

## An examination of the Australian genus *Xerochrysum* (Asteraceae: Gnaphalieae)

Paul G. Wilson

Western Australian Herbarium, Department of Parks and Wildlife,  
Locked Bag 104, Bentley Delivery Centre, Western Australia 6983  
Email: Paul.Wilson@dpaw.wa.gov.au

### Abstract

Wilson, P.G. An examination of the Australian genus *Xerochrysum* (Asteraceae: Gnaphalieae). *Nuytsia* 28: 11–38 (2017). In this partial revision of *Xerochrysum* Tzvelev the following taxa are described as new: *X. alpinum* Paul G. Wilson, *X. boreale* Paul G. Wilson, *X. halmaturorum* Paul G. Wilson and *X. interiore* Paul G. Wilson. Accounts of several published and unpublished species from north-east New South Wales and south-east Queensland that are currently recognised are omitted since these are being studied by other botanists; however, these taxa are included in the key to species provided here. Lectotypes are chosen for *Helichrysum bracteatum* var. *viscosum* DC., *X. bicolor* (Lindl.) R.J. Bayer and *X. viscosum* (Sieber ex Spreng.) R.J. Bayer.

### Introduction

The discrimination and naming of *Xerochrysum* Tzvelev was established in 1990. Tzvelev recognised that the Australian plant commonly referred to *Helichrysum bracteatum* (Vent.) Haw., which had long been cultivated in Russia, belonged to a distinct genus. However, partly due to the title of Tzvelev's paper (which indicated that it dealt with Russian species of Asteraceae) and the language in which it was written (Russian), the article was largely overlooked. This led Anderberg and Haegi (Anderberg 1991) to describe as new the genus *Bracteantha* Anderb. & Haegi based on the same type, *Xeranthemum bracteatum* Vent. Subsequently, when this synonymy came to be recognised, Bayer (2001) transferred to *Xerochrysum* those species that had been published under *Bracteantha*.

Recent studies by Schmidt-Lebuhn *et al.* (2015) support the recognition of *Xerochrysum* as circumscribed by Bayer and as delineated in this paper, while leaving open the relationship of somewhat ill-defined genera such as *Coronidium* Paul G. Wilson and *Leucochrysum* (DC.) Paul G. Wilson that have been associated with it.

The genus has been considered to consist largely of one polymorphic species, *Xerochrysum bracteatum* (Vent.) Tzvelev, which, in the broad sense, occurs over much of Australia. However, this view is based on the study of herbarium material; botanists familiar with the plants in the field have come to a different conclusion and it is their opinion on appropriate rank that has been followed in this paper.

Some of the taxa in the *X. bracteatum* group that occur in north-eastern New South Wales and south-eastern Queensland have been excluded from this treatment since they are currently under examination

by Ian Telford and Jeremy Bruhl of the University of New England; however, these taxa are included in the key to species below.

### Taxonomy

**Xerochrysum** Tzvelev, *Novosti Sist. Vyssh. Rast.* 27: 151 (1990). *Type: Xerochrysum bracteatum* (Vent.) Tzvelev.

*Bracteantha* Anderb. & Haegi, *Opera Bot.* 104: 102 (1991), *nom. illeg.* *Type: Bracteantha bracteata* (Vent.) Anderb. & Haegi.

Annual or perennial *herbs*, sometimes rhizomatous. *Indumentum* arachnoid, scabrous, or glandular. *Leaves* alternate; lamina flat or with margin recurved. *Capitula* terminating branches or branchlets, homo- or hetero-gamous, disciform. *Involucral bracts* multiseriate; lamina rigidly chartaceous, often spreading at junction with claw when mature; *claw* coriaceous, broadly oblong, flat; stereome broad, that of inner bracts fenestrate, veins numerous, anastomosing and ending near apex of claw, or vein solitary and extending into lamina. *Receptacle* ± flat, epaleate. *Outermost florets* usually sterile or sometimes female; *corolla* very narrowly tubular, shortly 4-lobed. *Inner* (or all) *florets* bisexual; *corolla* narrowly tubular, *lobes* ovate; *anthers* with apical appendage ovate and outwardly concave, *tails* slender, ± equal to collar; *style arms* slender, with rounded to narrowly acuminate appendage. *Achene* cylindrical or obloid, 2.5–3.5 mm long; *pericarp* thick, collenchymatous, smooth, glabrous, 2-veined, surface with linear idioblasts *c.* 0.1–0.2 mm long paired in parallel or these absent; *stipe* hollow, basal margin of one row of thickened cells; *apex* patelliform when mature. *Testa* free from pericarp, brown, cells ± equilateral, without thickening; vein passing to apex. *Pappus* uniseriate; bristles slender, equal to or exceeding corolla, colourless or yellow, consistent with the colour of the medial involucral bracts, barbellate with apical cells acute, bristles very shortly united at base and eventually deciduous as a whole or in pieces, sometimes persistent.

*Etymology.* The derivation of the name *Xerochrysum* was not indicated by Tzvelev (1990), however it evidently comes from the Latinised Greek words *xeros* (dry) and *chrysos* (gold), presumably with reference to the laminae of the involucral bracts. The name is probably also linked to the names *Xeranthemum* L. and *Helichrysum* Mill., in which genera the type species has in the past been included by some authors.

*Indumentum.* Cottony or woolly hairs are found on the stems and leaves of most species of *Xerochrysum*. These hairs each have a short multicellular base that may persist after the cottony apex has been shed and which may then become hard so as to form a scabrous surface to the stem or leaf. In some species sessile, globular, unicellular hairs are found and these are usually viscid.

*Involucral bracts.* Anderberg and Haegi (Anderberg 1991), in their description of the genus *Bracteantha*, indicated that the involucral bracts of the included species had an undivided stereome; this is correct for the outer and intermediate bracts but not for the inner ones in which the stereome is divided and fenestrate. The claws of all bracts have a branched venation.

*Notes.* In this paper *Xerochrysum* is divided into two groups that differ in the venation of their medial involucral bracts, the *X. bracteatum* group having a multi-veined claw and the *X. milliganii* (Hook.f.) Paul G. Wilson group having a 1-veined claw, with the single vein continuing into the lamina. The former group encompasses about a dozen taxa that have been loosely treated as conspecific under

*Helichrysum bracteatum* s. lat., and is distributed over most of Australia. The *X. milliganii* group consists of five Tasmanian taxa, some of which extend into south-eastern Australia.

Bayer *et al.* (2002), in a paper on the chloroplast DNA sequences in Australian Gnaphalieae, suggested that *Helichrysum leucopsideum* DC. is sister to a clade comprising *X. bracteatum*, *Triptilodiscus pygmaeus* Turcz., *Pogonolepis stricta* Steetz, *Helipterum craspedioides* W.Fitzg. (syn. *Myriocephalus morrisonianus* Diels) and *Hyalochlamys globifera* A.Gray. On the other hand *X. viscosum* (DC.) R.J.Bayer is in a clade that includes *Anemocarpa podolepidium* (F.Muell.) Paul G.Wilson and *Leucochrysum stipitatum* (F.Muell.) Paul G.Wilson. The conclusions of Schmidt-Lebuhn *et al.* (2015), based on nuclear as well as chloroplast sequences, are in many ways contrary to those of Bayer *et al.* (2002), and suggest that *H. leucopsideum* is generically distinct from *Xerochrysum* while *X. bracteatum* and *X. viscosum* are closely related. The latter classification is supported both by the morphology and the apparent hybridisation of *X. bracteatum* with *X. viscosum*.

### Key to species

1. Herbs, sometimes rhizomatous; claw of medial involucre bracts with several veins that terminate at its apex
2. Stem and leaves viscous, glabrous or sparsely hispidulous; leaves filiform to linear with revolute margins ..... 8. **X. viscosum**
- 2: Stem and leaves cottony or woolly, glandular-puberulous or hispidulous, if glabrous then not prominently viscous; leaves linear to elliptic or obovate, flat or with recurved margins
3. Leaves woolly; lamina of outer 2 or 3 rows of involucre bracts yellow or yellowish brown, rounded, apiculate.....X. sp. 'Cockatoo Creek'
- 3: Leaves cottony; lamina of outer bracts variable
4. Leaves linear to linear-elliptic, 10–30 cm long; medial involucre bracts obtuse ..... X. sp. 'Moreton Bay'
- 4: Leaves linear to elliptic or obovate, 2–10(–20) cm long; medial involucre bracts acute to acuminate
5. Foliaceous bracts subtending capitula prominent
6. Style appendages narrowly acuminate to triangular, broadly triangular or rounded ..... 1. **X. bracteatum**
- 6: Style appendages rounded to broadly ovate
7. Leaves usually linear to linear-elliptic, rarely ovate or obovate; style appendages rounded to narrowly or broadly ovate; lamina of involucre bracts white or pale fawn ..... 7. **X. papillosum**
- 7: Leaves elliptic to obovate; style appendages broadly ovate; lamina of involucre bracts yellow ..... 5. **X. bicolor**
- 5: Foliaceous bracts subtending capitula absent or inconspicuous
8. Stem minutely cottony towards apex ..... 3. **X. boreale**
- 8: Stem cottony or scabrous
9. Leaves elliptic to obovate; capitula yellow
10. Stem prominently bristly beneath capitulum; leaves prominently auriculate at base..... 2. **X. halmaturorum**

- 10: Stem minutely scabrous beneath capitulum; leaves not or scarcely auriculate at base..... **4. X. interiore**
- 9: Leaves narrowly elliptic to narrowly obovate; capitula white or yellow
11. Capitula white; stem with cottony hairs below capitulum..... **6. X. macranthum**
- 11: Capitula yellow; stem with or without cottony hairs below capitulum
12. Stem without cottony hairs below capitulum..... **5. X. bicolor**
- 12: Stem with cottony hairs below capitulum..... **6. X. macranthum**
- 1: Herbs, rhizomatous; claw of medial involucre bracts with a central vein that passes into the lamina
13. Lamina of involucre bracts white, pale pink or crimson
14. Stem densely white-cottony; leaves densely cottony on margin, otherwise glabrous or sparsely glandular puberulous..... **9. X. milliganii**
- 14: Stem glandular-puberulous and very sparsely cottony; leaves sparsely cottony on margin, otherwise minutely glandular..... **10. X. collierianum**
- 13: Lamina of involucre bracts yellow
15. Stem densely cottony towards apex
16. Leaves glabrous or with cottony hairs on margin; involucre bracts smooth..... **11. X. palustre**
- 16: Leaves sparsely to moderately cottony; involucre bracts minutely scabridulous abaxially..... **12. X. subundulatum**
- 15: Stem glandular-puberulous especially towards apex ..... **13. X. alpinum**

