Image by Hans and Annie Wapstra

Corunastylis brachystachya

shortspike midge-orchid

TASMANIAN THREATENED SPECIES LISTING STATEMENT

Scientific name: ***Corunastylis brachystachya*** (Lind) D.L.Jones & M.A.Clem., *Orchadian* 13(10): 460 (2002)

Common name: shortspike midge-orchid (Wapstra et al. 2005)

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

Name history: *Genoplesium brachystachum, Prasophyllum brachystachum*

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

Distribution: Endemic status: **Endemic to Tasmania**
Tasmanian NRM Region: **Cradle Coast**

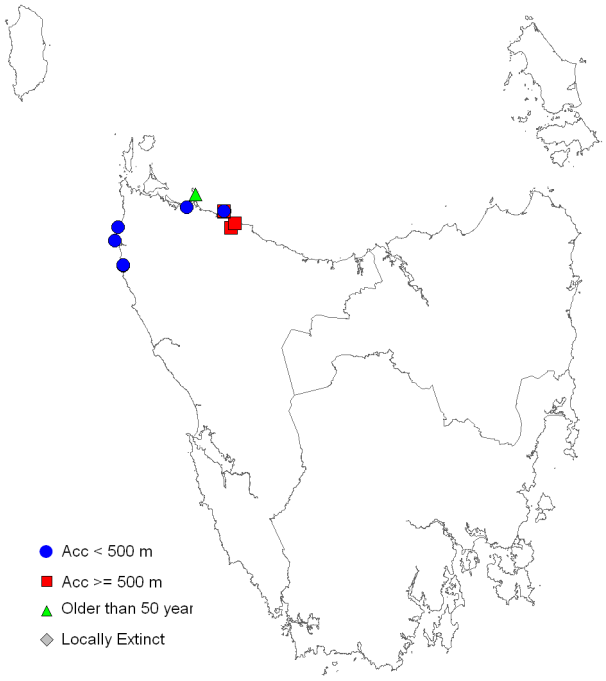

Figure 1. Distribution of *Corunastylis brachystachya,* showing Natural Resource Management regions

Plate 1. *Corunastylis brachystachya* inflorescence (image by Malcolm Wells)

SUMMARY: *Corunastylis brachystachya* is a diminutive terrestrial orchid endemic to Tasmania's far northwest. It is known from several near-coastal sites between Sisters Beach and Temma, where it grows among low shrubs, boulders and rock plates, in heathland and heathy woodland on well-drained quartzitic soils. The total population is thought to number fewer than 250 plants. The species responds strongly to disturbance such as fire or slashing. Threats to the species include land clearance, prolonged periods without disturbance and, given the small size of some subpopulations, a stochastic risk of extinction due to chance events. Management of known sites, in the form of an appropriate fire regime, is required, and further survey is also needed.

IDENTIFICATION AND ECOLOGY

Corunastylis brachystachya belongs to a group of orchids commonly known as midge orchids because of their insect-like appearance. *Corunastylis* species are deciduous terrestrials with a round, fleshy tuber partly enclosed by a persistent fibrous sheath, and a single thin cylindrical leaf. The leaf is solid in the basal part, with a short free apical part, and is inseparable from the stalk supporting the inflorescence as they are fused and emerge from the soil together. The upside-down flowers of *Corunastylis* species are crowded in a dense terminal spike.

Species of *Corunastylis* are mostly pollinated by small vinegar flies (drosophilids) attracted to the flowers by fruit perfumes and hairy segments (Jones 2006) although *Corunastylis brachystachya* is one of the hairless species. Some species are self-pollinating. Reproduction is solely from seed and like all orchids this species relies on associations with mychorrizal fungi for germination and growth.

