Erymophyllum (Asteraceae: Inuleae: Gnaphaliinae), A new Australian genus in the *Helipterum* complex

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Abstract

Wilson, Paul G. *Erymophyllum* (Asteraceae: Inuleae: Gnaphaliinae), a new Australian genus in the *Helipterum* complex. Nuytsia 7(1) 103-116(1989). The genus *Erymophyllum* is described; it contains five species, three of which are new; all except one are endemic to Western Australia. The two species previously recognised were included by Bentham (1867) in *Helipterum* sect. *Pteropogon* (DC.) Benth.

Introduction

In an earlier paper (Wilson 1989) I discussed the application of the names *Helipterum* DC. ex Lindley (1836) and *Helipterum* DC. (1838). I explained how the genus *Helipterum*, as currently conceived, is an unnatural one in which the constituent species can be clustered into groups that should either be recognised as distinct genera or be placed with related genera of the Gnaphaliinae. The five species here described, of which the two previously recognised were placed in *Helipterum*, form a discrete cluster that I consider constitutes a distinct genus.

The methods used for examining the material, and the microcharacters investigated, are detailed in the earlier paper. The significance of the nature of the cells that form the inner epidermis of the lobes of the corolla is further discussed below.

Historical Survey

The first species described, that is now to be placed in the genus *Erymophyllum*, was *Helipterum tenellum* Turcz. (1851). It was based on material collected by John Gilbert in Western Australia. Turczaninow placed it in sect. *Sericophorum* DC. (1838) which contained several Australian species with silky achenes. In 1852 Asa Gray described *Pteropogon* sect. *Helipteroides* and included in it *Pteropogon ramosus* A. Gray (= *Erymophyllum ramosum*) and *P. gracilis* A. Gray

(= *E. tenellum*); he distinguished this section from other sections of *Pteropogon* by the presence of leafy bracts around the involucre. *Helichrysum involucratum* F. Muell. (= *E. ramosum* subsp. *involucratum*) was described in 1863 and placed by Mueller in sect. *Blepharolepis* DC. which included species not closely related to the new taxon. However, Mueller indicated correctly that the circumscription of that section needed revising and that both *Pteropogon ramosus* and *Helipterum tenellum* were closely related to his new species. Bentham (1867) recognised three species, *Helipterum tenellum, H. gracile*, and *H. involucratum* and noted that each had a similar arrangement of linear foliaceous bracts; he included the three in *Helipterum* sect. *Pteropogon* (DC.) Benth. This placement was also accepted by Spencer Moore who, in 1920, described *Helipterum intermedium*, a species conspecific with *Erymophyllum tenellum*.

Generic Affinities

The closest affinities of the species within *Erymophyllum* appear to be with members of the *Helipterum* complex that have silky achenes and non-glandular leaves, e.g. *Helipterum humboldtianum* (Gaudich.) DC., *H. microglossum* (Benth.) Tate, and *H. pygmaeum* (DC.) Benth. All belong, in the strict sense, to *Pteropogon* DC. This genus differs noticeably from *Erymophyllum* in (1) the nature of its involucral bracts, (2) the shape and arrangement of the inner epidermal cells of the corolla lobes, (3) the woolly indumentum on leaves and branches (not glandular puberulous), and (4) the flattened (not terete) leaves.

The nature of the transition in *Erymophyllum* of the uppermost leaves into involucral bracts is unique in the *Helipterum* complex and one that I have not observed in other members of the Gnaphaliinae. The outer bracts have a short scarious base and a terete leaf-like apex; grading inwards, the scarious base enlarges while the foliaceous apex decreases until, with the inner bracts, only the scarious portion remains (Figure 2). In other genera of the *Helipterum* complex there is an abrupt or gradual transition from leaf to involucral bract with the apical portion of the leaf becoming scarious and the foliaceous base diminishing in size.

The particular combination of shape and arrangement of the inner epidermal cells of the corolla lobes is possibly also unique in the Gnaphaliinae; these cells are very narrowly oblong to linear and are grouped in transverse rows (Figure 1). In related genera such cells of the corolla lobes are equilateral to oblong and are randomly arranged.

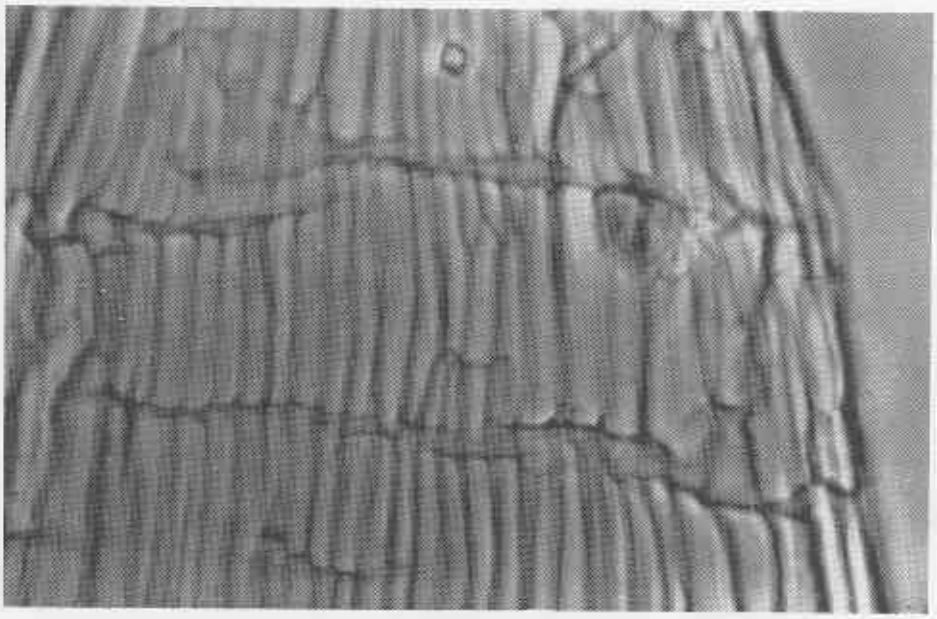

Figure 1. *Erymophyllum ramosum*. Inner epidermis of a corolla lobe, x 600. From CBG 022866

Distribution

The species of *Erymophyllum* are found in the western or south-western portion of Western Australia. All, with the exception of *E.ramosum* which extends into south-western South Australia, are endemic to that State.

Taxonomy

Erymophyllum Paul G. Wilson, gen. nov.

