

## THE STATUS OF *SENECIO GEORGIANUS* (GREY FIREWEED) IN TASMANIA

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### SUMMARY

*Senecio georgianus* is represented by three formal collections from Tasmania, all prior to 1850. The Tasmanian collections bear scant locality and habitat information. On the basis of no Tasmanian collections for at least 160 years, *Senecio georgianus* qualifies as presumed extinct on the Tasmanian *Threatened Species Protection Act 1995*, and it is recommended that this status be formalised. The species is already listed as Extinct on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*, because while apparently once widespread but nowhere common in southeastern Australia (New South Wales, Victoria), it has not been recorded for close to 150 years.

### INTRODUCTION

The acceptance of the occurrence of *Senecio georgianus* in Tasmania has an apparently confused history, although the reasons for this are unclear.

During the production of a State-based key to *Senecio* (Wapstra et al. 2008), it became apparent that *S. georgianus* should have been long-recognised as having been collected from Tasmania. No specimens collected from Tasmania are held at the Tasmanian Herbarium, which may explain the lack of inclusion of the species in the formal census of vascular plants collated by the Tasmanian Herbarium (Buchanan 2009).

This paper collates the collecting history of *S. georgianus* in Tasmania, describes its inclusion in various State floras, and discusses its conservation status in the light of the now-recognised collecting history.

### COLLECTING HISTORY

*Senecio georgianus* has only been collected three times in Tasmania (Table 1).

Leigh et al. (1984) stated that “although there are no specimens [of *S. georgianus*] in Australia to verify the Tasmanian collections... a recent search by Filson (pers. comm.) has located in the British Museum the specimens of this species from ...Tasmania...”. Leigh et al. (1984) only cited the Brown and Caley collections, both from near Hobart. Leigh et al. (1984) did not make mention of a collection of *S. georgianus* by Gunn, which post-dates the Brown and Caley collections (Table 1).

The first collection of *S. georgianus* from Tasmania was by Robert Brown on 29 February 1804. Leigh et al. (1984) listed this site as “Derwent River near Risdon Cove”, March–April 1804 (specimen held at BM). However, the Australian Virtual Herbarium indicates a Brown collection from 29 February 1804 (held at CANB), which is presumably a duplicate of the BM material.

The second collection of *S. georgianus* from Tasmania was by George Caley in 1805 (precise date unknown). Leigh et al. (1984) cites the location as “Agricultural Settlement, Hobart”, which is presumably

**Table 1.** Collection details of *Senecio georgianus* in Tasmania

Site No.	Location (from herbarium label)	Collector	Date	Specimen Held At	Comments
1	“Derwent River near Risdon Cove”	Robert Brown	29 February 1804	British Museum (BM) Australian National Herbarium (CANB)	Leigh et al. (1984) indicated that there is no date on the collection held at BM (the date is actually shown as Mar – Apr 1804 on the sheet). The Australian Virtual Herbarium database, which also lists a collection of Brown from Tasmania, lists the collection date as 29 February 1804.
2	“Agricultural Settlement, Hobart”	George Caley	1805	British Museum (BM)	Caley was in Hobart at the end of November 1805 (Webb 1995).
3	“Van D.L.” [=Van Diemens Land, now Tasmania]	R.C. Gunn	unknown	Royal Botanic Gardens (Kew)	This collection (GUN 701) was used by Joseph Hooker as the type of <i>Erechtites candicans</i> (Hooker 1847, and cited in Hooker 1858), which was later synonymised with <i>Senecio georgianus</i> .

from a similar area as the collection made by Brown.

The only other collection of *S. georgianus* from Tasmania was by Gunn. The date of the collection is not stated on the herbarium sheet but it must pre-date 1847 (which is when Hooker formally used the specimen to describe *Erechtites candicans* = *S. georgianus*). The location on the collection is simply given as “Van D.L.”. This collection was cited by Thompson (2004, 2006) and at the time considered as the only Tasmanian collection of *S. georgianus*. Interestingly, Leigh et al. (1984) did not cite the Gunn collection.

Wapstra et al. (2008) cast some doubt on whether Gunn had collected *S. georgianus* from Tasmania, suggesting the collection may have been from one of his mainland forays. However, the Gunn 701 specimen clearly bears his annotations, including

“Van D.L.” (Plate 1), confirming the allocation of the collection to Tasmania.

#### RESERVATION STATUS

Due to the highly imprecise locality details associated with the collections of *S. georgianus* in Tasmania, it is impossible to determine its former reservation status.

