

# *Craspedia paludicola*

## swamp billybuttons



Image by Andrew North

TASMANIAN THREATENED SPECIES NOTESHEET

**Scientific name:** *Craspedia paludicola* J.Everett & Doust, *Telopea* 5: 35 (1992)

**Common name:** swamp billybuttons

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

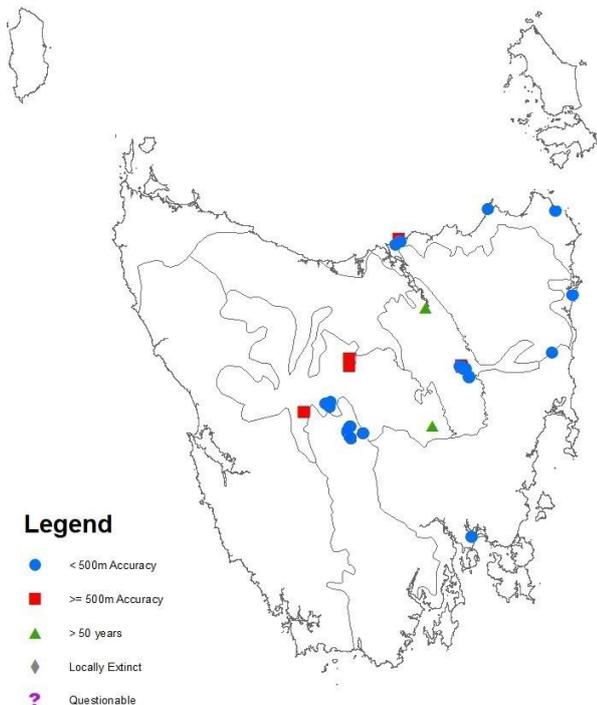
**Status:** *Threatened Species Protection Act 1995*: listing as rare under consideration

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

**Distribution:** Biogeographic origin: **not endemic to Tasmania**

Tasmanian NRM Regions: **North, South**

Tasmanian IBRA Bioregions (V6): **Flinders, Northern Midlands, South East, Central Highlands, Southern Ranges**



**Figure 1.** Distribution of *Craspedia paludicola* in Tasmania, showing IBRA bioregions (V6)



**Plate 1.** *Craspedia paludicola* (image by Andrew North)

**SUMMARY:** *Craspedia paludicola* (swamp billybuttons) is a robust herb in the daisy family that grows in open wet swampy areas or at the edges of water bodies or courses. In Tasmania, the species is known from 14 localities scattered in mostly lowland areas in the eastern half of the State, and in montane areas in the Central Highlands. While rarely encountered, the species can be abundant, but most occurrences are small. Its distribution and abundance appear to be regulated by conditions to maintain or disturbance to create open recruitment niches, as well as protection of this palatable species from browsers. The species is at risk from land clearing and direct and indirect impacts from changes in land use, as well as climatic changes that risk drying of its preferred wet habitat.

## IDENTIFICATION AND ECOLOGY

*Craspedia paludicola* is a perennial robust herb to 75 cm high when in flower. The species flowers from spring to summer (Everett & Doust 1992). Most Tasmanian records are from October to mid-January with some extending to early April (Natural Values Atlas).

Recruitment is from seed. Conditions for the germination of seed of *Craspedia paludicola* seem to differ little from other Tasmanian *Craspedia* species tested at the Tasmanian Seed Conservation Centre. Seed appears to non-dormant and germinates fairly rapidly at the temperature range tested (05°C to 20°C). There is some suggestion that *Craspedia* seed might require light to germinate, so it is possible that some percentage of the seed could form a temporary soil seedbank, but this light requirement is yet to be examined for *Craspedia paludicola* (James Wood pers. comm.). Non-dormant seed suggests that the species would rely on disturbance to create open recruitment niches, a premise supported by the open habitat descriptions accompanying records (see also Bridle & Kirkpatrick 1998).

Notes accompanying records suggest that the species is highly palatable with abundance seemingly curtailed by browsing (Natural Values Atlas). Bridle & Kirkpatrick (1998) provide evidence that for *Craspedia paludicola*, the distribution and abundance at sites is

regulated by disturbance to create open recruitment niches as well as browsing pressure. More abundant occurrences tend to be at sites that are inaccessible to browsers or where browsers are disturbed by people (James Wood, pers. comm., Bridle & Kirkpatrick 1998).

There are currently 227 species in the Asteraceae family native to Tasmania, with *Craspedia paludicola* being one of eight *Craspedia* species (de Salas & Baker 2020), one of which is listed as threatened on Schedules of the Tasmanian *Threatened Species Protection Act 1995*.

