



Studies in *Podolepis* and some related genera (Asteraceae: Gnaphalieae)

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Introduction

Podolepis Labill. was described in 1806, the type species being *P. rugata* Labill. *Panaetia* Cass. and *Siemssenia* Steetz were described in 1829 and 1845 respectively, the type species being *Panaetia lessonii* Cass. and *Siemssenia capillaris* Steetz. Bentham (1866) placed the former in *Podolepis* and made the new combination *Podolepis lessonii* (Cass.) Benth., and Diels (1904) placed the latter in *Podolepis* and made the new combination *Podolepis capillaris* (Steetz) Diels.

Davis (1957) revised *Podolepis*, which included the descriptions of 18 species as well as a detailed taxonomic and nomenclatural history of the genus up to that time. During that history, a rather disparate assemblage of taxa, whose only common feature is the presence of scarious involucre bracts, had been regarded as belonging to *Podolepis*. Some of these taxa have been removed to other genera, e.g. *Podolepis georgei* Diels to *Schoenia* Steetz (as *Schoenia ayersii* (F.Muell.) J.M.Black – see Black 1915) and *Podolepis tetrachaeta* (Schltdl.) Walp. to *Leptorhynchos* Less. (as *Leptorhynchos tetrachaetus* (Schltdl.) J.M.Black – see Black 1921)

Chromosome numbers were obtained for many *Podolepis* species by Turner (1967), ranging from $n=3$ to $n=12$, including an anomalous value of $n=ca. 30$ for *Podolepis jaceoides* (Sims) Voss (see Jeanes 2015a). Turner (1967) commented that, "... such a complicated array of chromosome numbers in *Podolepis* was unanticipated ...", but he nevertheless considered the genus to be, "... except for *P. lessonii* ... quite natural." In their study of fruit anatomy of members of the Australian Inuleae, Short *et al.* (1989) stated that "...*Podolepis* is clearly an unnatural genus." This comment was based on differences in floret types, bract morphology, chromosome numbers and fruit morphology within the genus. Furthermore Short *et al.* (1989) suggested that *Panaetia* and *Siemssenia* should be reinstated

Abstract

The genera *Panaetia* Cass. and *Siemssenia* Steetz are reinstated and the new combinations *Panaetia davisiana* (D.A.Cooke) Jeanes, *Panaetia tepperi* (F.Muell.) Jeanes and *Siemssenia microcephala* (Benth.) Jeanes are created. The new genus *Walshia* Jeanes is created to accommodate the anomalous taxon previously known as *Helipterum kendallii* F.Muell. and *Podolepis kendallii* (F.Muell.) F.Muell., and the new combination *Walshia kendallii* (F.Muell.) Jeanes is made.

Taxonomic treatments are given for *Podolepis arachnoidea* (Hook.) Druce, *P. gardneri* G.L.Davis, *P. gracilis* Graham, *P. hieracioides* F.Muell., *P. longipedata* A.Cunn. ex DC., *P. monticola* R.F.J.Hend. and *P. nutans* Steetz, seven species not covered in three recent papers on the genus *Podolepis* (Jeanes 2015a, Jeanes 2015b, Froud 2015). The new combination *Coronidium gnaphalioides* (Domin) Jeanes is created to accommodate the taxon previously known as *Podolepis gnaphalioides* Domin.

Keywords: morphology, taxonomy, *Walshia*

and that *P. georgei* and *Podolepis kendallii* (F.Muell.) F.Muell. should be removed from *Podolepis*. Anderberg (1991) agreed that, based on general morphology, floret morphology and other features, *Podolepis* was probably polyphyletic. A study based on molecular systematics (Konishi *et al.* 2000) would also suggest that *Panaetia* and *Siemssenia* are sister to *Podolepis* and could be recognised at some level.

In a previous paper (Jeanes 2015a), *Podolepis s.str.* was defined and a key to 18 of the species described at that time presented – with the exception of *P. gardneri* G.L.Davis, inadvertently overlooked for that work. A further species in *Podolepis s.str.* has been described since then (Jeanes 2015b). *Podolepis* currently consists of ca. 20 species and several subspecific taxa. Given the combined evidence of general morphology, floret morphology, chromosome numbers and molecular data, it appears that reinstatement of *Panaetia* and *Siemssenia* at generic level is warranted (see Table 1 for the main distinguishing characters of genera covered in this paper).

Podolepis kendallii is an unusual member of the Gnaphalieae by virtue of its distinctive fruit (long-papillose) and pappus (bristles distinctly plumose at the apex) morphology (Konishi *et al.* 2000). The various consensus trees derived by Konishi *et al.* (2000) show *P. kendallii* grouping with *Waitzia* J.C.Wendl., which otherwise has “...little similarity in fruit morphology and other morphological characteristics” (Konishi *et al.* 2000). Other authors (e.g. Short *et al.* 1989, Watanabe *et al.* 1999) commented about the uniqueness of

P. kendallii and suggested its removal from *Podolepis*. The distinctive and unique morphology of *P. kendallii* suggests that its placement in a monotypic genus is warranted and the genus *Walshia* Jeanes is created here to accommodate it.

Materials and Methods

Examination of qualitative and quantitative characters were made from dried herbarium specimens held at AD, BRI, CANB, DNA, HO, NT, PERTH and, particularly, MEL (herbarium codes follow Thiers 2020). All the relevant type specimens held at MEL have been examined and those from other herbaria were either examined directly or accessed and examined through JSTOR Global Plants (JSTOR 2000–2018). The measurements given in the descriptions were taken from dried specimens and may differ slightly from the dimensions of living plants. The distribution maps were downloaded from the Australasian Virtual Herbarium website (AVH 2018).

Taxonomy

***Panaetia* Cass., Ann. Sci. Nat. (Paris) 17: 417 (1829)**

Type species: *Panaetia lessonii* Cass.

Annual *herbs*, glabrous or somewhat arachnose. *Stems* 1–several, erect, usually branched. *Leaves* entire; basal leaves (when present) petiolate, apex acute; cauline leaves alternate, sessile, base amplexicaul, stem-clasping, decurrent, apex acute. *Peduncles*

Table 1: Main characters distinguishing *Panaetia*, *Podolepis*, *Siemssenia* and *Walshia*.

	<i>Panaetia</i>	<i>Podolepis</i>	<i>Siemssenia</i>	<i>Walshia</i>
Habitat	Arid regions	Arid and more mesic regions	Arid regions	Arid regions
Habit	Annual herbs	Annual and perennial herbs	Annual herbs	Annual herbs
Peduncles	Naked	With leafy bracts (naked in <i>P. gardneri</i>)	Naked	With leafy bracts
Outer florets	Tubular	With a 3–5-toothed ligule-like limb	With a 3–4-toothed ligule-like limb	Tubular
Number of pappus bristles on female florets	0–10 (female florets absent from <i>P. davisiana</i>)	6–40	0	0
Cypselas	Minutely papillose	Minutely papillose	Minutely papillose	Covered with long finger-like papillae
Chromosome number (n)	7 or 8	9–12	3 or 11	11

Key to genera dealt with in this paper.

- 1 Outer florets each with a ligule-like limb, prominent and far exceeding the involucre in most species, but small and barely exceeding the involucre in some species2
- 1: Outer florets all tubular4
- 2 Ligule-like limbs on outer florets prominent and much exceeding the involucre, usually wholly yellow or with some white, pink or purplish colouration **Podolepis**
- 2: Ligule-like limbs on outer florets barely exceeding the involucre, mostly white, sometimes yellow, lacking any pink or purplish colouration.....3
- 3 Involucral bract lamina narrow-elliptic, prominently wrinkled transversely; outer involucral bracts passing into stem leaves with no obvious peduncle present; stems few-branched, thick **Podolepis**
- 3: Involucral bract lamina oblong, indented on both sides about half way along, more or less smooth; outer involucral bracts not passing into stem leaves with the capitula on an obvious leaf-free peduncle; stems much-branched, wiry **Siemsenia**
- 4 Cypselas covered with long finger-like papillae **Walshia**
- 4: Cypselas minutely tuberculate and lacking long finger-like papillae **Panaetia**

filiform, naked. *Inflorescences* 1–many per plant. *Capitula* hemispherical or campanulate, disciform or discoid, solitary or few arranged in loose corymbose panicles. *Involucral bracts* free, united at the very base or in basal half, few–many-seriate, with slender linear claws, unequal, lamina scarious, margins fringed or entire. *Florets* yellow; outer florets female (bisexual in *P. davisiana*), uniseriate, tubular; disc florets bisexual, numerous, tubular. *Cypselas* terete, minutely papillose; pappus bristles few, plumose.

Panaetia lessonii Cass., *Ann. Sci. Nat. (Paris)* 17: 417 (1829)

Podolepis lessonii (Cass.) Benth., *Fl. austral.* 3: 606 (1867); *Podolepis lessoni* (Cass.) Benth. *Fl. austral.* 3: 606 (1867) *nom illeg.* (orth. var. of *Podolepis lessonii*); *Podolepis lessoni sensu* G.L.Davis. *Proc. Linn. Soc. New South Wales* 81: 270 (1957) *nom illeg.* (orth. var. of *Podolepis lessonii*).

Type: WESTERN AUSTRALIA. ‘Cette plante habite aussi les environs du port du Roi-Georges, où elle a été recueillie en 1826 par M. Lesson. Nous l’avons décrite sur des échantillons appartenant à M. Mérat.’ (This plant is found in the neighbourhood of the Port of King George,



Figure 1. Cypsel, floret and pappus bristles of *Walshia kendallii* from MEL 2027936. Reproduced with permission from Royal Botanic Gardens Victoria.

where it was collected in 1826 by M. Lesson. We have described it on specimens belonging to M. Mérat.): *Nouv. Holl. port du roi Georges, reçuen* 1833 M.Merat, no collection date, *M.Lesson s.n.* (Isotype GDC G00461476 photo! JSTOR Global Plants).

Podolepis gilbertii Turcz., *Bull. Soc. Imp. Naturalistes Moscou* 24 (1): 195 (1851); *Podolepis gilberti* Turcz., *Bull. Soc. Imp. Naturalistes Moscou* 24 (1): 195 (1851) *nom. illeg.* (orth. var. of *Podolepis gilbertii*). **Type: WESTERN**

Key to species of *Panaetia*.

- 1 Innermost involucral bracts united for about half their length to form a rigid cup enclosing the florets ***P. muelleri***
- 1: Innermost involucral bracts not as above2
- 2 Florets all similar, bisexual, fertile; innermost involucral bracts united at the base..... ***P. davisiana***
- 2: Florets dissimilar; outer florets long-tubular and female, inner florets tubular, bisexual; innermost involucral bracts free to the base3
- 3 Involucral bracts with fringed margins, shallowly wrinkled, pale; Western Australia only..... ***P. lessonii***
- 3: Involucral bracts entire, glabrous, shiny; Western Australia, South Australia and Victoria ***P. tepperi***



NATIONAL HERBARIUM OF VICTORIA (MEL)
MELBOURNE, AUSTRALIA

MEL 2027600



319 ASTERACEAE

Podolepis lessonii (Cass.) Benth.

Coll.: P.S. Short 4187 Date: 24 Aug 1995

AUSTRALIA - WESTERN AUSTRALIA
Locality: Austin Botanical District. 10 km by road from
Paynes Find along road to Yalgoo.
Lat.: 29°11'57"S Long.: 117°40'16"E

Notes: Growing in coarse sandy loam over granite.
Erect herbs. Florets yellow.

Dupls: AD, PERTH, S, TI

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Figure 2. Representative specimen of *Panaetia lessonii* (MEL 2027600). Reproduced with permission from Royal Botanic Gardens Victoria.

AUSTRALIA. 'Nova Hollandia occidentalis. Gilbert coll. n. 269 et 282': Western Australia, 1842, *Gilbert 269 and 282* (Syntypes KW 001001499 and KW 001001498 photos!).

Illustrations: Davis (1957) Figs 92–100 (as *Podolepis lessonii*); Grieve and Blackall (1975) page 790; Western Australian Herbarium (2018) (both as *Podolepis lessonii*).

Annual *herb* to 40 cm tall. *Stems* 1–several, erect, usually branched, sparsely woolly below. *Leaves* woolly below, sparsely septate-hairy above, margins, entire; basal leaves (when present) usually oblanceolate, 3–4.5 cm long and 1–1.5 cm wide, petiolate, apex acute; cauline leaves alternate, sessile, base amplexicaul, stem-clasping, decurrent, usually lanceolate, 1–7 cm long and 2–15 mm wide, apex acute. *Peduncles* filiform, 5–10 cm long, naked. *Inflorescences* 1–80 per plant. *Capitula* campanulate, mostly 6–12 mm diam., usually solitary or few arranged in loose panicles. *Involucral bracts* free, many-seriate, with slender linear claws, unequal, lamina scarious, pale, semi-transparent, shallowly wrinkled, margins fringed; intermediate bracts 4–5 mm long, lamina triangular, apex acute, claw slender; inner bracts with claw longer than lamina. *Florets* yellow; outer florets female, uniseriate, 8–16, tubular, 3- or 4-toothed, with a single pappus bristle; disc florets bisexual, numerous, 4- or 5-toothed, with 3 or 4 pappus bristles. *Cypselas* terete, c. 1 mm long, c. 0.4 mm wide, minutely papillose; pappus bristles plumose distally (Figure 2).