#### TAXONOMY, NOMENCLATURE AND IDENTIFICATION

*Senecio georgianus* was described by Candolle (1838) from material collected by Alan Cunningham c. 1817 from Lake George in New South Wales. Joseph Hooker described *Erechtites candicans*, synonymous with *S. georgianus*, from material collected by Gunn from Tasmania. The species is most widely known as ‘grey fireweed’ (Leigh et al. 1984; Wapstra et al. 2005; DEWHA 2010), an allusion to the grey appearance of the plant from a cottony

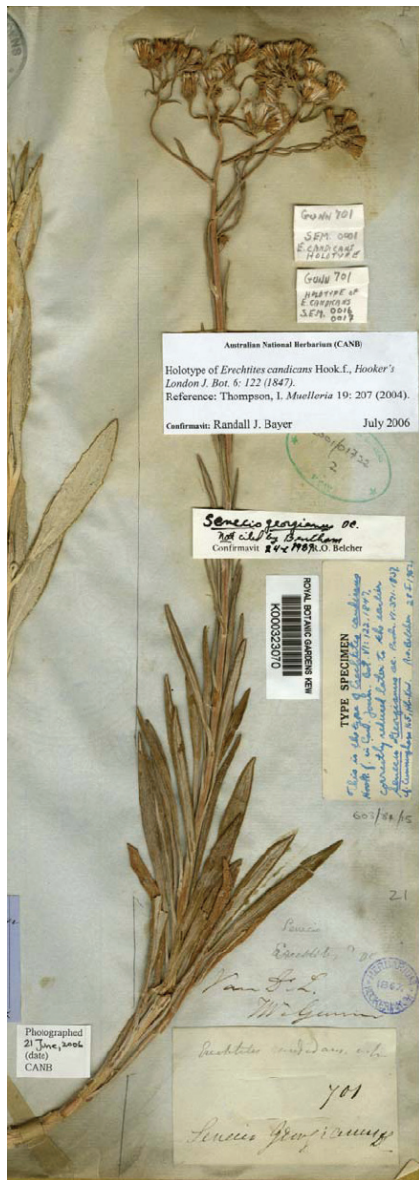


Plate 1. Specimen (Gunn 701) of *Senecio georgianus* collected by Gunn from “Van D.L.”, date unknown [extract of image downloaded from Kew Gardens’ website]

covering of hairs on the leaves and stem. It is also known as the ‘grey groundsel’, the terms ‘fireweed’ and ‘groundsel’ being applied without too much discretion to species of *Senecio*.

*S. georgianus* is generally included within the disciform or discoid group of *Senecio*. These species have non-radiate capitula (i.e. lacking ray florets, in which all the florets are bisexual (in disciform species the central florets are bisexual and the outer florets are female).

Based on limited available herbarium material, *S. georgianus* is an erect (30–80 cm tall) perennial herb. The stems are covered with appressed cobwebby hairs. Its linear- to lance-shaped leaves are 6–8 cm long, usually undivided and bases without auricles, the margins more or less entire or slightly toothed. The upper surface of the leaves is more or less glabrous or sparsely appressed-cottony and the lower surface is densely woolly. The capitula (flowerheads) are several per stem, with 6–10 calycular bracteoles (2–3 mm long), the peduncle not or only sparsely cobwebby at anthesis. The involucre is 5–7 mm long and about 2 mm diameter. The 12–14 phyllaries are glabrous and their apices recurved. The 25–40 florets are all bisexual. The achenes are narrow-obloid, 2.5–3.0 mm long, dark brown with papillose hairs in bands. The species appears to flower from late summer into autumn. Vegetatively, *S. georgianus* is probably most similar to the subalpine (and widespread) *S. gunnii*.

#### INCLUSION IN FLORAS

Hooker (1847) technically recognised the occurrence of the taxon in Tasmania, by describing material collected by Gunn as *Erechites candicans* (= *Senecio georgianus*). Hooker later included the taxon (as *Senecio georgianus*, recognising de Candolle’s nomenclature of 1838) in his *Flora Tasmaniae* (Hooker 1858) noting:

“I have only one Tasmanian specimen of this very distinct species, but a great number of Australian [he listed the distribution as “south-eastern and south-western Australia: from subtropical New South Wales, Victoria, Adelaide, and Swan River”] ones (collected by Cunningham, Mueller, Drummond, Robertson, and others), from a comparison of which it appears to be a very variable plant, being either perfectly glabrous or more or less covered (even on the involucre) with a hoary tomentum”.

Rodway (1903) in *The Tasmanian Flora* did not recognise occurrence of the species in Tasmania. Curtis (1963) in *The Student's Flora of Tasmania* similarly did not recognise the taxon. The exclusion of the species by both of these authors is surprising as in many other cases their floras were quite faithful to the much earlier work of Hooker.

*Senecio georgianus* was recognised as occurring in Tasmania in the *Flora of Victoria* (Walsh 1999).

The Tasmanian Herbarium's *Census of Vascular Plants* (Buchanan 2009) has never recognised the occurrence of *S. georgianus* in Tasmania.

#### CONSERVATION STATUS

*Senecio georgianus* is listed as Presumed Extinct on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. The species is also listed as Presumed Extinct under the New South Wales *Threatened Species Conservation Act 1972* (DEWHA 2010) and the Victorian *Advisory List for Rare or Threatened Plants of Victoria 2005*.