**1. Xerochrysum bracteatum** (Vent.) Tzvelev, *Novosti Sist. Vyssh. Rast.* 27: 151 (1990). *Xeranthemum bracteatum* Vent., *Jard. Malmaison* 1: 2, t. 2 (1803). *Helichrysum bracteatum* (Vent.) Haw. in Andrews, *Bot. Repos.* 6: ad t. 428 (1805). *Helichrysum lucidum* Henckel, *Adumbr. Pl. Hort. Hal.* 5 (1806), *nom. illeg.* *Helichrysum chrysanthum* Pers., *Syn. Pl.* 2: 414 (1807), *nom. illeg.* (*Xeranthemum bracteatum* cited in synonymy). *Helichrysum bracteatum* (Vent.) Willd., *Enum. Pl.* 869 (1809). *Helichrysum bracteatum* var. *chrysanthum* DC., *Prodr.* 6: 189 (1838), *nom. illeg.* (based on type of *X. bracteatum*). *Xeranthemum lucidum* Maund, *Bot. Gard.* ed. 3, 1: 156 (1878), *nom. illeg.* *Bracteantha bracteata* (Vent.) Anderb. & Haegi, *Opera Bot.* 104: 102 (1991). *Gnaphalium chrysanthum* Sch.Bip., *Bot. Zeitung* 3: 171 (1845). *Helichrysum lucidum* var. *normalis* F.Muell., *Fragm.* 11: 48 (1878), *nom. inval.* *Helichrysum bracteatum* var. *normalis* Domin, *Biblio. Bot.* 89: 668 (1929), *nom. inval.* *Type citation:* ‘originaire de la Nouvelle Hollande’, cultivated at La Malmaison (*holo:* G 00341478 image!).

*Helichrysum banksii* A.Cunn. ex DC., *Prodr.* 6: 188 (1838). *Type citation:* ‘in Novae-Holl. ora boreali-orient. ad flum. Endeavour in sylvaticis graminosis olim legit cl. Banks et postea A Cunningham jul. flor. (v.s. comm. a cl. A. Cunn.)’ (*holo:* G-DC, G 00328465 image! ‘Grassy forest-land, Endeavour River, Qld, July 1819, A. Cunningham’).

?*Helichrysum bracteatum* var. *eriopodium* DC., *Prodr.* 6: 189 (1838). *Type citation:* ‘Specim. spontanea nec hortensia.’ (*holo:* G-DC G 00470435 image! ‘Nouvelle Hollande côte orient. Museum de Paris. 1821’).

Erect, branched or unbranched, often viscid, annual or perennial *herb* to 60 cm high. *Stems* and *branches* finely sulcate, with arachnoid hairs, and usually with sessile and stipitate glandular hairs.

*Leaves* usually cauline (rarely radical), chartaceous, oblong-elliptic, to 7 cm long, obtuse to acute or acuminate, sparsely to densely cottony, usually with sessile and stipitate glandular hairs, rarely glabrous. *Capitula* solitary or in loose cymes, terminating short or slender peduncles, closely subtended by c. 3 narrowly oblong-acuminate foliaceous bracts, these sometimes inconspicuous. *Involucre* 3–6 cm diam., yellow or white with the outer bracts tinged brown; outer and medial bracts rounded or obtuse, the claw multi-veined; inner bracts acute to acuminate, minutely serrulate, smooth. *Style appendages* narrowly acuminate to broadly triangular or rounded. *Achene* cylindrical, 2.5–3.0 mm long, smooth; idioblasts narrowly linear, 0.1–0.2 mm long. *Pappus* caducous as a whole, sometimes tardily so. (Figure 1)

*Selected specimens examined.* QUEENSLAND: Kingaroy, 16 Apr. 1947, *L.S. Smith* 3055 (BRI); between Springsure and Rolleston, 22 Nov. 1978, *T. Stanley & E. Ross* 78466 (BRI). NEW SOUTH WALES: Port Macquarie, Feb. 1897, *E.R. Brown s.n.* (NSW); 5.5 km S of South Guyra, 2 Apr. 1975, *T.A. Halliday* 337 (HO); Breakneck Lookout, S of Taree, 5 Jan. 1964, *H. Salasoo* 2863 (NSW); Mt Lindsay to Kangaloon, 3 Apr. 1957, *C.L. Wilson* 560 (NSW). VICTORIA: Grampians National Park, 31 Dec. 1988, *R.M. King* 9726 (MEL); Gunbar Island, 5 July 1953, *R. Melville* 3894 & *J. Chinner* (HO); Hattah Lakes National Park, 22 Jan. 1970, *T.B. Muir s.n.* (MEL); 8 km NNW of Genoa, 24 Oct. 1991, *N.G. Walsh* 3246 (MEL). SOUTH AUSTRALIA: Chowilla Stn, 7 Jan. 1989, *C. O'Malley* 1391 (AD); 8 km W of Coomandook, 31 Oct. 1961, *C.R. Sharrad* 1238 (AD); Hypurna HS, 12 Sep. 1980, *H.R. Toelken* 6637 (AD).

*Distribution.* Found in eastern Queensland, eastern New South Wales, Victoria and eastern South Australia.

*Chromosome number.*  $n = 12$  (Watanabe *et al.* 1999: 783), based on the voucher *M. Ito* 96026 from Polblue Swamp, c. 31°56' S, 151°24' E, New South Wales.

*Notes.* The name *Xeranthemum bracteatum* was based on a cultivated plant that originated in Australia and it is assumed that the seed was collected from near Sydney.

*Xerochrysum bracteatum* is typically an erect, branching, short-lived perennial; however, in coastal situations it may be stunted, with most leaves forming a basal rosette. It is treated here in a moderately broad sense and includes a number of variants that could be recognised as distinct taxa. This course has not been taken, partly because of its variability which would entail field work to satisfactorily resolve.

As circumscribed here, *X. bracteatum* grades into *X. papillosum*, *X. interiore* and *X. boreale*, but can usually be distinguished as indicated in the key. It is also similar to *X. bicolor*, *X. macranthum* and *X. papillosum*; from these species it differs in the shape of the style appendages and from the last two usually in the colour of the involucre bracts.

For comments on the apparent merging with *X. viscosum* see under that species.

## 2. *Xerochrysum halmaturorum* Paul G. Wilson, *sp. nov.*

*Type:* Cape St Albans, Kangaroo Island, South Australia, 24 November 1994, *B.M. Overton* 2513 (*holo:* AD 99610190; *iso:* MEL 2048046).

Perennial, branched *herb* to 1 m high. *Stems* prominently bristly with stiff multicellular trichomes. *Leaves* scattered, somewhat congested towards the base of the plant, elliptic to obovate, sessile or

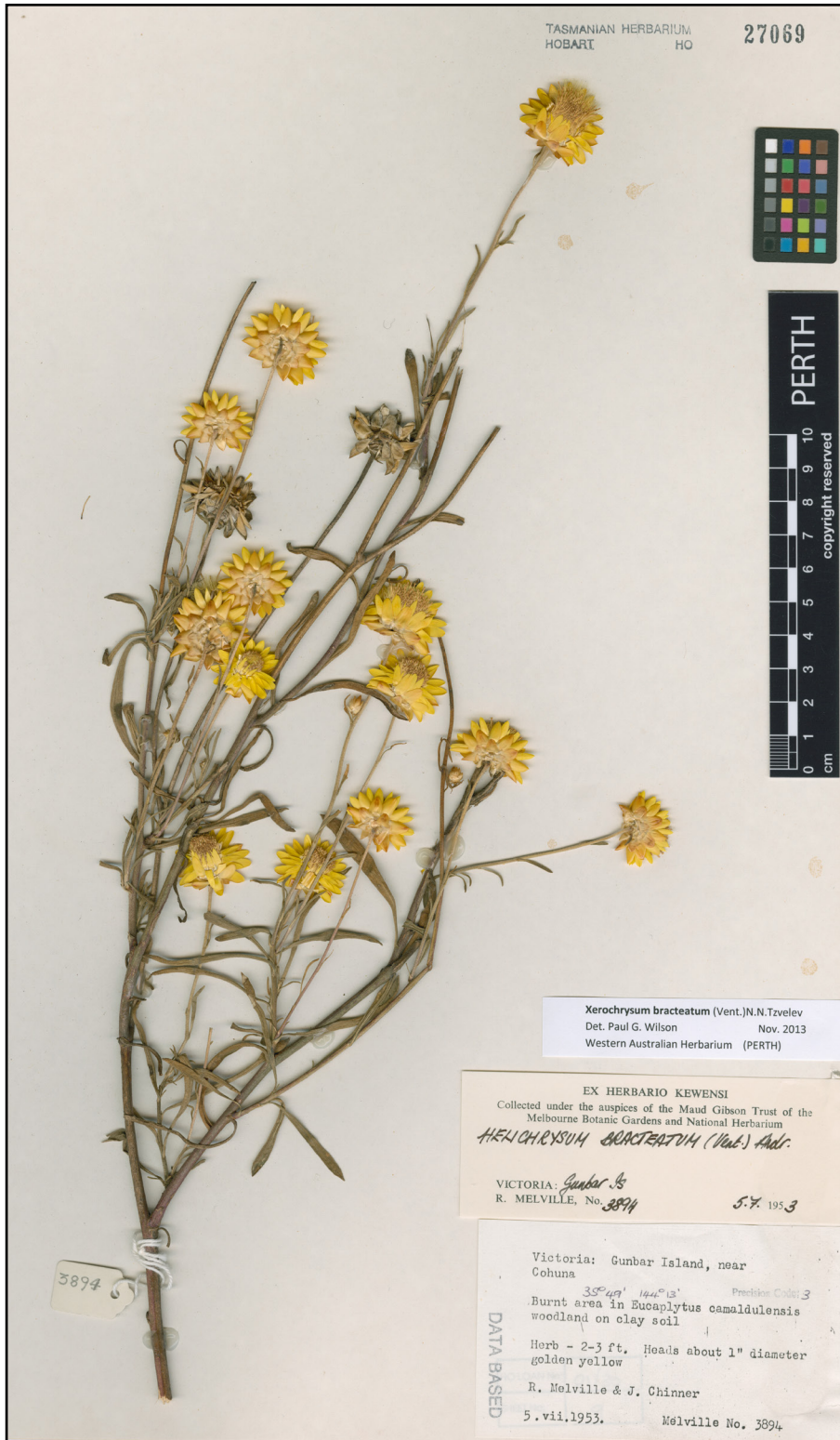


Figure 1. *Xerochrysum bracteatum* (R. Melville 3894, HO 27069).