Selected specimens examined: WESTERN AUSTRALIA. Bruce Rock, Pikaring Hill Reserve, 18.viii.2013, *G. Byrne 4650* (MEL 2410612); 37 km N of Yancheop on Lancelin Road, 10.ix.1975, *M.L. Clark 188* (MEL 597751); Kalbarri National Park, at 'The Loop', 19.x.1983, *P.S. Short 2127* (MEL 1523492); Harrismith, 0.5 km E of township, 26.ix.1979, *J. Taylor 895* (MEL 1619231); 37 km N of Yancheop on Lancelin Road, 10.ix.1975, *M.L. Clark 188* (MEL 597751).

Distribution and habitat: Endemic to Western Australia where widespread in the South-West and Eremaean Provinces, scattered over ca. 14 IBRA7 Regions (Commonwealth of Australia 2012). Found in a wide variety of habitats and soils (Figure 16a)

Conservation status: Widespread, common and well represented in conservation reserves.

Flowering period: Mostly August to January.

Cytology: Chromosome number determinations of $n=7$, $2n=14$ were reported by Turner (1967) and Watanabe *et al.* (1999) under the name *Podolepis lessonii*.

Notes: The holotype of *Panaetia lessonii* does not

appear in JSTOR Global Plants, nor apparently is it in the historical collections in Paris (P).

The type sheet of *Podolepis gilbertii* consists of seven elements (all apparently of the same taxon) and four labels. Two of the labels refer to the two syntypes Gilbert 269 (KW 001001499) and Gilbert 282 (KW 001001498), and one label refers to a Drummond collection (KW 001001500), which is not a type. There is no apparent link between the specimens and the labels so determining which of the specimens are the types is not possible.

A specimen at Geneva (G00301420) is annotated as an isotype of *P. gilbertii*, but this is a Drummond collection and hence cannot be type material. Without seeing the type sheet, Davis (1957) concluded that *P. gilbertii* was most likely synonymous with *Podolepis lessonii* (= *Panaetia lessonii*) and this appears to be correct.

Panaetia davisiana (D.A.Cooke) Jeanes, **comb. nov.**

Basionym: *Podolepis davisiana* D.A.Cooke, *J. Adelaide Bot. Gard.* 7(3): 281, fig. 4 (1985). **Type: SOUTH AUSTRALIA.** Western edge of Lake Torrens, c. 3 km N of South Gap Station Homestead, 3.ix.1968, *R. Swinburne 19* (holotype, AD 96929450!, isotype, MEL 674081! (Figure 3)).

Illustrations: Cooke (1985) Figure 4; Jessop and Toelken (1986) Figure 710C (both as *Podolepis davisiana*).

Annual *herb* to 16 cm tall. *Stems* 1–several, erect, sparsely branched, sparsely arachnose mostly at the nodes. *Leaves* lanate below, arachnose to lanate above, margins entire; basal leaves (when present) usually elliptic to oblanceolate, 1–4 cm long and 0.5–1.5 cm wide, petiolate, apex acute; cauline leaves alternate, sessile, amplexicaul at base, decurrent, lanceolate to elliptic, 1–4 cm long and 2–10 mm wide, apex acute. *Peduncles* filiform, 1–6 cm long, naked. *Inflorescences* 1–20 per plant. *Capitula* hemispherical, homogamous, discoid, mostly 8–10 mm diam., usually solitary or few arranged in loose panicles. *Involucral bracts* about 6-seriate, with short linear claws, unequal, lamina scarious, stramineous, smooth or shallowly wrinkled, margins almost entire to fringed; intermediate bracts free, 4–5 mm long, lamina ovate, margins fringed, apex acute, claw slender; inner bracts united at base. *Florets* yellow; 40–90, all bisexual, tubular, 5-toothed. *Cypselas* ellipsoid, slightly compressed, c. 1.5 mm long, c. 0.4 mm wide, sparsely and minutely papillose; pappus bristles 9–14, subplumose.



Figure 3. Isotype of *Podolepis davisiana* (MEL 674081) = *Panaetia davisiana*. Reproduced with permission from Royal Botanic Gardens Victoria.

Specimens examined: SOUTH AUSTRALIA. 5 miles (ca. 8 km) N of Duff Creek, 7.viii.1963, *T.R.N. Lothian 1354* (MEL 1594430); Woomera, 1 km from Woomera on Pimba road, 27.x.1989, *B. Nordenstam, A. Anderberg 834* (MEL 1591043); 3 km S of Pimba, 14.x.1995, *K. Watanabe 325* (MEL 2027397); 3 km S of Pimba on Stuart Highway, 16.x.1996, *K. Watanabe 691, T. Denda & N. Konishi* (MEL 2034803).

Distribution and habitat: Endemic to South Australia where scattered over seven IBRA7 Regions (Commonwealth of Australia 2012). Mostly found on stony slopes and gibber plains (Cooke 1985). (Figure 16b)

Conservation status: Widespread and represented in conservation reserves.

Flowering period: Mostly August and September.

Cytology: Chromosome number determinations of $n=7$ and $2n=14$ were reported by Watanabe et al. (1999) under the name *Podolepis davisiana*.

Notes: *Panaetia davisiana* is unique in the genus in having all florets similar and bisexual. Apparently all records of *P. lessonii* for South Australia are referable to either *P. davisiana* or *P. muelleri*.

***Panaetia muelleri* Sond., *Linnaea* 25: 505 (1852)**

Podolepis muelleri (Sond.) G.L.Davis, *Proc. Linn. Soc. New South Wales* 81: 272 (1957). **Type: SOUTH AUSTRALIA.** 'Inter rivum Crystalbrook et sinum Spencer, Oct.' (Between Crystalbrook and Spencers Gulf, October): x.1851, *F.Mueller s.n.* (lectotype, MEL 305652 part A! (Figure 4) *vide* G.L. Davis (1957), isolectotypes, MEL 305652! Part B, MEL 305653!).

Podolepis lessonii auct. non (Cass.) Benth., *Fl. austral.*, 3: 606 (1866) *p.p.* as to eastern Australian specimens.

Podolepis cupulata Maiden & Betche, *Proc. Linn. Soc. New South Wales* 38(2): 249 (1913). **Type: NEW SOUTH WALES.** 'Wanganella, near Hay (Miss Edith Officer; October, 1903)': Wanganella, near Hay, x.1903, *Miss Edith Officer s.n.* (lectotype here designated, NSW 25443 photo! JSTOR Global Plants; isolectotypes, MEL 2280348!, BRI-AQ 0354839 photo! JSTOR Global Plants, AD 97225107 photo! JSTOR Global Plants, K 000899354 photo! JSTOR Global Plants).

Illustrations: Davis (1957) Figs 101–109; Cunningham et al (1992) page 663; PlantNET (2018) (all as *Podolepis muelleri*).

Annual herb to 22 cm tall. Stems 1–several, wiry, erect

or ascending, sparsely branched, sparsely arachnose to glabrescent. Leaves arachnose, margins entire; basal leaves (when present) usually elliptic to oblanceolate, 1–5 cm long and 0.5–1 cm wide, petiolate, apex acute; cauline leaves alternate, sessile, amplexicaul at base, decurrent, lanceolate, 1–4 cm long and 2–8 mm wide, apex acute. Peduncles filiform, erect, 1–4 cm long, naked. Inflorescences 1–70 per plant. Capitula hemispherical to campanulate, heterogamous, disciform, mostly 3–7 mm diam., usually solitary or few arranged in loose panicles. Involucral bracts about 6-seriate, with short linear claws, unequal, lamina scarious, shiny, stramineous, often bluish distally, smooth; intermediate bracts 3.5–4 mm long, lamina broad-ovate, margins minutely erose-ciliate, apex acute, claw slender, glandular; inner bracts with broad, thickened oblong claws adhering for c. half their length to form a cup around the florets, becoming cartilaginous with small triangular scarious laminae. Florets yellow, tubular, slightly exceeding the involucre; outer florets 3–7, female, slightly asymmetric, 3- or 4-toothed; inner florets 18–40, bisexual, 5-toothed. Cypselas terete, c. 1.5 mm long, c. 0.4 mm wide, sparsely and minutely papillose; pappus bristles absent from female florets, up to 13 on bisexual florets, shortly plumose, shortly connate at base.

Selected specimens examined: SOUTH AUSTRALIA. Northern areas, ix.1890, *W. Gill, 170* (MEL 0716833!); Port Augusta, 1887, *L.T. Wehl s.n.* (MEL 716843). **QUEENSLAND.** 0.8 km E of Yelarbon Post Office, 8.ix.2001, *Bean, A.R. 17788* (MEL 2166258). **NEW SOUTH WALES.** Talluba Creek, 17.5 km ENE of Pilliga on the Wee Waa road, 8.ix.1986, *J.M.Dalby 86/55* (MEL 1576230); Western side of Red Bobs Reserve, about 40 km south west of Gunnedah, 25.ix.2005, *J.R. Hosking 2619* (MEL 2361495). **VICTORIA.** Eastern side of Lake Tyrrell on a raised northerly projecting promontory onto the lake bed, beside Storers Road, 7.x.2014, *J.A.Jeanes 3099* (MEL 2379586).

Distribution and habitat: Widespread in South Australia and New South Wales, but rare in Queensland and Victoria, and scattered over ca. 13 IBRA7 Regions (Commonwealth of Australia 2012). Grows on coastal cliffs to deep inland in woodland, grassland and saltbush shrubland on heavy soils often on stony sites (PlantNET). (Figure 16c)

Conservation status: Widespread and represented in conservation reserves.

Flowering period: Mostly August to November.

Cytology: Chromosome number determination of

$n=7$, was reported by Watanabe *et al.* (1999) under the name *Podolepis muelleri*.

Note: The herbarium sheet containing the lectotype (MEL 305652) consists of six main elements and some fragments. The right hand element (A) was designated by G.L. Davis as the lectotype and the remaining elements (B) as isolectotypes (termed lectoparatypes by Davis).

Panaetia tepperi (F.Muell.) Jeanes, **comb. nov.**

Basionym: *Helichrysum tepperi* F.Muell., *S. Sci. Rec.* 2: 1 (1882); *Podolepis tepperi* (F.Muell.) D.A.Cooke, *J. Adelaide Bot. Gard.* 7(3): 284 (1985). **Type:** SOUTH AUSTRALIA. 'In Yorke's Peninsula; O. Tepper': South Australia, Mulooowurtie, 28.ix.1880, *J.G.O. Tepper 79* (lectotype here designated, MEL 727577! (Figure 5)); Yorkes Peninsula, South Australia, no date, *O. Tepper s.n.* (possible isolectotype, K000978224, photo! JSTOR Global Plants).

Illustrations: VicFlora (2018); PlantNET (2018) (both as *Podolepis tepperi*).

Annual *herb* to 15 cm tall. *Stems* 1–several, erect to ascending, few-branched, glabrous to slightly arachnose. *Leaves* arachnose, usually more densely so below, margins entire; basal leaves in a distinct rosette, usually elliptic, 0.5–2 cm long, to c. 10 mm wide, petiolate, apex acute; cauline leaves alternate, sessile, amplexicaul, decurrent, usually lanceolate, 0.5–2 cm long, to c. 7 mm wide, apex acute. *Peduncles* filiform, 1–4 cm long, naked. *Inflorescences* 1–10 per plant. *Capitula* campanulate, mostly 3–5 mm diam., disciform, usually solitary or few arranged in loose panicles. *Involucral bracts* few-seriate, with slender linear claws, unequal, lamina scarious, blue-green tinted, shiny, semi-transparent, smooth, margins entire; intermediate bracts free, 3–4 mm long, lamina ovate, apex acute, claw c. equal to lamina; inner bracts scarious-hyaline, linear, slightly connate at base. *Florets* all tubular, pale yellow, shorter than involucre; outer florets 10–20, female, filiform, 3- or 4-toothed; inner florets bisexual, 10–25, 4- or 5-toothed. *Cypselas* terete, 0.5–1 mm long, c. 0.4 mm wide, minutely papillose; pappus bristles 5–10, free, 2–3 mm long, minutely barbellate.

Selected specimens examined: WESTERN AUSTRALIA. Cowcowing, 1.viii.1904, *M. Koch 1076* (MEL 696716, MEL 696720); 26 miles S of Norseman, 12.ix.1965, *B.L. Turner 5560* (MEL 602403). SOUTH AUSTRALIA. Lower slopes of Wilpena

Pound, 1.x.1996, *R.J. Bates 44655* (MEL 2373910); Hundred of Coombe 6.5 km ENE of Tintinara, 1.x.1991, *P.J. Lang D-8231* (MEL 2373533). VICTORIA. Ellam Flora Reserve, 18.ix.1986, *A.C. Beauglehole s.n.* (MEL 2337620); Bronzewing Flora and Fauna Reserve along southern boundary track, 11.x.2014, *V. Stajsic 7602* (MEL 2392419).

Distribution and habitat: Widespread and often locally common in the South-West Province of Western Australia, southern South Australia, north-eastern Victoria, and apparently rare in south-western New South Wales. Scattered across ca. 13 IBRA7 Regions (Commonwealth of Australia 2012). Usually occurs in mallee communities, margins of salt lakes or woodlands on sandy, loamy or clay soils (Western Australian Herbarium 1998–). (Figure 16d)

Conservation status: Widespread, common and well represented in conservation reserves.

Flowering period: Mostly August to October

Cytology: A chromosome number determination of $n=8$ was reported by Watanabe *et al.* (1999) under the name *Podolepis tepperi*.