When not flowering, *Corunastylis* specimens are virtually undetectable because their single thin leaf is often hidden amongst grasses and sedges. Even in flower, their short stature and colour makes them hard to detect in their surrounds. *Corunastylis brachystachya* often occurs in relatively low abundance at any particular site, making detection a chance event. The flowering period of *Corunastylis brachystachya* is February to April (Jones 2006) but most specimens have been collected in March. Late summer to early autumn is the recommended timing for surveys (Wapstra et al. 2008).

When in flower, midge orchids are short and often hidden among grasses, rushes and heathy shrubs. They are most commonly seen in places that have been recently been burnt or spots that are regularly mown or slashed, such as areas beside tracks and on road verges. *Corunastylis brachystachya* is strongly fire-responsive and is most abundant one to three flowering seasons after a fire.

Description

Corunastylis brachystachya is a short midge-orchid, about 10 to 15 cm tall. It has a slender green leaf with a reddish base, which is about 8 to 12 cm long. The leaf is closely sheathing and ends well below the flower spike. The free apical portion is 10 to 20 mm long. The scape ends in a moderately dense spike of flowers that is 10 to 20 mm long. The flower spike comprises of several flowers (between 1 and 12). The flowers semi-nodding and are about 5 mm long and 3.5 mm wide. The flowers are green to brownish green with reddish petals and labellum. The dorsal sepal is 3 mm long and 2 mm wide, reddish, with hairless margins and a sharply pointed apex. The lateral sepals are projecting to semi-nodding, 4 mm long and 1.2 mm wide, and the apex often has a small or vestigial gland. The petals are 3 mm long and 1.3 mm wide, reddish, with hairless margins and a sharply pointed apex. The labellum is stiffly hinged, narrowly elliptical, 2.7 mm long and 1.4 mm wide. The labellum has irregular hairless margins and a sharply pointed apex.

[description from Jones 1998, Jones et al. 1999, Jones 2006]

Confusing species

Corunastylis brachystachya is most similar to *Corunastylis tasmanica* but is relatively easy to differentiate based on several characters. *Corunastylis brachystachya* has a gently curved labellum with an apex that is not sharply recurved (rather than sharply recurved), lateral sepals lacking apical glands or the glands vestigial (rather than prominently globose) and between 1 and 12 flowers (rather than 5 to 25).

Corunastylis brachystachya may be initially mistaken for *Corunastylis archeri* in the field as both have a very short flower spike. However, *Corunastylis archeri* has ciliate floral parts so is easily distinguished on closer examination.

DISTRIBUTION AND HABITAT

Corunastylis brachystachya is endemic to Tasmania, being known only from several widely separated locations on the north and west coasts (Figure 1).

The species occurs in near-coastal lowland habitats (generally below 200 m elevation) in well-drained quartzitic soils in heathland and heathy woodland, growing among low shrubs, boulders and rock plates. Canopy species may include *Eucalyptus nitida* and *Banksia serrata* (Plate 2).

Plate 2. *Corunastylis brachyscapa*: habitat along Irbys Road (image by Richard Schahinger)

POPULATION ESTIMATE

Corunastylis brachystachya is known from only five confirmed extant subpopulations (Table 1). Voucher specimens are unavailable for the Stanley and Bass Highway sites to enable confirmation of the identity of the species. The type collection by Gunn in the 1830s cites the location as Rocky Cape and Circular Head, though whether specimens were from either or both of the locations (as assumed for Table 1) is unknown. Most database and herbarium collections from the Rocky Cape area probably represent the same subpopulation in Rocky Cape National Park, spanning the area from near the lighthouse to nearby Cathedral Hill and Saddleback Hill.

Most subpopulations do not have reliable estimates of abundance and extent, though it appears that the species is usually highly localised and occurs in relatively low numbers, often less than 25 individuals. The total population is difficult to estimate but is likely to be less than 250, and the area of occupancy less than a few hectares. The species has a linear range of about 82 km and an extent of occurrence of about 1700 km^2.