narrowed to a broad petiole, auriculate and somewhat stem-clasping at base, in all to 9 cm long, to 3 cm wide, obtuse, apiculate, scabrous above, prominently gland-dotted below, margin with bristly hairs. *Capitula* solitary, terminal to branches. *Involucre* to 5 cm diam., bright yellow; outer bracts pale reddish brown, rounded to obtuse; medial bracts obtuse to acute, the claw multi-veined. *Style appendages* ovate. *Achene* smooth; idioblasts numerous, narrowly linear, *c.* 0.2 mm long. *Pappus* deciduous. (Figure 2)

*Selected specimens examined.* SOUTH AUSTRALIA: Encounter Bay, W of Bluff, 20 Jan. 1933, *J.B. Cleland s.n.* (AD); Second Valley Forest Reserve, 6 Dec. 1938, *J.B. Cleland s.n.* (AD); Inman Valley, *J.B. Cleland s.n.* (AD); section 138, Hundred of Cassini, near Mt McConnell, 8 Apr. 1987, *T. Croft* 11 (AD); Hindmarsh Valley Reservoir, Oct. 1909, *E.H. Ising s.n.* (AD); Cape Hart National Park, 13 Nov. 1983, *G. Jackson* 1633 (AD, HO); 5.7 km SW of Cape Willoughby Lighthouse, 18 Nov. 1989, *B. Overton, P. Canty & S. Kinnear* NPKE 40881 (AD) Torrens Gorge, 10 Nov. 1879, *R. Tate s.n.* (AD).

*Distribution and habitat.* Found on Kangaroo Island and on the adjacent South Australian mainland in the southern Fleurieu Peninsula. Grows in coastal or near-coastal situations on coastal cliffs, sides of gullies, and in eucalypt forest, usually over basalt or limestone.

The only herbarium specimens of *X. halmaturorum*, in the strict sense, that came from the South Australian mainland were collected over 70 years ago, suggesting that it is now either rare or no longer present on the Fleurieu Peninsula. All recent collections from this area show intergradation with *X. bracteatum*.

*Etymology.* The epithet *halmaturorum* has been applied by several botanists to plants that occur on Kangaroo Island. It is derived from the Greek word *halma* to leap, which alludes to the kangaroo, and the genitive suffix *-orum*.

*Notes.* *Xerochrysum halmaturorum* is similar in morphology to *X. macranthum* from south-west Western Australia and is a link to the typical form of *X. bracteatum* from south-eastern Australia.

### 3. *Xerochrysum boreale* Paul G. Wilson, *sp. nov.*

*Type:* Port Keats opposite Dorcherty Island, Northern Territory, 9 August 1983, *C. Dunlop* 6459 & *G. Wightman* (*holo:* CANB 345434; *iso:* AD 98419226, BRI, DNA D0021944, MEL 0291510, NSW 518497, NT).

*Illustration.* J. Brock, *Top End native plants* p. 215 (1988), as *Helichrysum bracteatum*.

Erect perennial, branched *herb* to 50 cm high. *Stems* glandular-hirtellous, usually densely cottony towards apex. *Radical leaves* densely clustered around the base forming a rosette, narrowly elliptic to obovate, to 10 cm long; *cauline leaves* linear to very narrowly oblong, to 10 cm long, acuminate, sparsely cottony and with sessile, globular, glandular hairs predominantly abaxial. *Capitula* solitary on slender, densely cottony peduncles which do not become scabrous, subtended by inconspicuous leafy bracts. *Involucre* usually *c.* 3 cm diam.; outer bracts pale yellowish brown, medial and inner bracts yellow, the medial ones obtuse and with the claw multi-veined. *Style appendages* narrowly triangular, 0.3–0.5 mm long. *Achene* *c.* 2.5 mm long; idioblasts numerous, filiform, *c.* 0.15 mm long. *Pappus* bristles to 7 mm long.





Figure 2. *Xerochrysum halmaturorum* (G. Jackson 1633, HO80731).



*Selected specimens examined.* WESTERNAUSTRALIA [localities withheld for conservation reasons]: 7 Sep. 1921, *C.A. Gardner* 1565 (PERTH); 1901, *F.M. House s.n.* (PERTH); 6 Sep. 1995, *A.A. Mitchell* 648 (MEL). NORTHERN TERRITORY: W of Port Bradshaw, 31 Oct. 1968, *N. Byrnes* 979 (NT); 5 miles [c. 8 km] W of Wangi HS, 28 Aug. 1969, *N. Byrnes* 1680 (NT); Fog Bay, 13 June 1994, *I.D. Cowie* 5115 (CANB); 19 km N of Mirrngadja, Arnhem Land, 5 Nov. 1987, *G. Leach & C. Dunlop* 1550 (NT); Mt Tolmer, 22 Oct. 1972, *J. McKean* B754 (CANB, NT); Mirrngatja [Mirrngadja], Arnhem Land, 9 Aug. 1986, *N.H. Scarlett* 201 (CANB). QUEENSLAND: Cooladdi, 75 km WSW of Charleville, 25 Oct. 1977, *L. Pedley* 4456 (AD).

*Distribution and habitat.* Occurs in the northern Pilbara and Kimberley regions of Western Australia, the far north of the Northern Territory, and the far north of Queensland. Found on loamy, sandy, or gravelly soils in grassland or woodland, sometimes in seasonally inundated areas.

*Conservation status.* To be listed as Priority Three under Department of Parks and Wildlife Conservation Codes for Western Australian flora (M. Smith pers. comm.). In Western Australia, this species is known from just five collections and has not been collected in the Kimberley region since the early 1920s.

*Etymology.* The specific epithet is derived from the Latin *borealis* (northern), and refers to the northern Australian distribution of this species.

*Notes.* This species is similar to *X. interiore*. The two species differ principally in leaf shape. However, leaf size and shape vary considerably with habitat and many collections cannot be referred unequivocally to either species based on these characters alone.

#### 4. *Xerochrysum interiore* Paul G. Wilson, *sp. nov.*

*Type:* 4 miles [c. 6.4 km] east of Acacia Well, Undoolya, Northern Territory, 9 November 1954, *G. Chippendale* 450 (*holo:* AD 95805047; *iso:* BRI, CANB 37993, DNA A0000450, NSW 518728, PERTH 00423815).

Annual or perennial, branched *herb* to 50 cm high. *Stem branches* slender, scabrescent and sometimes sparsely cottony towards apex. *Leaves* cauline, the medial ones broadly elliptic, thin, apex rounded to obtuse, apiculate, base narrowed to a broad petiole, in all to 8(–17) cm long, abaxially with minute sessile glands, adaxially almost glabrous. *Capitula* terminating branches; subtending foliaceous bracts of mature capitula inconspicuous. *Involucre* 3–5 cm diam., yellow; outer bracts with rounded apex; medial bracts obtuse with acumen, the claw multi-veined. *Style appendages* narrowly triangular. *Achene* c. 3 mm long, smooth; idioblasts numerous, narrow-linear, 0.1–0.2 mm long. *Pappus* 6–8 mm long, very shortly plumose except at summit, deciduous. (Figure 3)

*Selected specimens examined.* WESTERN AUSTRALIA: 5 mi [8 km] along Warburton Rd off Gunbarrel Hwy, 4 Oct. 1971, *U. Johnson* 16 (NSW, PERTH); about 90 km S of Munjina RH on Newman road, 4 Sep. 1995, *A.A. Mitchell* PRP 648 (PERTH). NORTHERN TERRITORY: Mt Zeil, 13 June 1974, *G.W. Carr* 1587 & *A.C. Beauglehole* 45566 (PERTH); 5 mi [8 km] N of Indiana Stn, 11 Sep. 1956, *M. Lazarides* 5964 (PERTH); Alice Springs, c. 15 km W on Larapinta Drive, 19 Aug. 1998, *C.R. Mitchell & J. Risler* 1795 (NT); Harry Creek, 50 km N of Alice Springs, 18 Nov. 1988, *D.J. Nelson* 2732 (NT). SOUTH AUSTRALIA: 45 km SW of Everard Park HS, 5 June 1972, *G.C. Cornwall* 213 (AD).



Figure 3. *Xerochrysum interiore* (G. Chippendale 450, PERTH 00423815).

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**HERBARIUM OF NORTHERN TERRITORY**  
 ALICE SPRINGS, AUSTRALIA  
 No. 450  
 Name *Helichrysum bracteatum* (Vent) Andr.  
 Locality 4m. E. Acacia Well, Undoolya, N.T.  
 Collector G. Chippendale Date 9/11/1954  
 Notes Herb 2' tall, heads golden yellow,  
 small patches. Common.