Podolepis Labill., *Nov. Holl. Pl.* 2: 56, t.208 (1806) (*nom. cons.*)

Scalia Sieber ex Sims *Bot. Mag.* 24: t. 956 (1806)

Stylolepis Lehm. *Sem. hort. bot. Hamburg* 14, 17 (1828)

Scaliopsis Walp. *Linnaea* 318 (1840)

Rutidochlamys Sond. *Linnaea* 25: 497 (1852)

Rhytidochlamys Anderb. (orth. var. of *Rutidochlamys*) *Opera Bot.* 104: 120 (1991)

Type species: *Podolepis rugata* Labill. *Nov. Holl. Pl.* 2: 57, t.208 (1806)

Annual or perennial *herbs*, often with arachnose eglandular or glandular hairs. *Stems* 1–several, erect, usually branched. *Leaves* entire; basal leaves (when present) sessile, apex acute; cauline leaves alternate, sessile, base amplexicaul, stem-clasping, often decurrent, apex acute. *Peduncles* elongate with leafy bracts decreasing in size towards the involucre (naked and filiform in *P. gardneri*). *Inflorescences* 1–many per plant. *Capitula* hemispherical or campanulate, solitary or several loosely clustered together at the end of branches. *Involucral bracts* free, many-seriate, each with a linear claw-like stereome, or sometimes the lamina of bract at least partially continuous with stereome, unequal, lamina scarious, margins entire. *Florets* yellow,

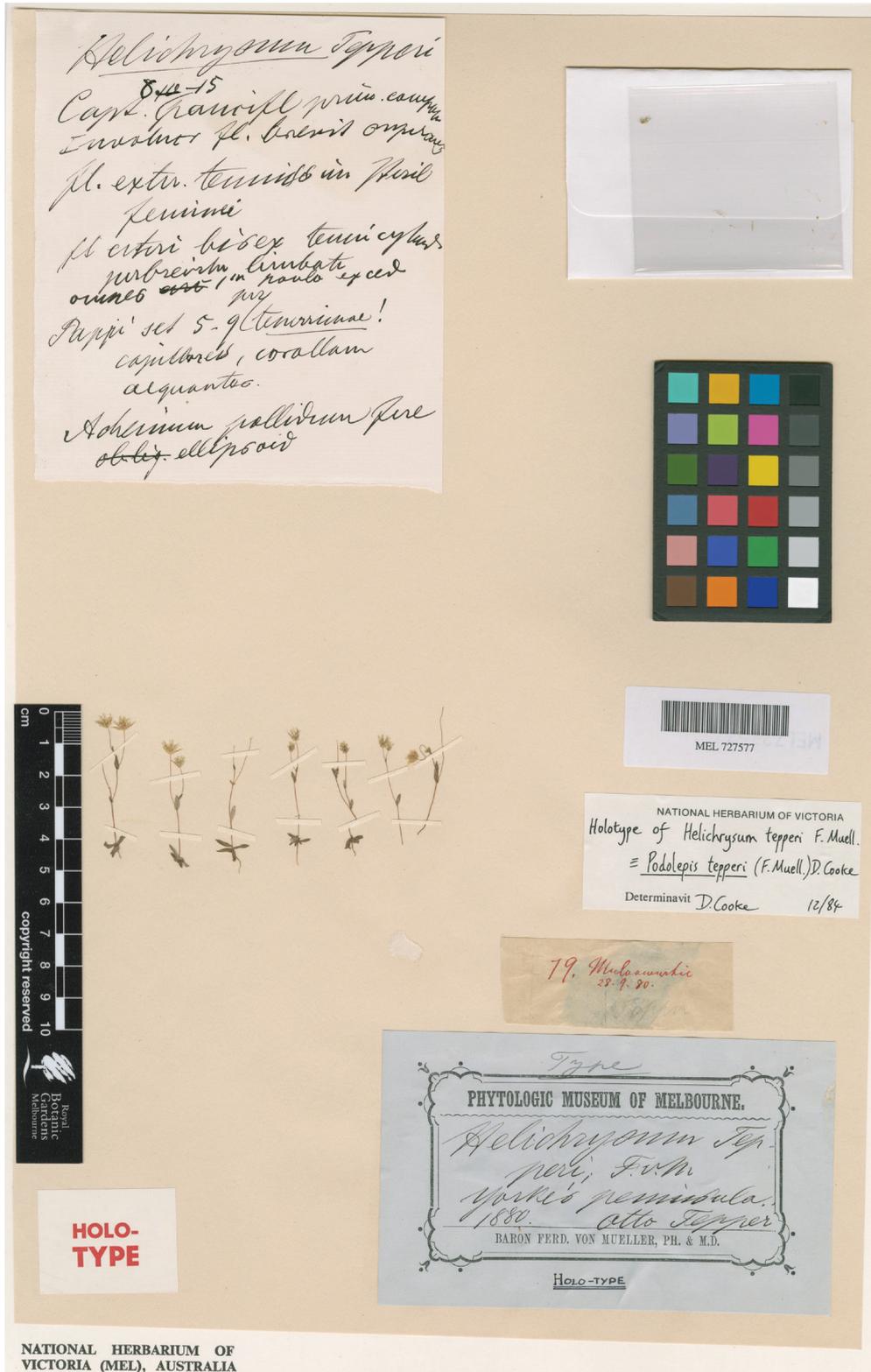


Figure 5. Lectotype of *Helichrysum tepperi* (MEL 727577) = *Panaetia tepperi*. Reproduced with permission from Royal Botanic Gardens Victoria.

Key to species of *Podolepis*

1 Scarios part of intermediate involucre bracts at least partially continuous with the stereome	2
1: Scarios part of intermediate involucre bracts completely discrete from the claw-like stereome	5
2 Outer involucre bracts not passing into stem leaves; peduncles naked and filiform.....	<i>P. gardneri</i>
2: Outer involucre bracts passing into stem leaves with no obvious peduncle present	3
3 Ray florets barely exceeding length of involucre bracts; lamina of involucre bracts deeply transversely rugose	<i>P. arachnoidea</i>
3: Ray florets far exceeding length of involucre bracts; lamina of involucre bracts smooth (sometimes slightly wrinkled in dry specimens)	4
4 Intermediate involucre bracts 9–14 mm long; lamina of intermediate involucre bracts oblong, apex acute to obtuse	<i>P. neglecta</i>[#]
4: Intermediate involucre bracts 5–8 mm long; lamina of intermediate involucre bracts ovate to triangular, apex acuminate.....	<i>P. omissa</i>[#]
5 Lamina of intermediate involucre bracts transversely rugose at least towards the apex	6
5: Lamina of intermediate involucre bracts virtually smooth (sometimes slightly wrinkled in dry specimens).....	8
6 Lamina of intermediate involucre bracts often shorter than their claw, lamina 1–2.5 mm long; capitula <10 mm diam	<i>P. canescens</i>[*]
6: Lamina of intermediate involucre bracts about as long as or longer than their claws, lamina usually 2.5–10 mm long; capitula usually >10 mm diam. except rarely in depauperate specimens.....	7
7 Apex of involucre bracts more or less obtuse; capitula mostly 20–30 mm diam.; plant perennial	<i>P. rugata</i>[*]
7: Apex of involucre bracts acute to aristate; capitula mostly 10–20 mm diam.; plant annual.....	<i>P. aristata</i>[*]
8 Apex of lamina of intermediate involucre bracts acute to aristate	9
8: Apex of lamina of intermediate involucre bracts retuse to obtuse	18
9 Lamina of intermediate involucre bracts shorter than their claws	10
9: Lamina of intermediate involucre bracts as long as or longer than their claws.....	12
10 Lamina of intermediate involucre bracts narrow-trullate, less than twice as wide as their claws.....	<i>P. rugata</i>[*]
10: Lamina of intermediate involucre bracts ovate or ± triangular, more than twice as wide as their claws.....	11
11 Lamina of intermediate involucre bracts ovate-acuminate, more or less flat (sometimes slightly wrinkled in dry specimens); Western Australia, Northern Territory and South Australia	<i>P. eremaea</i>[*]
11: Lamina of intermediate involucre bracts ± triangular, usually with an adaxial bowl-like depression just above junction with the claw; South Australia, north-eastern New South Wales and Queensland	<i>P. longipedata</i>
12 Ray florets pink or mostly yellow but apically tinged purple	13
12: Ray florets only yellow	14
13 Ray florets pink; lamina of intermediate involucre bracts ovate, longer than broad, straw coloured, transparent, scarios	<i>P. gracilis</i>
13: Ray florets yellow, tinged with purple at the apex; lamina of intermediate involucre bracts transverse-elliptic, broader than long, reddish-brown, not transparent, rigid	<i>P. nutans</i>
14 Capitula mostly 5–10(–15) mm diam.; laminas of intermediate involucre bracts mostly 2–3(–4) mm long; plants from dry inland habitats	15
14: Capitula mostly (10–)15–30 mm diam.; laminas of intermediate involucre bracts mostly >4 mm long; plants from various habitats	16
15 Involucre bracts closely imbricate, hiding the claws; lamina of intermediate involucre bracts broad ovate to sub-orbicular, somewhat concavo-convex, often nearly as wide as long	<i>P. remota</i>[*]
15: Involucre bracts loosely imbricate, not hiding the claws; lamina of intermediate involucre bracts ovate, more or less flat (sometimes slightly wrinkled in dry specimens), much narrower than long.....	<i>P. eremaea</i>[*]
16 Capitula mostly 10–20 mm diam.; plants annual; southern half of Australia	<i>P. aristata</i>[*]
16: Capitula mostly 20–30 mm diam.; plants perennial; eastern Australia	17
17 Basal leaves linear, mostly 3–6 mm wide, glabrous or nearly so; apex of involucre bracts usually long-acuminate to aristate; mostly grasslands	<i>P. linearifolia</i>[*]
17: Basal leaves usually lanceolate to oblanceolate, rarely linear, mostly 5–20 mm wide, variously hairy; apex of involucre bracts acute to acuminate; various habitats	<i>P. jaceoides</i>[*]

Key to species of *Podolepis* (continued)

- 18** Involucral bracts closely imbricate, hiding the claws, somewhat concavo-convex; small annuals from north-west and central Australia *P. remota*^{*}
- 18:** Involucral bracts loosely imbricate, not hiding the claws, more or less flat (sometimes slightly wrinkled in dry specimens); robust perennials from southern and eastern Australia **19**
- 19** Lamina of intermediate involucral bracts shorter than their claws; capitula usually 3–20 in terminal clusters .. *P. hieracioides*
- 19:** Lamina of intermediate involucral bracts similar in length or longer than their claws; capitula solitary or few in loose or contracted panicles **20**
- 20** Basal and cauline leaves linear; plants ± glabrous or glabrescent except for prominent axillary hair tufts on basal leaves *P. laevigata*^{*}
- 20:** Basal and cauline leaves not linear; plants variously hairy **21**
- 21** Basal leaves to 20 mm wide; stems often several; capitula usually solitary, or rarely a few in loose panicles; slender plants mostly of lowland habitats but extending into the alps *P. decipiens*^{*}
- 21:** Basal leaves mostly 15–65 mm wide; stem usually solitary; capitula usually 5–11 in a dense contracted panicle; robust plants of montane to alpine habitats **22**
- 22** Basal leaves woolly to glabrescent, ovate to obovate, 35–65 mm wide, petioles winged; from mountainous areas of north-eastern New South Wales and south-eastern Queensland *P. monticola*
- 22:** Basal leaves glabrous or hairy, but not woolly, oblong to spatulate, mostly 15–35 mm wide, petioles not markedly winged; alpine and subalpine areas of south-eastern New South Wales and Victoria **23**
- 23** Ray florets yellow to orange, 9–13 mm long, teeth to 2 mm long; claw of involucral bracts c. 1 mm wide; capitula 15–25 mm diam.; mature cypselas < 3 mm long *P. robusta*[§]
- 23:** Ray florets yellow, 14–20 mm long, teeth 2–4.5 mm long; claw of involucral bracts 1.5–2 mm wide; capitula 25–30 mm diam.; mature cypselas 3–4.5 mm long *P. laciniata*[§]

For taxonomic and nomenclatural information on species marked “*” in the above key see Jeanes 2015a; for those marked “#”, see Jeanes 2015b; and for those marked “§”, see Froid 2015.

white or purplish; ray florets female, uniseriate, with a 3–5-toothed, ligule-like limb usually much exceeding the involucre (except in *P. arachnoidea*); disc florets bisexual, numerous, tubular, deeply 5-lobed. *Cypselas* terete, minutely papillose; pappus bristles numerous, barbellate to shortly plumose, basally connate or free.

Podolepis arachnoidea (Hook.) Druce, *Rep. Bot. Exch. Club Brit. Isles, Suppl.* 2: 640 (1917)

Basionym: *Rutidosia arachnoidea* Hook., in T. Mitchell, *J. exped. trop. Australia* 341 (1848). **Type:** QUEENSLAND. ‘6th October...the camp of the Pyramids...included an ascent of Mount Pluto...a new RUTIDOSIS, a tall herbaceous perennial [***R. ARACHNOIDEA (Hook. MS.)]: Sub-Tropical New Holland, 1846, T.L. Mitchell s.n. (holotype, K 000899332, photo! JSTOR Global Plants); Queensland. Camp near the Pyramids, 7.x.1846, T.L. Mitchell s.n. (probable isotype, MEL 241720! (Figure 6)); Queensland. Near the Pyramids, Nov-Holl. inter subtrop., 7.x.1846, T.L. Mitchell s.n. (probable isotype, MEL 696384!).

