

Senecio campylocarpus

bulging fireweed

TASMANIAN THREATENED SPECIES NOTESHEET



Image by Mark Wapstra

- Scientific name:** *Senecio campylocarpus* I.Thomps., *Muelleria* 20: 139 (2004)
Common name: bulging fireweed (Wapstra et al. 2005)
Name history: *Senecio glandulosus* (DC.) Sch.Bip.
Group: vascular plant, dicotyledon, family **Asteraceae**
Status: *Threatened Species Protection Act 1995*: **vulnerable**
Environment Protection and Biodiversity Conservation Act 1999: **Not listed**
Distribution: Endemic status: **not endemic to Tasmania**
Tasmanian NRM regions: **North**

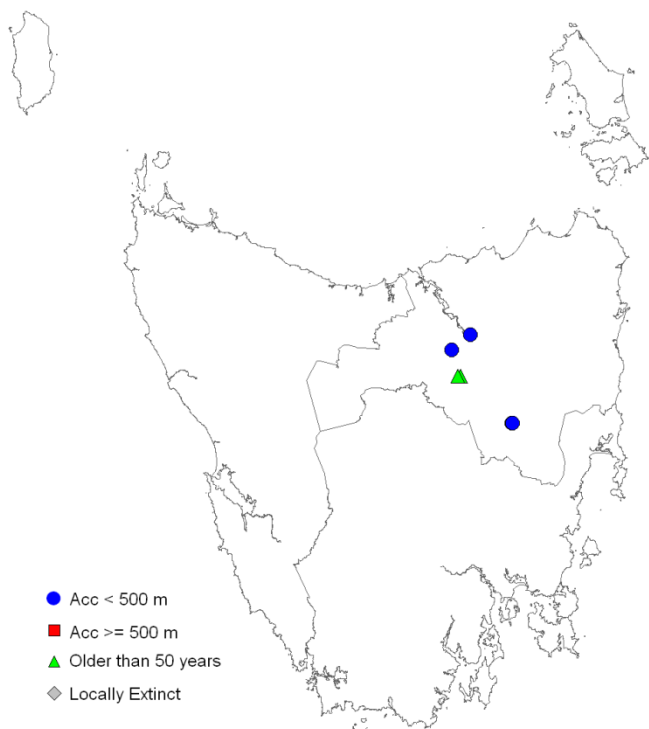


Figure 1. The distribution of *Senecio campylocarpus* in Tasmania, showing Natural Resource Management regions



Plate 1. Inflorescence of *Senecio campylocarpus*, showing mature dark achenes with typical curvature (image by Mark Wapstra)

SUMMARY: *Senecio campylocarpus* (bulging fireweed) is a semi-aquatic perennial herb, known in Tasmania from three extant sites and a site that may now be extinct, all from the northern Midlands and greater Launceston area. In Tasmania, the species occurs in flood-prone lowland grassy habitats associated with major river systems. The data suggest that the total population in Tasmania is small, and likely to number fewer than 1,000 plants and occupy much less than 1 ha in total, placing the species at risk from chance events, the risk exacerbated as fireweed plants may not be seen or only persist in low numbers between disturbance events. Ongoing agricultural activities on private land risk the further loss or degradation of habitat and perhaps explain the now fragmented distribution of the species in Tasmania. As well as preventing the destruction of known and potential habitat by clearing, inundation or severe degradation, the most important needs of the species are to prevent overgrazing by stock, competition from weeds, and changed hydrology of known sites.

IDENTIFICATION AND ECOLOGY

Species of *Senecio* are usually annual to short-lived perennial herbs known as fireweeds or groundsels. They are categorised by the form of the capitulum (the compound flowerhead). Radiate capitula can be seen in the typical garden daisy, with a heart of tubular florets (disk florets) surrounded by ray florets with their radiating ligules. Non-radiate capitula do not have ray florets. They are categorised as disciform if the central florets are bisexual and the outer florets are female and, in Australian *Senecio*, the outer florets have a more slender and fewer-lobed corolla; or discoid if all florets are bisexual. *Senecio campylocarpus* is one of 17 disciform species in Tasmania (Baker & de Salas 2013).

Species of *Senecio* reproduce by seed (referred to as achenes), which are usually produced in high numbers on each plant and are wind-dispersed as most species have seeds with a long pappus (a ring of very fine bristles or hairs at the tip of the body of the achene) that aid in dispersal. As such, species of *Senecio* are often one of the first colonisers of bare and disturbed ground, but can produce locally and temporarily dense

occurrences that are short-lived and decrease as competition with other plants progresses. As *Senecio campylocarpus* occurs on river verges in flood prone habitats it is likely that seed is also spread by flood waters, with flood-scoured areas providing recruitment niches. It is not known whether the species germinates from soil-stored seed.

Survey techniques

The peak flowering period of most species of *Senecio* is spring through summer and into autumn, but many species are detectable and identifiable at most times of the year (Wapstra et al. 2008). Collections of *Senecio campylocarpus* in Tasmania have been made from January through to May, but the detection window is likely to be much wider.