## Survey techniques

*Craspedia paludicola* is most readily detected when flowering, the peak period occurring from October to early January

## Description

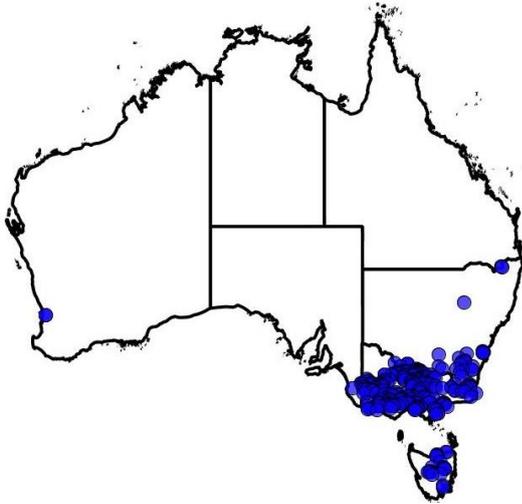
The flaccid leaves are 15 to 30 cm long and 8 to 20 mm wide, basal and cauline, narrow-obovate, obtuse, attenuate and broadly stem-clasping at the base. They have one to several prominent longitudinal veins and are glabrous or with few scattered hairs that denser on the margins or mid-vein. The leaves are dark olive-green, usually tinged deep red at the base and the old leaf bases are retained. The inflorescence is a single globular compound head 1.7 to 3.0 cm in diameter with up to 300 partial heads each with 7 to 12 florets with bright yellow corollas and surrounded by a ring of bracts with glandular hairs, the main bract broadly triangular to ovate. The scape (flower stem) is purplish with scattered long fine hairs and up to 75 cm high. The fruits (achenes) are small, dry and one seeded. They are 1 to 1.8 mm long and 0.5 to 1.0 mm in diameter, with dense appressed silky hairs and a pappus of 13 to 17 plumose bristles 3 to 4 mm long.

[description based on de Everett & Doust 1992, Schmidt-Lebuhn & Milner 2013]

## Confusing species

*Craspedia paludicola* can be distinguished by its long, oblong, very dark green leaves with very broad leaf bases (Everett & Doust 1992). It can be distinguished from *Craspedia glauca* which has pale green leaves that are less than 15 cm long, although the leaves of *Craspedia paludicola* from some Tasmanian sites can be less than 15 cm long (Schmidt-Lebuhn & Milner 2013), hampering identification.

## DISTRIBUTION AND HABITAT



**Figure 2.** Distribution of *Craspedia paludicola*  
[source: *Atlas of Living Australia*, 11 February 2020]

As well as occurring in Tasmania, *Craspedia paludicola* is widespread in Victoria and southeastern NSW (including the ACT), extending into southeastern South Australia where it is endangered (Figure 2). Outlying occurrences are in northern NSW, and southern Queensland and there are historical collections from a site in Western Australia. In Tasmania, the species is scattered in the eastern half of the State and in the Central Highlands (Figure 1, Table 1).

The habitat of *Craspedia paludicola* is described as 'restricted to swampy areas and drainlines, and often grows with its leaves partly submerged' (Everett & Doust 1992). Tasmanian occurrences are in open wet areas that are often temporarily inundated e.g. bogs, swamps, ponds, ditches and the edges of lakes, lagoons, rivers, creeks and streams, in vegetation ranging from open wetlands, marshland, rushland, sedgeland to grasslands. The altitude of sites

ranges from sea level, with lowland sites restricted to the eastern half of the State, to an elevation of 1200 m a.s.l. in montane sites in the Central Highlands.

## POPULATION PARAMETERS

*Number of subpopulations* = 22 (2 possibly extinct), **19 current** (recorded since 1991)

*Number of localities* = 14 (2 possibly extinct), **11 current** (recorded since 1991)

*Extent of occurrence* = 23,500 km<sup>2</sup>, **23,000 current**

*Area of occupancy* ~ 12 ha recorded

*Area of occupancy (as per IUCN criteria)* = 228 km<sup>2</sup>, (116 km<sup>2</sup> excluding possibly extinct sites), **104 km<sup>2</sup> current** (recorded since 1991)

*No. of mature individuals* = at least 12,000

*Largest subpopulation* = 8,000-10,000 mature individuals

Most occurrences (Table 1) would have been attributed to *Craspedia glauca* until *Craspedia paludicola* was described in 1992 (Everett & Doust 1992), and the taxonomic treatment confirmed in 2013 (Schmidt-Lebuhn & Milner 2013). As such it is likely that further occurrences will be found, particularly in the Central Highlands where several new subpopulations were reported during consultation with field botanists during preparation of this document and it is likely that further sites remain unreported. However, the experts consulted have noted that the species is rarely encountered, and rarely abundant. As such the likelihood of new occurrences significantly altering the population parameters listed above is low.