Rutidochlamys mitchellii Sond., *Linnaea* 25: 497 (1852) *nom. illeg.* (*Rutidosia arachnoidea* cited in synonymy).

Podolepis rhytidochlamys F.Muell., *Fragm.* 4 (26): 79 (1864) *nom. illeg.* (*Rutidosus arachnoidea* cited in synonymy);

Podolepis rutidochlamys F.Muell. in Benth., *Fl. austral.* 3: 603 (1867) *nom. illeg.* (orth. var. of *Podolepis rhytidochlamys*)

Illustrations: Davis (1957) Figs 126–133; Cunningham *et. al* (1992) page 665; VicFlora (2018), PlantNET (2018).

Perennial *herb* to 80 cm tall. *Stems* 1–many, erect, usually branched, woolly to glabrescent. *Leaves* woolly on both surfaces or just below, margins entire; basal leaves usually oblanceolate, 3–13 cm long and 1–2 cm wide, petiolate, apex acute; cauline leaves alternate, sessile, stem-clasping, decurrent, usually narrow-lanceolate, 1–11 cm long and 3–20 mm wide, apex acuminate. *Peduncles* to c. 5 mm long. *Inflorescences* 1–many per plant. *Capitula* campanulate, mostly 5–10 mm diam., usually 3–10 loosely clustered together at the end of branches. *Involucral bracts* unequal, narrow-elliptic, acuminate, scarious, wrinkled, glabrous, shiny; intermediate bracts 5–10 mm long, short-clawed; inner bracts green with scarious margins, short-clawed. *Florets* yellow; ray florets 5–7, female, uniseriate, with

a ligule-like limb c. 2.5 mm long, 3–4-lobed, barely exceeding the involucre; disc florets bisexual, usually 10–15. *Cypselas* terete, 2–3 mm long, c. 0.5 mm wide, minutely papillose; pappus bristles 25–30, free, minutely barbellate.

Selected specimens examined: NORTHERN TERRITORY.

Port Darwin, 1888, *M.W. Holtze 910* (MEL 716213).

QUEENSLAND. State Forest 341, Wondul Range Stock Route, 6.x.1999, *P.I. Forster 24943* (MEL 298791); 59 km E of Barcaldine on road to Jericho, 15.x.1993, *B.J. Lepschi 1171* (MEL 2067770).

NEW SOUTH WALES. 20 km E of Goolgowi, 23.ix.1973, *E.J. McBarron 20838* (MEL 571975); Cocoparra Range, Woolshed Flat area beside tributary of Woolshed Creek, 16.xi.1988, *N.G. Walsh 2217* (MEL 295436).

Distribution and habitat: Widespread mostly in Queensland and New South Wales, scattered over about 20 IBRA7 Regions (Commonwealth of Australia 2012). Three old collections from the Northern Territory (Port Darwin), South Australia (Coopers Creek) and Victoria (Kulkyne/Australia Felix) respectively are of uncertain provenance. Found mostly in mallee scrub and woodland on sandy soils (PlantNET 2018). (Figure 16e)

Conservation status: Widespread, common and well represented in conservation reserves.

Flowering period: September to February.

Cytology: Chromosome number determinations of $n=9$ were reported by Turner (1967) and Watanabe *et al.* (1999).

Notes: In his published journal, Mitchell (1848) indicated that he did no collecting on 7 October 1846, so the dates on the probable MEL isotypes are here considered to be in error.

Podolepis gardneri G.L.Davis, *Proc. Linn. Soc. New South Wales* 81: 264 (1957)

Type: WESTERN AUSTRALIA. Meekatharra, Western Australia, Quartz rises, rays yellow, 20.vii.1931, *C.A. Gardner 2358* (holotype, PERTH 1182455, photo! JSTOR Global Plants).

Illustrations: Davis (1957) Figs 50–57; Grieve and Blackall (1975) page 791; Corrick and Fuhrer (1996) Fig 43.

Annual herb 15–30 cm tall. *Stems* 1–many, erect, usually branched, almost glabrous. *Leaves* with short septate hairs on both surfaces, margins entire; basal leaves usually oblanceolate, 2–7 cm long and 2–5 mm wide, petiolate, apex obtuse; cauline leaves alternate, sessile, stem-clasping, decurrent, usually broad-linear,

1–7 cm long and 2–5 mm wide, apex obtuse. *Peduncles* naked, to c. 5 cm long. *Inflorescences* 1–20 per plant. *Capitula* campanulate, mostly 9–15 mm diam., usually solitary or few clustered together at ends of branches. *Involucral bracts* unequal, rhomboidal or oblanceolate to ovate, sub-acute to acute, scarious, smooth or slightly wrinkled, glabrous; intermediate bracts 5–8 mm long, short-clawed, the stereome continuing about half way along lamina; inner bracts subsessile. *Florets* yellow; ray florets 25–30, female, uniseriate, with a ligule-like limb 9–11 mm long, 2-lobed with a third lobe arising from the base of the limb; disc florets bisexual, many. *Cypselas* terete, 2–3 mm long, c. 0.5 mm wide, minutely papillose; pappus bristles c. 15, free, minutely barbellate (Figure 7).

Selected specimens examined: WESTERN AUSTRALIA.

1 km NNE of Retreat Bore, Koonmarra Station, 29.viii.1986, *R.J. Cranfield 6008* (CANB 489863.1); Sandstone-Leonora road, 147 miles by road ESE of Sandstone, 63 miles by road SE of Agnew, 14.ix.1966, *R.V. Smith 66/494* (MEL 1516335); Upper Murchison River, 1892, *I. Tyson 72* (MEL 716229); 24 km E of Dalgety Downs H.S., this is 105 km E of Gascoyne Junction, 31.vii.1969, *P.G. Wilson 8483* (CANB 354952.1).

Distribution and habitat: Endemic to Western Australia where widespread across inland parts of the state, scattered over 5 IBRA7 Regions (Commonwealth of Australia 2012). Found on rocky outcrops, on hillsides and creek beds (Western Australian Herbarium (1998–). (Figure 16f)

Conservation status: Widespread, common and well represented in conservation reserves.

Flowering period: July to October.

Cytology: Chromosome number determination of $n=8$ was reported by Turner (1967).

Podolepis gracilis Graham, *Edinburgh New Philos. J.* 5: 379 (1828); Steetz, *Pl. Preiss* 1(3): 463 (1845)

Type: CULTIVATED. ‘The seeds of this plant were sent to us from New South Wales in November last by Mr Fraser, as a species of *Centaurea*. The plants have been kept in the greenhouse of the Royal Botanic Gardens, and will produce very few seeds’: no locality, i.vii.1828, no collector (holotype, E 00417433, photo! JSTOR Global Plants).

Stylolepis gracilis Lehm., *Sem. hort. bot. Hamburg* 14: 17 (1828). **Type: CULTIVATED.** ‘Hab. in Nova Hollandia. Semina ex Anglia sub nomine *Centaurea* speciei accepimus.’ (Habitat in New Holland. Seeds from England



Figure 7. Representative specimen of *Podolepis gardneri* (MEL 1555314). Reproduced with permission from Royal Botanic Gardens Victoria.

sent [to Hamburg] under the name of *Centaurea* sp.): hort. Bot. Hamburg 1834 (ex herb. Sonder), no collection date, no collector (lectotype here designated, MEL 715994, photo!).

Stylolepis gracilis Lehm. var. *glabra* Lehm. *Sem. hort. bot. Hamburg* 14: 17 (1828). *Type*: (not cited).

Stylolepis gracilis Lehm. var. *arachnoidea* Lehm. *Sem. hort. bot. Hamburg* 14: 17 (1828). *Type*: (not cited).

Podolepis filiformis Steetz. *Pl. Preiss.* 1(3): 465 (1845).

Type: WESTERN AUSTRALIA. 'In turfosis humidis inter frutices ad lacum prope Woodman's-point. d. 18. Dec. 1838. Herb. Preiss. No. 57.' (In moist peat amongst shrubs beside a/the lake near Woodman's Point.): Swan River in Nova Holland[ia]. [Woodman Point], no date, *J.A.L. Preiss 57* (lectotype here designated, MEL 2280265!, isolectotype, MEL 715992!); 18.xii.1838, *J.A.L. Preiss 57* (isolectotypes, LD 180112343, photo! JSTOR Global Plants, MEL 2280264!); no locality, no date, *J.A.L. Preiss 57* (probable isolectotype, W 0046599, photo! JSTOR Global Plants).

Podolepis rosea Steetz *Pl. Preiss.* 1(3): 463 (1845).

Type: WESTERN AUSTRALIA. 'In arenosis sylvae prope Limekilns, d. 23. Sept. 1839. Herb. Preiss. No. 55.' (In sandy woods near Limekilns): no date, *J.A.L. Preiss 55* (lectotype *fide* G.L. Davis (1957), MEL 2280274 part A!, isolectotypes MEL 2280274 part B!, MEL 715991!, MEL 715995!, LD 1800547, photo! JSTOR Global Plants, S S-G-4946, photo! JSTOR Global Plants, possible isolectotype, W 0046596, photo! JSTOR Global Plants).

Podolepis rosea Steetz var. *mollissima* Steetz *Pl. Preiss.* 1(3): 464 (1845). **Type: WESTERN AUSTRALIA.** 'In arenosis subumbrosis secundum flavium Cygnorum supra oppidulum Perth, d. 3. Aug. 1839. Herb. Preiss. No. 53. et in colliculis calcareis haud procul ad oppidulo Freemantle, d. 15 Aug. 1839. No. 61. In terra Leuwin, in collibus aridis. Ferd. Bauer! (V.s. in herb. Aulico Vindobonn!).' (In rather shady, sandy places by the Swan River upstream of the township of Perth (Preiss 53), and in little calcareous hills not far at all from the township of Freemantle (Preiss 61). In Leeuwins land in arid hills (Bauer). Seen in Vienna herbarium): Sandy rather shady places on the Swan R., above Perth, 3.viii.1839, *J.A.L. Preiss 53* (lectotype *fide* G.L. Davis (1957), MEL 2280275 part A!, isolectotypes, MEL 2280275 part B!, MEL 2165149!; LD 1800611, photo! JSTOR Global Plants, W 18890130448 & W 18890105670, photos! JSTOR Global

Plants, possible isolectotypes, W 0046598, photo! JSTOR Global Plants, BR 0000005429547, photo! JSTOR Global Plants). In colliculis calcareis haud procul ab urbiscula 'Freemantle', 15.viii.1839, *J.A.L. Preiss 61* (syntype, LD 1800675, photo! JSTOR Global Plants). Nova Hollandia ora australis, Lewins Land [Cape Leeuwin] in collibus aridis, no date, *F.L. Bauer s.n.* (syntype, W 0046597, photo! JSTOR Global Plants).

Podolepis rosea Steetz var. *mollissima* Walp. *Repert. bot. syst.* 6(2): 236 (1846) *nom. illeg. non* Steetz (1845)

Podolepis gracilis (Lehm.) Graham f. *alba* Voss *Vilm. Blumengärtn.* edn. 3, 1(1): 537 (1894). *Type*: (not cited).

Podolepis gracilis (Lehm.) Graham f. *rosea* (Steetz) Voss *Vilm. Blumengärtn.* edn. 3, 1(1): 537 (1894). Basionym: *Podolepis rosea* Steetz.

Podolepis gracilis (Lehm.) Graham f. *superba* Voss *Vilm. Blumengärtn.* edn. 3, 1(1): 537 (1894). *Type*: (not cited).

Podolepis spenceri Ewart *Proc. Roy. Soc. Victoria* 20(1): 83, t. xiii (1907). **Type: WESTERN AUSTRALIA.** 'Woorooloo (=Woorooloo, W.A., M. Koch, 1906': Woorooloo, x.1906, *M. Koch 1509* (lectotype here designated, MEL 2280276!, isolectotypes, MEL 715993!, PERTH 01182919!, PERTH 01182927!, BM 000810530, photo! JSTOR Global Plants).

Illustrations: Davis (1957) Figs 75–83; Grieve and Blackall (1975) page 792; Western Australian Herbarium (2018).

Annual *herb* to 50 cm tall. *Stems* 1–many, erect, usually branched, sparsely woolly to glabrescent. *Leaves* sparsely woolly below, more or less glabrous above, margins entire; basal leaves seldom present; cauline leaves alternate, sessile, stem-clasping, decurrent, usually oblanceolate to broad-linear, 1–8 cm long and 3–15 mm wide, apex acute to acuminate. *Peduncles* to c. 10 cm long. *Inflorescences* 1–many per plant. *Capitula* campanulate, mostly 1–2 cm diam., solitary or few clustered together at ends of branches. *Involucral bracts* unequal, triangular to ovate, straw-coloured, acute to subacute, scarious, smooth, glabrous, shiny; intermediate bracts 4–7 mm long, lamina longer than broad, with slender glandular claws about equal in length to lamina; inner bracts scarious, short-clawed. *Ray florets* pink fading to white, 15–40, female, uniseriate, with a ligule-like limb 10–15 mm long, 2–3-lobed. *Disc florets* pink fading to white, sometimes yellow, bisexual, numerous. *Cypselas* terete, 1–1.5 mm long, c. 0.5 mm wide, minutely papillose; pappus bristles 6–20, free, minutely barbellate (Figure 8).



Figure 8. Representative specimen of *Podolepis gracilis* (MEL 2028029). Reproduced with permission from Royal Botanic Gardens Victoria.

Selected specimens examined: WESTERN AUSTRALIA.

