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STUDIES IN THE TRIBES *ASTEREAE* AND *INULEAE* (COMPOSITAE)

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Abstract

Brachycome dimorphocarpa G.L. Davis is reduced to synonymy under *B. ciliaris* (Labill.) Less., and *B. xanthocarpa* sp. nov. is described. Two sibling species, one of which is referred to *Calotis plumulifera* F. Muell., are distinguished within *C. multicaulis* sens. lat. *Olearia suffruticosa* sp. nov. and *O. pimeleoides* (DC.) Benth. subsp. *incana* subsp. nov. are described, and the new combination *O. passerinoides* (Turcz.) Benth. subsp. *glutescens* (Sonder) D.A. Cooke is made.

In the Inuleae, *Podolepis davisiana* sp. nov. is described and the new combination *P. tepperi* (F. Muell.) D.A. Cooke is made; the affinities of these species are discussed. *Scyphocoronis incurva* sp. nov. is described and compared to *S. major.*

TRIBE ASTEREAE

1. Brachycome

Brachycome ciliaris (Labill.) Less., Syn. Comp. 192 (1832). *Bellis ciliaris* Labill., Nov. Holl. Pl. Sp. 2:56 (1806).

Type: New Holland, *J. Labillardière s.n.* (Lecto: P, *n.v.*)

Brachycome dimorphocarpa G.L. Davis, Muelleria 1:112 (1959), *synon. nov.*

Type: Bon Bon Station to Kingoonya, South Australia, 11.x.1955, *N.T. Burbidge & M. Gray 4653* (Holo: CANB, *n.v.*; iso: AD!)

As described by Davis (1959), *B. dimorphocarpa* differs from *B. ciliaris* only in the inrolled wings of the disk achenes. In *B. ciliaris* the wings are usually flat but may be slightly inrolled. Out of a total of 266 collections seen, the only two specimens agreeing with the description of *B. dimorphocarpa* (cited below) with regard to the achenes, differed widely from each other in vestiture and leaf shape, and cannot be maintained as a distinct entity.

Specimens examined

SOUTH AUSTRALIA: Bon Bon Station to Kingoonya, 11.x.1955, *N.T. Burbridge & M. Gray* 4653 (AD, isotype of *B. dimorpocarpa*); 4 km SW Canopus Homestead, 19.x.1975, *L.D. Williams 7225*(AD).

Brachycome xanthocarpa D.A. Cooke, sp. nov.

Herba annua eglandulosa usque ad 12 cm alta. *Caules* erecti vel ascendentes usque ad 4 cm alti parce ramificantes, teretes rubescentes sparsim pubescentes. *Folia basilaria* oblanceolata basi attenuata 3-18 mm longa 1-5 mm lata, integra vel pinnatipartita lobis obtusis vel subacutis, supra glabra, subtus pubescentia, marcescentia. *Folia caulina* pauca, obovata vel ovata basi amplexicaulia 3-9 mm longa 1-5 mm lata sursum decrescentia, pinnatisecta segmentis acutis vel folium summum integrum, pubescentia. *Pedunculi* 2-9 erecti simplices 4-8 cm longi laeves glabri nudi, unusquisque ramum foliaceum caulis terminans. *Bracteae involucri* 9-15, obvatae vel oblanceolatae 2.3-3.2 mm longae 0.7-1.5 mm latae membranceae viridulae glabrae, ad apicem obtusae vel subacutae minute erosae plerumque purpureae. *Receptaculum* hemisphaericum vix scrobiculatum 2.0-2.5 mm diametro. *Flosculi radii* 15-27, ligulis 4-5 mm longis albis lilacinisve. *Antherae* 0.6-0.7 mm longae, connectivo loculos haud producto. *Achenia* cuneata vix complanata 1.5-1.7 mm longa c.0.6. mm lata; margines angusti haud alati laeves viriduli glabri; superficies dorsalis ventralisque depressi, tuberculis congestis grossis 0.1-0.2 mm altis ochroleucis obtecti, praeter aliquot pilos minutos prope apicem glabri. *Pappus* prominens 0.3-0.4 mm longus candidus, setis inaequalibus basi connatis. (Fig. 1).