Losses from historical land clearing for agriculture and residential development are likely to have occurred, particularly in the lowlands including the wetter grassland areas. Findings from impact assessment surveys suggest potential for ongoing declines. There would be a 25% decline in the extent of occurrence should the southernmost outlier be lost. A continuing decline as per the listing criteria is invoked due to losses and fragmentation from development and impacts from a drying climate.

**Table 1.** Population summary for *Craspedia paludicola* in Tasmania

Locality (year first seen)	Subpopulation	Tenure	NRM Region	1:25000 Mapsheet	Year last (first) seen	Area occupied (ha)	Number of mature plants
1. Musselroe Bay	1. Musselroe Bay	private land	North	Musselroe	2019	unknown	unknown
2. Waterhouse	2a. Croppies Point*	Waterhouse Conservation Area	North	Waterhouse	1983	unknown	'common'
	2b. Homestead Road**				2015	unknown	unknown
3. Soldiers Settlement Road (1842)	3. Curries Rivulet*	private land	North	Low Head	2014	unknown	unknown
	4. Cimitiere Creek*	private land			1996	unknown	unknown
	5. Stony Head	Commonwealth land		Launceston	2015	unknown	unknown
4. Launceston	6. Cataract Gorge?*	unknown	North	Launceston	1911	possibly extinct	
5. Midlands	7a. Diprose Lagoon	Crown land Diprose Lagoon (Forest Hall) Extension (informal reserve)	North	Cleveland	2010	unknown	2
	7b. Midland Highway at Cleveland*	road casement (DSG) or private land		Cleveland	1976	unknown	unknown
	7c. Cleveland Lagoon*	Cleveland Lagoon Conservation Area?		Cleveland	1961	unknown	unknown
	7d. private land including Smiths Lagoon*	private land with Conservation Covenant		Cleveland	2014 (1998)	0.005	<25(3sites)
	7e. Midland Highway N of Conara*	road casement, rail casement (State Rail Network) and/or private land		Cleveland	2009 (1961)	unknown	unknown
	8. Blacksmiths Creek*	Stewardship Agreement Private Reserve (variable term)		Conara	2009	1	'locally abundant' 8,000-10,000
6. Dianas Basin area	9. Dianas Basin area	private land	North	St Helens or Beaumaris	2017	unknown	unknown
7. Dukes Marshes	10. Dukes Marshes	Crown land (Future Potential Production Forest)	North	Fingal	2014	>1	unknown
8. Cambridge	11. Cambridge	private land	South	Carlton	2010	9	3,500
9. Lake Crescent	12. Lake Crescent*	unknown	South	Interlaken or Table	1965	possibly extinct	
10. First Bar Lake	13. First Bar Lake*	Central Plateau Conservation Area	South	Pillans	1984	unknown	'common'
	14. Devils Den**				1997	unknown	at least 20
11. Lake Echo	15. Mentmore Road	Central Plateau Conservation Area	South	Echo	2012	unknown	~12

Location (year first seen)	Subpopulation	Tenure	NRM Region	1:25000 Mapsheet	Year last (first) seen	Area occupied (ha)	Number of mature plants
12. Bronte Lagoon/Bradys Lake	16. Bronte Lagoon northern end	Tailers Bay Conservation Area and Hydro Electric Corporation land	South	Bronte	2012	unknown	unknown
	17. Bronte Lagoon southern end*	private land	South	D'Arcys	2011	0.1-0.5	200-500
	18. Bradys Lake**	Hydro Electric Corporation land	South	D'Arcys	2020	0.5-1.5	100s
13. Skullbone Plains	19. near Little Nive Rivulet*	private land with Conservation Covenant	South	Ina	2012	unknown	unknown
	20. Kenneth Lagoon*				2012	unknown	unknown
	21a. Lake Ina (foreshore)				2021 (1992)	'small bay'	20
	21b. Lake Ina (foreshore)				2021 (1992)	'along 200m'	200-300
14. Cuvier Valley	22. Cuvier Valley	Cradle Mountain – Lake St Clair National Park	South	Olympus or Rufus	1990	unknown	unknown

\*=pressed specimen(s) available, \*\*=image available  
DSG=managed by Department of State Growth

Given that *Craspedia paludicola* is a perennial herb that recruits from seed, the generation length of individuals for use in applying the listing criteria in conjunction with declines is estimated to be between 2 and 5 years.

