Image by Greg Jordan

Gompholobium ecostatum

dwarf wedgepea

TASMANIAN THREATENED SPECIES LISTING STATEMENT

Scientific name: ***Gompholobium ecostatum*** Kuchel, *Suppl. Black's Fl. S. Austral.*: 182 (1965)

Common Name: dwarf wedgepea (Wapstra et al. 2005)

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

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**

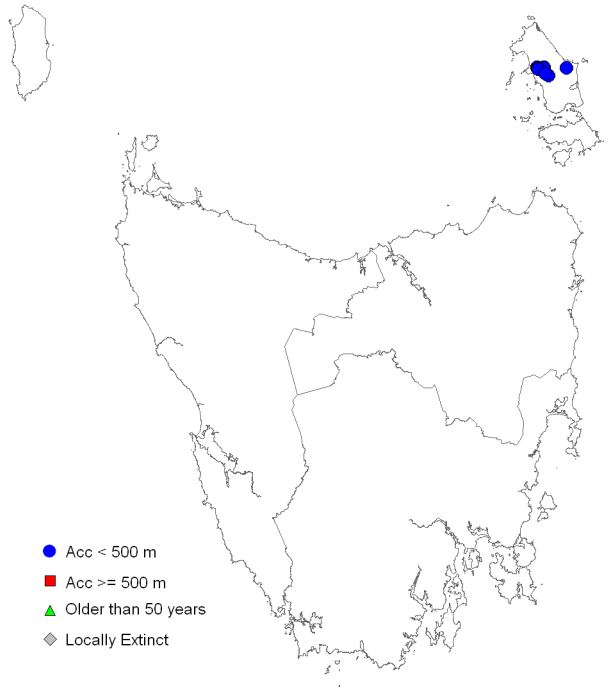

Figure 1. Distribution of *Gompholobium ecostatum* in Tasmania, showing Natural Resource Management regions

Plate 1. Flower of *Gompholobium ecostatum* (image by Natalie Tapson)

SUMMARY: *Gompholobium ecostatum* (dwarf wedgepea) is a low spreading shrub that occurs in heathland and heathy eucalypt woodland on sandy and gravelly soils. In Tasmania, it occurs at several locations in central Flinders Island, where it has a highly restricted distribution occurring within a linear range of less than 20 km and likely to occupy less than 10 ha, and the total number of mature individuals is estimated at fewer than 5000, putting the species at risk from localised, inadvertent or chance events. Threats include land clearance, disease, inappropriate fire regimes, stock, mechanical disturbance and changing climatic conditions.

IDENTIFICATION AND ECOLOGY

Gompholobium ecostatum flowers mainly between October and March (Jeanes 1996). The deep orange-red flowers have nectar guides and rewards adapted to pollination by bees (Hingston & McQuillan 2000). The species recruits after fire from what appear to be a long-lived soil-stored seed bank. Its capacity for vegetative recovery is unknown.

Survey techniques

Surveys for *Gompholobium ecostatum* should be conducted during its flowering period, as it is otherwise difficult to detect in its heathy habitat. Care should be taken when conducting surveys to avoid spreading *Phytophthora cinnamomi* by surveying in dry conditions and ensuring that footwear and all field equipment is disinfected.

Description

Gompholobium ecostatum is a decumbent, horizontally spreading to erect shrub up to 0.5 m tall. The stems are wiry and covered with short spreading hairs. The leaves are sessile and trifoliate. The leaflets are linear, linear-lanceolate or linear-oblanceolate, 3 to 15 mm long and about 1 mm wide, shortly stalked, and glabrous or with short stiff hairs, with revolute margins and a pointed apex. The flowers are solitary or occur in pairs near the end of branches, on pedicels to about 10 mm long. There are two minute bracteoles (leaf-like structures) inserted midway along the pedicels. The flowers are 15 to 20 mm long and are deep apricot to reddish with a yellow centre and black outer surfaces. The calyx (outermost whorl of floral parts) is about 8 mm long, black, glabrous outside and with tomentose inside margins. The keel (lower petal) is usually minutely ciliate along the edges. The pod is obliquely ovoid, 10 to 12 mm long and about 8 mm wide, swollen and glabrous. The seeds are numerous, kidney-shaped, light brown and about 1 mm long.

[description based on Curtis & Morris 1975, Jeanes 1996]

Confusing species

Gompholobium ecostatum is highly distinctive when in flower and unlikely to be confused with any other species. The other species of *Gompholobium* in Tasmania, *Gompholobium huegelii*, also has trifoliate leaves and a somewhat similar growth habit, but the flowers are yellow with greenish markings and the stems are more or less glabrous rather than covered with short spreading hairs.

DISTRIBUTION AND HABITAT

Gompholobium ecostatum occurs in South Australia, Victoria and Tasmania (Jeanes 1996). In Tasmania, the species occurs in heathlands and heathy woodlands on the sandy plains and adjacent rising hills of central Flinders Island (Figure 1). The habitat is usually a low open heathy *Eucalyptus nitida* woodland, often with *Xanthorrhoea australis*, on sandy and gravelly soils. The elevation of known sites ranges from 30 to 160 m above sea level.