15.5 km E of Jurien on road to Brand Highway, 15.xi.1983, *L. Haegi* 2669 (MEL 663833); Whistlepipe Gully Kalamunda, 19 km E of Perth, 3.ix.1984, *R. Hamilton & M. Hamilton* 17 (MEL 1527891); About 7 km by road W of Augusta, 1.xi.1983, *P.S. Short* 2256 (MEL 1523018); By Calgardup, c. 12 km SW of Margaret River, 16.xi.1982, *A. Strid* 21386 (MEL 627974).

Distribution and habitat: Endemic to Western Australia where widespread and common, mostly in the South-West Province, and scattered over seven IBRA7 Regions (Commonwealth of Australia 2012). Found on sandy or gravelly soils over limestone, granite or laterite as well as on coastal limestone and winter-wet flats (Western Australian Herbarium 1998–). (Figure 17a)

Conservation status: Widespread, common and well represented in conservation reserves.

Flowering period: August to January.

Cytology: Chromosome number determination of $n=12$ was reported by Turner (1967) and Watanabe *et al.* (1999).

Notes: *Podolepis gracilis* and *Stylolepis gracilis* were described in the same year. Steetz (1845) gives priority to *P. gracilis* and there appears to be no reason to dispute this.

The lectotype specimen of *Podolepis rosea* var. *mollissima* as designated by Davis (1957) is mounted on the sheet MEL 2280275. This sheet appears to be a mixed collection consisting of three main components arranged from left to right across the sheet. Two fragment pockets labelled [Preiss] no. 61 and [Preiss] no. 53 are also present. The two outer components (MEL 2280275 part B) appear to be part of the same gathering and are at a later stage of maturation than the central component (MEL 2280275 part A). In 1956 G.L. Davis placed a determination slip partially behind and below the central component, clearly designating it as the lectotype of *Podolepis rosea* var. *mollissima*. Below this central component is also an old label with "53" written on it as well as an original label in Steetz's hand stating that the collection was made along the Swan River near Perth. The two outer components (MEL 2280275 part B) are most likely an isolectotype.

Podolepis hieracioides F.Muell., *Fragm.* 1(5): 112 (1859)

Type: VICTORIA. 'In vallibus graminosis juxta ripas fluminum Delatite, McAllister River, Mitta Mitta, Omeo Creek, Snowy River Alibique, altitudine 2–4000'. (In

grassy valleys beside the banks of the rivers Delatite, McAllister, Mitta Mitta, Omeo Creek and elsewhere, altitude 2–4000 ft.): Victoria. Macallister (= McAllister) River, i.1859, *F. Muell. s.n.* (lectotype *vide* J.H. Willis 1954, MEL 716192! (Figure 9); isolectotype, MEL 716193!). Victoria. Ad ripas graminosas fluminis Delatite & ejusden tribular, 26.iii.1853, *F. Muell. s.n.* (syntype, MEL 716195!); Victoria. Delatite, no date, *F. Muell. s.n.* (syntype, MEL 716194!); Victoria. Delatite, 1853, *F. Muell. s.n.* (syntype, K 000899334 photo! JSTOR Global Plants).

Podolepis hieracioides F.Muell. *First Gen. Rep. Gov. Bot. Veg. Colony* 14 (1853) *nom. inval., nom. nud.*

Illustrations: Davis (1957) Figs 25–32; VicFlora (2018); PlantNET (2018).

Perennial *herb* to 70 cm tall. *Stems* 1–several, erect, simple or few-branched, woolly to glabrescent. *Leaves* scabrous to glabrescent, margins entire; basal leaves lanceolate to elliptical, 5–20 cm long, 1–2.5 cm wide, stem-clasping at base, apex acute; cauline leaves alternate, sessile, stem-clasping, decurrent, usually linear to narrow-lanceolate, mostly 5–13 cm long and 3–15 mm wide, decreasing in size up the stem, apex acute to acuminate. *Peduncles* 1–5 cm long. *Inflorescences* 1–several per plant. *Capitula* hemispherical, mostly 1.5–2 cm diam., 3–20 arranged in short, dense, terminal panicles. *Involucral bracts* unequal, ovate, obtuse to subacute, scarious, smooth, glabrous, shiny; intermediate bracts 5–9 mm long, with broad glandular claws usually longer than lamina; inner bracts scarious, long-clawed. *Ray florets* yellow, 15–30, female, uniseriate, with a ligule-like limb 10–18 mm long, 2–4-lobed. *Disc florets* yellow, bisexual, numerous. *Cypselas* terete, 1.5–3 mm long, c. 1 mm wide, minutely papillose; pappus bristles 30–40, shortly connate at base, minutely barbellate.

Selected specimens examined: QUEENSLAND. Bald Mountain railway enclosure near Wallangarra, 13.i.1933, *S.T. Blake* 4458 (BRI AQ 0270146); Toowoomba, ix.1921, *R.J. Holdsworth s.n.* (BRI AQ 0270148). **NEW SOUTH WALES.** Breakfast Creek on the Pikes Saddle – Damper Trig Road, c. 40 km E of Bredbo, 1.iii.1975, *R.G. Coveny* 6234 (MEL 2165825); Snowy River. 0.5 km NW from Sawpit on Waterfall Track, 9.ii.1996, *M. Ito* 96057 (MEL 2030508). **VICTORIA.** Mt Seldom Seen, 0.5 km S of summit, 6.ii.1980, *S.J. Forbes* 197 (MEL 574720); Between upper Cann and Genoa Rivers, almost on the NSW border, 13.i.1953, *R. Melville* 2865 (MEL 716199).

Distribution and habitat: Widespread and sometimes



Figure 9. Lectotype of *Podolepis hieracioides* (MEL 716192). Reproduced with permission from Royal Botanic Gardens Victoria.



Figure 10. Lectotype of *Podolepis longipedata* (MEL 2280269). Reproduced with permission from Royal Botanic Gardens Victoria.

locally common from south-eastern Queensland to eastern Victoria, scattered over ca. eight IBRA7 Regions (Commonwealth of Australia 2012). Found in montane open forests or woodlands often in moist grassy sites (VicFlora 2018). (Figure 17b)

Conservation status: Widespread, common and well represented in conservation reserves.

Flowering period: December to April.

Cytology: No data available.

Note: Bentham (1866) regarded *P. hieracioides* and *Podolepis longipedata* A.Cunn. ex DC. as synonymous, however the two are quite distinct morphologically and tend to occupy different habitats.

Podolepis longipedata A.Cunn. ex DC. *Prodr.* 6: 163 (1838)

Type: QUEENSLAND. 'In Novae-Cambriae austr. littoribus arenosis ad sinum Moreton, oct. flor. legit cl. Cunningham....(v. s. comm. á cl. inv.)' (In Queensland Australia by the sandy shore of the Moreton Bay, flowering October, collected by the celebrated Cunningham): Queensland, Moreton Bay, no date, A. Cunningham s.n. (lectotype *vide* G.L. Davis (1957), MEL 2280269! (Figure 10), isolectotypes, MEL 2280270!, G-DC 00461472, photo! JSTOR Global Plants, K 000899335, photo! JSTOR Global Plants).

Scaliopsis lucaeana Walp. *Linnaea* 318 (1840). **Type:** AUSTRALIA. 'in Novae Hollandia legit Lhotsky': (not located).

Podolepis lucaeana (Walp.) Walp. *Repert. Bot. Syst.* 6(2): 235 (1846). Basionym: *Scaliopsis lucaeana* Walp.

Podolepis mitchellii Sond. *Linnaea* 25: 508 (1853).

Type: QUEENSLAND. 'Nov. Holland. subtropica. Sir Th. Mitchell. (Spec. comm. cl. Lindley)': Maranoa Trop. Australia, i.i.1846, *T.L. Mitchell s.n.* (lectotype *vide* G.L. Davis (1957), MEL 222562!).

Podolepis lucaeana A.D.Chapm. *Australian Plant Name Index* 2340 (1991) *nom. illeg.* (orth. var. of *Podolepis lucaeana*).

Illustrations: Davis (1957) Figs 17–24; Beadle (1980) Figure B; PlantNET (2018).

Annual herb to 60 cm tall. Stems 1–several, erect, simple or few-branched, woolly to glabrescent. Leaves scabrous to glabrescent, margins entire; basal leaves broad-linear to oblanceolate, 5–20 cm long, 0.5–2.5 cm wide, stem-clasping at base, apex acute,

soon withering; cauline leaves alternate, sessile, stem-clasping, decurrent, usually linear to narrow-lanceolate, mostly 3–13 cm long and 3–10 mm wide, decreasing in size up the stem, apex acute to acuminate. Peduncles 1–5 cm long. Inflorescences 1–few per plant. Capitula hemispherical, mostly 1.5–2 cm diam., 3–10 arranged in elongated terminal panicles. Involucral bracts unequal, triangular, acute, scarious, smooth, glabrous, shiny, reddish-brown with ciliate margins; intermediate bracts 7–9 mm long, with linear glandular claws much longer than the lamina; inner bracts scarious, long-clawed. Ray florets yellow, 30–40, female, uniseriate, with a ligule-like limb 15–20 mm long, 2–4-lobed. Disc florets yellow, bisexual, numerous. Cypselas terete, 1.5–2 mm long, c. 1 mm wide, minutely papillose; pappus bristles 20–30, shortly connate at base, minutely barbellate.

Selected specimens examined: SOUTH AUSTRALIA. Mount Ive Station near Gairdner, 8.iv.1993, *R.J. Bates* 32125 (MEL 2373566); Googs Track SW of Tarcoola, 23.x.2004, *M.C. O'Leary* 4670 (MEL 2374465). QUEENSLAND. Fraser Island. Orchid Beach airstrip, 3.ix.2004, *P.I. Forster* 30190 (MEL 2301700); 25 km N of Charleville, 14.ix.1987, *P.S. Short* 3054 (MEL 1556550). NEW SOUTH WALES. 'Lisgar', about 15 km S of Yetman on Warialda road, 1 km ENE of homestead, 15.x.1992, *C.W.E. Moore* 9259 (CANB 433023.1); 10 km from Mungindi towards Moree, 11.ix.1975, *B. Muffet* M5/339 (CBG 60357.1).

Distribution and habitat: Widespread and sometimes locally common from south-eastern Queensland to central New South Wales, with isolated occurrences in South Australia near Lake Gairdner and Mount Finke, and scattered across seven IBRA7 Regions (Commonwealth of Australia 2012). Found mostly in mallee scrub on sandy soils (PlantNET 2018). (Figure 17c)

Conservation status: Widespread, common and well represented in conservation reserves.

Flowering period: Mostly October to December but other times in response to rain.

Cytology: Chromosome number determinations of $n=10$ and $2n=20$ have been reported by Turner (1967) as *Podolepis neglecta*, and Watanabe *et al.* (1999).

Notes: See note under *P. hieracioides*. *Podolepis longipedata* var. *robusta* Maiden & Betche is now referred to *Podolepis robusta* (Maiden & Betche) J.H. Willis (see Frood 2015).

Podolepis monticola R.J.F.Hend. *Contr. Queensland Herb.* 2: 1, figs 1–3 (1969)



0 1 2 3 4 5 6 7 8 9 10
cm
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Royal Botanic Gardens & National Herbarium Melbourne



ex QUEENSLAND HERBARIUM, BRISBANE
FLORA OF QUEENSLAND: MORETON DISTRICT

Podolepis monticola R.J. Henderson
28°13'S, 153°14'E;
Lamington National Park - Araucaria
Lookout near Binna Burra; in rock
crevices on an exposed south-
easterly slope

R.J. Henderson H127 2 Nov. 1965

Limited distribution

PART OF TYPE COLLECTION
ISOTYPE of
Podolepis monticola R.J. Henderson
in Contrib. from Qld. Herb. No. 25, 1969

MEL 2280271

ROYAL BOTANIC GARDENS
& NATIONAL HERBARIUM
MELBOURNE, AUSTRALIA
TYPE

Figure 11. Isotype of *Podolepis monticola* (MEL 2280271). Reproduced with permission from Royal Botanic Gardens Victoria.

Type: QUEENSLAND. Moreton District: Lamington National Park – Araucaria Lookout near “Binna Burra” Lodge, in rock crevices on an exposed south-easterly slope, ii.xi.1965, *R.J.F. Henderson H127* (holotype, BRI 077216!, isotypes, MEL 2280271! (Figure 11), CANB 196785!, AD 97115172!, US 00128309, photo! JSTOR Global Plants, K 000899353, photo! JSTOR Global Plants, TEX 00373736, photo! JSTOR Global Plants).

Illustration: Henderson (1969) Figure 2.

Perennial *herb* to 50 cm tall. *Stems* 1–several, woody, prostrate, simple or few-branched, with an apical rosette of leaves and an erect lanate flowering stem. *Leaves* sparsely tuberculate to lanate above, lanate below, margins entire; basal leaves ovate to obovate, 10–21 cm long, 3.5–6.5 cm wide, gradually narrowed into a winged petiole, stem-clasping at base, apex obtuse, acute or acuminate; cauline leaves alternate, sessile, stem-clasping, decurrent, usually linear to ovate or obovate, mostly 5–18 cm long and 1–5 cm wide, decreasing in size up the stem, apex obtuse to acuminate. *Peduncles* 5–20 cm long, bracteate. *Inflorescences* 1–few per plant. *Capitula* hemispherical, mostly 2–2.5 cm diam., 1–10 arranged in elongated terminal panicles. *Involucral bracts* unequal, ovate, acute to obtuse, scarious, smooth, glabrous, shiny, reddish-brown with minutely ciliate margins; intermediate bracts 9–11 mm long, with linear glandular claws about as long as the lamina; inner bracts scarious, claws longer than lamina. *Ray florets* yellow, 25–35, female, uniseriate, with a ligule-like limb 10–15 mm long, deeply 2–4-lobed. *Disc florets* yellow, bisexual, numerous. *Cypselas* terete, 2.5–3.5 mm long, c. 1 mm wide, smooth or minutely papillose; pappus bristles 20–30, shortly connate at base, minutely barbellate.