**STATE HERBARIUM**  
 WESTERN AUSTRALIA  
 Loc. \_\_\_\_\_  
 Coll. \_\_\_\_\_  
 19

*Xerochrysum interiore* Paul G. Wilson  
 Isotype  
 DETERMINAVIT Paul Wilson Nov 2013  
 Western Australia Herbarium (PERTH)  
 TEMPORARY SORTING SLIP - W.A. HERBARIUM  
*Bracteantha bracteata* (Vent.) A. Anderb.  
 & Haegi - Fide Op. Bot. 104:105 (1991)  
 Signed S. Curry 8 April 1991

Western Australian Herbarium  
 PERTH 00423815

*Distribution and habitat.* Found in the Pilbara and Coolgardie regions of Western Australia, and central Australia (including parts of Western Australia, the Northern Territory, and South Australia). Usually grows in red sand in the 'Centre' but elsewhere in a variety of soils. In the Pilbara the plant has been recorded from plains with *Triodia* grasslands or open eucalypt and *Acacia* woodland.

*Conservation status.* This widespread species is not considered to be of conservation concern in Western Australia.

*Chromosome number.*  $n = 14$ , recorded [as *Helichrysum bracteatum*] by Turner (1970: 384), based on the voucher *B.L. Turner* 5251.

*Etymology.* The specific epithet is derived from the Latin *interior*, with reference to the distribution of this species in central Australia.

*Notes.* The three collections examined from the Pilbara region of Western Australia appear to be of an annual plant whereas plants from other areas are obviously perennial.

Under dry conditions this species has leaves that are small (to 8 cm) and obovate, whereas in moist situations the leaves are large (to 17 cm long) and narrowly obovate to obovate. In all cases the style appendages are narrowly or very narrowly triangular.

This species apparently has a higher base chromosome number than either *X. bracteatum* or *X. viscosum*.

**5. *Xerochrysum bicolor*** (Lindl.) R.J. Bayer, *Kew Bull.* 56: 1014 (2001). *Helichrysum bicolor* Lindl., *Bot. Reg.* 21: t. 1814 (1835). *Gnaphalium bicolor* (Lindl.) Sch. Bip., *Bot. Zeitung* 3: 171 (1845). *Helichrysum bracteatum* var. *bicolor* (Lindl.) L.H. Bailey, *Cycl. Amer. Hort.* 2: 723 (1900). *Bracteantha bicolor* (Lindl.) Anderb. & Haegi, *Opera Bot.* 104: 105 (1991). *Type citation:* 'introduced by Mr. Low of the Clapton Nursery... It is a native of Van Diemen's Land, whence our excellent correspondent Mr. Gunn has sent beautiful specimens (No. 111).' (*lecto*, here designated: *R. Gunn* 111 [*s. dat.*], CGE photo!; possible *isolecto*: MEL 61303, NSW 122366).

Erect perennial *herb* with tuberous roots. *Branches* scabrid with multicelled hairs, cottony hairs absent. *Leaves* narrowly elliptic to obovate, 6–9(–20) cm long, acuminate, chartaceous, sparsely hirsute or scabrid, with minute, sessile, globular, glandular hairs, becoming viscid, scabrous on margin. *Capitula* solitary or terminating branches in an open panicle, subtending foliaceous bracts inconspicuous or linear. *Involucre* hemispherical, to 5 cm diam., laminae smooth, yellow (abaxial surface dusky yellow); outer bracts rounded; medial bracts obtuse, apiculate, the claw multi-veined. *Outer florets* female. *Style appendages* broadly ovate. *Achene* c. 3 mm long, dark brown; idioblasts inconspicuous, 0.2–0.4 mm long. *Pappus* deciduous, 5–7 mm long, very shortly plumose. (Figure 4)

*Selected specimens examined.* TASMANIA: Mayfield Beach, 10 June 1986, *A.M. Buchanan* 8628 (HO); Port Arthur, *J. Bufton* 6 (MEL); Mt Jukes Rd, 8 Mar. 2000, *L.H. Cave* 191 (CANB, MEL); Launceston, Nov. 1863, *S.G. Hannaford s.n.* (HO); Great Lake, 26 Mar. 1932, *M.J. Hood* 17 (HO); Green Point, west coast, Jan. 1958, *W.D. Jackson s.n.* (HO); near Shot Tower, Browns River Rd, Nov. 1891, *L. Rodway s.n.* (HO); Maria Island, 10 Apr. 2002, *A.C. Rozefelds* 3102 (HO); Cataract Gorge, Launceston, *H.M.R. Rupp* 4 (MEL); Mount Chappell Island, Furneaux Group, 8 Feb. 1972, *J.S. Whinray* 222 (CANB).



Figure 4. *Xerochrysum bicolor* (A.C. Rozefelds 3102, HO 516532).

*Distribution and habitat.* Found in Tasmania in damp situations usually near the coast and often on cliff faces. An apparent variant referred to *X. bicolor* that is sometimes found on disturbed sites in Tasmania, is evidently an introduced weedy form of *X. bracteatum*.

*Notes.* Two specimens in herb. MEL collected by Charles Stuart in Tasmania c. 1848–1849 (of which one is labelled as having come from South Esk River), have broadly elliptic leaves, but in neither specimen is the style tip apparent. They are possibly of a different taxon.

*Xerochrysum bicolor* is very similar to *X. bracteatum* but differs from that species in having denser hispidulous indumentum on the stem, in the sparse arachnoid hairs, in the apparent absence of stipitate glandular hairs, and in the ovate style appendages.

*Lectotypification.* The illustration, t. 1814, that accompanied Lindley's description, was presumably prepared from living material grown by Mr Low, but the origin of his seed is unclear. Since no specimen has been found that purports to be the basis of that illustration, the name is lectotypified on *Gunn* 111 in herb. CGE, which was cited by Lindley in his protologue. During the period 1832–1834, Gunn collected in north-eastern Tasmania (in the general vicinity of Launceston) and it is from here that no. 111 is likely to have been gathered (see Buchanan 1988, 1990).

Lindley, in his herbarium (CGE) and in a note in *A sketch of the vegetation of the Swan River colony* xxii (Lindley 1839), included the yellow-flowered variant of *X. macranthum* from south-west Western Australia under *Helichrysum bicolor*.

**6. *Xerochrysum macranthum*** (Benth.) Paul G. Wilson in Schmidt-Lebuhn *et al.*, *Taxon* 64: 105 (2015). *Helichrysum macranthum* Benth. in Endl. *et al.*, *Enum. Pl.* 65 (1837). *Gnaphalium macranthum* (Benth.) Sch.Bip., *Bot. Zeitung* 3: 171 (1845). *Aphelexis humilis* var. *macrantha* (Benth.) Paxton, *Paxton's Mag. Bot.* 15: 269 (1849). *Aphelexis macrantha* (Benth.) Hereman, *Paxton's Bot. Dict.* 2<sup>nd</sup> edn, 41 (1868). *Type:* Fremantle, Swan River, Western Australia, *K.A. Huegel s.n. (holo: W 0047162 image!)*.

?*Helichrysum glabratum* DC., *Prodr.* 6: 189 (1838). *Gnaphalium glabratum* (DC.) Sch.Bip., *Bot. Zeitung* 2: 171 (1845). *Type:* 'in Nova-Hollandia merid. et orientali. ... (v.s. comm. à Mus. reg. Par. ex itin. Baudin.)' (*syn:* G-DC G00470565 image!, GDC G00470680 image!).

?*Helichrysum bracteatum* var. *albidum* DC., *Prodr.* 6: 189 (1838). *Helichrysum bracteatum* f. *albidum* (DC.) Voss, *Vilmorin's Blumeng.* 3<sup>rd</sup> edn, 1: 534 (1894). *Type:* 'Rarius in hortis colitur. (v.v.c.)', label on specimen in G-DC 'Hort. Genev. 15 octobre 1834' (*syn:* G-DC G 00470178 image!, G-DC G 00470552 image!).

*Helichrysum niveum* Graham, *Bot. Mag.* t. 3857 (1840), *nom. illeg. non Less.* (1832). *Helichrysum nervosum* Donn, *Hortus Cantabrig.* 13<sup>th</sup> edn, 567 (1845). *Helichrysum bracteatum* var. *album* hort. ex L.H. Bailey, *Cycl. Amer. Hort.* 2: 723 (1900). *Type citation:* 'raised by Mr Low of Clapton, from seed sent from Swan River by Mr Drummond' (*syn:* FI 006313 image!, K 000899127 image!).

*Helichrysum robustum* Paxton, *Paxton's Mag. Bot.* 7: 188 (1840), *nom. subnud.* *Type:* Swan River, seed collected by *J. Drummond (n.v.)*.

Erect branching annual or short-lived perennial *herb* or *sub-shrub* with woody base, to 1.5 m high. *Stem branches* scabrid, cottony towards apex. *Leaves* narrowly elliptic, 6–9(–20) cm long, acuminate, medial

and lower leaves narrowed to a slender petiole not auriculate at base, chartaceous, sparsely hirsute or scabrid, with minute, sessile, globular glandular hairs, becoming viscid. *Capitula* heterogamous, solitary or terminating branches in an open panicle, subtending foliaceous bracts inconspicuous or linear. *Involucre* hemispherical, to 5 cm diam., with smooth laminae; outer bracts white tinged brown or pink or dusky yellow, rounded, medial bracts white or yellow, obtuse and apiculate, the claw multi-veined. *Style appendages* ovate or triangular. *Achene* smooth; idioblasts indistinct. *Pappus* c. 6 mm long, very shortly plumose. (Figures 5 & 6)

*Selected specimens examined.* WESTERN AUSTRALIA: 3.5 km NW of Chidlow, 8 Nov. 1996, *M.G. Allen* 398 (PERTH); Pipehead Dam, 2 Nov. 1984, *M.G. Corrick* 9397 (MEL); 23 km E of Collie, 30 Oct. 1997, *R.J. Cranfield* 11500 (PERTH); Herne Hill, 6 Sep. 1978, *R.J. Cranfield s.n.* (PERTH); 6 mi [c. 10 km] N of Cockleshell Gully, 26 Sep. 1976, *R.W. Johnson* 3271 (PERTH); Lesmurdie, 11 Oct. 2008, *K.R. Thiele* 3700 (PERTH).

*Distribution and habitat.* Found in the south-west of Western Australia from Geraldton south to Albany. Grows on a variety of substrates and in markedly different habitats including jarrah forest, heathland, riverine flats, or seasonally marshy situations.