Pteropogon sect. *Helipteroides* A. Gray, Hooker's J. Bot. Kew Gard. Misc. 4: 269 (1852). *Lectotype*: *Pteropogon ramosus* A. Gray, lecto. nov. (see note).

Herba annua glabra vel glanduloso puberula, Rami graciles teretes. Folia basilaria opposita, sequentia alterna, gracilia, teretia, obtusa. Capitula dense vel laxe corymbosa vel solitaria, folius terminalibus subtentibus. Involucrum cylindricum vel late turbinatum 3-7 mm longum; bracteae exteriores basi glumaceae hyalinae late ovatae, apice foliaceae; bracteae interiores late ellipticae glumaceae hyalinae nec appendiculatae; bracteae intimae lamina flava vel raro alba vel absenti. Flores 10-20, bisexuales vel intimi achenio sterili. Corolla anguste cylindrica versus apice anguste turbinata, 5-lobata, actinomorpha vel leviter zygomorpha, glabra vel sparse puberula vel lobis sparse glanduloso pilosulis, flava; lobi anguste triangulares vel oblongi, cellulis epidermidis interioris anguste oblongis vel linearibus in seriebus transversalibus dispositis. Styli apex truncatus vel deltoideus, papillosus. Achenium anguste turbinatum sericeo-villosum.

Typus: Erymophyllum ramosum (A. Gray) Paul G. Wilson

Annual *herbs*, erect, glabrous or puberulous with short gland-tipped hairs. *Branches* slender, terete. *Leaves* opposite below, alternate above, slender-terete, rounded at apex. *Inflorescence* an open or congested corymb, or heads solitary. *Capitulum* subtended by foliage leaves or foliaceous bracts. *Involucre* cylindrical to hemispherical, 3-7 mm long; outermost bracts foliaceous with short, broad glumaceous base grading to inner bracts that are entirely glumaceous or with margins membranous and hyaline, glabrous or arachnoid-ciliate; *innermost bracts* with a narrow hyaline claw and a yellow or white lamina, or the lamina absent; stereome hard, flat, and linear. Receptacle cushion-shaped, c. 1 mm diameter, shallowly alveolate, glabrous. *Flowers* 10-20, bisexual, the innermost usually with a sterile and almost glabrous achene. *Corolla* narrow-tubular or with upper half narrow-turbinate, 5-lobed, actinomorphic or slightly zygomorphic, glabrous or with a few minute simple hairs on tube and a few minute biseriate gland-tipped hairs on back of lobes, glabrous within, yellow; *cells* of inner epidermis of lobes and throat narrow-oblong to linear with straight lateral walls, the cells of the lobe mostly grouped in transverse rows; *vascular traces* terminating in throat or at base of sinuses between lobes or in lower part of lobes. *Nectary* cup-shaped, persistent on achene. *Anther*: apiculum not thickened, narrowly triangular to ovate, marginal cells not differentiated; *anther tails* of fine weak hairs exceeding collar; *collar* narrow, equal in width to filament. *Style apex* truncate to deltoid, papillose or, on margins, pilosulose; *vascular trace* extending to base of style apex. *Achene* narrow-turbinate, compressed, silky or villous with long duplex hairs; *carpophore* a short glabrous ring c. 0.1 mm diameter; *pericarp* thin, translucent; testa brown, somewhat leathery, eventually fused to pericarp, with numerous minute crystals randomly arranged in cells. *Pappus* persistent; shaft of bristles filiform to linear or linear - lanceolate, denticulate to narrowly plumose, shorter than or shortly exceeding corolla.

Notes: Two species were included by Asa Gray in his section *Helipteroides*, these were *Pteropogon gracilis* and *P. ramosus*; both are members of *Erymophyllum*. I have selected the second species as lectotype of the section and also as the type of *Erymophyllum*.

The name *Erymophyllum* is derived from the Greek words *'eryma'* a fence and *'phyllon'* a leaf, with reference to the leafy bracts that surround the capitula.

Key to species

1. Capitula with white or yellow lamina to inner involucral bracts
   2. Upper leaves and branches somewhat glandular puberulous
      3. Pappus bristles firm, shaft linear-lanceolate, outwardly curved and elastic in fruit; corolla somewhat zygomorphic, the abaxial side more deeply lobed; achenial hairs rounded at apex ..... 1. *E. glossanthus*
      3. Pappus bristles very slender, neither curved nor elastic in fruit; corolla actinomorphic; achenial hairs bidentate at apex ..... 2. *E. ramosum*
   2. Upper leaves and branches glabrous
      4. Lamina of inner involucral bracts obovate, c. 5 mm long..... 4. *E. hemisphaericum*
      4. Lamina of inner involucral bracts linear to narrow oblong, c. 2 mm long .... 5. *E. tenellum*
1. Capitula without lamina to involucral bracts..... 3. *E. compactum*

1. **Erymophyllum glossanthus** Paul G. Wilson, sp. nov. (Figure 2)

Typus: Western Australia, 46 km W of Warriedar Homestead, 29° 12' S, 116° 45' E, red heavy soil, 26 Sept. 1986, *P.G. Wilson* 12278 (holo: PERTH; iso: CANB, K).

Herba erecta ad 20 cm alta, minute et sparse glanduloso puberula. Folia graciliter teretia obtusa 5-12 mm longa supra sulcata. Capitula modice dense corymbosa. Involucrum ovoideum c. 5 mm longum; bracteae exteriores foliaceae glanduloso puberulae; bracteae intermediae basi late ellipticae hyalinae apice foliaceae sparse ciliato-arachnoideae; bracteae interiores late ellipticae, c. 4 mm longae, hyalinae; bracteae intimae unguice elliptico hyalino, lamina late ovata flava 2-3 mm longa. Corollae tubus anguste cylindricus versus apicem leviter turbinatus, c. 3 mm longus, sparsissime puberulus; lobi inaequales: lobo abaxiali longissimo, c. 1 mm longo, lobis ceteris c. 0.5 mm longis. Styli apex truncatus papillosus. Achenium anguste obovoideum, dorsi-ventraliter compressum, c. 1.5 mm longum, dense villosum pilis relative firmis obtusis (nunquam bidentatis). Pappi setae scapo lineari-lanceolato 2.5-3 mm longo, in statu maturo extrinsecus curvato brevissime plumoso versus basi denticulato.

