

# *Senecio extensus*

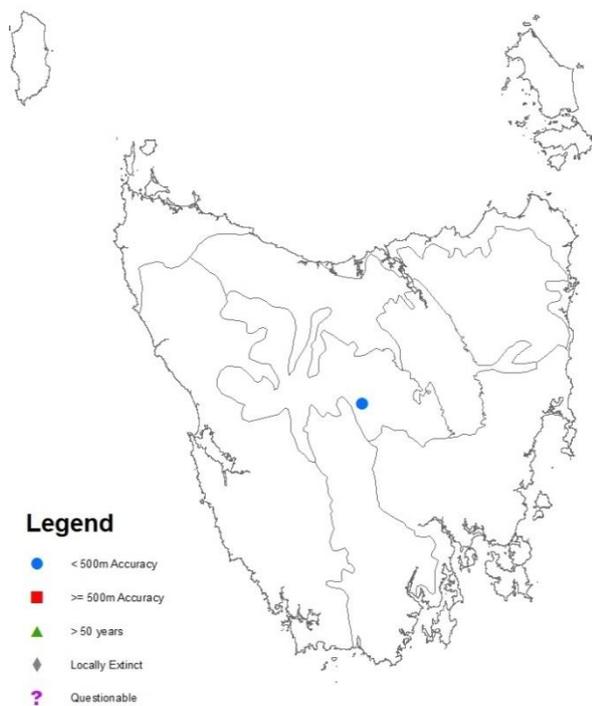
subalpine fireweed



Image by Mark Wapstra

TASMANIAN THREATENED SPECIES LISTING STATEMENT

- Scientific name:** *Senecio extensus* I.Thomps., *Muelleria* 19: 150 (2004)
- Common name:** subalpine fireweed
- Group:** vascular plant, dicotyledon, family **Asteraceae**
- Status:** *Threatened Species Protection Act 1995:* **Endangered**  
*Environment Protection and Biodiversity Conservation Act 1999:* **Not listed**
- Distribution:** Biogeographic origin: **not endemic to Tasmania**  
Tasmanian Natural Resource Management regions: **South**  
Tasmanian IBRA Bioregions (V6): **Central Highlands**



**Figure 1.** Distribution of *Senecio extensus* in Tasmania, showing IBRA bioregions (V6)



**Plate 1.** *Senecio extensus* at Top Marshes, 3 Jan. 2020 (image by Mark Wapstra)

**SUMMARY:** *Senecio extensus* (subalpine fireweed) is a perennial herb that was only known in Tasmania from a single collection made in 1984 until confirmed in 2020 from two sites on a broad undulating area of dolerite-based sedgy plain surrounded by open shrubby subalpine forest at about 1,000 m a.s.l. The two Tasmanian sites are in one sub-population, the total area of occupancy less than 1 ha and the total number of mature individuals fewer than 250. Limited direct threats are identified but the apparently highly localised occurrences place the species at risk of stochastic events. Appropriate management of the known sites, and extension surveys to detect novel occurrences and better understand threats and management needs are considered the key management objectives.

#### 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 extensus* is one of 17 disciform species and one of 38 *Senecio* taxa native to Tasmania (de Salas & Baker 2019), five of which are currently listed as threatened. There are 226 native taxa in the Asteraceae family (de Salas & Baker 2019).

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, and can produce locally and temporarily dense occurrences that are short-lived and decrease as competition with other plants progresses. *Senecio extensus* has mostly been detected in recently burnt areas. 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 the detection window is likely to be much wider, although confirmation of identification usually requires mature achenes (Wapstra et al. 2008). Thompson (2004) suggested *Senecio extensus* flowers in mid-summer to autumn. Fertile material is present on the specimen collected in February 1984. Observations in early January 2020 suggest flowering may peak in late January (M. Wapstra & G. Daniels pers. obs.). Surveys of bare areas being colonised following fire may increase the chance of detection.

#### Description

*Senecio extensus* is a rhizomatous perennial herb with an erect or ascending to erect stem to 0.5 m tall. The stems are moderately appressed and cottony to glabrescent. The leaves in the middle third of the stems often become distinctly wider spaced and narrower upwards, and are oblanceolate to spatulate, 5 to 12 cm long, with a length:width ratio of about 4:9, the leaves lobate (or less often not dissected) with 3 to 5 segments per side occurring in the distal third, antrorse, triangular, oblong or obovate; leaf base attenuate to cuneate; margins with occasional denticulations or teeth; both surfaces glabrous or scabridulous and/or slightly cobwebby, lower surface green. The uppermost leaves are very narrow-elliptic with a length:width ratio of about 5:10; lobate to deeply lobate; base commonly auriculate, with auricles dissected and slightly amplexicaul. The unit inflorescence is of several to many capitula, the total number of capitula per stem often 20 to 60, overtopping variable, the mature lateral peduncles mostly 5 to 20 mm long. There are 6 to 8 calycular bracteoles, each 2-3 to 5 mm long. The peduncle and margin of the bracteoles is often slightly cobwebby at anthesis (moderately so shortly prior to anthesis). The involucre is 5 to 7 mm long with a 1.8 to 2 mm diameter. There are 12 to 14 phyllaries, which are glabrous or nearly so with an erect apex, the stereomes (in dried specimens) more or less flat, green or partially purple, black at the tip, sometimes purple in a zone about 1 mm long below the tip.

