

## DISTRIBUTION OF *XEROCHRYSUM VISCOSUM* (STICKY PAPERDAISY) IN TASMANIA

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### INTRODUCTION

*Xerochrysum* is a genus of spectacular paperdaisies represented by seven formally described species, all of which occur in Tasmania, with only one endemic to the State (de Salas & Baker 2014). Many readers will know these species by the older generic names of *Helichrysum* or *Bracteantha*.

*Xerochrysum papillosum* ('cliff paperdaisy') is white-flowered and occurs mainly on coastal cliffs and dunes in eastern and northern Tasmania. *Xerochrysum subundulatum* ('orange paperdaisy') is orange- to yellow-flowered and occurs at moderate to high elevations in subalpine grasslands and grassy woodlands. *Xerochrysum bracteatum* ('golden paperdaisy') and *Xerochrysum bicolor* ('eastcoast paperdaisy') are yellow-flowered and mainly coastal in occurrence, although the species are somewhat taxonomically confused. *Xerochrysum palustre* ('swamp paperdaisy') occurs in sedgy-grassy swampy habitats from the lowlands of the northeast to the Central Highlands and Midlands. *Xerochrysum collerianum* ('quartzite paperdaisy') is the most recently recognised species in Tasmania (Buchanan 2004), and is the only species endemic to Tasmania, occurring on the higher quartzite-based peaks of the west of the State.

Along with our six native species of *Xerochrysum*, Tasmania also supports a population of a naturalised species, *Xerochrysum viscosum* ('sticky paperdaisy'). How this species arrived in Tasmania, and its current distribution, is the subject of this short paper.

### *XEROCHRYSUM VISCOSUM*

*Xerochrysum viscosum* (Plates 1-3) is an annual, sometimes perennial, herb with erect stems. Plants are typically 20-90 cm tall, much-branched, with bright green linear to elliptic leaves (mostly 2-8 cm long and 1-5 mm wide) that have a sticky (viscid) rough surface.

The bright yellow flowerheads (capitula) are in terminal panicle-like or corymbose inflorescences, and are about 1-3.5 cm across and long-lasting. Flowering in Tasmania starts around late August/early September with the appearance of new leafy growth and bright yellow budding capitula: flowerheads persist until at least end of February.

### *Distribution and habitat outside Tasmania*

*Xerochrysum viscosum* occurs naturally in Victoria, New South Wales, Australian Capital Territory, and southern Queensland (Figure 1), where its distribution and habitat is described as "dryish, often rocky areas" (Flann 1999), "open woodland and sclerophyll forest, usually on sandy to sandy loam soils" (Brown 2014), and "opportunistic in disturbed areas such as roadsides and goldfields" (Carr 2010).

### *Occurrence in Tasmania*

The Tasmanian Herbarium holds two collections of *Xerochrysum viscosum* from Tasmania. The first was collected by David Marrison (Royal Tasmania Botanic Gardens) from the Southern Outlet in

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Plate 1. Growth habit of *Xerochrysum viscosum* on the Southern Outlet



Plate 2. Morphology of *Xerochrysum viscosum*. (A) flowerheads at the end of leafy branches; (B) individual flowerhead showing bright yellow papery bracts; (C) stem and leaves showing how the species obtained its name

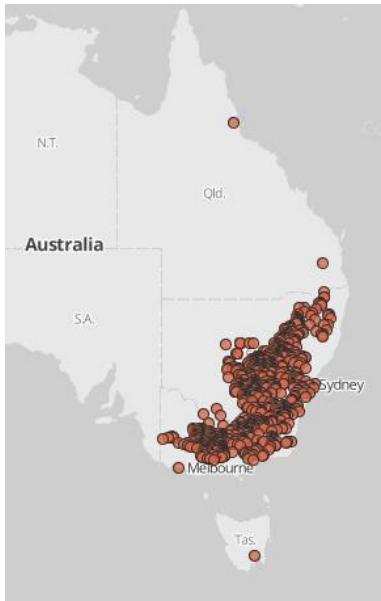
December 2000. At the time, the material was used to plant out in the Australian Section of the Gardens and is still present. The source was investigated informally, and acknowledged that it was “probably a component of hydro seed mix” (note on herbarium sheet). The second collection was provided to the Tasmanian Herbarium in December 2002 by Hans and Annie Wapstra, and was also from the verges of the Southern Outlet between Mount Nelson and Kingston. While these collections are technically the first and second for the State, the occurrence of the species from this section of State-owned road had been known by field botanists for several years, perhaps dating back to the early 1990s (Andrew North pers. comm.; B. French pers. comm.). The species has been considered “naturalised” in the *Census of Vascular Plants of Tasmania* (de Salas & Baker 2014).

### Current extent

As part of the preparation of this manuscript, we drove and walked the verges of the Southern Outlet between the Mount Nelson-Tolmans Hill overpass (northern end) and the Firthside overpass (southern end) on 12 February 2014, recording the extent of patches of *Xerochrysum viscosum* on the highway batters and adjacent batter tops. We also searched the vegetated median strip between the northbound and southbound lanes, where potential habitat was present. Where the species was encountered, the approximate area occupied was estimated using hand-held GPS-waypointing of the start and end of the patch. Notes were also made of the approximate downslope and upslope extent of the patch on the batter and estimates were made of the abundance within each patch, although the counts were by no means rigorous.

