Stenopetalum lineare

narrow threadpetal

TASMANIAN THREATENED SPECIES LISTING STATEMENT

Image by Mark Wapstra

Scientific name: ***Stenopetalum lineare*** R.Br. ex DC. *Syst. Nat.* 2: 513 (1821)

Common name: narrow threadpetal (Wapstra et al. 2005)

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

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 Regions: **North, South**

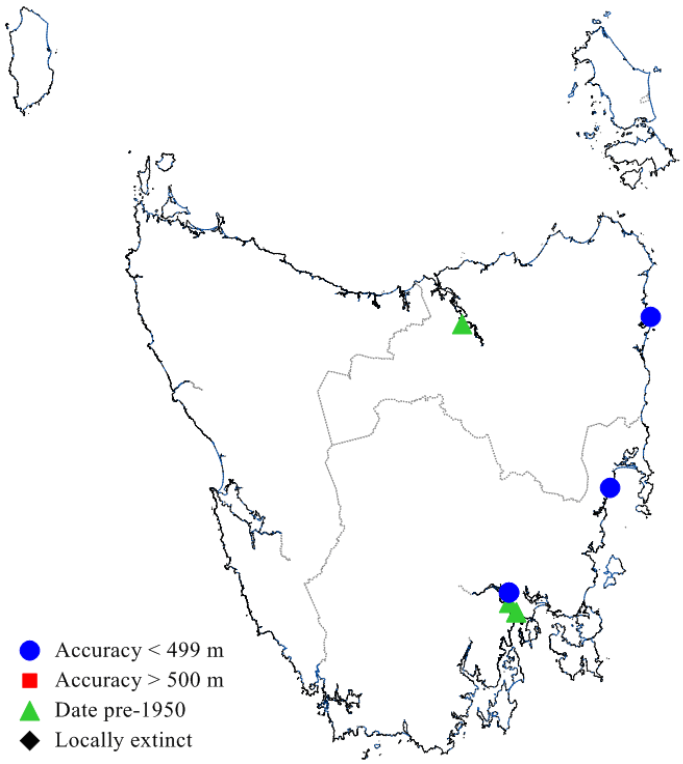

Figure 1. The distribution of *Stenopetalum lineare* within Tasmania

Plate 1. *Stenopetalum lineare* from Kelvedon Beach (image by Mark Wapstra)

SUMMARY: *Stenopetalum lineare* (narrow threadpetal) is an annual (rarely biennial) herb that, although widespread throughout much of the drier parts of Australia, has only been recorded from 6 or 7 sites within Tasmania, only 3 of which have been seen in recent years. In Tasmania, the species occurs in the east, predominantly on low grass-covered dunes, coastal heathy woodland and open grassy forest. The data suggest that the total population in Tasmania is small, and likely to occupy well less than 1 ha in total, placing it at risk from chance events, the risk exacerbated as plants may not be seen or only persist in low numbers in between disturbance events. Coastal subpopulations are subject to erosion as a result of the increase in the frequency and intensity of storm surges associated with climate change. The most important needs of the species are periodic disturbance to create gaps for recruitment, prevention of invasion from weeds, as well as protection of known subpopulations and supporting habitat.

IDENTIFICATION AND ECOLOGY

Stenopetalum lineare is an annual or rarely biennial herb. Although the species is widespread across the drier parts of Australia, there is a paucity of information on its ecology. As with many short-lived members of the Brassicaceae family, some form of disturbance is likely to be required for recruitment of the species from seed. Combined with the short-lived nature of plants, it is likely that subpopulations only exist temporarily above ground, with seed persisting in the soil seed bank in between gap forming disturbance events. The species is unlikely to be dependant on fire to promote recruitment because some habitats are not particularly fire-prone (e.g. coastal sands). The patches of the species at Kelvedon Beach appear to be most strongly associated with more open sandy areas, where the species occurs as scattered individuals to localised patches, perhaps a result of seed being dispersed by windblown or water-moved sand.

Survey techniques

Stenopetalum lineare flowers mainly in spring and summer (Curtis & Morris 1975, Entwisle 1994), the recommended time for survey, though the species may be detectable from dried stems with old seed pods at other times. Opportunistic rather than targeted surveys, particularly in recently disturbed areas, are likely to be most fruitful for detection for this disjunctly distributed and short-lived species.