The post-fructescence receptacle is 3 to 3.5 mm in diameter, with phyllaries commonly finally erect. There are 30 to 45 florets; about 80% female, corolla lobes triangular and slightly thickened apically; corolla of bisexual florets 5 to 6 mm long, 4- or 5-lobed; corolla lobes of female florets 3 or 4, about 0.2 mm long. The achenes are narrow obloid to narrow oblong-ellipsoid, 2 to 2.2 mm long red-brown, lustrous and glabrous. The pappus is 5 to 6 mm long.

[description based on Thompson 2004; M. Wapstra & G. Daniels pers. obs.; for terminology refer to Wapstra et al. (2008)]

### Confusing species

*Senecio extensus* is readily distinguished by its dark-tipped and long calycular bracteoles (Plate 2) and glabrous, lustrous achenes (Thompson 2004). However, it superficially resembles other species that may co-occur (e.g. *Senecio glomeratus*, *Senecio gunnii*) so confirmation of suspected specimens by specialists familiar with the group of species should be sought.



**Plate 2.** Flowering heads of *Senecio extensus* showing the dark-tipped and relatively long calycular bracteoles (arrowed in red) and the dark-tipped phyllaries (arrowed in blue) (images by M. Wapstra)

It is most likely to be superficially confused with *Senecio glomeratus* but is distinguished by the rhizomatous habit (Plate 3), the fewer and less cobwebbed involucre with relatively long bracteoles, and the glabrous achenes (FofV 2019). *Senecio psilocarpus* also has glabrous lustrous achenes but is a lowland species (Wapstra 2010).

*Senecio gunnii* (which is sympatric at both known sites) has grey-green cottony leaves that are entire or denticulate but not lobate (Plate 4) and is non-rhizomatous. It also tends to occur in the better-drained sites, at both a macro- and micro-habitat scale (M. Wapstra & G. Daniels pers. obs.).



**Plate 3.** Rhizomatous habit of *Senecio extensus* (image by Mark Wapstra)



**Plate 4.** LHS. Lobate leaves of *Senecio extensus*. RHS. Lobate leaves of *Senecio extensus* (E) compared to the entire leaves of *Senecio gunnii* (G) (images by M. Wapstra)

Wapstra et al. (2008) provides a key to Tasmanian species of *Senecio*, but the key and descriptions in Thompson (2004) should be used to confirm the identification. As with most *Senecio* material, roots, lower stems, as well as lower, middle and upper stem leaves are usually required to correctly identify a species.

### DISTRIBUTION AND HABITAT

*Senecio extensus* has a disjunct distribution, occurring in New South Wales (including the Australian Capital Territory), Victoria and central Tasmania (Figures 1 & 2).

Thompson (2004, 2015) described the mainland habitat as “grasslands/herbfields or open shrublands in subalpine areas”, and the Victorian distribution and habitat is more recently described as “confined to grasslands above about 1500 m, and apparently rather rare”.



**Figure 2.** Mainland Australian distribution of *Senecio extensus*

[source: *Atlas of Living Australia*, 26 December 2019]

In Tasmania, the species was originally only known by a single collection from Mackenzies Tier, which is a broad undulating area of dolerite-based open shrubby subalpine forest and plains at about 1,000 m a.s.l. described as occurring “within sward of *Astelia alpina*, grass, sedge plain, *Restio australis*, *Poa labillardierei*, *Lepidosperma filiforme*, *Calorophus lateriflorus*, *Epacris gunnii*, *Epacris lanuginosa*, *Carpha alpina*”.

Searches in January 2020 re-detected the species from the general area of the 1984 collection, confirming the original habitat description (Plate 5) and detected a novel site about 400 m away in Restionaceae- and herb-rich grassland-sedgeland-rushland (Plate 6) that would be classified as a mosaic of highland grassy sedgeland and Restionaceae rushland, with the species growing amongst tussocks of *Poa* species, *Baloskion australe* and *Lepidosperma filiforme*, generally in the slightly more poorly-drained micro-habitats (Table 1, M. Wapstra & G. Daniels pers. obs.).