Selected specimens examined: QUEENSLAND. McPherson Range, Araucaria Lookout, 27.vi.1980, *I.R. Telford 8219* (CBG 8004392.1); Lamington National Park near Araucaria Lookout (c. 10 km from Binna Burra Lodge), 2.x.1996, *K. Watanabe 625* (MEL 2034680). **NEW SOUTH WALES.** Tweed Range, Border Ranges National Park, The Pinnacle, 24.viii.1988, *B. Barnsley 1479* (CBG 8802568.1); McPherson Range, Mt Merino near summit. Lamington N.P., 16.xii.1967, *S.T. Blake 22868* (BRI AQ 0270271).

Distribution and habitat: Known only from near the border between New South Wales and Queensland on the McPherson Range in Lamington National Park and the Border Ranges National Park. IBRA7 Regions: Brigalow Belt South and South Eastern Queensland (Commonwealth of Australia 2012). Found on exposed

faces of scarps on the upper slopes of the ranges at altitudes of c. 1100 m, with a vegetation of *Nothofagus* closed forest, but also in drier open *Eucalyptus* forest, exposed to westerly winds. Grows in shallow soil of basalt origin (Henderson 1969). (Figure 17d)

Conservation status: Of limited distribution and regarded as Vulnerable (VU) by criteria of IUCN (2018). All known populations are within national parks.

Flowering period: Mostly October to February.

Cytology: Chromosome number determinations of $n=10$ and $2n=20$ were reported by Henderson (1969) and Watanabe *et al.* (1999).

Podolepis nutans Steetz, *Pl. Preiss.* 1(3): 464 (1845)

Type: WESTERN AUSTRALIA. ‘In arenosis terrae inferioris. Herb. Preiss. No. 58’ (in poor sandy ground): In Nova Hollandia (Swan River Colonia), 1843, *J.A.L. Preiss 58* (lectotype *vide* G.L. Davis (1957), MEL 2280272 part A! (Figure 12), isolectotypes, MEL 2280272 part B!, MEL 304114!, S S-G-4945, photo! JSTOR Global Plants, LD 1039844, photo! JSTOR Global Plants, G 00301386, photo! JSTOR Global Plants).

Illustrations: Davis (1957) Figs 84–91; Grieve and Blackall (1975) page 792.

Annual *herb* to 25 cm tall. *Stems* 1–many, erect, usually branched, sparsely woolly to glabrescent. *Leaves* sparsely woolly below, more or less glabrous above, margins entire; basal leaves only present on young plants; cauline leaves alternate, sessile, stem-clasping, decurrent, usually lanceolate to broad-linear, 1–6 cm long and 3–8 mm wide, apex acute. *Peduncles* to c. 10 cm long. *Inflorescences* 1–many per plant. *Capitula* campanulate, mostly 1–1.5 cm diam., usually solitary. *Involucral bracts* unequal, transverse-elliptic, reddish-brown, acute to subacute, scarious, not transparent, rigid, smooth, glabrous, shiny; intermediate bracts 4–7 mm long, lamina broader than long, with slender glandular claws about equal in length to lamina; inner bracts scarious, short-clawed. *Ray florets* white, cream or yellow tinged with purple at the apex, 15–25, female, uniseriate, with a ligule-like limb 5–10 mm long, 2–3-lobed. *Disc florets* white, cream or yellow, bisexual, numerous. *Cypselas* terete, 1–1.5 mm long, c. 0.5 mm wide, minutely papillose; pappus bristles 10–15, free, minutely barbellate.

Selected specimens examined: WESTERN AUSTRALIA.



Figure 12. Lectotype and isolectotype of *Podolepis nutans* (MEL 2280272). Reproduced with permission from Royal Botanic Gardens Victoria.

Mundaring Weir, ix.1947, *A.W. Jessep s.n.* (MEL 2166206); Mokine Nature Reserve, 18 km WNW of York, 8.ix.1985, *G.J. Keighery, J.J. Alford 1205* (PERTH 807982); Wooroloo, 1.x.1907, *M. Koch 1747* (MEL 222582); Armadale, 23.ix.1946, *W.H. Nicholls s.n.* (MEL 644148); Swan View (Jane Brook) National Park, 12.ix.1947, *J.H. Willis s.n.* (MEL 2166204).

Distribution and habitat: Endemic to Western Australia where widespread in the South-West Province and scattered over five IBRA7 Regions (Commonwealth of Australia 2012). Found on sandy soils or loams over limestone or laterite (Western Australian Herbarium 1998–) (Figure 17e).

Conservation status: Widespread but uncommon and apparently represented in conservation reserves.

Flowering period: October to December.

Cytology: No data available.

Notes: The herbarium sheet (MEL 2280272) containing the lectotype consists of two main elements and some fragments. The right hand element (A) was designated by G.L. Davis as the lectotype and the left hand element (B) as an isolectotype (termed a lectoparatype by Davis).

An Allan Cunningham collection, allegedly from Shark Bay, is of dubious provenance.

Siemssenia Steetz, *Pl. Preiss.* 1(3): 467 (1845)

Type species: *Siemssenia capillaris* Steetz

Annual *herbs*, glabrous or somewhat arachnose in leaf axils. *Stems* 1–many, erect, wiry, usually much-branched. *Leaves* entire, apex more or less obtuse; basal leaves (when present) petiolate; cauline leaves alternate, sessile, base amplexicaul, stem-clasping. *Peduncles* filiform, naked. *Inflorescences* usually many per plant. *Capitula* campanulate, usually solitary. *Involucral bracts* free, many-seriate, unequal, lamina greenish with scarious margins indented about half way along each side, glabrous or stereome densely glandular. *Florets* white or yellow; ray florets female, uniseriate; disc florets bisexual, numerous, tubular. *Cypselas* ovoid, minutely papillose; pappus bristles few, plumose.

Siemssenia capillaris Steetz, *Pl. Preiss.* 1(3): 467 (1845)

Podolepis capillaris (Steetz) Diels, *Bot. Jahrb. Syst.* 35(2):

621 (1904); *Podolepis siemssenii* F.Muell., *Fragm.* 5(40): 200 (1866) *nom. illeg.* (based on *Siemssenia capillaris* Steetz), *Podolepis siemssenia* F.Muell. in Benth., *Fl. austral.* 3: 607 (1867) *nom. illeg.* (orth. var. of *Podolepis siemssenii*). **Type:** **WESTERN AUSTRALIA.** 'In limosis porrectis illustribus sylvae haud procul a praedio rustic cl. J. (?G.) Moore, terrae superioris, d. 10. Sept. 1839. Herb. Preiss. No. 72.' (In extended muddy clear places of woodland not far from the rustic farm of J. Moore, of better soils): Western Australia. Swan River colony, near the property of G. Moore, x.1839, *J.A.L. Preiss 72* (lectotype *fide* G.L. Davis (1957), MEL 2279065 part A! (Figure 13), isolectotypes, MEL 2279065 part B!, MEL 304115!, MEL 1539405!, MEL 696533!, LD 1055044 photo! JSTOR Global Plants).

Illustrations: Davis (1957) Figs 110–117; Grieve and Blackall (1975) page 792; Jessop and Toelken (1986) Figure 710B; Cunningham *et. al* (1992) page 663; Corrick and Fuhrer (1996) Figure 42; Western Australian Herbarium (2018); VicFlora (2018); PlantNET (2018) (all as *Podolepis capillaris*).

Annual *herb* to 45 cm tall. *Stems* 1–many, erect, wiry, usually much-branched, reddish with a grey waxy coating, glabrous except for cobwebbed hairs in leaf axils. *Leaves* glabrous, margins entire; basal leaves oblanceolate to elliptic, 3–4.5 cm long, to c. 10 mm wide, soon withering; cauline leaves alternate, sessile, stem-clasping, usually linear, 0.5–4cm long, 1–2 mm wide, apex obtuse. *Peduncles* mostly 1–4 cm long. *Inflorescences* usually many per plant. *Capitula* campanulate, mostly 3–6 mm diam., wider than long, usually solitary. *Involucral bracts* unequal, ovate, greenish with scarious margins indented about half way along each side, obtuse, entire, glabrous, shiny; intermediate bracts 3.5–5 mm long, claws longer than lamina; inner bracts long-clawed. *Ray florets* white or yellow, 9–12, female, uniseriate, with a ligule-like limb 2–2.5 mm long, often with a purplish line, about as long as involucre. *Disc florets* white or yellow, bisexual, 17–22, corolla asymmetric, split down one side. *Cypselas* ovoid, c. 1 mm long, c. 0.5 mm wide, minutely papillose; pappus bristles 15–18, free, 1–2 mm long, absent from ray cypselas.

Key to species of *Siemssenia*.

- 1 Involucral bracts completely glabrous; capitula about as long as wide; ray florets 9–12 ***S. capillaris***
 1: Involucral bracts with the stereome densely glandular; capitula wider than long; ray florets 5–7 ***S. microcephala***

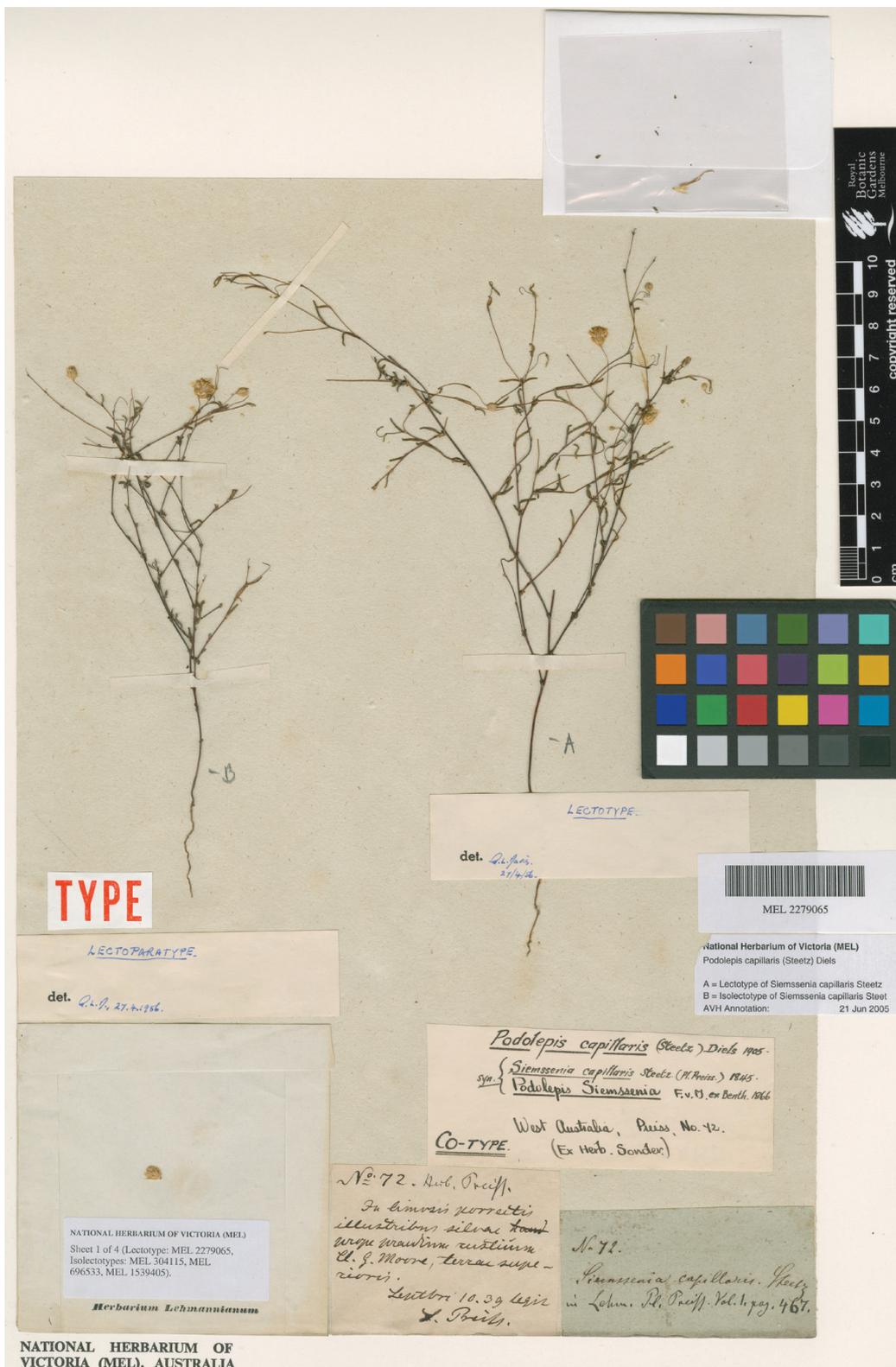


Figure 13. Lectotype and isolectotype of *Siemssenia capillaris* (MEL 2279065). Reproduced with permission from Royal Botanic Gardens Victoria.