Erect *herb* 10-20 cm high branching at base, minutely and sparsely glandular puberulous. *Branches* slender. *Leaves* slender-terete, 5-14 mm long, sulcate above. Heads in fairly dense corymbs. *Involucre* ovoid, c. 5 mm long; outer bracts leaf-like, slightly scarious at base, c. 2.5 mm long, glandular puberulous; *intermediate bracts* broadly elliptic, hyaline, with a foliaceous sparsely ciliate-archnoid apex; *inner bracts* broadly elliptic, acute, c. 4 mm long, straw-coloured to pale brown, totally hyaline except for the firm linear stereome; innermost bracts similar to inner but with a spreading broadly ovate yellow lamina 2-3 mm long. *Florets* c. 10, the 4 innermost functionally male with narrowly cylindrical ± glabrous sterile achenes. *Corolla* narrowly cylindrical, slightly turbinate in upper half; *tube* c. 3 mm long, very sparsely puberulous in middle with simple hairs otherwise glabrous; *lobes* unequal, spreading; abaxial lobe more deeply divided than others, c. 1 mm long; other lobes c. 0.5 mm long. *Anther* (including apiculum) c. 1.5 mm long; *apiculum* ovate, c. 0.3 mm long. *Style apex* truncate, prominently papillose. Achene narrow obovoid, dorsiventrally compressed, c. 1.5 mm long, densely villous with relatively firm blunt hairs, not myxogenic.

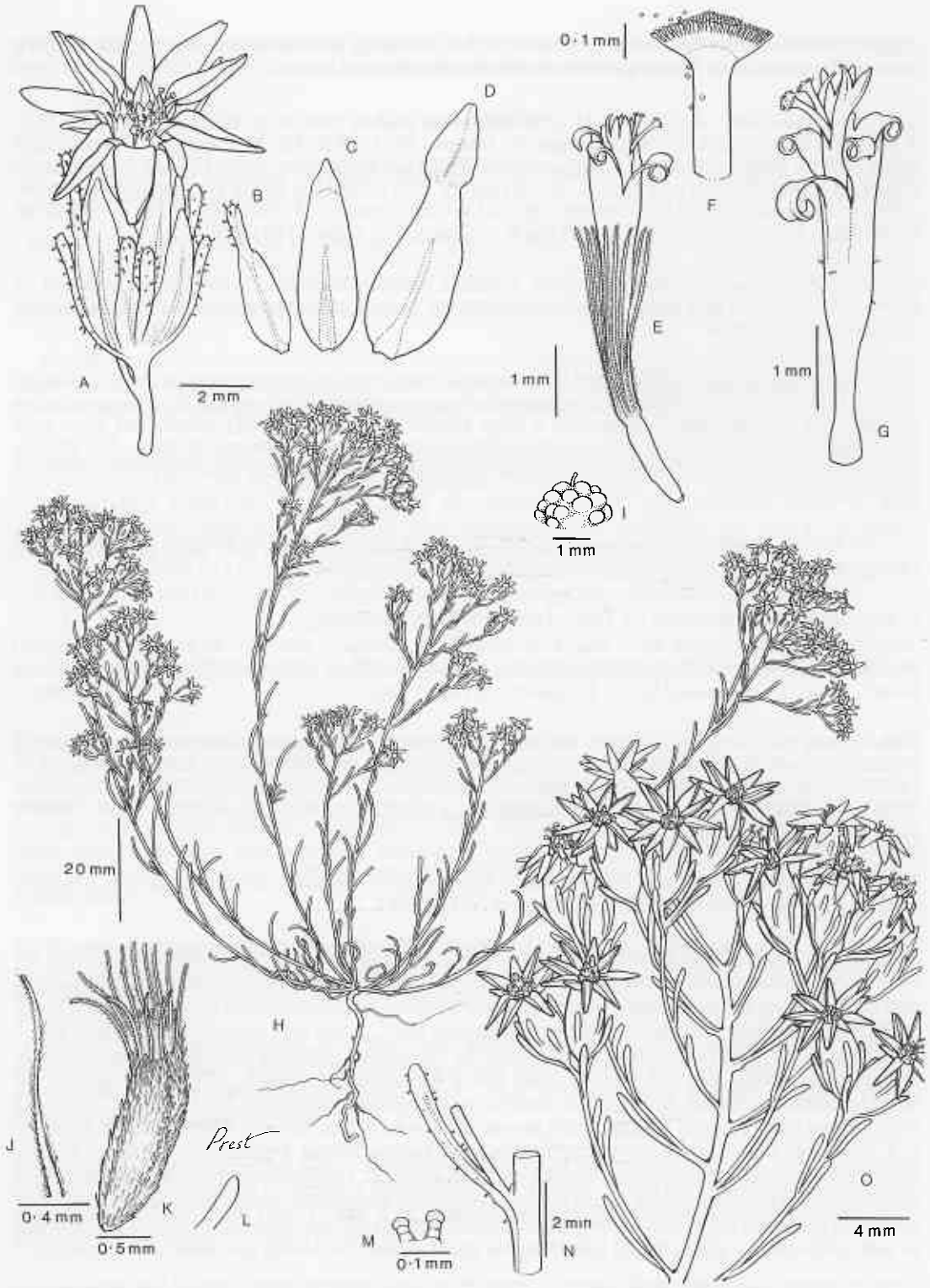

Figure 2. *Erymophyllum glossanthus*. A - Capitulum. B - Outer involucral bract. C - Intermediate involucral bract. D - Innermost involucral bract. E - Floret. F - Style apex. G - Floret with achene removed. H - Habit of plant. I - Receptacle. J - Pappus bristle. K - Achene and pappus. L - Apex of duplex hair. M - Glandular hairs of leaf. N - Leaf. O - Inflorescence. All from *H. Demarz* 8259 (PERTH).

Pappus bristles with shaft linear-lanceolate, 2.5-3 mm long (of sterile achenes slightly longer), outwardly curved, very shortly plumose and denticulate towards base.

Specimens examined. WESTERN AUSTRALIA: near Paynes Find, *W.E. Blackall* 3900 (PERTH); 4 miles (c. 6 km) south of Three Springs, *H. Demarz* 2655 (PERTH); Youanme, *H. Demarz* 8259 (PERTH); 67 km N of Wubin, *H. Demarz* 8315 (PERTH); Mt Magnet, Sept. 1903, *W.V. Fitzgerald* (NSW 181884); 70 km E of Mullewa, *G.J. Keighery* 3303 (PERTH); 10 km E of Paynes Find, Nov. 1984, *C. Luscombe* (PERTH); Western edge of Lake De Courcy, *P.S. Short* 601 (AD); 32 km SE of Fields Find, *P.S. Short* 2169 (MEL); 32 km N of Cleary, *P.S. Short* 2379 (MEL).