The broad vegetation type potentially supporting *Corunastylis brachystachya* — lowland near-coastal heathland and heathy woodland on well-drained rocky terrain — is widespread in Tasmania, though it is also generally well surveyed by orchid enthusiasts due to its floristic richness. In particular, recently burnt sites in near-coastal areas along the north and west coasts are often targeted by orchid enthusiasts and specialists, and several sites in the Rocky Cape National Park and Arthur-Pieman Conservation Area have been particularly well surveyed due to the presence of other threatened orchids.

The discovery of the species in new sites and locations in the Arthur-Pieman area in 1999 and 2010 — representing a significant range extension — suggests that there may be other opportunities for new records, especially in the near-coastal heathlands of the west and northwest coast.

RESERVATION STATUS

Corunastylis brachystachya occurs in Rocky Cape National Park and Arthur-Pieman Conservation Area.

CONSERVATION ASSESSMENT

Corunastylis brachystachya was listed as rare on the original schedules of the *Threatened Species Protection Act 1995* (under the name *Genoplesium brachystachyum*), and uplisted to endangered in 2001. The species meets criteria B, C and D of the endangered category due to its restricted range, small number of subpopulations and low numbers of plants (fewer than 250 mature individuals).

Table 1. Population summary for *Corunastylis brachystachya*

	Subpopulation	Tenure	NRM Region	1:25000 Mapsheet	Year last (first) seen	Area occupied (ha)	Number of mature plants
1	Corner of Heemskirk & Temma Roads	Arthur-Pieman Conservation Area	Cradle Coast	Temma	2010 (1999)	0.8	16
2	Bluff Hill	Arthur-Pieman Conservation Area	Cradle Coast	Bluff	2010	0.01	8
3	West Point Road	Arthur-Pieman Conservation Area	Cradle Coast	Marrawah	2010	0.001	1 to 3
4	Corner of Jocks Road & Bass Highway *	road verge	Cradle Coast	Smithton	1997	unknown	10 ^
5	Circular Head/Stanley *	unknown	Cradle Coast	unknown	1946 (1837)	unknown	unknown
6	Irbys Road near Sisters Beach	Road reserve	Cradle Coast	Wynyard	2015 (c. 1980)	0.02	23
7.1	Rocky Cape: Lighthouse	Rocky Cape National Park	Cradle Coast	Rocky Cape	1998 (1997)	unknown	unknown
7.2	Rocky Cape: boat ramp	Rocky Cape National Park	Cradle Coast	Rocky Cape	2012 (2009)	c. 0.1	9
7.3	Rocky Cape: shackery	Rocky Cape National Park	Cradle Coast	Rocky Cape	1985 (1980)	unknown	unknown
7.4	Cathedral Hill	Rocky Cape National Park	Cradle Coast	Rocky Cape	2015	Over 1.4 km	40

* unconfirmed sites; ^ believed to have been destroyed by roadworks; NRM region = Natural Resource Management region; species first recorded in the Rocky Cape area by Ronald Gunn in 1837.

THREATS, LIMITING FACTORS AND MANAGEMENT ISSUES

The highly localised distribution of subpopulations of *Corunastylis brachystachya*, combined with the usually relatively low abundance, makes the species subject to stochastic risk at all of its known sites. This is exacerbated by possible non-emergence in unfavourable conditions, and the relationship with mycorrhizal fungi which may make the species susceptible to additional factors. The precise extent of each of the subpopulations is also not formally documented so disturbance from nearby activities has the potential to impact the sites supporting the species.

Land clearing: Any clearing activities in the vicinity of subpopulations of *Corunastylis brachystachya* may deleteriously affect the subpopulations. Poor planning, combined with the low precision of some of the database records, may result in inadvertent disturbance and even local elimination of subpopulations. Historically, significant areas of potential habitat (i.e. lowland near-coastal heathland and heathy woodland) have been cleared and this may explain the disjunct contemporary distribution of the species. Any clearing of potential habitat has the potential to disturb and/or eliminate as yet undetected subpopulations. Expansion and occupation of the Rocky Cape shack sites over several decades has probably eliminated some *Corunastylis brachystachya* from the vicinity.