Selected specimens examined: **WESTERN AUSTRALIA.** Cullimbin Reserve, E of Manmanning, 7.x.1983, *M.G. Corrick 8650* (MEL 105919); c. 16 km from Carnamah, along Eneabba Road, 23.x.1983, *P.S. Short 2191* (MEL 1524743). **NORTHERN TERRITORY.** Simpson Gap National Park, Simpson Gap area, 15 km W of Alice Springs P.O., 6.vi.1974, *A.C. Beauglehole 45029* (MEL 1586180); 7 miles SW of Eridunda, 24.iv.1974, *P.K. Latz 4934* (MEL 526637). **SOUTH AUSTRALIA.** c. 34 km W of Pimba, 28.viii.1989, *P.S. Short 3704* (MEL 695040); Mount Wudinna, 15.x.1995, *K. Watanabe 334* (MEL 2027517). **QUEENSLAND.** Currawinga National Park, 7 km along Lake Numalla Road off Thargomindah Road, 7.iii.1996, *P.I. Forster 18671* (MEL 258339); Between Stokes Range and Coopers Creek, *W.F. Wheeler s.n.* (MEL 696514). **NEW SOUTH WALES.** Balranald district just S of Boree Plains Homestead towards Wampo Station, 12.x.1979, *E.M. Cannng 4716* (MEL 1575118); Southern boundary of Mallee Cliffs National Park, NNE of Euston off the Sturt Highway, 10.x.2000, *R.G. Coveny 18785* (MEL 2067889). **VICTORIA.** c. 5.5 km SW of Cramenton. East-west running track forming the northern boundary of F1 land E of Calder Highway, 24.iv.1985, *D.E. Albrecht 1759* (MEL 690376); At northern end of Lake Albacutya, 50 metres S of Outlet Creek outlet, 7.ix.1978, *T.B. Muir 5922* (MEL 562726).

Distribution and habitat: Occurs in all mainland Australian States as well as the Northern Territory, often in dry inland areas and scattered over ca. 33 IBRA7 Regions (Commonwealth of Australia 2012). Found mostly in mallee communities on sandy soils (VicFlora 2018). (Figure 17f)

Conservation status: Widespread, common and well-represented in conservation reserves.

Flowering period: Mostly August to March, but also following rain.

Cytology: Chromosome number determinations of $n=3$ and $2n=6$ were reported by Turner (1967), Short (1986) and Watanabe et al. (1999) under the name *Podolepis capillaris*.

Notes: The herbarium sheet containing the lectotype (MEL 2279065) consists of two main elements and some fragments. The right hand element (A) was designated by G.L. Davis as the lectotype and the left hand element (B) as an isolectotype (termed a lectoparatype by Davis). The protologue states that the collection locality was

near the property of J. Moore, possibly this is a misprint of G. Moore, the name that appears on the lectotype.

Siemssenia microcephala (Benth.) Jeanes, **comb. nov.**

Basionym: *Podolepis microcephala* Benth. *Fl. austral.* 3: 607 (1867). **Type:** **WESTERN AUSTRALIA.** 'Shark's Bay, Milne': Shark Bay, no date, *Milne s.n.* (lectotype here designated, K000899351, photo! JSTOR Global Plants, isolectotype, K000899350 photo! JSTOR Global Plants); Shark Bay [Denham], no date, *W.G. Milne s.n.* (probable isolectotype, PERTH 01182471!).

Illustrations: Davis (1957) Figs 118–125; Grieve and Blackall (1975) page 793. (both as *Podolepis microcephala*).

Annual herb to 25 cm tall. *Stems* 1–many, erect, wiry, usually much-branched, reddish-purple with a waxy grey bloom, glabrous except for cobwebbed hairs in leaf axils. *Leaves* glabrous, margins entire, recurved; basal leaves oblanceolate to elliptic, 3–3.5 cm long, to c. 8 mm wide, soon withering; cauline leaves alternate, sessile, stem-clasping, usually linear, 0.5–3.5 cm long, 1–2 mm wide, apex obtuse. *Peduncles* mostly 1–4 cm long. *Inflorescences* usually many per plant. *Capitula* campanulate, mostly 4–8 mm diam., about as wide as long, usually solitary. *Involucral bracts* unequal, ovate, greenish and densely glandular with scarious margins indented about halfway along each side, obtuse, entire, shiny; intermediate bracts 3.5–5 mm long, claws longer than lamina; inner bracts long-clawed. *Ray florets* white (rarely yellow), 5–7, female, uniseriate, with a ligule-like limb 2–2.5 mm long, about as long as involucre. *Disc florets* white (rarely yellow), bisexual, 15–25, corolla asymmetric, split down one side. *Cypselas* ovoid, c. 1 mm long, c. 0.5 mm wide, minutely papillose; pappus bristles 12–16, free, 1–2 mm long, absent from ray cypselas (Figure 14).

Selected specimens examined: **WESTERN AUSTRALIA.** Mission Road, 35 km WNW of Kojonup, 15.i.1996, *C.M. Lewis 230* (PERTH 4945883); Denham to Hamelin road, c. 21 km SSE of Denham, 15.ix.2012, *A.N. Schmidt-Lebuhn 1447* (MEL 2390796); Hamelin Pool, shell-dunes immediately above stromatolites, 8.x.1993, *P.S. Short 4098* (MEL 2018235); "World Heritage Area" sign along Hamelin Pool to Denham road (41 km E of Overlander), 27.x.1995, *P.S. Short 4499* (MEL 2027964).

Distribution and habitat: Endemic to Western Australia where found mostly in the Eremaean Province



Figure 14. Representative specimen of *Siemssenia microcephala* (MEL 2027967). Reproduced with permission from Royal Botanic Gardens Victoria.

in the vicinity of Shark Bay, but with isolated occurrences in the South-West Province near the Stirling Ranges. IBRA7 Regions: Carnarvon, Jarrah Forest, Mallee and Yalgoo (Commonwealth of Australia 2012). Grows on sandy or clay loams, around salt lakes or samphire flats, sometimes in heathland (Western Australian Herbarium 1998–). (Figure 18a)

Conservation status: Not threatened and well-represented in conservation reserves.

Flowering period: September to November.

Cytology: Chromosome number determinations of $n \approx 12$ were reported by Turner (1967) and $n=11$, $2n=22$ by Watanabe et al. (1999) under the name *Podolepis microcephala*.

Note: The herbarium sheet containing the type specimens consists of two herbarium numbers (K000899351 and K000899350), five plant specimens and various small labels. The bottom three plant specimens are associated with the herbarium number K000899351 and appear to have been seen by Bentham as suggested by two labels at the bottom of the sheet. These three specimens have been chosen by me as the lectotype. The remaining two specimens mounted at an angle at the top of the sheet are isolectotypes. The PERTH 01182471 specimen is possibly also an isolectotype.

Walshia Jeanes **gen. nov.**

Type species: *W. kendallii* (F.Muell.) Jeanes

Annual *herbs* to 35 cm tall. *Stems* 1–many, erect or decumbent, wiry, usually somewhat branched, glabrous except for woolly younger growth. *Leaves* glabrous, margins entire; basal leaves oblanceolate to elliptic, 2–3 cm long, to c. 8 mm wide, soon withering; cauline leaves alternate, sessile, stem-clasping, usually linear, 1–5 cm long, 1–2 mm wide, margins recurved, apex subacute. *Peduncles* mostly 1–4 cm long, leafy. *Inflorescences* usually many per plant. *Capitula* campanulate to hemispherical, mostly 1–2 cm diam., usually solitary. *Involucral bracts* unequal, lanceolate to elliptical, light brown, the scarious lamina rugose, margins fringed with short hairs, apex acuminate; intermediate bracts 5–8 mm long, claws about as long as lamina; inner bracts long-clawed. *Outer florets* yellow, 4–6, female, uniseriate, tubular, with a 3–4-lobed corolla and no pappus. *Disc florets* yellow, bisexual, 10–25,

corolla 5-lobed, with a pappus of 7–10 shortly plumose bristles. *Cypselas* conical, curved, c. 2 mm long, c. 1 mm wide, covered with long finger-like papillae (Figure 1).

Note: The various consensus trees derived by Konishi et al. (2000) show *Walshia* (as *Podolepis kendallii*) grouping with *Waitzia*. The fruit morphology of *Walshia* however is quite different from that of *Waitzia* in that the latter has obovoid, ellipsoid or terete fruit (conical in *Walshia*), with a long-beaked pappus (beakless in *Walshia*) and the surface is covered with small conical papillae (much larger finger-like papillae in *Walshia*). Analysis of a larger sample of taxa in the *Waitzia* group may clarify the relationships of *Walshia* and other members of the Gnaphalieae.

Etymology: Named in honour of my colleague Neville G. Walsh (1956–) conservation botanist and taxonomist at the National Herbarium of Victoria. Neville is a recognised expert in the Rhamnaceae and Poaceae and has made significant contributions to our understanding of many Australian plant families including Asteraceae through his revision of *Centipeda* and *Eriochlamys* and his work on other genera most notably *Coronidium*, *Craspedia*, *Leucochrysum* and *Olearia*.

Walshia kendallii (F.Muell.) Jeanes, **comb. nov.**

Basionym: *Helipterum kendallii* F.Muell., *Fragm.* 8(66): 168 (1874); *Podolepis kendallii* (F.Muell.) F.Muell., *S. Sci. Rec.* 3: 68 (1883). **Type:** WESTERN AUSTRALIA. 'In vicinia sinus Champion's Bay; Guerin.' (near Champion Bay; Guerin): Champions [=Champion] Bay, 1871, *J. Guerin s.n.* (lectotype here designated, MEL 305199! (Figure 15), isolectotype, MEL 305200!).

Podolepis kendallii (F.Muell.) F.Muell. var. *nanus* Ewart, *Proc. Roy. Soc. Victoria* 20(1): 83 (1907) (as *Podolepis kendalli*, orth. var.). **Type:** WESTERN AUSTRALIA. 'Waterloo [=Watheroo], W.A., Max Koch, 1906. Champion Bay, W.A., L. Gould 1890: Watheroo, Western Australia, Rabbits Fence, viii.1906, *Max Koch 1359* (lectotype here designated, MEL 2280266!); Western Australia, Champion Bay, 1890, *L. Gould s.n.* (syntype, MEL 2280267!)

Illustrations: Davis (1957) Figs 134–141; Grieve and Blackall (1975) page 790. (both as *Podolepis kendallii*).

Description: As per genus.

Selected specimens examined: WESTERN AUSTRALIA. 56 km NW of Meekatharra on road to Gascoyne Junction,

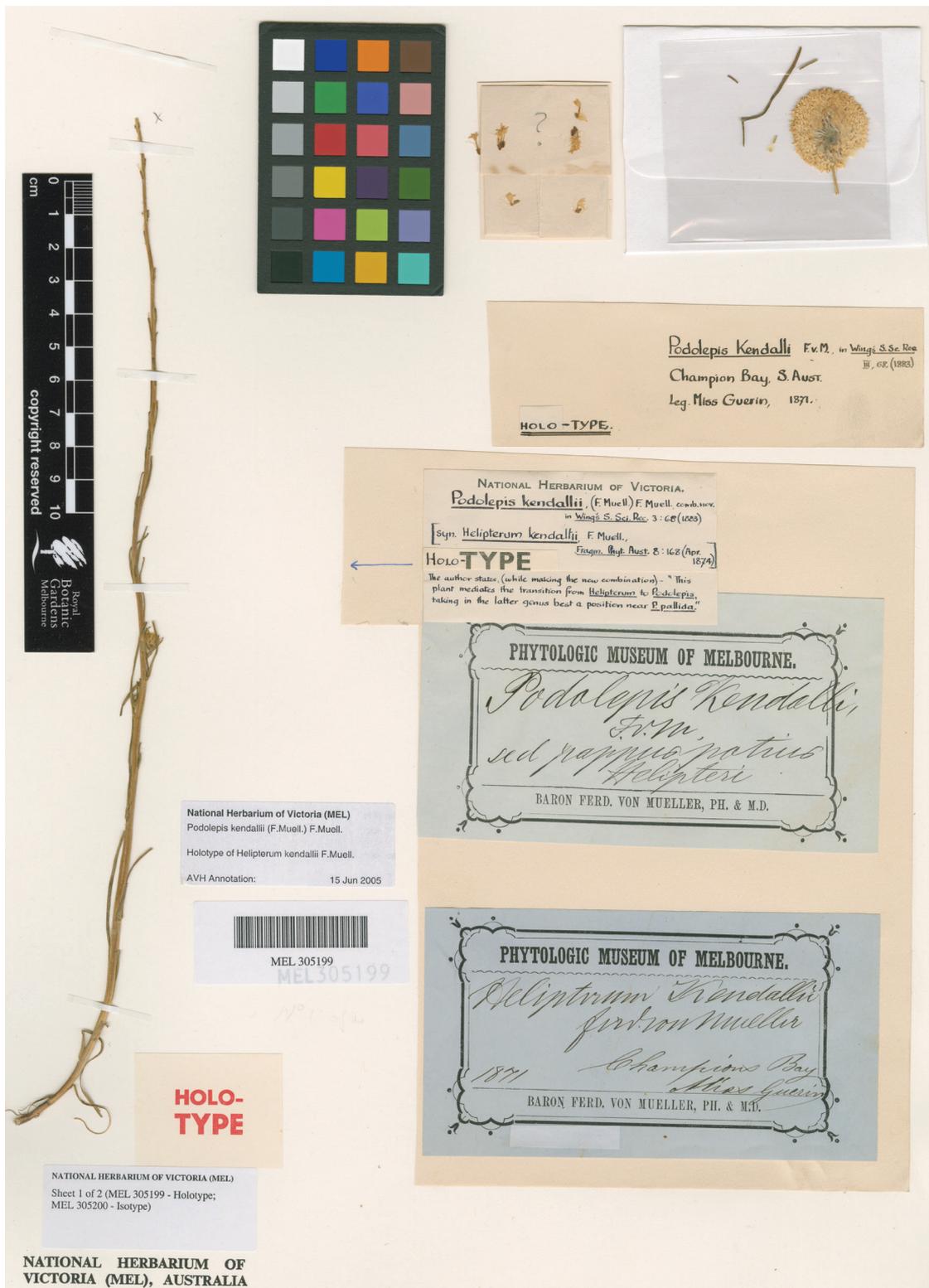


Figure 15. Lectotype of *Helipterum kendallii* (MEL 305199) = *Walshia kendallii*. Reproduced with permission from Royal Botanic Gardens Victoria.