**Plate 5.** Habitat at the putative original site of collection on Mackenzies Tier, where the species was confirmed in January 2020 (image by Mark Wapstra, 3 January 2020)



**Plate 6.** Habitat at the novel site at the southeastern edge of Top Marshes (image by Mark Wapstra, 3 January 2020)

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

Location	Subpopulation	Tenure	NRM region	1:25000 mapsheet	Year last (first) seen	Area occupied (ha)	Number of individuals
1	1a. Mackenzies Tier	Top Marshes Conservation Area	South	Monpeelyata	2020 (1984)	0.09	5* “rare”
	1b. Top Marshes, north of Mackenzies Tier	private land	South	Monpeelyata	2020	~ 0.5**	~ 50-150

\*non-fertile; \*\*extent not fully assessed

**POPULATION PARAMETERS**

*Number of locations* 1

*Number of subpopulations* 1

*Linear extent of occurrence* 0.4 km

*Extent of occurrence* ~0.03 km<sup>2</sup>

*Area of occupancy* ~ 0.6 ha

*Area of occupancy (as per IUCN criteria)* 4 km<sup>2</sup>

*No. of mature individuals* <250 (55 to 155 noted)

The possibility of finding further occurrences of *Senecio extensus* must not be discounted, considering several recent re-discoveries of plant species in Tasmania, including species of *Senecio* (e.g. Wapstra et al. 2006). However, while the species has been formally described only relatively recently (Thompson 2004), additional subpopulations have not been detected despite the wider detection of other *Senecio* species with increasing familiarity following the availability of a field key (Wapstra et al. 2008), for example, *Senecio campylocarpus* (Wapstra 2010) and *Senecio psilocarpus* (Wapstra 2011). Potential habitat for *Senecio extensus* is widespread across much of the Tasmanian Central Highlands though extensive surveys in parts of the possible range (e.g. for development proposals such as wind farms but also reserves such as the Vale of Belvoir, Five Rivers Reserve, Skullbone Plains and parts of the World Heritage Area) have not resulted in the detection of additional occurrences. The extent of the novel site at Top Marshes (Table 1) has not been fully assessed, although the species was absent from the relatively similar habitat to the southeast (M. Wapstra & G. Daniels pers. obs.).

There is no information on declines available. Even though species in the genus may proliferate after fire or other disturbance, for *Senecio extensus* there is insufficient information to determine that there are extreme fluctuations in the extent, area of occupancy or number of locations, subpopulations or mature individuals as per the criteria used to determine the conservation status. The possibility exists given that the species has most often been detected following a fire event.

**RESERVATION STATUS**

*Senecio extensus* occurs in the Top Marshes Conservation Area (Table 1).

**CONSERVATION ASSESSMENT**

*Senecio extensus* is listed as endangered on the Schedules of the Tasmanian *Threatened Species Protection Act 1995*, meeting the following criteria:

D: Total population extremely small or area of occupancy restricted, and

1. total population estimated to number fewer than 250 mature individuals;
2. total population with an area of occupancy less than 1 ha and typically in five or fewer locations that provide an uncertain future due to the effects of human activities or stochastic events, and thus capable of becoming extinct in a very short time period.

**THREATS, LIMITING FACTORS AND MANAGEMENT ISSUES**

The threats to *Senecio extensus* are poorly understood, limited by lack of knowledge about the species in Tasmania.

**Land clearing:** Some potential habitat of *Senecio extensus* may have been historically cleared but this is unlikely to be a contemporary threat, except at a highly localised scale.

**Inappropriate disturbance:** Species of *Senecio* generally respond positively to most forms of disturbance and many species are primary colonisers of post-disturbed land. At the novel site of collection, *Senecio extensus* is actively recolonising the bare ground created by the “Great Pine Tier” wildfire in March 2019 (Plate 1) but is also locally abundant in the patches of low vegetation that escaped the fire. The putative location of the 1984 collection had been burnt in a wildfire in November 1982. The plants at this site that were detected in 2020 were also in a localised patch of low vegetation affected by the 2019 fire. It is considered unlikely that low intensity grazing would deleteriously affect the species.

**Lack of secure tenure:** The only extant site is on freehold land. Potential changes in land ownership or management and unregulated activities may pose a marginal risk to the species long term survival.

**Stochastic events:** While stochastic events are by definition unpredictable, in this case, such events are most likely to be associated with events such as unintended fires (e.g. arson, lightning strikes). The sites supporting *Senecio extensus* are not frequently visited by people so deliberate or inadvertent (e.g. for the purpose of identification) picking of flowers is a low risk because most visits will be for the purposes of demographic monitoring.

**Climate change:** It is possible that even minor shifts in average seasonal conditions may have an adverse impact on locally restricted species such as *Senecio extensus*, especially if other ecological factors are absent (e.g. an appropriate fire/disturbance regimes).

## MANAGEMENT STRATEGY

### Management objectives

The main objectives for the recovery of *Senecio extensus* are to appropriately manage the extant sites, gain a better understanding of the extent of the species, to increase the number of known subpopulations through survey, and better determine threats to the species and management issues.

### What has been done?

The putative location of the 1984 collection was re-surveyed by Mark Wapstra and Grant Daniels on 3 January 2020 when the species was re-detected. The survey included a transect of approximately 4 km through superficially suitable habitat in the catchment of Rushcroft Creek, with a serendipitous discovery of the novel Top Marshes site about 400 m to the northeast of the original site of collection.

### 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;
- monitor known subpopulations with respect to extent, abundance, condition of supporting habitat, threats and response to disturbance;
- undertake extension surveys of potential habitat, radiating out from the known sites, using topographic and vegetation maps as a basis of targeting putatively suitable habitat;
- collect seed for long-term conservation storage at the Tasmanian Seed Conservation Centre (based at the Royal Tasmanian Botanical Gardens).

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