to medium term.

**Lack of disturbance:** *Leptorhynchus elongatus* requires open ground to recruit, so some form of disturbance is required to maintain such conditions, either via fire, grazing or mowing. Lack of disturbance represents a potential threat only, as regular disturbance is the norm at each of the known sites. It has the potential to become an issue on those parts of Liawenee Moor that remain free from stock grazing, though the recovery of existing bare ground in this alpine environment is likely to be a decadal-scale process due to the past impact of fire and grazing (Bridle & Kirkpatrick 1999).

**Stochastic events:** The small size of the known subpopulations exposes them to a high risk of extinction due to chance events, particularly for the two cemetery sites.

## MANAGEMENT STRATEGY

### What has been done?

- Management plans were prepared for the native grasslands at the Bothwell and Jericho cemeteries (Leonard 2002a &



2002b), with interpretative signage erected at the Bothwell site.

- A Vegetation Management Agreement under the Tasmanian *Nature Conservation Act 2002* has been in place at the St Lukes cemetery (Bothwell) site since July 2007. Since 2008 the native grasslands that support *Leptorhynchus elongatus* have been subject to a mowing regime designed to be favourable to the species, weed management has been undertaken and the site has been monitored annually.
- Seed has been collected from the Bothwell and Jericho subpopulations over the past decade and lodged for long-term conservation storage at the Tasmanian Seed Conservation Centre based at Royal Tasmanian Botanical Gardens (Hobart).

### Management objectives

The main objectives for the recovery of *Leptorhynchus elongatus* are to prevent the loss or degradation of known subpopulations, increase the information and data available on the location, size and condition of known subpopulations, gain a better understanding of the species' ecological requirements and increase the number of known subpopulations through survey.

### 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 subpopulations and potential habitat;
- undertake surveys of the Liawenee Moor site to determine the full extent of the subpopulation and identify relevant management issues;
- monitor known subpopulations for health, recruitment and response to disturbance;

- monitor compliance with the existing Vegetation Management Agreement at St Lukes cemetery and, depending on the results of ongoing monitoring of the species, adjust the mowing and weeding practices as required;
- collected seed from the Wanstead and Liawenee Moor sites for long-term conservation storage at the Tasmanian Seed Conservation Centre based;
- encourage private landowners to consider protection and management of the species' habitat through either perpetual covenants or vegetation management agreements under the Tasmanian *Nature Conservation Act 2002*.

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