Distribution and habitat. Inland Western Australia between Mullewa, Three Springs and east of Paynes Find. Found in a variety of habitats including *Acacia* scrub and granite outcrops, generally in heavy soil. Figure 4.

Discussion. This species exhibits very little variation throughout its geographical range. It is similar in appearance to some variants of *Erymophyllum ramosum* from which it may be distinguished in having (1) a zygomorphic corolla with a large abaxial lobe, (2) relatively coarse and blunt (not bidentate) duplex hairs on the achene, and (3) linear-acuminate elastic pappus bristles. The pappus bristles are similar to those found in species of *Actinobole* and presumably serve, as in that genus, to help disperse the fruits.

The epithet *'glossanthus'* is derived from the Greek word *'glossa'* (a tongue) and *'anthos'* (a flower) and alludes to the relatively long abaxial lobe of the corolla.

2. **Erymophyllum ramosum** (A. Gray) Paul G. Wilson, comb. nov.

Pteropogon ramosus A. Gray, Hooker's J. Bot. Kew Gard. Misc. 4:270 (1852). *Lectoptype*: 'Swan River', s. dat. *J. Drummond* (lecto: K; isolecto: K) lecto nov.

Helichrysum involucratum F. Muell., Fragm. 3:135 (1863). — *Helipterum involucratum* (F. Muell.) Benth., Fl. Austral. 3: 646 (1867); Grieve and Blackall, How to know Western Austral. Wildfl. 831 (1975). *Type citation*: 'In collibus calcareis ad sinum Champion Bay et Flumen Murchison. Walcott et Oldfield'. *Lectotype:* Limestone N. of Murchison, *A. Oldfield* (lecto: MEL 10977; isolecto: K, PERTH), lecto nov. (see note).

[*Helipterum tenellum* auct. non Turcz.: Benth., Fl.Austral. 3:646(1867); B.J.Grieve & W.E.Blackall, How to Know Western Australian Wildflowers, 831(1975).]

Erect *herb* branching at and above base, 10-30 cm high, minutely glandular puberulous on leaves and branches, sometimes aromatic. *Branches* slender, terete. *Leaves* slender, terete, 5-30 mm long, sulcate above, rounded at apex. *Heads* in dense to open corymbs or panicles or solitary on slender branchlets. *Involucre* narrow-campanulate and c. 5 mm long to narrow-cylindrical and 7 mm long; *outer bracts* leaf-like, shorter than the involucre, glandular puberulous; *intermediate bracts* with a broad obovate hyaline base and a foliaceous appendage, sometimes sparsely to densely ciliate-arachnoid; *inner bracts* narrow-ovate, hyaline, terminated by a short (c. 0.5 mm) erect yellow (rarely white) lamina or this absent; *innermost bracts* linear to narrow-elliptic, hyaline, c. 5 mm long, with a spreading yellow (rarely white) ovate lamina 3-6 mm long. *Florets* 8-20, a few of the innermost with sterile sparsely pubescent achenes. *Corolla* narrow-cylindrical, in all 5-6 mm long, slightly turbinate in upper half, very sparsely puberulous in middle with simple hairs otherwise glabrous; lobes all narrowly oblong-triangular 0.7-1.5 mm long, equal in length, glabrous or with a few minute gland-tipped hairs towards apex. *Anther* (including apiculum) c. 2 mm long;

with minutely bidentate hairs, not myxogenic. *Pappus bristles* with shaft linear-filiform, c. 5 mm long, denticulate to shortly plumose, the terminal cilia shorter and sometimes opaque.

Key to subspecies

1. Involucre narrow-campanulate c. 5mm long; outer bracts sparsely ciliate or eciliate ..... a. subsp. *ramosum*

1. Involucre narrow cylindrical c. 7mm long; outer bracts long arachnoid-ciliate ..... b. subsp. *involucratum*

2a. **Erymophyllum ramosum** (A. Gray) Paul G. Wilson subsp. **ramosum**

Involucre narrow-campanulate c. 5mm long; outer (foliaceous) bracts glandular puberulous; innermost bracts with an ovate lamina 3-5 mm long. *Corolla* c. 5mm long. *Anther apiculum* ovate c. 0.5 mm long. *Style apex* truncate to broadly deltoid. *Pappus bristles* shortly plumose.

Specimens examined (selection only). WESTERN AUSTRALIA: Bullabulling, *A.M. Ashby* 1350 (AD); Eucla, 1890, *Batt* (MEL); Widgiemooltha, *W.E. Blackall* 966 (PERTH); Cundeelee, *P. Boswell* B25 (PERTH); 14.5 km SE of Windidda HS, *R.J. Chinnock* 819 (AD); s. loc. *J. Drummond* 156 (MEL); Mt Jackson, *G.J. Keighery* 4376 (PERTH); 30 km S of Haig, *A.A. Mitchell* 79 (PERTH); Frank Hann National Park, *K. Newbey* 6503 (PERTH).

SOUTH AUSTRALIA: Between Colona and Ooldea, Oct. 1954, *J.B. Cleland* (AD); Hughes, *E.H. Ising* 1568 (AD,MEL,NSW); between Eucla and Fowlers Bay, 1875, *Richards* (MEL).

Distribution. Found in Western Australia south-west of a line from Roebourne to Eucla (but excluding the extreme south-west and south coast) and in the Nullarbor region of South Australia. Figure 6.

Discussion. Erymophyllum ramosum subsp. *ramosum* exhibits considerable variability in habit and in the minutiae of floral structure. This variability is most noticeable in the length of the cilia that make up the plumose pappus bristles, the shape of the style apex (truncate to deltoid), and in the presence of cilia on the outer involucral bracts. However, I have been unable to find a correlation of characters to support further infraspecific division within this taxon. To the northern extent of its range some collections have narrower and longer involucres, outer bracts somewhat ciliate, and style tips more obviously deltoid; these characters suggest an introgression with subsp. *involucratum.*

2b. **Erymophyllum ramosum** subsp. **involucratum** (F. Muell.) Paul G. Wilson, comb. et stat. nov. — *Helichrysum involucratum F. Muell., Fragm. 3: 135 (1863).* — *Helipterum involucratum* (F. Muell.) Benth., Fl. Austral. 3:646 (1867).