The start and end points of the survey are somewhat nominal but are based on familiarity gained over many years of driving the route between Hobart and the suburbs of Kingborough, supplemented with numerous surveys of native vegetation in the Mount Nelson-Ridgeway-Kingborough region, and actual road verge surveys of several sections of the Southern Outlet. Based on these surveys, it has become clear that *Xerochrysum viscosum* is restricted to the verges of the Southern Outlet and has not extended into surrounding native vegetation by more than a matter of metres.

Figures 2-4 provide details of the distribution of the species along the Southern Outlet. The species occurs in ten distinct patches, on both southbound and northbound lanes on both sides of the road (with one patch allocated to the median strip of vegetation). The approximate linear extent is 830 m. Very roughly speaking, the total population abundance of mature



**Figure 1.** Australian distribution of *Xerochrysum viscosum* (extract from Atlas of Living Australia)

individuals is around 1,220 (most on northbound lanes). The species is usually an annual but can be perennial. Our abundance count may be a snapshot for just one year but it is noted that the 2013-2014 spring-summer period was conducive to herbaceous growth of “weeds” in southern Tasmania, so the 2014 count is probably at the upper limit of individuals present in any particular year. However, we were unable to count every individual due to safety reasons (banks too steep to climb so some counts are visual estimates from top or bottom of batter, which may under-estimate the number of smaller plants).

### **Habitat**

*Xerochrysum viscosum* is most strongly associated with highly modified environments such as areas of bare ground on steep roadside batters, but also extends slightly into open dry eucalypt woodland, usually dominated by *Eucalyptus pulchella* (Plates 3 & 4), and weed-dominated low roadside banks (Plate 5).

### **Where did it come from?**

The Southern Outlet was constructed by 1968, prior to which there was little access to the forested hills between Mount Nelson and Kingston. It was upgraded to a dual carriageway in 1985 (although works went on for many years before both lanes in both directions were completely opened).

*Xerochrysum viscosum* co-occurs with putatively threatened flora species such as *Rytidosperma indutum* (tall wallabygrass) and *Vittadinia muelleri* (narrowleaf new-holland-daisy) and amongst several weed species. It was long-assumed by many field workers that *Xerochrysum viscosum* was an accidental introduction from discarded garden waste, had escaped from a garden setting, or was accidentally introduced during road works by contaminated machinery.

Following completion of road works, the new batters were hydro-mulched under direction of the then Department of Transport. The recommended seed mix included an indigenous species of *Xerochrysum* (at the time *Bracteantha*) but apparently local provenance seed of the genus was not available and seed from NSW was included (J. Gillian pers. comm.). This turned out to be *Xerochrysum viscosum*. Unfortunately, records from the mid to late 1980s are no longer held by the State government, so it is not known which batters were hydro-mulched with a mix containing the Victorian seed. Whether the species has spread significantly since the late 1980s is not known, but personal observations suggest occasional new patches every so often.

The Southern Outlet is perhaps one of the most diverse weed sites in southern Tasmania, with many deliberate plantings of “environmental weeds” (mainly species of *Acacia*) and many patches of invasive herbaceous and grass species. Interestingly, *Xerochrysum viscosum* is essentially restricted to the roadside batters, only extending to adjacent areas on the immediate fringes of the top of the batter or where the median strip is very narrow between the southbound and northbound lanes. We have not seen *Xerochrysum viscosum* used in Tasmanian gardens as an ornamental, and it is apparently not widely cultivated (ANPS 2008), although cultivars of *Xerochrysum* “*bracteatum*” are popular as ornamental (and even roadside/roundabout) plantings, including in southern Tasmania. Species of *Xerochrysum* can become weedy, including the *Xerochrysum bracteatum* species-complex, and this has already been observed in southern Tasmania, including on the Queens Domain and Rokeby area (A. Muyt pers. comm.; A. North pers. comm.; M. Wapstra pers. obs.).

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**Plate 3.** Habitat of *Xerochrysum viscosum* along the Southern Outlet: the species is locally dense over most of this steep rocky batter, less frequent on the cut ledge where the shrubs start and absent from the forested area on the slope behind

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**Plate 4.** Habitat of *Xerochrysum viscosum* along the Southern Outlet: the species is less frequent in this shrubbier and flatter habitat

### **What should we do now?**

It is clear that *Xerochrysum viscosum* is an exotic species to Tasmania, unintentionally introduced to the Southern Outlet, and as such attempting eradication sooner rather than later is suggested to prevent further spread. However, weed management on some of steep batters will be problematic and resource-hungry due to the steep and inaccessible slopes and proximity to high-flow and high-speed traffic. In addition, any herbicide use will need to consider the presence of other plants with a high priority for conservation management (some formally listed as threatened on the Tasmanian *Threatened Species Protection Act 1995*). The species also occurs in two municipalities (limited patches and numbers in City of Hobart; majority in Kingborough), meaning coordination between land managers (councils, road authorities) may be needed.