Inappropriate fire regime: The flowering of *Corunastylis brachystachya* is enhanced by summer fires. However, for safety reasons, fire management at the known sites and in potential habitat for the species is usually directed towards preventing the type of fires considered ideal to stimulate flowering. A more frequent lower intensity fuel reduction fire regime is unlikely to benefit the species and in the long term may reduce habitat quality. Lack of fire for long periods of time is likely to render habitat unsuitable.

Inappropriate disturbance regime: *Corunastylis brachystachya* is likely to benefit from periodic disturbance such as slashing, which probably mimics a natural fire event by reducing the density of the overtopping shrubs

and creating areas of bare ground. An inappropriate disturbance regime is likely to be deleterious to subpopulations of *Corunastylis brachystachya*. Disturbance that occurs outside the period of flowering and seed set and which does not disturb dormant tubers is likely to be acceptable. However, intensive soil disturbance and persistent removal of fertile plants is likely to have a long term negative impact. Roadside slashing of vegetation is likely to benefit species of *Corunastylis* but is unlikely to occur at any known subpopulations of *Corunastylis brachystachya*. Roadworks may have eliminated the (unconfirmed) site beside the Bass Highway west of Stanley.

Climate change: While the response of *Corunastylis brachystachya* to climate change is unknown, mainly because its ecological requirements are poorly understood, climatic warming has the potential to further exacerbate the precarious position of the species, particularly if the rainfall pattern changes leading to alterations in fire regime and soil moisture levels.

MANAGEMENT STRATEGY

What has been done?

Survey: Known sites for *Corunastylis brachystachya* have traditionally received much attention from orchid specialists and enthusiasts. In particular, several attempts have been made to relocate the roadside subpopulation near Smithton but that is now believed to be extinct. The Rocky Cape National Park and Arthur-Pieman Conservation Area are also regularly surveyed by orchid specialists and enthusiasts, especially after fire events, most recently in April 2015 resulting in the discovery of the Cathedral Hill site. Surveys of potential habitat (specifically rocky outcrops among coastal shrubland vegetation) were undertaken during the 1999, 2000 and 2010 flowering seasons, following discovery of the colony at Temma Road in 1999.

Recovery planning: *Corunastylis brachystachya* is included in the *Flora Recovery Plan: Threatened Tasmanian Orchids 2006–2010* (Threatened Species Unit 2006), with a high priority noted for baseline surveys to guide management action.

Management objectives

The main objective for the management of *Corunastylis brachystachya* is to ensure that there is no decline in the known subpopulations and to increase the number of subpopulations through survey.

What is needed?

- determine the precise extent and condition of recorded subpopulations, and develop appropriate management strategies for each of the sites;
- address the ecological requirements of *Corunastylis brachystachya* in any management plans for the Rocky Cape National Park and Arthur-Pieman Conservation Area, especially with regard to fire management;
- undertake targeted surveys of recently burnt areas of coastal heathland and heathy woodland, especially in the Rocky Cape-Sisters Hill area and the Arthur-Pieman Conservation Area;
- provide information and extension support to relevant Natural Resource Management committees, local councils, Government agencies, development proponents and the local community on the location, significance and management of known subpopulations and areas of potential habitat;
- encourage formal land management agreements with the owners of sites found to support *Corunastylis brachystachya* on private land that incorporate longer term habitat protection and maintenance objectives and actions;
- collect seed and associated mycorrhizal fungi for long-term storage at the Tasmanian Seed Conservation Centre at the Royal Tasmanian Botanical Gardens (Hobart), if sufficient fertile material is available;
- implement the Threatened Tasmanian Orchid Recovery Plan (Threatened Species Unit 2006) and include the species in any revision of the Plan.

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