Smaller occurrences of *Craspedia paludicola*, face an increased extinction risk from stochastic events and edge effects which can jeopardise recruitment exacerbated by what appears to be a temporary seedbank (i.e. prone to exhaustion) and a requirement for an appropriate level of disturbance to create recruitment niches.

Despite the suggestion of temporary seed bank, there is insufficient information to suggest that there are extreme fluctuations as per the listing criteria though the largest subpopulation was recorded following good rains after years of drought (R. Schahinger, pers. comm.).

While the number of current subpopulations can be a substitute for locations to apply the listing criteria the use of threat-defined locations can be justified for assessing the status of *Craspedia paludicola* given plausible threats across its distribution. The maximum number of threat-defined locations would be

that of current localities. The defining threats include expanding peri urban development exacerbated by fragmentation (e.g Cambridge locality) and agricultural (including irrigation) development which is exacerbated by a drying climate as well as fragmentation (in the Midlands region).

#### RESERVATION STATUS

*Craspedia paludicola* occurs in the Waterhouse Conservation Area, Central Plateau Conservation Area, Tailers Bay Conservation Area and Cradle Mountain – Lake St Clair National Park, and may occur in the Cleveland Lagoon Conservation Area. It also occurs on two private properties in areas covered by perpetual conservation covenants under the *Tasmanian Nature Conservation Act 2002*.

## CONSERVATION ASSESSMENT

*Craspedia paludicola* is under consideration for listing as rare on Schedules of the Tasmanian *Threatened Species Protection Act 1995*.

## THREATS, LIMITING FACTORS AND MANAGEMENT ISSUES

**Land clearing and edge effects from adjacent development:** Occurrences on private land, particularly in lowland areas are at some risk of a change in land use e.g. for agriculture, recreational and residential development. The largest subpopulation occurs in the Midlands and is temporarily protected as a private reserve (Table 1). Co-occurrence with 13 threatened flora grassland species offers additional protection. There would be a 25% decline in the extent of occurrence of *Craspedia paludicola* if the Cambridge occurrence was lost, though co-occurrence with a number of threatened flora species offers some level of protection of its habitat. Both these occurrences are also afforded protection due to the listing of Lowland Native Grasslands of Tasmania as a threatened ecological community on the Commonwealth *Environment Protection Biodiversity Act 1999* though protection may not apply for areas less than 1 ha or degraded areas. Encroaching residential development at the Cambridge site may risk degradation of the habitat of the species. The risk of clearing of occurrences in the formal or informal reserves (Table 1) is considered low due to the often swampy conditions. Two disjunct locations in the north east of the State were discovered in recent years during impact assessments for unspecified development proposals though their wetland habitats would likely be excluded from direct impacts.

**Climate change:** As a consequence of climate change, *Craspedia paludicola* is at risk from an increase in the frequency and intensity of drought in its preferred wet habitat.

## MANAGEMENT STRATEGY

### What has been done?

Seed has been collected for long term conservation storage at the Tasmanian Seed

Conservation Centre (based at the Royal Tasmanian Botanical Gardens, Hobart).

### Management objectives

The main objectives for the recovery of *Craspedia paludicola* are to prevent the loss or degradation of known occurrences and potential habitat in their vicinity, and to survey for new subpopulations.

### 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 the species and its potential habitat;
- survey for additional occurrences in potential habitat, radiating out from known locations;
- monitor selected sites to determine life history attributes and response to disturbance in order to better inform management;
- collect more seed to supplement the collection held for long-term conservation storage at the Tasmanian Seed Conservation Centre (based at the Royal Tasmanian Botanical Gardens).

## REFERENCES

- Bridle, K.L. & Kirkpatrick, J.B. (1998). Why do tall herbs rarely dominate Tasmanian alpine vegetation? Evidence from islands in the Ouse River system. *Papers and Proceedings of the Royal Society of Tasmania* 132:9–14.
- Everett, J & Doust, A.N.L. (1992). Four new Australian species of *Craspedia* sens. stric. (Asteraceae: Gnaphalieae). *Telopea* 5 (1):35–38.

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Schmidt-Lebuhn, A.N. & Milner, K.V. (2013). A quantitative study of morphology in Australian *Craspedia* (Asteraceae: Gnaphalieae). *Australian Systematic Botany* 26 (3):238–354.

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