*Conservation status.* This species is not considered rare or threatened; however, the habitats of some of the numerous variants appear to be decreasing due to clearing.

*Typification.* The two syntypes of *Helichrysum glabratum* in G-DC probably came from Western Australia since the laminae of the involucre bracts were described as being white; if this is the case then the name would be a synonym of *X. macranthum*.

*Notes.* Near the south-west coast of Western Australia and in the Stirling and Porongurup Ranges, a stunted variant occurs that has dense oblong to obovate leaves and white involucre bracts (see Figure 6). From the herbarium material seen it would appear that this variant has a different habit and a different leaf-shape at each of the many localities where it has been collected but it retains the indumentum and floral characteristics of typical *X. macranthum*. Although the habit, leaf form, and capitulum size of this south-west form are retained in cultivation (*G.J. Keighery* pers. comm.) it is not recognised here as a distinct taxon since in other characters it is clearly close to the typical form of *X. macranthum* from the south-west of Western Australia with which each of the variants appear to merge (Figure 6).

Examples of this far south-west variant are as follows (all PERTH): Black Hole, Denmark, 9 Dec. 1962, *A.S. George* 4286; Mt Many Peaks, 23 Nov. 1979, *S.D. Hopper* 1569; Bluff Knoll, Stirling Range, 28 Feb. 1986, *G.J. Keighery* 7960; Collier Peak, Porongurup Range, 20 Nov. 1987, *G.J. Keighery* 8722; Gracetown, 14 Dec. 1994, *G.J. Keighery* 14766; Devils Slide, Porongurups, Oct. 1963, *W. Rogerson* 37; Hush Hush Beach, Walpole-Nornalup National Park, 30 Nov. 1992, *J.R. Wheeler & S.J. Patrick* 3564.

**7. *Xerochrysum papillosum*** (Labill.) R.J. Bayer, *Kew Bull.* 56: 1015 (2001). *Helichrysum papillosum* Labill., *Nov. Holl. Pl.* 2: 46 (1805) t. 192 (1806). *Gnaphalium papillosum* (Labill.) Poir. in Lam. & Poir., *Encycl. Suppl.* 2: 808 (1812). *Xeranthemum papillosum* (Labill.) Poir., *Encycl. Suppl.* 3: 143 (1813). *Helichrysum bracteatum* var. *papillosum* (Labill.) Domin, *Věstn. Král. České Společn. Nauk. Tř. Mat.-Přír.* 2: 120 (1923). *Bracteantha papillosa* (Labill.) Anderb. & Haegi, *Opera Bot.* 104: 105 (1991). *Type citation:* ‘Habitat in capite Van-Diemen’ [Tasmania], *J.J.H. de Labillardière* (syn: FI 006314 image!, FI 006315 image!, G-DC G00470570 image!).



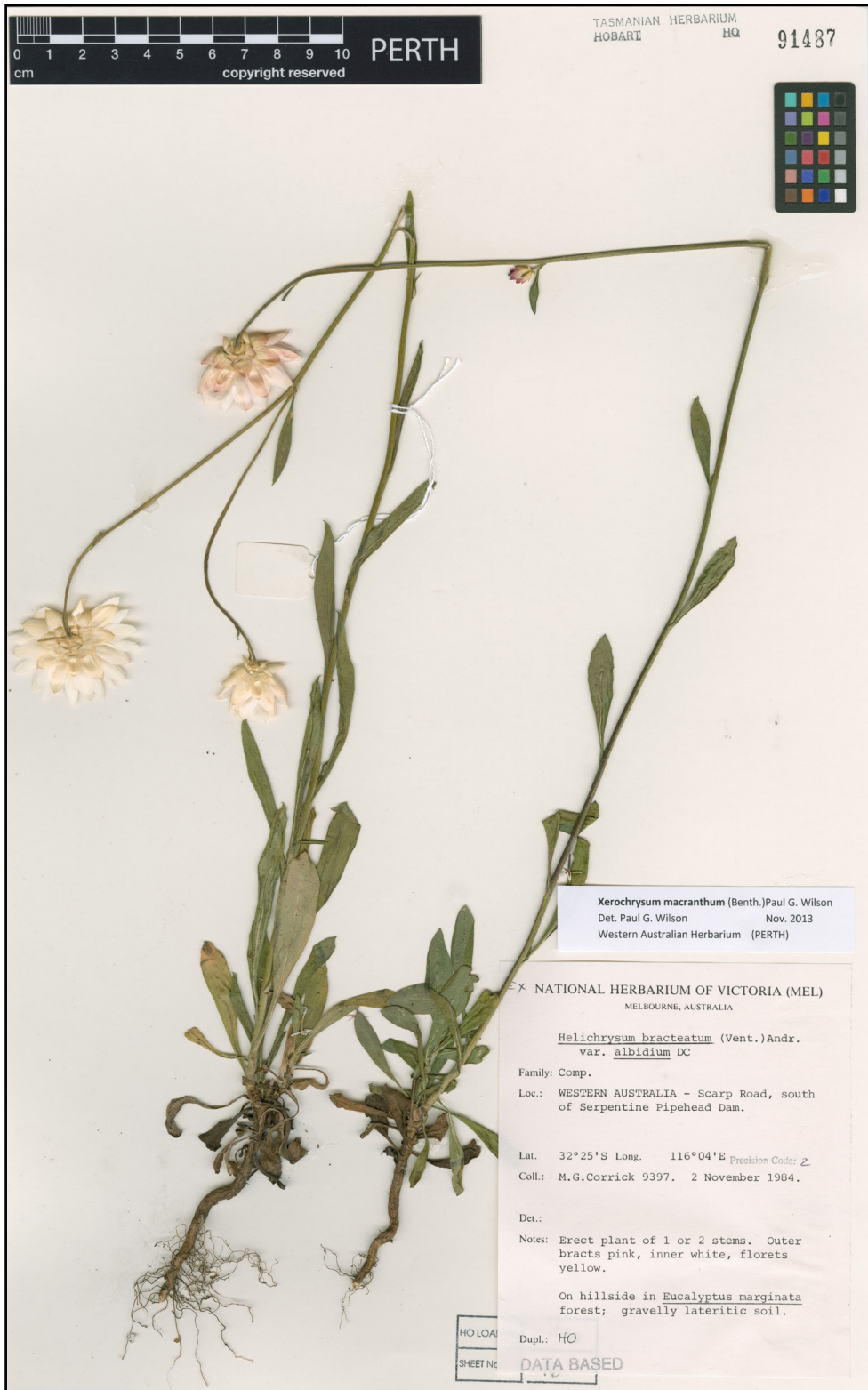


Figure 5. *Xerochrysum macranthum* (M.G. Corrick 9397, HO 91487).



Figure 6. *Xerochrysum macranthum*, Stirling Range–Porongorup Range variant (W. Rogerson 37, PERTH 00442577).

Annual or perennial, erect branching *herb* to 1 m high. *Stem branches* and *leaves* glandular-puberulous and scabridulous or hispidulous, sometimes sparsely cottony, faintly glandular-punctate. *Leaves* usually narrowly linear to narrowly elliptic, rarely ovate or obovate, to 10 cm long. *Capitula* terminating stems or branches, subtended by 1–3 leafy bracts. *Involucre* to 4 cm diam.; outer bracts broadly ovate, obtuse, laminae white to pale fawn; medial bracts broadly to narrowly oblong, obtuse to acute, white, the claw multi-veined; inner bracts narrowly oblong and acute to acuminate, white. *Style appendages* rounded to narrowly or broadly ovate. *Achene* smooth, c. 3 mm long, dark brown; idioblasts filiform, c. 0.2 mm long. *Pappus* bristles c. 6 mm long, very shortly plumose, colourless. (Figure 7)

*Selected specimens examined.* VICTORIA: Wilsons Promontory National Park, 10 Nov. 1983, A.C. Beauglehole 75352 (MEL). TASMANIA: Sandy Bay, 22 Nov. 2001, A.M. Buchanan 15854 (HO); South Cape Bay, 5 Apr. 1930, H.F. Comber 2278 (HO); Maatsuyker Island, 8 Mar. 1992, S. Harris s.n. (HO); Sarah Anne Rocks, 4 Nov. 2000, M. Kensey s.n. (HO); Lady Barron, 7 Dec. 2000, T. Rudman s.n. (HO); Great Lake, 31 Mar. 1891, A. Simson s.n. (HO); Long Island, Hogans Group, 7 Dec. 1972, J.S. Whinray 1399 (CANB).

*Distribution.* *Xerochrysum papillosum* occurs on Wilsons Promontory and some off-shore islands of southern Victoria, the Bass Strait islands, and in coastal mainland Tasmania.

*Notes.* The style appendages are narrowly to broadly ovate, with the tip rounded to obtuse (broadly ovate with rounded tip in specimens from Recherche Bay at southern tip of Tasmania, the type locality, while narrowly ovate in Bass Strait). Collections from the Bass Strait islands usually have linear (often revolute) leaves, a morphology that is strongly displayed in specimens that come from Wilsons Promontory and from its neighbouring islands. Specimens from southern Tasmania tend to have narrowly elliptic leaves. The colour of the laminae of medial involucre bracts in the majority of the collections examined was white (as are those of the type) but in some collections from the Bass Strait islands the laminae are pale yellow which is possibly due to intergradation with *X. bicolor* since in other characters some collections suggest a transition between the two.

The leaf morphology in collections from the Bass Strait islands may be due to intergradation with *X. viscosum* since the leaves are sometimes glandular and viscid although the capitula are much larger than in typical *X. viscosum* and the style appendages are rounded, not narrowly triangular-acuminate. Specimens from southern Tasmania may have narrowly elliptic leaves. The leaves were described by Labillardière as being papillose above, in which character he was evidently referring to the short, villous indumentum found on plants of this taxon from the south coast region of Tasmania; however, this, the typical variant, grades northwards into the variant from Bass Strait that has a scabrid pubescence.

The colour of the laminae of the involucre bracts remains the most obvious character that distinguishes *X. papillosum* from *X. bicolor*.