In the short- to medium-term there seems a low risk of the species spreading significantly, especially into adjacent grassy forest and woodland, but with a steadily warming climate a “northern” species such as *Xerochrysum viscosum*, already adapted to rapid colonisation of dry habitats, could pose a significant risk to the Tasmanian environment. In its natural range, seedlings colonise large areas after fire (Carr 2010). Several massive fire events have occurred across the Southern Outlet between Mount Nelson and Kingston in the last two decades, and it is probably quite fortunate that *Xerochrysum viscosum* has not spread further.

### **ACKNOWLEDGEMENTS**

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**Plate 5.** Habitat of *Xerochrysum viscosum* along the Southern Outlet: large plants growing amongst ornamental plantings and weeds

**Table 1.** Details of patches of *Xerochrysum viscosum* along the Southern Outlet

Lane (S)outhbound (N)orthbound (M)edian	Side (E)astern (W)estern	Easting/northing	Patch type	Number
S	E	525006mE 5247009mN	POINT	2
	W	525514mE 5246119mN to 525526mE 5246034mN	LINEAR	45
		525532mE 5245903mN	POINT	1
		525529mE 5245858mN to 525510mE 5245750mN	LINEAR	152
N	E	525478mE 5246165mN to 5254468mE 5245909mN	LINEAR	335
		525488mE 5245849mN to 525478mE 5245780mN	LINEAR	72
		524968mE 5246998mN	POINT	1
	W	525470mE 5245851mN	POINT	8
		525457mE 5246167mN to 525476mE 5245906mN	LINEAR	460
M	n/a	524973mE 5247029mN to 524944mE 5247076mN	LINEAR	147

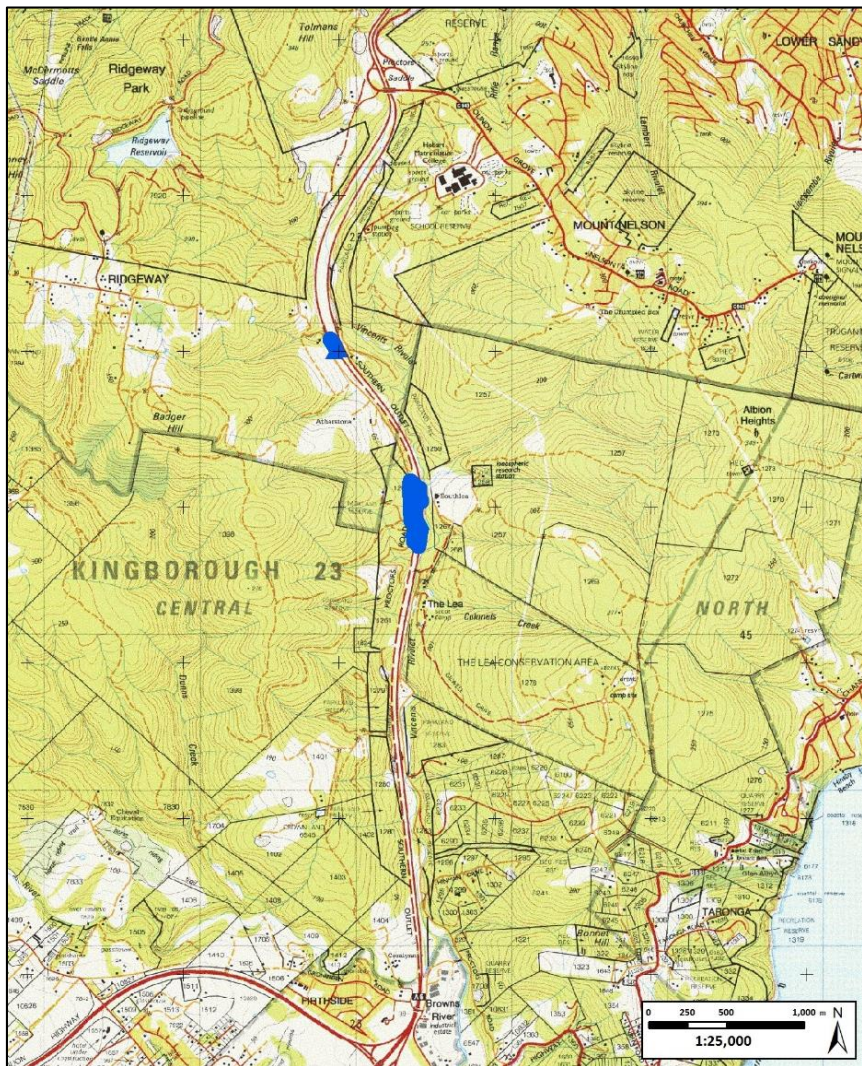


Figure 2. Distribution of *Xerochrysum viscosum* along the Southern Outlet (base data: TheList)



**Figure 3.** Distribution of *Xerochrysum viscosum* along the Southern Outlet – southern section (aerial imagery: GoogleEarth)



**Figure 4.** Distribution of *Xerochrysum viscosum* along the Southern Outlet – northern section (aerial imagery: GoogleEarth)