Involucre narrow-cylindrical c. 7 mm long; outer (foliaceous) bracts long arachnoid-ciliate; innermost bracts with a narrowly oblong-elliptic laminae c. 6 mm long. *Corolla* c. 6mm long. *Anther apiculum* narrow-ovate c. 0.7 mm long. *Style apex* deltoid to narrow-deltoid. *Pappus bristles* denticulate to very shortly pilose.

Specimens examined (selection only). WESTERN AUSTRALIA: 'Wanna' Station, *J.S. Beard* 6073 (PERTH); 39 km NNW of Overlander Roadhouse, *W.R. Barker* 2174 (AD); 56 km S of Dongarra, *A.E. Orchard* 4221 (PERTH); 11 km S of Wannoo, *M.E. Phillips* (CBG 062774); 66 km S of Billabong Roadhouse, *P.S. Short* 2108 (MEL).

Distribution and habitat. Near the west coast of Western Australia from Shark Bay region to south of Dongarra; usually found in calcareous soil. Figure 4.

Discussion. The narrowly cylindrical involucre and the arachnoid-ciliate outer bracts serve to distinguish this sub-species, however, as noted earlier, some collections are somewhat intermediate between the two subspecies in these features.

Nomenclatural notes. Mueller's description of *Helichrysum involucratum* was based on mixed material. The Murchison River collection, here selected as lectotype, corresponds to the plant that is commonly referred to this species. Only material of this collection was cited by Bentham (1867). An isolectotype at herb. K has an original label with the information 'Limestone Hills, Yatthoo, Murchison, Oldf[ield], W. Aust.'. The Champion Bay collection cited by Mueller (MEL 109800) is, in this paper, described as a new species, *Erymophyllum hemisphaericum.* Although Walcott was given as a co-collector only Oldfield's name is present on the type specimens I have seen.

For a comment on the misapplication of the name *Helipterum tenellum* see under *Erymophyllum tenellum.*

3. **Erymophyllum compactum** Paul G. Wilson, sp. nov. (Figure 3)

Herba erecta ad 20 cm alta, glanduloso puberula. Folia graciliter teretia supra sulcata 5-20 mm longa obtusa. Capitula in corymbis terminalibus compactis foliaceis disposita. Involucrum breviter cylindraceum, c. 3-5 mm longum, bracteis foliaceis linearis glanduloso puberulis araneoso-ciliatis subtentum. Bracteae involucri hyalinae, glabrae, eciliatae; lamina absens. Flosculi 10-26, omni fertiles. Corolla omnino glabra involucrum excedens; tubus anguste cylindricus c. 3 mm longus; lobi anguste oblongi c. 1.5 mm longi. Styli apex truncatus papillosus. Achenium anguste turbinatum leviter dorsi-ventraliter compressum c. 1.5 mm longum dense sericeo villosum pilis minute bidentatis. Pappi setae scapo anguste lineari, arcte dentato, corollam aliquantum breviore.

Typus: 35 km west of Wiluna, in clay, 20 Sept. 1980, *H. Demarz* 8236 (holo: PERTH).

Erect *herb* to 20 cm high branching at base, sparsely to moderately puberulous with short gland-tipped hairs, viscid, somewhat aromatic. *Branches* slender, straight. *Leaves* slender, terete, sulcate above, 5-20 mm long, rounded at apex. *Heads* clustered in a compact terminal corymb; peduncles c. 3 mm long, leafy. *Involucre* shortly cylindrical, c. 3-5 mm long, 2.5 mm diameter, subtended by c. 6 linear-spathulate leafy bracts densely glandular puberulous and sparsely arachnoid ciliate, ± equal to the involucre. *Involucral bracts* hyaline, glabrous, eciliate; outer bracts ovate obtuse, c. 1.5 mm long; intermediate and inner bracts elliptic to broad-oblong, 3-3.5 mm long, obtuse to rounded with prominent hard linear stereome; lamina absent. *Florets* 10-26, all fertile. *Corolla* completely glabrous, orange-yellow, exceeding involucre; tube narrow-cylindrical, c. 3 mm long; lobes narrow-oblong, acute, c. 1.5 mm long; vascular strands extending to base of lobes. *Anthers* exerted c. 1.5 mm long including the narrow-ovate apiculum c. 0.3 mm long. *Style arms* truncate prominently papillose. *Achene* narrow-turbinate, slightly dorsiventrally compressed, c. 1.5 mm long, densely silky villous, the hairs minutely bidentate, not myxogenic. *Pappus bristles:* shaft narrow-linear, closely dentate, 2-3.5 mm long, shorter than the corolla.

Specimens examined. WESTERN AUSTRALIA: 49.3 miles E of NW Coastal Hwy and Gascoyne Junction turnoff, *A.M. Ashby* 4572 (AD); 'Wanna' Station, *J.S. Beard* 6080 (PERTH); 52 km S of Ashburton Downs turnoff, *H. Demarz* 4447 (PERTH); 7 km N of Meekatharra, *H. Demarz* 4700 (PERTH); 'Three Rivers Station', *H. Demarz* 6963 (PERTH); 35 km W of Wiluna, *H. Demarz* 8236 (PERTH); 92 km N of Meekatharra, *H. Demarz* 8356 (PERTH); Mullewa to Annean, *S. Dixon* s.n. (AD); Jimba Jimba, *C.A. Gardner* 6095 (PERTH); 2 km N of 'Polelle' Homestead, *A.A. Mitchell* 1268 (PERTH); 18 km W of 'Lyons River' Homestead, *K.R. Newbey* 11561 (PERTH); Wooramel River, 1889, *G.D. Robinson* (MEL); 'Mulgul' Station, *T.L. Setter* 321 (AD); near Colurabi Hills, *P.G. Wilson* 7404 (PERTH); 8 km N of Gascoyne Junction, *P.S. Short* 463 (MEL); 20 km N of Gascoyne Junction, *P.S. Short* 469 (AD); 18 km S of Wiluna, *P.G. Wilson* 8941 (PERTH).