Herbarium material of *X. papillosum* is similar to that of *X. macranthum* from south-west Western Australia and the two species are largely to be distinguished by the shape of the style appendages. However, while the Tasmanian plant is coastal in its distribution the Western Australian plant is predominantly an inland species. It may be more realistic, in view of their morphological similarity, to treat the two populations as representing one species; both populations exhibit considerable variation, and each has both a form with white involucre bracts and a form with yellow involucre bracts. In spite of this, since there are slight but significant differences, such as in the indumentum, in the size of the capitula, and in the stigma shape, I am recognising them as distinct species.





Figure 7. *Xerochrysum papillosum* (A.M. Buchanan 15854, HO 511217).

**8. *Xerochrysum viscosum*** (Sieber ex Spreng.) R.J.Bayer, *Kew Bull.* 56: 1015 (2001). *Helichrysum viscosum* Sieber ex Spreng., *Syst. Veg.* 3: 484 (1826). *Bracteantha viscosa* (Sieber ex Spreng.) Anderb. & Haegi, *Opera Bot.* 104: 105 (1991). *Type*: none cited [‘Nov. Holl.’ [New South Wales], *F. Sieber* 345, see de Candolle, *Prodr.* 6: 189 (1838)] (*lecto*, here designated: G-DC G 00470540 image!; *isolecto*: HAL 0111515 image!, MEL 604820 image!, W 18890232748 image!).

*Helichrysum bracteatum* var. *viscosum* DC., *Prodr.* 6: 189 (1838). *Type citation*: ‘H. viscosum Sieb.! Pl. exs. nov. holl. N. 345. H. bracteato valde affine Cunn.! In litt. 1834. Frequens ad latus occid. montium coerul.’ *Type specimens*: ‘Fl. Novae Holl. No. 345’, *F. Sieber* 345 (*lecto*, here designated: G-DC G 00470540 image!; *isolecto*: HAL 0111515 image!, MEL 604820 image!, W 18890232748 image!); ‘Frequent in the country on the western side of the Blue Mountains’, New South Wales, 1817, *A. Cunningham* 120 (*syn*: G-DC, G00470545 image!, MEL 61351).

*Helichrysum bracteatum* var. *angustifolium* Guilfoyle, *Austral. Pl.* 209 (1910), *nom. subnud.* *Type*: not indicated.

Viscid, slender, erect, annual/perennial *herb* to 80 cm high, sparingly branched and with perennial rootstock. *Branches* scabrid. *Leaves* mostly cauline, narrowly linear to linear or the lower very narrowly elliptic, 2–8 cm long, 1–2(–6) mm wide, slightly recurved to revolute on margins, densely covered with minute, spherical, viscous sessile glands on both surfaces, otherwise glabrous or scabridulous. *Capitula* terminating slender branches or paniculate, subtended by 1–3 linear *foliaceous bracts*. *Involucre* 2–4.5 cm diam., laminae smooth; outer bracts pale reddish brown, rounded to obtuse, apiculate; medial bracts narrowly oblong, yellow, acute, the claw multi-veined. *Style appendages* filiform-acuminate to narrowly triangular-acuminate. *Achene* c. 2 mm long, reddish brown, with thick, crustaceous pericarp; idioblasts linear, c. 0.2 mm long. *Pappus* pale yellow, 6–7 mm long, very shortly plumose. (Figure 8)

*Selected specimens examined.* QUEENSLAND: Wyberba, 23 Jan. 1933, *S.T. Blake* 4639 (BRI). NEW SOUTH WALES: 48.5 km NE of Coolamon, 25 Nov. 1984, *R. Coveny* 11989 (CANB); 11.8 km N of Coonabarabran, 3 Aug. 1984, *M. Parris* 8862A (CANB). AUSTRALIAN CAPITAL TERRITORY: Namadgi National Park, Scabby Range, 11 Mar. 1992, *I.R. Telford* 11550 (HO, PERTH). VICTORIA: Warby Range, 24 Sep. 1985, *A.C. Beauglehole* 80882 (MEL); 4 km W of Bailieston, 25 Oct. 1981, *M.G. Corrick* 7887 (HO); 5 miles [8 km] SE of Rushworth, 7 Nov. 1967, *T.B. Muir* 4659 (MEL). TASMANIA: Southern Outlet, north bound lane cutting, 15 Dec. 2000, *A.M. Gray* 1083 (HO).

*Distribution and habitat.* This species is found in the extreme south-east of Queensland and in central and eastern New South Wales, while it is widespread in Victoria; also present (possibly as an introduction) in Tasmania where it is occasionally found along roadsides (*vide* Alex Buchanan pers. comm.). Generally growing in woodland on shallow sandy or loamy soils.

*Chromosome number.*  $n = 12$ , recorded [as *Bracteantha bracteata*] by Watanabe *et al.* (1999: 783), based on the voucher *K. Watanabe* 218 (MEL).

*Typification.* No type was cited by Sprengel under *Helichrysum viscosum* but since the name was attributed to Sieber and the locality cited as ‘Nov. Holl.’, it is assumed to be based on a Sieber collection. The only Sieber collection cited by de Candolle is n. 345 a duplicate of which is in his herbarium (G-DC).

The basionym of *Bracteantha viscosa* was cited by Anderberg and Haegi in Anderberg (1991) as ‘*Helichrysum viscosum* Sieber ex De Candolle, *Prodr.* 6: 189 (1838)’ which is incorrect.

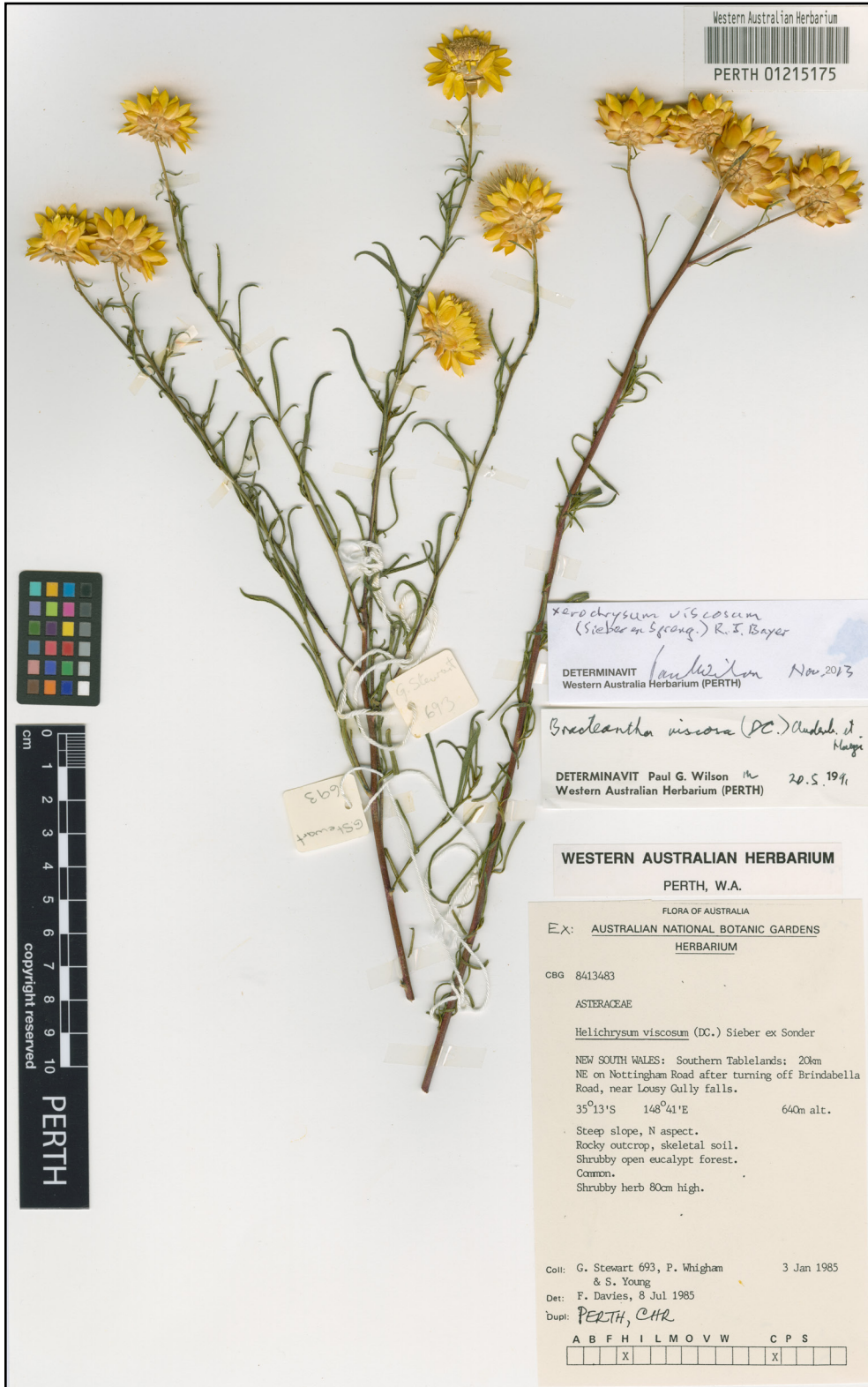


Figure 8. *Xerochrysum viscosum* (G. Stewart 693, PERTH 01315175).



Bayer (2001) cited the basionym of *Xerochrysum viscosum* as ‘*Helichrysum bracteatum* var. *viscosum* DC. (1838)’ and the type as ‘Flora Nov. Holl. exs. n. 345’. Since both the Sieber and the Cunningham collections were cited by de Candolle this must be considered to be an incorrect type citation. Bayer added ‘*non Helichrysum viscosum* Sieb. ex Spreng., Syst. Veg. 3: 484 (1826). Type: Nov. Holl.’. However, although the two names were evidently based on different specimens, but from the same collection, this statement is curious. I am treating Bayer’s combination as legitimate but with an incorrect bibliographic citation.

*Notes.* Although *X. viscosum* is treated here as being specifically distinct from *X. bracteatum*, the two species evidently merge and many collections appear to be intermediate in morphology. *Xerochrysum viscosum* may be distinguished from narrow-leaved variants of *X. bracteatum* by its viscid leaves and branches and by the absence of cottony or woolly hairs.