In Tasmania, *S. georgianus* is currently not listed on the Tasmanian *Threatened Species Protection Act 1995*. However, on the basis of no formal collections from the wild for over 160 years, the species clearly meets the

criterion for presumed extinct (Schedule 3.2), which states “a taxon of native flora or fauna may be listed as endangered because it is presumed to be extinct on the ground that no occurrence of the taxon in the wild can be confirmed during the past 50 years” and “for a taxon to be confirmed to have occurred in the wild during the past 50 years, there must be a verified specimen or a record of a sighting that is considered to be reliable”.

The tantalising possibility that *S. georgianus* is extant within Tasmania is highlighted. The revisions to the taxonomy and nomenclature of *Senecio* in Tasmania (e.g. Thompson 2006), and the production of a State-based key to the genus (Wapstra et al. 2008), has already led to a reinvigorated interest and collection of *Senecio* by Tasmanian field botanists. Several hitherto poorly-collected species have already been re-discovered (e.g. *S. campylocarpus* – see Wapstra et al. 2006) or their distribution significantly extended by recent collections (e.g. *S. psilocarpus* – see Wapstra 2010, this issue). The persistence of several species of threatened flora in bushland remnants in and around Hobart, for example, gives hope to the possible re-discovery of *S. georgianus* in Tasmania.

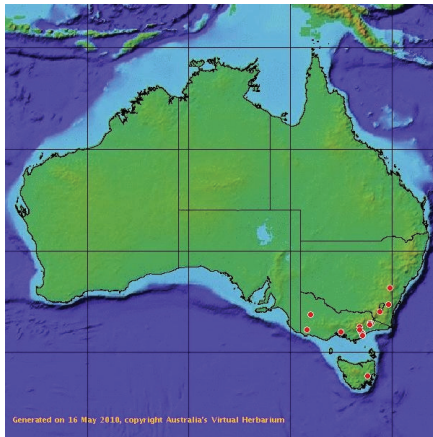
#### DISTRIBUTION, HABITAT AND RESERVATION STATUS ON MAINLAND AUSTRALIA

*Senecio georgianus* occurs in southeastern Australia (Figure 1), including Tasmania, Victoria, and New South Wales (Thompson 2006).

Sources (e.g. Willis 1972; Leigh et al. 1984; Walsh 1999; DEWHA 2010) that indicate the occurrence of *S. georgianus* from South Australia and Western Australia are outdated (I. Thompson, pers. comm.). Collections previously allocated to

*S. georgianus* from South Australia have been re-determined as *S. helichrysoides* and those from Western Australia as *S. barkhausioides* (I. Thompson, pers. comm.; Thompson 2006). Note that both *S. helichrysoides* and *S. barkhausioides*, like *S. georgianus*, appear to have highly localised distributions and have been rarely collected.

In Victoria, *S. georgianus* has been collected from the Clarence River, Macquarie River and Lake George (DEWHA 2010). In New South Wales, *S. georgianus* has been collected from Macalister River, Mitta-Mitta Range and Lake Omeo.



**Figure 1.** Distribution of *Senecio georgianus* within Australia (map generated from the *Australia's Virtual Herbarium*, 16 May 2010).

DEWHA (2010) states that “all collections are old (prior to 1900) except for Victorian collections which were made in 1972” and “Victorian populations, at the time were described as rare and localised”. DEWHA (2010) sourced these statements from Leigh et al. (1984), which cited Willis (1972) as the source of their information. Willis (1972) did not actually make any statements

regarding the dates of collection, simply stating the distribution as “rare and localized, on Macalister R. and at Lake Omeo”, suggesting that there have not been any recent collections of the species in Victoria.

On mainland Australia, *S. georgianus* is recorded as occurring in savannah grassland, undulating grassy eucalypt woodland, grassy subalpine ridges, and collections frequently occurred in association with major rivers and lakes (Leigh et al. 1984). The habitat within Tasmania is unknown.

#### THREATENING PROCESSES AND MANAGEMENT

On the mainland, the threats to *S. georgianus* are not entirely understood, but clearing and domestic stock grazing appear to have caused the local extinctions (DEWHA 2010). The historical collection locations on southeastern mainland Australia were resurveyed and all sites had been converted to pasture (Leigh et al. 1984).

In the absence of the precise collection locations of *S. georgianus* in Tasmania, it is difficult to ascertain causes of its presumed extinction. However, clearing of sites for primary production and human occupation are the most probable causes of habitat loss.

#### DISCUSSION

*Senecio georgianus* is one of several Tasmanian species of *Senecio* represented by a small number of historical collections. On the basis of existing information, it is suggested that the species qualifies as presumed extinct under the Tasmanian *Threatened Species Protection Act 1995*. The lack of information on potential habitat and likely sites in Tasmania means that the opportunity for re-discovery of extant populations of the species must be considered serendipitous at best.

**ACKNOWLEDGMENTS**

Wendy Potts provided the impetus for this paper by making me aware of the threatened status of *Senecio georgianus* on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*, a fact that had hitherto escaped my attention. Ian Thompson provided information on collections of *S. georgianus* from mainland States. John Hunnax and Honathon Gregson (British Museum) provided images of their Tasmanian collections of *S. georgianus*. Lorilee Yeates and Wendy Potts provided useful commentary on an earlier version of the manuscript.

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