Description

Stenopetalum lineare is a usually sparsely branched herb that grows to about 50 cm tall. The base of the plants at least is covered in irregularly branched or stellate hairs but usually the whole plant is densely covered in appressed velvety hairs. The basal leaves are up to 5 cm long, very occasionally longer. They are pinnately lobed, toothed or entire. If present, the lobes are lanceolate to linear. The stem leaves are up to 10 cm long, pinnately or 3-lobed to entire and threadlike. The inflorescence is an elongating raceme. The 3 to 6 mm long sepals are erect, tightly enclosing the basal portion of the petals. They are dimorphic with one opposite pair pouched. The 4 petals are chocolate-brown to olive-green. They are 6 to 13 mm long, with an oblong lamina drawing out at the apex into a thread-like extension (Plate 1). There are 6 stamens, and the stigma is sessile, large and capitate. The fruit is oblong to slightly obovoid, dehiscent, and 4 to 7 mm long and 1.5 to 2 mm wide. The pedicels are appressed to erect, and usually 1 to 2 mm long. The seeds are in 2 rows, mostly with 8 to 14 seeds per row. They are smooth, pale brown, ovoid to oblong and 0.8 to 1.5 mm long.

[description based on Entwisle 1994]

Confusing species

Stenopetalum lineare is unlikely to be confused with any other species.

DISTRIBUTION AND HABITAT

Stenopetalum lineare occurs throughout temperate Australia (Curtis & Morris 1975, Entwisle 1994), with widespread occurrences in all States and Territories. Within Tasmania the species has a sporadic collecting history and is only known from 6 sites between South Arm and

Table 1. Population summary for *Stenopetalum lineare* within Tasmania

	Subpopulation	Tenure	NRM Region	1:25000 Mapsheet	Year last (first) seen	Area occupied (ha)	Number of individuals
1	**Hope Beach, South Arm**	private land	South	Blackmans Bay	2011	0.0001	1
2	**Bellerive**	Public Reserve	South	Hobart	1942 (1923)	unknown	unknown
3	**Risdon**	unknown	South	Hobart	1905	unknown	unknown
4	**Gunners Quoin**	Crown land	South	Richmond	2000	0.0005	<20
5	**Kelvedon Beach**	Kelvedon Beach Conservation Area	South	Mayfield	2011 (1999)	0.3	c. 200
6	**Humbug Point**	Humbug Point State Recreation Area	North	St Helens	1985	0.0001	1?
7	**South Esk River**	unknown	North	unknown	pre-1903	unknown	unknown

NRM region = Natural Resource Management region

Binalong Bay, and a possible site somewhere along the South Esk River (Figure 1, Table 1).

Plate 2. Possible habitat of *Stenopetalum lineare*, Bellerive Beach (image by Mark Wapstra)

On mainland Australia, *Stenopetalum lineare* occurs in a range of habitats, though mainly in drier areas (Entwisle 1994). In Tasmania, the species is known from open *Eucalyptus pulchella/Eucalyptus viminalis* woodland on dolerite at Gunners Quoin at an altitude of 450 m and grass-covered low sand-dunes at Hope Beach and Kelvedon Beach at sea level. This latter site is dominated by the introduced *Ammophila arenaria* (marram grass), with scattered *Imperata cylindrica* (blady grass), a native species, whose presence appears to be strongly correlated with that of *Stenopetalum lineare* (M. Wapstra pers. obs.). The 1942 collection from Bellerive was described as "stable sand dunes" and the 1985 collection from Humbug Point as "white sand close to beach amongst scattered *Pteridium esculentum*", indicating an apparent preference for coastal sandy habitats in Tasmania (Plate 2).

POPULATION PARAMETERS

Although *Stenopetalum lineare* was first collected from Tasmania in about the 1840s (from an unspecified location), population information for the species is limited (Table 1). The largest known subpopulation, the extent of which has not been determined, occupies small patches of low dunes at Kelvedon Beach and has been informally estimated at about 200 mature individuals (M. Wapstra pers. obs.). The abundance at the other relatively recently collected sites at appears to be substantially lower (Table 1). Despite being distinctive, the species has not been seen at other recorded locations for over 50 years and may no longer be extant at those sites.