The shape of the cells in the testa and the pattern of thickening in the pericarp appear to be the same as is found in the testa and pericarp of *X. bracteatum*.

This species could be separated into two variants; one with small, narrowly linear leaves often arranged in axillary clusters, and relatively small capitula; the other with longer linear leaves that are not clustered, while the capitula are more prominent. However, these appear to merge and many collections cannot be clearly placed with one or the other of the variants.

**9. *Xerochrysum milliganii*** (Hook. f.) Paul G. Wilson in A.N. Schmidt-Lebuhn *et al.*, *Taxon* 64: 106 (2015). *Helichrysum milliganii* Hook. f., *Fl. Tasman.* 1: 214 (1856). *Type citation:* ‘(Gunn, 1169). Hab. Summit of Mount Pearse, Surrey Hills, elev. 3000 feet, Mount Sorrell, Macquarie [sic] Harbour, *Milligan.*’ *Type specimens:* Mt Sorell [sic], Macquarie Harbour [Tasmania], 15 January 1847, *J. Milligan* 755 (*lecto, fide* Paul G. Wilson *op. cit.*: K 000928522!; *isolecto*: K 000928518, K 000928519, K 000928520, MEL 1585997); Mt Pearse, Surrey Hills, Tasmania, *R.C. Gunn* 1169 (*syn*: K).

*Illustrations.* M. Stones & W. Curtis, *The endemic flora of Tasmania* pt 1: t. 13 (1967); J. Kirkpatrick, *Alpine Tasmania* p. 76, Figure 33e (1997); A.N. Schmidt-Lebuhn *et al.*, *Taxon* 64: 106, Figure 5 (2015), each as *Helichrysum milliganii*.

Low, dense, perennial *herb* with thick, divided rootstock bearing rosette-like leaves. *Flowering stems* erect, to 25 cm high, densely white-cottony. *Leaves* erect, densely imbricate, thick, oblong-elliptic, obtuse to acute, to 2.5 cm long, with broad, stem-clasping base, woolly on margins otherwise glabrous or sparsely glandular-puberulous, grading into involucre bracts. *Capitulum* solitary, to 3.5 cm diam. *Involucre* with bracts spreading at anthesis, erect in fruit; outer bracts ovate, sessile, white to crimson, woolly towards base; medial bracts white, with a narrowly elliptic lamina passing into a semi-terete 1-veined claw, in all to 18 mm long. *Style appendages* rounded. *Achene* cylindrical, *c.* 3 mm long; pericarp brown, smooth, glossy; idioblasts not apparent; testa brown, cells broad-oblong, not thickened. *Pappus* persistent, with bristles minutely denticulate. (Figure 9)

*Selected specimens examined.* TASMANIA: Mt Rufus, 25 Jan. 1949, *N.T. Burbidge* 3347 (CANB); Cradle Mtn, 18 Jan. 1976, *E. Mullins* 209 (CANB); Moonlight Ridge, Hill One, 31 Jan. 1983, *P.S. Short* 1873 (CANB).

*Distribution and habitat.* Found on the western and central mountains of Tasmania; growing in heath, short grassland, and sedgeland.



Herb. AD

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State Herbarium of South Australia

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*Helichrysum milliganii* Hook. f.



16489

*Xerochrysum milliganii* (Hook. f.) Paul G. Wilson  
Det. Paul G. Wilson 16 Sept. 2003  
Western Australian Herbarium (PERTH)

LOAN  
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445

Databased as  
*Helichrysum milliganii*

*Helichrysum milliganii* HOOK. f.  
  
Tasmania.  
Cradle Mountain National Park.  
Plateau between Marion's Lockout  
and Kitchen Hut.  
  
leg. Hj. Eichler 16489 8.I.1960

HERBARIUM HANSOERG EICHLER

Figure 9. *Xerochrysum milliganii* (Hj. Eichler 16489, AD 96108517).

*Notes.* Superficially similar to *X. collierianum* A.M.Buchanan, which also grows in heathland. The divided rhizomatous base produces clumps that have the aspect of a cushion-plant.

**10. *Xerochrysum collierianum*** A.M.Buchanan, *Muelleria* 20: 49, Figures 1, 2 (2004). *Type:* St Valentines Peak, Tasmania, 13 January 1986, *P. Collier* 1206 (*holo:* HO 116970).

*Illustration.* J. Kirkpatrick, *Alpine Tasmania* p. 70, Figure 30d (1997), as *Bracteantha* sp. aff. *bicolor*.

Rhizomatous, perennial *herb* forming dense clumps. *Stems* erect, simple, to 20 cm high, apically minutely glandular-puberulous and very sparsely cottony. *Leaves* minutely glandular, sparsely cottony on margin; *radical leaves* spatulate, to 7 cm long; *cauline leaves* spatulate to narrowly elliptic, 20–50 mm long, diminishing upwards. *Capitula* predominantly solitary, subtended by 2 or 3 foliaceous bracts which grade into the outer lacerate involucre bracts. *Involucre* with smooth, white or rarely pink-tinged laminae; medial bracts with a narrowly elliptic lamina c. 2 cm long and 1-veined claw, not strongly reflexed at maturity. *Outermost florets* female with filiform corolla. *Bisexual florets:* corolla narrowly cylindrical below, narrowly turbinate above, pale yellow; *style appendages* broadly ovate, obtuse. *Achene* 2–3 mm long; pericarp crustaceous, glossy; idioblasts not evident; epidermal cells of testa broadly oblong. *Pappus* persistent.

*Selected specimens examined.* TASMANIA: Mt Claude Lookout, 1 Dec. 2001, *A.M. Buchanan* 15908 (HO); Mt Remus, 13 Jan. 1988, *P. Collier* 3087 (HO); Mt Roland, 7 Apr. 1991, *P. Collier* 5192 (HO); Round Mtn, Mar. 1971, *K. Gillanders* 15 (MEL); Raglan Range, 26 Jan. 1994, *S.J. Jarman* s.n. (HO); Mt Murchison, 13 Feb. 1995, *G. Kantvilas* (HO); summit of Ragged Range, 28 Jan. 1995, *G. Kantvilas* & *S.J. Jarman* s.n. (HO); Gog Range, 1 May 1983, *A. Moscal* 2245 (HO); Mt Claude, 4 Apr. 1988, *A. Moscal* 15683 (HO); Frenchmans Cap, 13 Mar. 1977, *D. Wythes* s.n. (HO).

*Distribution and habitat.* Endemic to western and north-western Tasmania where it is found growing in rock crevices in alpine situations.

*Conservation status.* It is stated by Alex Buchanan, *op. cit.*, that although this species is uncommon more than half of the known occurrences are in national parks or other reserved lands.

*Notes.* Similar in habit and in bract and floral morphology to both *X. alpinum* and *X. milliganii*.

**11. *Xerochrysum palustre*** (Flann) R.J.Bayer, *Kew Bull.* 56: 1015 (2001). *Bracteantha palustris* Flann, *Muelleria* 11: 97 (1998). *Type:* Saplings Morass Flora and Fauna Reserve, Victoria, 11 December 1996, *C. Flann* 1 & *N.G. Walsh* (*holo:* MEL 2036150 image!; *iso:* CANB 528907 image!).

*Helichrysum acuminatum* var. *angustifolium* DC., *Prodr.* 6: 188 (1838). *Type:* ‘in terra Van-Diemen’ [Tasmania], *R.C. Gunn* 247 (*holo:* G-DC G 00470645 image!; *iso:* MEL 61301 ).

*Illustration.* C. Flann, *Muelleria* 11: 98, Figure 1 (1998).

Rhizomatous, perennial *herb*, 45–80(–100) cm high. *Stems* usually simple, slender, densely cottony towards apex, otherwise glabrous. *Leaves* all cauline, well-spaced, very narrowly oblong-acuminate, 6–8(–12) cm long, half-clasping at base, flat, glabrous or with cottony hairs on margin. *Capitulum* terminal, solitary, to 4 cm diam., subtended by 1–3 linear, herbaceous, woolly *bracts*. *Involucre bracts* yellow or orange, outer bracts ovate, acute; medial bracts narrowly oblong, acuminate, the lamina

smooth on both surfaces, with a 1-veined claw. *Outer florets* female. *Style appendages* obtuse. *Achene* not seen in mature state; idioblasts not evident. *Pappus* bristles pale yellow, 6–7 mm long.

*Selected specimens examined.* VICTORIA: Surrey River, Gorae, *s. dat.*, A.C. Beaglehole 17154 (MEL); 3 km N of Lal Lal, 12 Dec. 1996, C. Flann 7 (MEL); Trawalla, 17 Dec. 1991, R. Thomas (MEL). TASMANIA: Big Den, 35 km W of Campbell Town, 9 Dec. 1990, P. Collier 5024 (HO); Little Hampton, Toiberry, 30 Jan. 1932, F.H. Long 1130 (HO); Friendly Beaches Road, Freycinet, 10 Feb. 1984, A. Moscal 6168 (HO).

*Distribution and habitat.* Recorded from southern Victoria and eastern Tasmania; confined to wet situations, such as permanent swamps, winter wetlands, and stream margins.

*Notes.* A distinctive species; it is similar to *X. subundulatum* in habit and in the apparent absence of glandular hairs on the leaves, but differs in having smooth involucre bracts.

**12. *Xerochrysum subundulatum*** (Sch.Bip.) R.J.Bayer, *Kew Bull.* 56: 1015 (2001). *Helichrysum acuminatum* DC., *Prodr.* 6: 188 (1838), *nom. illeg. non* (Link) Sweet (1826). *Bracteantha acuminata* Anderb. & Haegi, *Opera Bot.* 104: 105 (1991), *comb. illeg.* *Gnaphalium subundulatum* Sch.Bip., *Bot. Zeitung* 3: 171 (1845). *Bracteantha subundulata* (Sch.Bip.) Paul G. Wilson, *Muelleria* 7(4): 519 (1992). *Type:* Van Diemen Land (Tasmania), R.C. Gunn 244 (*holo:* G-DC G 00470677 image!; *iso:* MEL 61149).