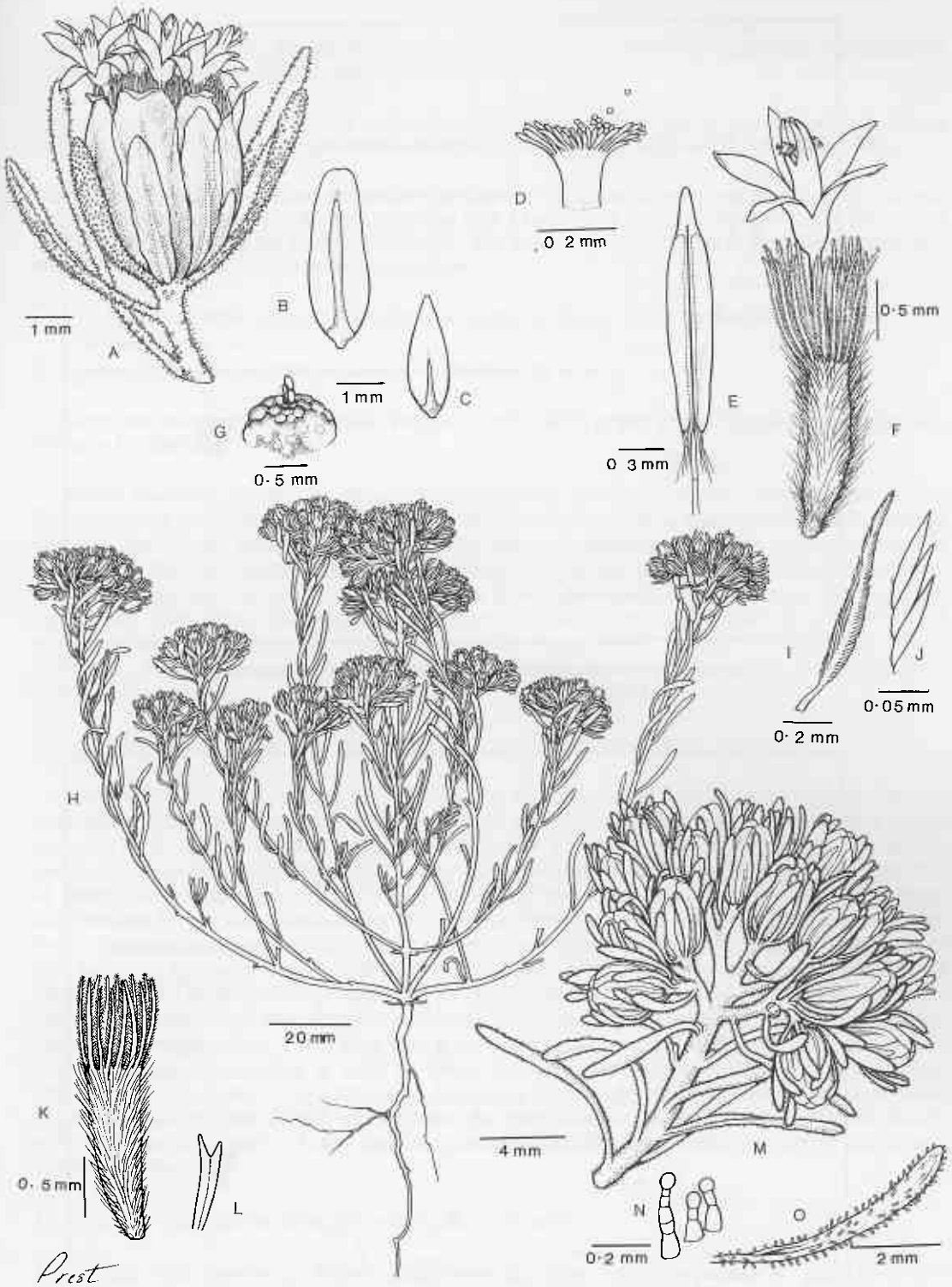

Figure 3. *Erymophyllum compactum*. A - Capitulum. B - Inner involucral bract. C - Outer involucral bract. D - Style apex. E - Anther. F - Floret. G - Receptacle. H - Habit of plant. I - Pappus bristle. J - Portion of duplex hair. M - Inflorescence. N - Glandular hairs of leaf. O - Leaf. Figure K from *H. Demarz* 8356 (PERTH), otherwise from *P.G. Wilson* 8941 (PERTH).

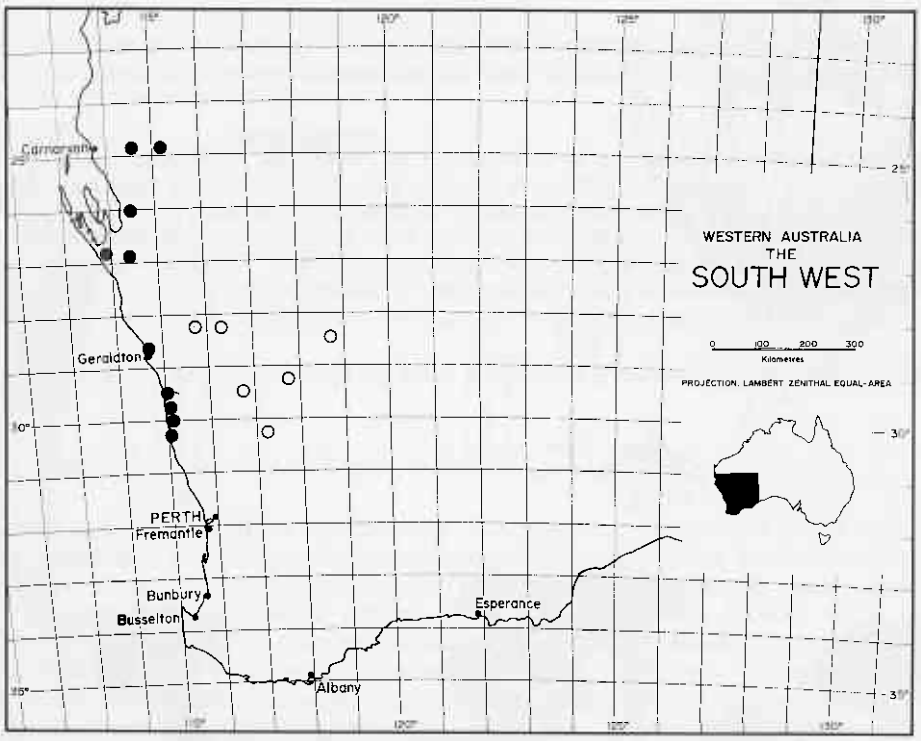

Figure 4. Distribution of *Erymophyllum ramosum* subsp. *involucratum* (●), and *E. glossanthus* (○).