The site near the South Esk River was reported by Rodway (1903) though there are no supporting specimens held in Australian herbaria. Excluding this site, the linear extent of the species is 210 km and the extent of occurrence is 3500 km^2. The area of occupancy is estimated to be less than 1 ha in total.

The disjunct distribution of *Stenopetalum lineare* in Tasmania, combined with its apparent wide habitat preferences, suggests that the species may be detected at further sites. However, because of the apparent highly localised occurrences of the species and likely temporary occurrence above ground, discovery is likely to be serendipitous rather than as a result of targeted surveys.

RESERVATION STATUS

Stenopetalum lineare occurs within the Kelvedon Beach Conservation Area, the Humbug Point State Recreation Area, and at Gunners Quoin in a Public Reserve proposed for reservation under the *Nature Conservation Act 2002* (CLAC 2006).

CONSERVATION ASSESSMENT

Stenopetalum lineare was listed in 1995 as endangered on the Tasmanian *Threatened Species Protection Act 1995*. The species meets criterion B for the endangered category as the area of occupancy is estimated to be less than 10 ha and;

1. the species has a severely fragmented distribution and is now known from fewer than 5 locations; and

2c. there is a continuing decline is observed in area, extent and/or quality of habitat.

THREATS, LIMITING FACTORS AND MANAGEMENT ISSUES

Limited information on most subpopulations of *Stenopetalum lineare* is available to enable the assessment of specific threats and development of management strategies. However, the likely absence of plants or presence in very low numbers in between recruitment events increases the potential for losses of this likely disturbance dependent species through chance events or development. This is exacerbated by imprecise location details for older recordings though the species may now be extinct from those sites.

Land clearing: In Tasmania, threats to *Stenopetalum lineare* may have included extensive historical land clearing, but the extent to which this factor has, and continues to, operate is unknown. Land clearing is not identified as a specific threat to any subpopulations at present.

Inappropriate disturbance regime: *Stenopetalum lineare* may require disturbance to promote recruitment, although the type and degree of disturbance is unknown. The subpopulation at Gunners Quoin is subject to erosion of bare soil and intense grazing pressure (North & Associates 2001). Coastal subpopulations are probably subject to periodic inundation by extreme high tides and storm surges.

Weed invasion and competition: At least three of the sites (Hope Beach, Bellerive and Kelvedon Beach) are amongst dense marram grass (*Ammophila arenaria*), an introduced highly competitive sand-binding grass that can form dense swards that may inhibit recruitment of *Stenopetalum lineare*. Invasion of this site by coast wattle (*Acacia longifolia* subsp. *sophorae*), albeit a native species, may pose a future threat as this dense shrub closes in gaps amongst the dunes such as those where *Stenopetalum lineare* is currently present.

Climate change: The beach subpopulations are subject to being washed away as a result of increases in the frequency and intensity of storm surges and increasing sea levels associated with climate change.

Stochastic risk: The limited extent of most subpopulations and the low population abundances may subject the species to risk of localised extinction from chance events.

MANAGEMENT STRATEGY

What has been done?

- Seed from the subpopulation at Kelvedon Beach has been collected for conservation storage at the Tasmanian Seed Conservation Centre based at the Royal Tasmanian Botanical Gardens.

Management objectives

The main objectives for the management of *Stenopetalum lineare* in Tasmania are to increase the number of known subpopulations through survey and to ensure that all subpopulations do not decline by protecting and managing habitat.

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.

- undertake extension surveys at or in the vicinity of recorded sites to determine the status of the subpopulations, and, if detected, determine their size and extent and current threats;
- monitor the Kelvedon Beach subpopulation to determine longevity and response to disturbance;
- improve reservation status and/or develop management agreements with private landowners and public land managers, and ensure that current priorities for the species are incorporated into the Private Land Conservation Program's (DPIPWE) reservation strategies
- provide information and extension support to relevant Natural Resource Management committees, local councils, government agencies, the local community and development proponents on the locality, significance and management of known subpopulations and potential habitat;
- supplement the collection of seed for long-term conservation storage at the Tasmanian Seed Conservation Centre.

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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.