Description

Senecio campylocarpus is an erect perennial herb growing to 1.5 m tall. It has an inconspicuous taproot and fleshy secondary roots. The stems are almost glabrous, with sparse appressed-cottony hairs. The leaves in the middle third of stems are more or less evenly spaced and sized, and very narrow-elliptic to linear. They are 10 to 24 cm long, with a length to width ratio of about 12 to 16. They are not dissected, their bases are attenuate and the uppermost leaves sometimes develop small entire auricles. The leaf surfaces are more or less glabrous or with sparse appressed to cottony hairs that rub off with age. The leaf margins are usually minutely denticulate. The unit inflorescence supports many capitula (flowerheads), of which there are often 30 to 100 per stem with slight to moderate overtopping. There are 4 to 8 bracteoles, 1 to 2 mm long, grouped to resemble a calyx at the base of each flower head. The peduncle and margins of the bracteoles are moderately cobwebby at flowering. The involucre (ring of bracts called phyllaries that surround the group of florets in the capitulum) is 5 to 8 mm long and about 1.8 to 2.2 mm in diameter. The mostly 12 to 14 phyllaries are sparsely cobwebby at least when young, and commonly reflexed with erect apices. The 30 to 50 florets in each capitulum are about 80% female, the remainder bisexual. The fruiting receptacle is 3 mm diameter. The

brown lageniform achenes are 2.5 to 3.5 mm long, the outer ones often rather curved. They have papillose hairs scattered in lines. The pappus is 5 to 6 mm long.

[description based on Thompson 2004a]

Confusing species

Senecio campylocarpus is most similar to the widespread and common *Senecio quadridentatus*, but differs by its sparsely haired to glabrous leaves and stems (*Senecio quadridentatus* usually has dense white cottony hairs), broader leaves tapering distinctly to each end, broader phyllaries that are reflexed rather than spreading at maturity (Plate 1), shorter florets with more corolla-lobes, curved fruits (this is a key character), and a smaller taproot and fleshier secondary roots (Thompson 2004a). The receptacle undergoes relatively little expansion as the achenes develop and, because of this, the capitula become slightly more urn-shaped and bulging than those of other species. *Senecio campylocarpus* also tends to grow in poorly-drained sites, a habitat occupied by only a small number of superficially similar, but equally uncommon species of *Senecio*. Wapstra et al. (2008) provides a key to Tasmanian species of *Senecio*.

DISTRIBUTION AND HABITAT

Senecio campylocarpus occurs in Tasmania, Victoria, southern New South Wales and the Australian Capital Territory (Thompson 2004a, 2004b). Within Tasmania, the species is known from only four subpopulations in the northern Midlands and near Launceston, though the subpopulation from a swamp near Cressy has not been seen for over 60 years and may now be extinct. The extant subpopulations are along the Elizabeth River in the heart of Campbell Town, along the North Esk River near Launceston, and along the Meander River at Westwood Road west of Launceston (Table 1).

Extant sites in Tasmania are from riparian habitats though all are rather degraded occurring where major flood-prone rivers cross through low-lying pastoral lands. The subpopulation along the Elizabeth River in Campbell Town occurs on the immediate banks of the river subject to periodic flooding and

amongst river rocks forming small shallow rapids (Plates 2 & 3). The fringes of the river are all grassy and weedy with willows, blackberries, slashed old pasture and mown lawns of a public park. The habitat of the site near the North Esk River was described as an overgrown paddock on a broad grassy floodplain of a major river subject to periodic inundation. The Meander River site on Westwood Road west of Launceston is a grassy, weedy open river bank. Thompson (2004a) described *Senecio campylocarpus* on mainland Australia as occurring on loam to clay soils in forest and woodland, usually in seasonally inundated areas.



Plate 2. Habitat of *Senecio campylocarpus* along the banks of the Elizabeth River in Campbell Town with the species occurring amongst sedges and grasses on the river bank (image by Mark Wapstra)



Plate 3. Habitat of *Senecio campylocarpus* along the banks of the Elizabeth River in Campbell Town with the species occurring amongst river rocks forming a small series of rapids in drier times (image by Mark Wapstra)

Table 1. Population summary for *Senecio campylocarpus* in Tasmania

	Subpopulation	Tenure	NRM region	1:25000 mapsheet	Year last (first) seen	Area occupied	Number of individuals
1	Elizabeth River, Campbell Town	Public Reserve	North	Campbell Town	2011 2008 (2006)	c. 50 plants in 2008 (several discrete patches of c. 1-20 plants along c. 200-400 m of river bank, either side of the Midland Highway bridge in 2006)	
2	near Hoblers Bridge, North Esk River	Crown land	North	Launceston	2010 (1888)*	5 m ²	1
3	Meander River (Westwood Road)	private land with river access	North	Prospect	2013 (1888)*	4 m ²	3
4	Cressy	unknown	North	unknown	1943	unknown	unknown

* collected near Launceston in 1888 though maybe not from this exact site

POPULATION PARAMETERS

Senecio campylocarpus had not been recorded in Tasmania for over 60 years (Wapstra 2011, Wapstra et al. 2006) being known only from an 1888 collection from Launceston and 1943 collection from near Cressy, before being discovered at Campbell Town in 2006, and later at other locations (Table 1, Figure 1). The species is now known from 4 locations, one possibly extinct, with an extent of occurrence of about 660 km². Based on the limited surveys to date, the area of occupancy is estimated to be less than 1 ha, with fewer than 100 mature individuals.