25.viii.1996, *J. Barker 64* (MEL 2108486); Beside Northern Highway 63 km N of Paynes Find, 13.ix.1992, *M.G. Corrick 10943* (MEL 2014114); 12 km from Yuin towards Tardie, 13.ix.1986, *P.S. Short 2898* (MEL 1555414); 20.8 km E of Leonora, 19.x.1995, *K. Watanabe 353* (MEL 2027541).

Distribution and habitat: Endemic to Western Australia where found in the Eremaean Province and the South-West Province scattered across seven different IBRA7 Regions (Commonwealth of Australia 2012). Grows in red sand, clay, clay loam, alluvium on floodplains, clay flats and along watercourses (Western Australian Herbarium 1998–). (Figure 18b)

Conservation status: Not threatened and well-represented in conservation reserves.

Flowering period: Mostly August to November.

Cytology: Chromosome number determinations of $n=11$, $2n=22$ were reported by Turner (1967) and by Watanabe *et al.* (1999) under the name *Podolepis kendallii*.

A new combination with relevance to *Podolepis*

Coronidium gnaphalioides (Domin) Jeanes **comb. nov.**

Basionym: *Podolepis gnaphalioides* Domin, *Biblioth. Bot.* 22(89): 1230 (1930). **Type:** QUEENSLAND. 'Mt. Remarkable sowie in den Savannenwäldern bei Pentland (DOMIN 111. 1910)': Mt. Remarkable, iii.1910, *K. Domin 9049* (lectotype here designated, PR 531701, photo!); in xerodrymic apud opp Pentland, iii.1910, *K. Domin 9050* (syntype, PR 531702, photo!).

Coronidium lanosum Paul G. Wilson, *Nuytsia* 18: 309 (2008). **Type:** QUEENSLAND. Mt King, c. 96 km NNE of Hughenden, 1.iv.1998, *E.J. Thompson, G.P. Turpin & V.J. Neldner HUG692* (holotype, BRI AQ 573739, photo! JSTOR Global Plants)

Helichrysum sp. (Belyando River *V.J. Neldner 3459*). Queensland Herbarium. *Queensland vascular plants* 39 (1994).

A name of uncertain application

Panaetia fulva Lindl., *Edwards's Bot. Reg.* 24: 47 misc. (1838)

Type: WESTERN AUSTRALIA. '...annual plant, with the habit of a Gnaphalium, introduced from Swan River by R. Mangles Esq. It flowered in May, 1838...' (not located).

Note: The brief Latin and English descriptions of *Panaetia fulva* in the protologue would suggest that this taxon does not belong to *Panaetia* or *Podolepis*.

Unfortunately type specimens have not been located either on JSTOR Global Plants or in the Lindley herbarium at Cambridge University (CAM).

For a detailed discussion see Davis (1957).

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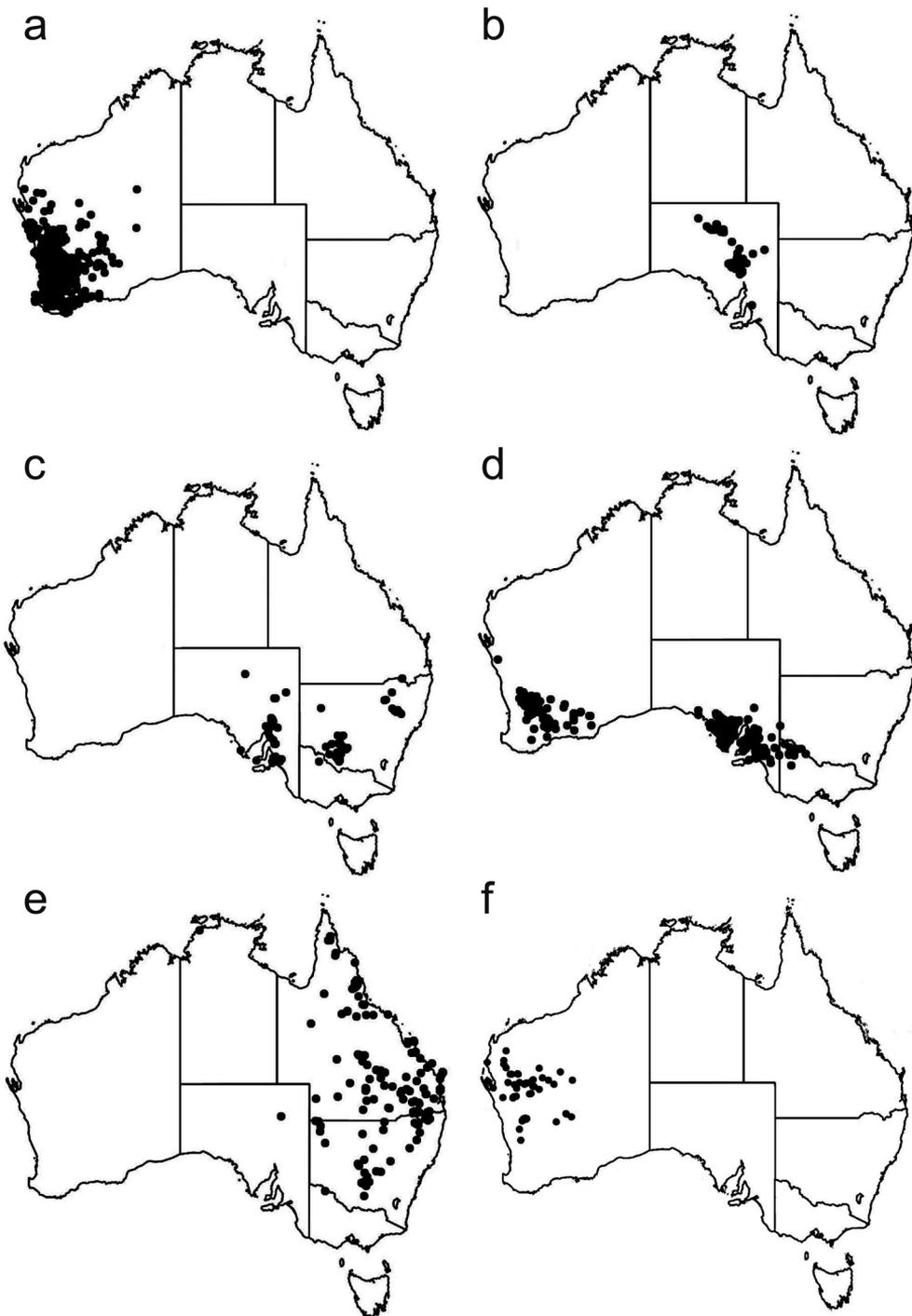


Figure 16. Distribution of **a.** *Panaetia lessonii*; **b.** *Panaetia davisiana*; **c.** *Panaetia muelleri*; **d.** *Panaetia tepperi*; **e.** *Podolepis arachnoidea*; **f.** *Podolepis gardneri*.

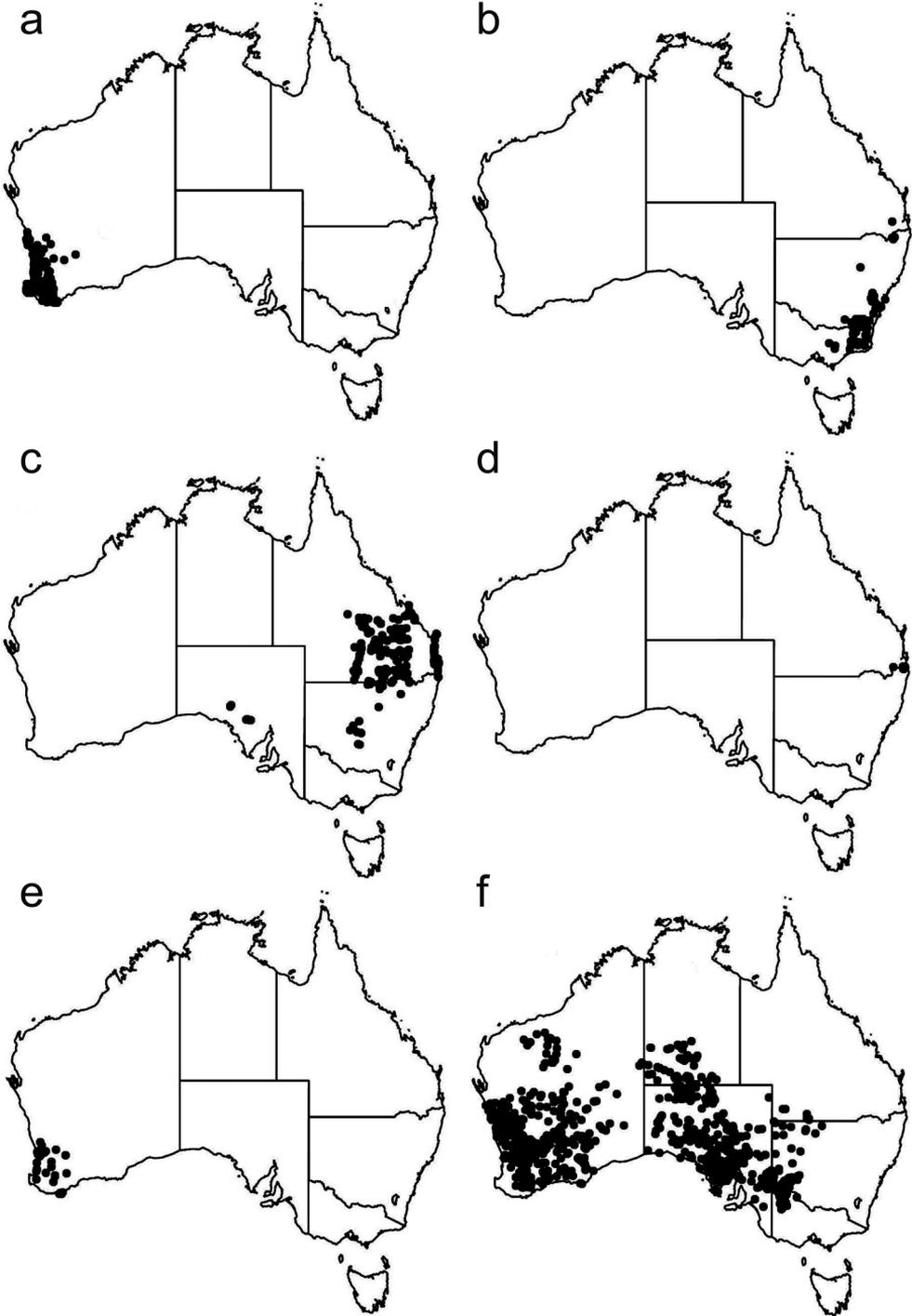


Figure 17. Distribution of **a.** *Podolepis gracilis*; **b.** *Podolepis hieracioides*; **c.** *Podolepis longipedata*; **d.** *Podolepis monticola*; **e.** *Podolepis nutans*; **f.** *Siemssenia capillaris*.

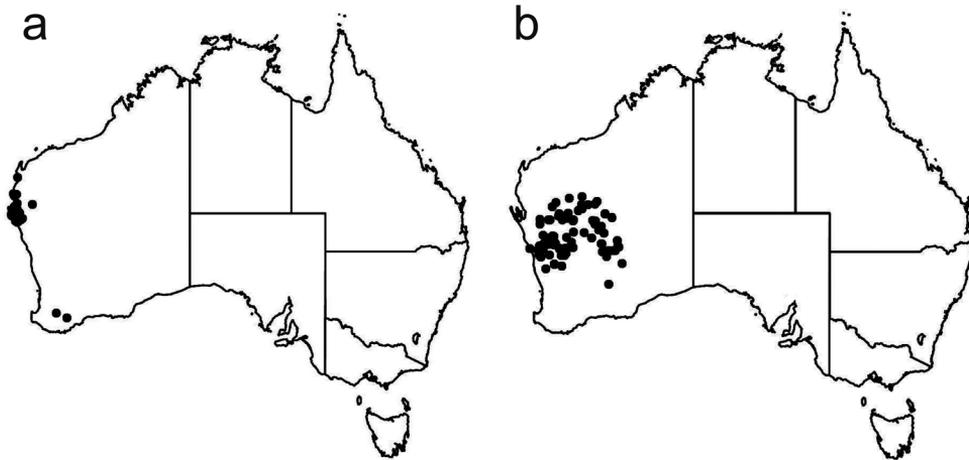


Figure 18. Distribution of **a.** *Siemssenia microcephala*; **b.** *Walshia kendallii*.

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