POPULATION PARAMETERS

Gompholobium ecostatum has been recorded from five subpopulations in Tasmania (Table 1). Observations from two of the subpopulations, Centre Hill and Mulligans Hill, are from several different patches each, but it is unclear if the species is continuous between these patches. For most subpopulations there is limited information on plant numbers or the area occupied (Table 1), though it seems likely that

Table 1. Population summary for *Gompholobium ecostatum* in Tasmania

	Subpopulation	Tenure	NRM Region *	1:25000 Mapsheet	Year last (first) seen	Area occupied (ha)	Number of individuals
1	The Patriarchs	Patriarchs Conservation Area	North	Patriarchs	1981	unknown	unknown
2	Badger Hill	Brougham Sugarloaf Conservation Area	North	Leventhorpe	2004	2 sites c. 100 m apart	unknown
3	Memana Road	Darling Range Conservation Area	North	Leventhorpe	2001 (1966)	0.15	c. 20
4.1	Centre Hill (NW)	Private land	North	Memana	2005 (2000)	0.5?	'100s'
4.2	Centre Hill (NE)	Private land	North	Memana	2001	c. 2	unknown
4.3	Centre Hill (Kuhns Road)	Private land	North	Memana	1975	unknown	unknown
5.1	Mulligans Hill track (N – start)	Private land	North	Memana	2005 (1999)	1?	100s
5.2	Mulligans Hill track (centre)	Private land	North	Memana	2008	0.02	50
5.3	Mulligans Hill track (NE)	Private land	North	Memana	2008 (1999)	2	500
5.4	Mulligans Hill track (S – end)	Private land	North	Memana	1999	unknown	unknown

* NRM Region = Natural Resource Management Region

the total population of mature individuals does not exceed 5,000. In Tasmania the species has a linear range of 19.6 km, an extent of occurrence of about 60 km^2 and the area of occupancy is likely to be less than 10 ha.

The species was first detected on Flinders Island in 1966, with several additional sites uncovered in the interim, most recently near Badger Hill in 2004. The presence of suitable habitat between the known sites on Flinders Island suggests that there is a reasonable likelihood of further subpopulations being detected, provided any survey effort is well-timed and well-resourced.

RESERVATION STATUS

Gompholobium ecostatum has been recorded from Brougham Sugarloaf Conservation Area, Patriarchs Conservation Area, and Darling Range Conservation Area (Table 1).

CONSERVATION ASSESSMENT

Gompholobium ecostatum was listed as endangered on the original schedules of the Tasmanian *Threatened Species Protection Act 1995* meeting criterion B: extent of occurrence estimated to be less than 500 km^2, and

- known to exist at no more than five locations;
- a continuing decline, inferred, observed or projected in area, extent and/or quality of habitat.

THREATS, LIMITING FACTORS AND MANAGEMENT ISSUES

Land clearing and/or habitat modification: Cleared and modified land in the vicinity of known occurrences of *Gompholobium ecostatum* suggest that the distribution of the species may have been more extensive prior to European settlement.

Disease: Observations in Victoria indicate that *Gompholobium ecostatum* is moderately susceptible to the exotic soil-borne pathogen *Phytophthora cinnamomi* (Weste 2002), though to date there have been no reports of the species being affected on Flinders Island. Elements of the species' heathy habitat are also liable to be impacted by *Phytophthora* (Schahinger et al.

2003), with the pathogen known to be present in at least the Mulligans Hill and Patriarchs areas.

Inappropriate fire regimes: The heathy habitat of *Gompholobium ecostatum* is highly adapted to fire. However, like other pea shrubs, it may be sensitive to prolonged, frequent firing, although there is no supporting quantitative data.

Inappropriate grazing and disturbance regime: Parts of some subpopulations on private land are subject to stock grazing and there are signs of erosion caused by stock trampling, which could lead to changes in population structure. Changes to fertilising practices are also a threat, with even a one-off fertiliser application likely to eliminate the species. Part of the Centre Hill site has been disturbed by heavy machinery, and the site north of Mulligans Hill occurs on disturbed heathland that has been scraped by machinery.

Roadside & power-line maintenance: The original site at the margins of Memana Road was inadvertently disturbed during clearing for power lines in 1999, with limited recovery in the interim (Table 1). It seems likely that road construction would have impacted the subpopulation in the past, and continued maintenance may, if not undertaken carefully, further degrade the site.

Stochastic risk: The apparent localised nature of subpopulations exposes the species to the risk of local extinctions due to unforeseen human activities or chance events.

Climate change: It is possible that even minor shifts in average seasonal conditions may have an adverse impact on locally restricted species such as *Gompholobium ecostatum*.

MANAGEMENT STRATEGY

Management objectives

The main objectives for the recovery of *Gompholobium ecostatum* are to prevent the inadvertent destruction of subpopulations, maintain the viability of existing subpopulations, and promote conditions for its successful recruitment.

What has been done?

Survey and monitoring: Some subpopulations have been assessed on an ad hoc basis.

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, the local community and development proponents on the locality, significance and management of known subpopulations and potential habitat.
- undertake extension surveys radiating out from the known sites into areas of potential habitat;
- update and implement relevant reserve management plans;
- monitor the species' response to disturbance and disease regimes to guide future recovery work;
- develop management agreements with private landowners and public land managers to ensure that areas of vegetation that support the species are managed appropriately, and ensure that current priorities for the species are incorporated into the reservation strategies of DPIPWE's Private Land Conservation Program;
- collect seed for long-term storage at the Tasmanian Seed Conservation Centre which is based at the Royal Tasmanian Botanical Gardens;

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Contact details: Threatened Species and Marine Section, Department of Primary Industries, Parks, Water and Environment, GPO Box 44 Hobart Tasmania Australia 7001. Ph. (03) 61654340; fax (03) 62333477; threatenedspecies.enquiries@dpipwe.tas.gov.au

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