Potential habitat for *Senecio campylocarpus* (poorly-drained habitats such as flood-prone pastures, grasslands and river banks) is still relatively common and the species appears to have a widespread distribution so range extensions and infillings are likely. The species may still be poorly known in Tasmania as the taxonomy of the disciform species of *Senecio* was clarified only recently (Thompson 2004a, 2004b), resulting in the recognition that *Senecio campylocarpus* occurred in Tasmania. This was after the bulk of surveys of riparian areas had been conducted (e.g. Askey-Doran 1993). However, the species has only been collected three times since, despite increased attention to the identification of *Senecio* species following the publication of a key for Tasmanian *Senecio* species (Wapstra et al. 2008), suggesting that

the species is genuinely uncommon in the landscape.

RESERVATION STATUS

Senecio campylocarpus is not formally reserved.

CONSERVATION ASSESSMENT

Senecio campylocarpus was listed as vulnerable under the Tasmanian *Threatened Species Protection Act 1995* in April 2016, meeting criterion D: total population very small or area of occupancy restricted, specifically D1: total population estimated to number fewer than 1000 mature individuals.

THREATS, LIMITING FACTORS AND MANAGEMENT ISSUES

Information to date suggests that *Senecio campylocarpus* has a highly restricted and fragmented distribution in Tasmania, likely as the result of extensive habitat clearing and modification in the fertile lowlands of northern Tasmania. Habitat modification and stochastic events are the greatest contemporary threats to the species.

Historical land clearing and modification: Extensive areas of the low-lying poorly-drained parts of Tasmania, especially through the Northern Midlands, have been developed for primary production since the earliest times of European settlement. It is likely that such habitat modification, which has included

vegetation clearing, hydrological changes, fertilising and cultivation, stock grazing to river banks and in swampy areas, and spread of weeds has probably resulted in the elimination of some subpopulations.

Contemporary land clearing and modification: Contemporary threats include those associated with agricultural practices and inundation of potential habitat. Irrigation developments, may flood potential habitat and result in hydrological changes to sites downstream of impoundments and irrigated areas. Inadvertent clearing may occur with activities associated with the removal of weeds along river banks.

Inappropriate disturbance regime: Disturbance regimes associated with known sites of *Senecio campylocarpus* may include weed management, slashing and recreational activities (e.g. along the Elizabeth River), stock grazing (e.g. along the Meander River), and natural flood events. The tolerance of the species to the frequency and intensity of disturbance is not well understood.

Weeds and browsing: Proximity of sites to agricultural areas increases the risk of invasion by weeds, particularly for small subpopulations, and agricultural areas attract native and introduced animals potentially resulting in an increase in browsing pressure.

Climate change: A warmer climate and longer periods of drought may deleteriously impact on the habitat of *Senecio campylocarpus*, through effects such as drying out of low-lying areas and increased competition from weeds.

Lack of knowledge on distribution: Lack of knowledge on the distribution of the species is also a concern because many potentially suitable sites are probably subject to ongoing intensive primary production activities. It is likely that minor modifications to agricultural practices would result in a significantly higher level of security for the species as some level of disturbance is acceptable, if not necessary, for persistence.

Stochastic risk: The highly localised distribution of known sites, combined with low abundance, makes the species subject to chance events. Small populations separated by long distances supporting unsuitable habitats are also

not conducive to genetic exchange and potentially reduce fitness through inbreeding.

MANAGEMENT STRATEGY

Management objectives

The main objectives for the recovery of *Senecio campylocarpus* are to prevent the loss or degradation of known subpopulations, and increase the number of known subpopulations through survey.

What has been done?

- The collection history of the species in Tasmania has been compiled (Wapstra 2011) increasing the awareness of the species in Tasmania.
- Seed has been collected from the Campbell Town site for long-term conservation storage at the Tasmanian Seed Conservation Centre based at the Royal Tasmanian Botanical Gardens.

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 extension surveys of potential habitat, radiating out from the known sites, using topographic and vegetation maps as a basis of targeting flood plains of major river systems of the Midlands including along the Elizabeth, Macquarie, Lake, Meander, South Esk and North Esk rivers;
- liaise with managers of river reserves (such as local councils) supporting the species to develop the most appropriate management regime (e.g. slashing and weed management regime), and update any relevant management plans;

- liaise with landowners to restrict grazing through fencing;
- monitor known subpopulations for health, recruitment and response to disturbance.

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Permit: It is an offence to collect, disturb, damage or destroy this species unless under permit.