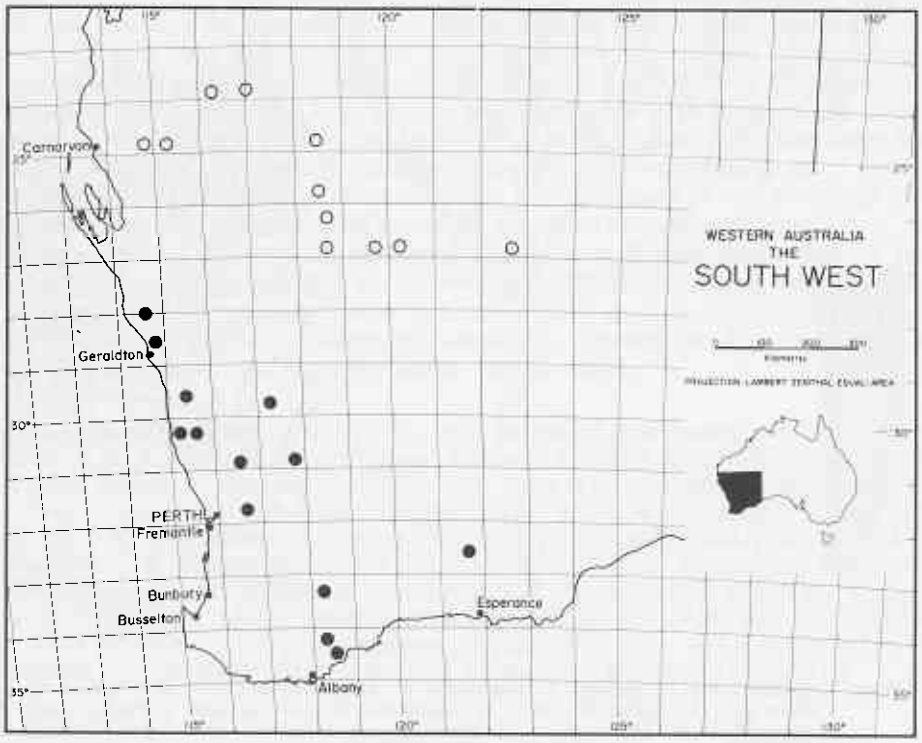

Figure 5. Distribution of *Erymophyllum compactum* (○), *and E. tenellum* (●).

Distribution and habitat. Found in Western Australia in the area between Laverton and Gascoyne Junction. Principally in gravelly soil in open country. Figure 5.

Flowering time. Material has been collected in bud in late August, and in flower from mid-August to mid-October. Some of the specimens collected in October also apparently bear mature fruit.

Discussion. This species differs from other members of the genus *Erymophyllum* in having compact inflorescences and inner involucral bracts that lack a lamina. It is also distinctive in the form taken by the foliaceous bracts for these pass abruptly into hyaline bracts whereas in the other species they merge, with the basal portion becoming hyaline.

The specific epithet refers to the manner in which the flower heads are congested together.

4. **Erymophyllum hemisphaericum** Paul G. Wilson, sp. nov.

[*Helichrysum involucratum* F. Muell., Fragm. 3: 135 (1863) p. pte. as to Champion Bay collection, not as to lectotype.].

Herba erecta ad 25 cm alta glabra. Folia filiformia 10-30 mm longa, supra sulcata, obtusa. Capitula pauca graciliter pedunculata. Involucrum hemisphaericum c. 6 mm altum, nitidum praeter unguices bractearum interiorum lanato ciliatos glabrum; bracteae exteriores foliaceae; bracteae intermediae basi late ovatae hyalinae, apice foliaceae; bracteae intimae unguice anguste oblongo hyalino, lamina obovata obtusa c. 5 mm longa flava. Corolla c. 3.5 mm longa; tubus anguste cylindricus, fere glaber; lobi anguste triangulares c. 1 mm longi, sparse glanduloso pilosi. Styli apex truncatus papillosus. Achenium anguste obovatum dense sericeo villosum pilis minute bidentatis. Pappi setae scapo lineari-filiformi manifeste dentato, dentibus versus apicem congestis opacis.

Typus: Champion Bay, Western Australia, s. dat., *A. Oldfield* (holo: MEL 109800).

Herb to 25 cm high, simple or branching at base, glabrous. *Stems* and *branches* slender, sometimes slightly flexuose. *Leaves* filiform, c. 30 mm long near base of plant diminishing in size towards apex, sulcate above, obtuse. *Inflorescence* an open cyme of 2-6 heads on slender peduncles. *Involucre* hemispherical, c. 6 mm high, glossy, glabrous except for sparsely ciliate claw of inner bracts; *outer bracts* foliaceous with short glumaceous base, shorter than the involucre; *intermediate bracts* with a broad ovate hyaline pale brown base and a short foliaceous apex; *inner bracts* broad ovate, obtuse to acute, c. 5 mm long, hyaline, pale brown, with a minute appendage or this lacking; *innermost bracts* with a narrow-oblong delicate hyaline claw and a thick linear stereome with a prominent obovate obtuse yellow lamina c. 5 mm long and 3 mm wide. *Florets* c. 20. *Corolla* narrow-cylindrical (upper half narrow-turbinate), c. 3.5 mm long; tube almost glabrous; lobes narrow-triangular c. 1 mm long with a few short biseriate gland-tipped hairs on abaxial side; vascular strands terminating at base of lobes. *Anthers* (including apiculum) c. 1.5 mm long; apiculum narrow-ovate, c. 0.4 mm long. *Style apex* truncate, papillose. *Achene* narrow-obovate, not seen in mature state, densely silky villous, the hairs bidentate, not myxogenic. *Pappus bristles* with shaft linear-filiform c. 4 mm long, very prominently dentate, the teeth congested and opaque towards the apex.

Distribution. Only known from the type locality. Figure 6.

Discussion This species is known only from the type collection which is also a syntype (lectoparatype) of *Erymophyllum ramosum* subsp.*involucratum.* The two taxa may be distinguished by the difference in indumenta (glandular puberulous in subsp. *involucratum*), shape of the involucres, shape of the laminae of the innermost involucral bracts, and the morphology of the

pappus bristles. *Erymophyllum hemisphaericum* is most similar to *E. tenellum* and, as in that species, is glabrous.

The specific epithet refers to the shape of the involucre.

5. **Erymophyllum tenellum** (Turcz.) Paul G. Wilson, comb. nov.

Helipterum tenellum Turcz., Bull. Soc. Nat. Moscou 24 (1):198 (1851). *Type*: 'Nova Hollandia occidentalis', *Gilbert* 272(lect: KW). See note.