Rhizomatous, perennial *herb* with erect, simple stems *c.* 25 cm high. *Stems* with arachnoid indumentum. *Leaves* semi-amplexicaule, sessile, scattered, diminishing in size upwards; *lower leaves* narrowly oblong to narrowly obovate or oblong-elliptic, 4–7 cm long, apex rounded to obtuse; *upper leaves* narrowly oblanceolate, acute, variably cottony and with sparse, indistinct, and very minute, sessile, spherical glands beneath. *Capitula* solitary, 2.5–6 cm diam., subtended by 2 or 3 linear, herbaceous, cottony bracts. *Involucre* with bracts sometimes not spreading at maturity; outer bracts ovate, acute, ciliolate, reddish brown, abaxially minutely scabridulous; medial bracts with a narrowly oblong-acuminate, golden yellow lamina and a 1-veined claw. *Corolla* yellow. *Style appendages* ovate. *Achene* *c.* 2 mm long; pericarp crustaceous, glossy; idioblasts not evident; testa epidermal cells broadly oblong, not thickened. *Pappus* persistent. (Figure 10)

*Selected specimens examined.* NEW SOUTH WALES: Diggers Creek, Kosciuszko National Park, 2 Feb. 1966, A.M. Ashby 1737 (AD). VICTORIA: Watchbed Creek, Bogong High Plains, 20 Jan. 1966, R. Filson 8110 (MEL); Bidwell, 19 Jan. 1953, R. Melville 2959 (MEL); Bentley Flat, below Mt Nugong, 26 Jan. 1953, R. Melville 3131 (MEL). TASMANIA: 4 mi (*c.* 6 km) from Guildford Junction, H.N. Barber *s.n.* (HO); Iris River crossing, Wilmot–Cradle Mt Rd, 15 Feb. 1969, E.M. Canning *s.n.* (CANB); Lake Augusta, Central Plateau, 20 Feb. 1972, D.J. Jarman *s.n.* (HO); Breton Rivulet, 2 Feb. 1981, A. Moscal 611 (HO).

*Distribution and habitat.* Found in alpine or subalpine areas of eastern Victoria, Tasmania and south-eastern New South Wales, with an outlier in the Kanangra-Boyd National Park in the Great Dividing Range; growing in moist situations in woodland, herbfields and grasslands.

*Notes.* The arachnoid indumentum on the leaf margins is often absent or sparse in collections from the Snowy Mountains.

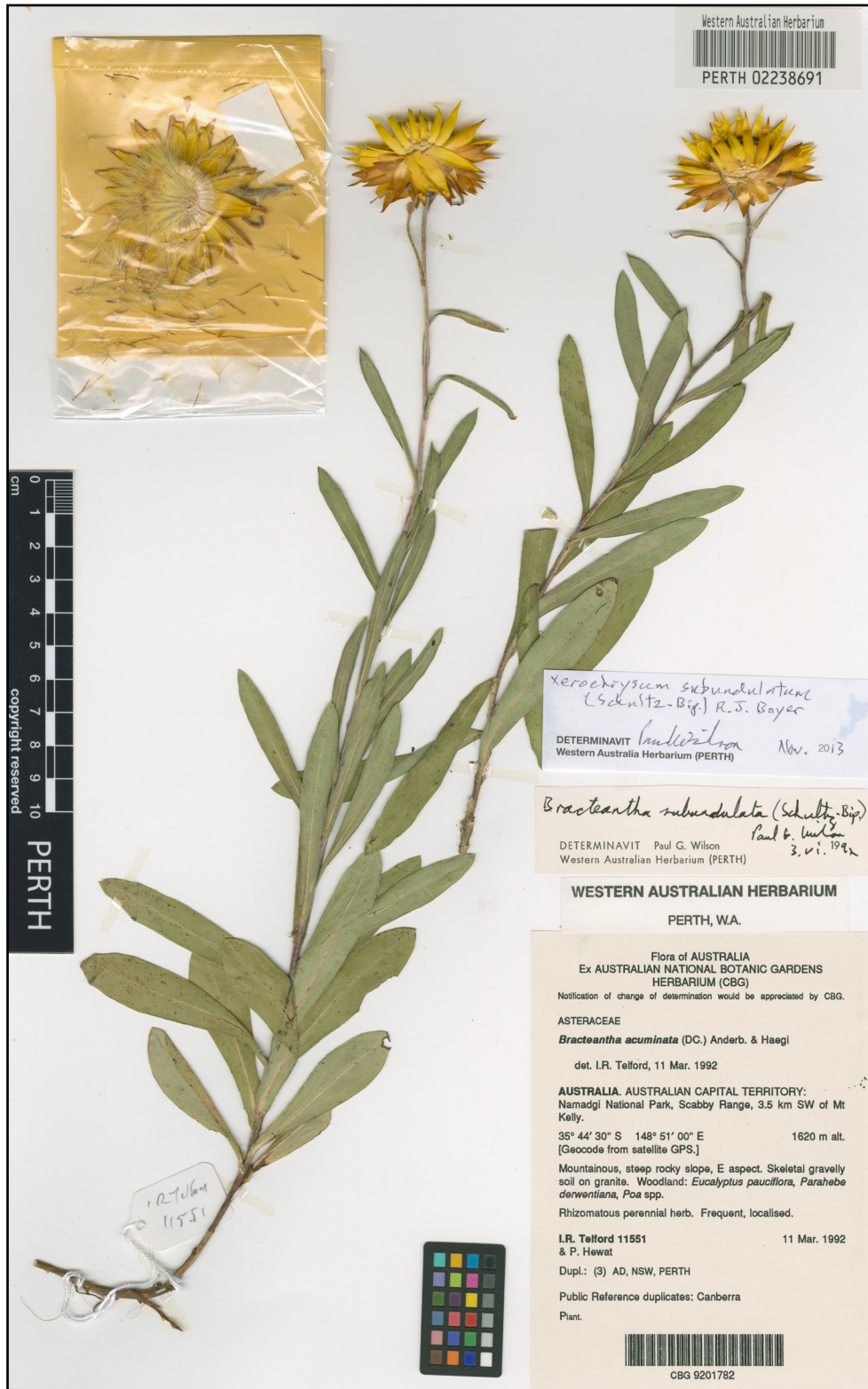


Figure 10. *Xerochrysum subundulatum* (I.R. Telford 11551, PERTH 02238691).



Two collections from the Australian Capital Territory, one from Mt Murray, Namadgi National Park, and the other from Blackfellows Gap, have a habit similar to that of typical *X. subundulatum* but they differ in the virtual absence of cottony hairs on the stem, in their somewhat scabrid leaves, and in their smooth involucre bracts, of which the outer and medial ones have a rounded apiculate (not acuminate) apex. Burbidge and Gray (1970) suggest that this variant may have arisen through hybridisation between *X. subundulatum* and *X. viscosum*. It is possible, however, that they represent an undescribed species of *Xerochrysum*.

### 13. *Xerochrysum alpinum* Paul G. Wilson, *sp. nov.*

*Type*: Lake Lea Road, Tasmania, 17 February 1998, *A.M. Buchanan* 15101 (*holo*: HO 324393).

*Illustration*. J. Kirkpatrick, *Alpine Tasmania* p. 70, Figure 30e (1997) [as *Bracteantha subundulata*].

Rhizomatous, perennial *herb* 8–15(–20) cm high. *Stems* erect, simple-glandular-puberulous and sparsely arachnoid-hairy. *Leaves* crowded towards base of stem, diminishing in size upwards, glandular-puberulous or the lower leaves glabrescent, cottony on margin; *basal leaves* somewhat fleshy, elliptic to obovate, narrowed to a broad petiole, to 5 cm long, apex obtuse to rounded; *cauline leaves* narrowly obovate to oblong, erect, stem-clasping. *Capitula* solitary, *c.* 4 cm diam., subtended by densely glandular-puberulous foliaceous bracts *c.* 10 mm long, the uppermost bract with a scarious, rounded, lacerate apex, grading into the involucre bracts. *Involucre* with sessile, reddish brown glands adaxially on the thick claws; outer bracts with a short, broad claw and broadly ovate lamina, acute, scarious with reddish brown tip, abaxially minutely scabridulous; medial bracts narrowly elliptic, yellow, smooth, with a narrowly oblong, 1-veined claw. *Style appendages* rounded. *Achene* not seen in mature state; pericarp glossy; idioblasts not evident. *Pappus* persistent. (Figure 11)

*Selected specimens examined*. TASMANIA: Lake Bill, upper Mersey River, 15 Mar. 1987, *P. Collier* 2289 (HO); Mt Field, Jan. 1945, *W.M. Curtis s.n.* (HO); Pyramid Mtn, 14 Feb. 1983, *A. Moscal* 1780 b (HO); Quamby Bluff, summit, 6 Mar. 1986, *A. Moscal* 12596 (HO); Mt Victoria, 28 Apr. 1980, *M.G. Noble* 29257 (HO); Little Plain, Blue River, Blue Tier, 1 Feb. 1878, *A. Simson* 1056 (HO); Blue Tier, summit, 1 Feb. 1878, *A. Simson* 1101 (MEL).

*Distribution and habitat*. Widespread over alpine Tasmania and growing in peaty herbfields.

*Etymology*. The specific epithet is derived from the Latin *alpinus*, with reference to the mountainous distribution of this species.

*Notes*. *Xerochrysum alpinum* superficially has the appearance of alpine forms of *X. subundulatum* but the former's glandular-puberulous indumentum, and the transition of its uppermost leaves into outer involucre bracts, clearly distinguish the two. No mature achenes were observed.

### Uncertain Name

*Helichrysum macrocephalum* A.Cunn. ex DC., *Prodr.* 6: 188 (1838). *Gnaphalium macrocephalum* (DC.) Sch.Bip., *Bot. Zeitung* 3: 17(1845). *Type*: Moreton Bay, Queensland, sandy shores, Oct. 1824, *A. Cunningham* 121 (*holo*: G-DC G 00328540 image!) [probably a variant of *X. bracteatum*].





Figure 11. *Xerochrysum alpinum* (A. Moscal 12596, HO 403116).

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