Pteropogon gracilis A. Gray, Hooker's J. Bot. Kew Gard. Misc. 4: 269 (1852), - *Helipterum gracile* (A. Gray) Benth., Fl. Austral. 3: 646 (1867); Grieve and Blackall, How to know Western Austral. Wildfl. 831 (1975). *Type citation*: 'Swan River, *Drummond*' (holo: K).

Helipterum intermedium S. Moore, J. Linn. Soc. 45: 181 (1920); Grieve and Blackall, op. cit. 830 (1975). *Type citation*: 'Kauring; *Stoward*, 593' (holo: BM; iso MEL).

Slender *herb* to 20 cm high usually branching at base, glabrous. *Stem* and *branches* slender to almost filiform, often slightly flexuose. *Leaves* filiform, well-spaced, 8-40 mm long, sulcate above, obtuse. *Inflorescence* an open cyme of 2-10 heads on slender peduncles, or the heads sometimes clustered. *Involucre* ovoid, c. 6 mm long; outer bracts foliaceous, 3-4 mm long with very short glumaceous base, glabrous, grading into intermediate bracts with broad-elliptic brown glumaceous base and foliaceous apex; *inner bracts* broad-elliptic, acuminate, c. 6 mm long, hyaline, pale brown to straw-coloured; innermost with a linear to narrow-oblong hyaline claw c. 6 mm long, a flat green linear stereome that is cottony within, and an erect narrow-oblong yellow lamina c. 2 mm long. *Florets* c. 20, all fertile or the innermost functionally male. *Corolla* narrow-cylindrical with the upper half slightly turbinate, c. 3 mm long; tube glabrous; lobes erect, narrowly triangular, c. 0.5

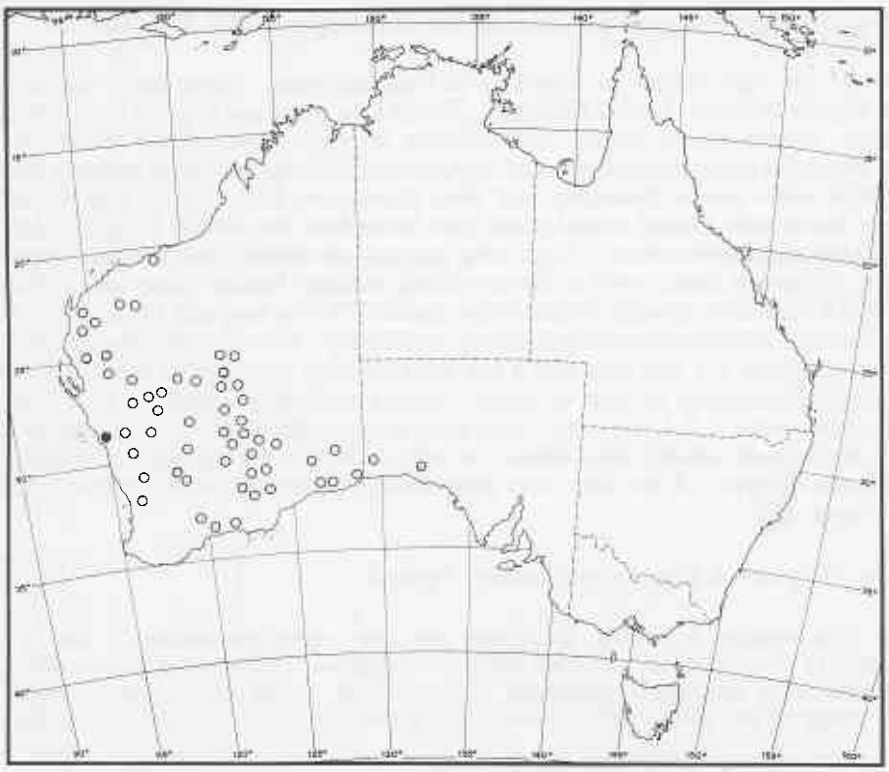

Figure 6. Distribution of *Erymophyllum ramosum* subsp. *ramosum* (○), *and E. hemisphaericum* (●).

mm long, with a few short gland-tipped biseriate hairs on abaxial side; vascular strands terminating low in tube. *Anthers* (including apiculum) c. 1 mm long; apiculum narrow-ovate obtuse c. 0.3 mm long. *Style apex* truncate. *Achene* narrow-obovate, dorsiventrally compressed, 1.5-2.5 mm long, pale brown, densely silky villous, the hairs bidentate, not myxogenic. *Pappus bristles* with shaft narrowly linear-lanceolate, slightly exceeding corolla, shortly plumose with the cilia reduced towards apex.

Specimens examined (selection only). WESTERN AUSTRALIA: 1 km NE of Mt Lesueur, *E.A. Griffin* 2620 (PERTH); Throssel Nature Reserve, *G.J. Keighery* 1224 (PERTH); Kukerin, Oct. 1913, *M. Koch* 2212 (MEL); Wongan Hills, Oct. 1903, *A. Morrison* (CANB); 15.5 km from Borden, *P.S. Short* 2286 (MEL); 15 km N of Badgingarra, *P.G. Wilson* 3830 (PERTH).

Distribution. South-west Western Australia from Geraldton to near Albany and Salmon Gums; growing in heathland and woodland on a variety of soils. Figure 5.

Discussion. This species is fairly uniform in appearance over its range although varying slightly in microscopic characters. It differs noticeably from other species in the genus in being glabrous, in having a very open inflorescence, and in the yellow laminae of the involucral bracts being short and erect. As in *E. hemisphaericum*, the capitulum is not surrounded by true leaves since even the outermost involucral bracts have a scarious base.

Typification. The type sheet of *Helipterum tenellum* (KW) consists of five specimens. Two of these specimens (those on the left-hand side of the sheet), including the largest and most complete, are of glabrous plants with slender appendages to the outer bracts and short, yellow laminae to the inner bracts. The other three specimens are minutely glandular-puberulous with shorter outer-bracts appendages and with white laminae to the inner bracts. Turczaninow in his original description referred to the plant as *glaberrimum* (i.e. perfectly glabrous) and as having slender appendages to the outer bracts and golden yellow appendages to the inner bracts. This description obviously applies only to the two specimens on the left-hand side of the sheet. I have therefore lectotypified the name on the larger of those two specimens. The name *Helipterum tenellum* therefore corresponds to the plant previously referred to as *Helipterum gracile*. The three remaining specimens on the sheet belong to *Erymophyllum ramosum*.

Acknowledgements

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Index To Scientific Names

Numerals in bold type represent main entry of accepted names. New names are given in bold type. Other accepted names are in Roman. Synonyms are in italics.

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