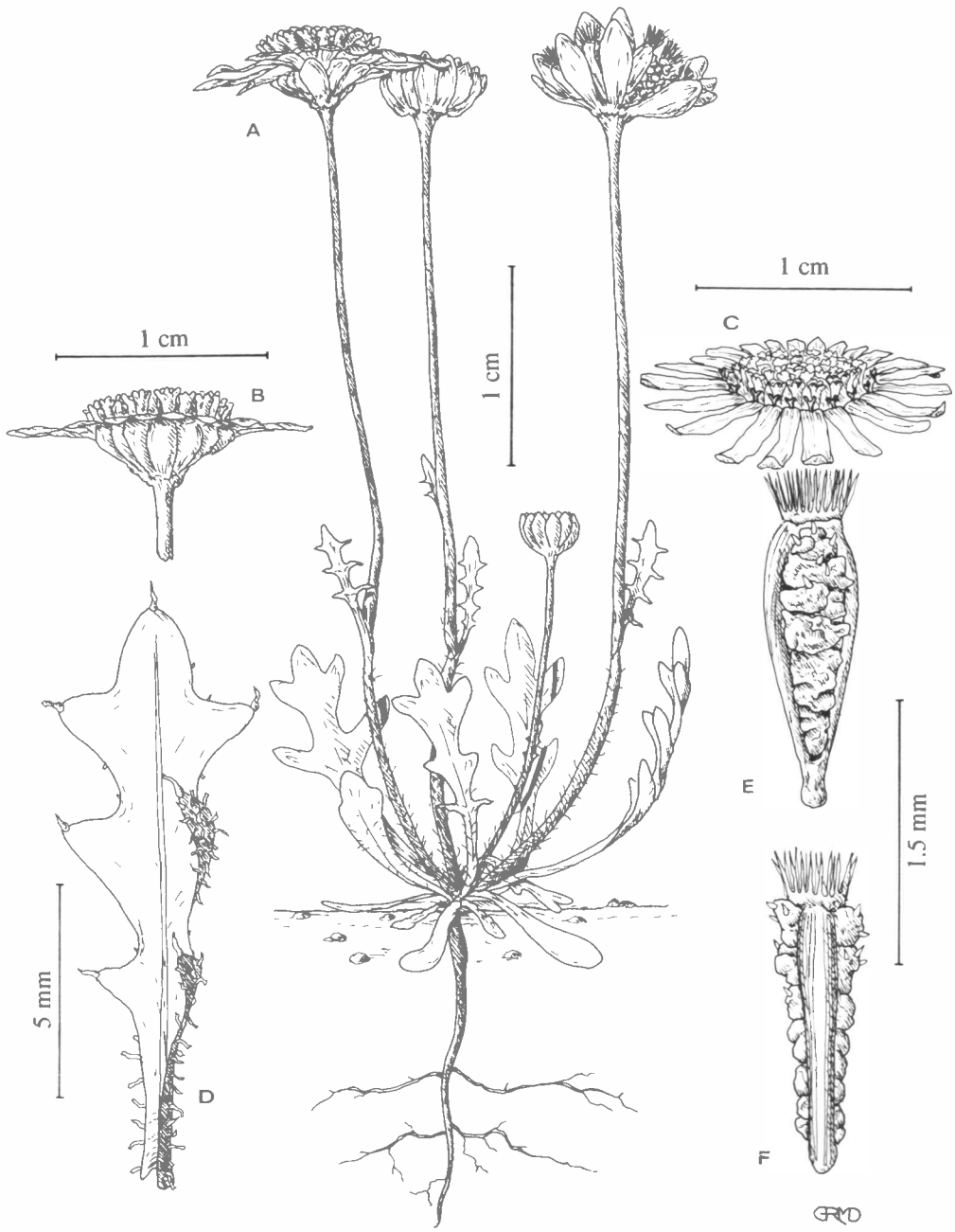


Fig. 1. *Brachycome xanthocarpa*: A, whole plant; B-C, flowering capitulum; D, basal leaf; E, achene, ventral view; F, achene, lateral view (drawn from *Wheeler 1039*, AD, holotype).

Type: Hincks National Park, Hd. of Nicholls, c.2 km E of north/south access track and c.4 km N of the southern boundary, 11.x.1968, *J.R. Wheeler 1039* (Holotype: AD 96925131).

Etymology: Greek *xanthos*, yellow; *karpos,* fruit; referring to the distinctive yellow colour of the achenes.

Annual herb, lacking glands, up to 12 cm high. *Stems* erect to ascending, up to 4 cm high, sparsely branching, terete, sparsely pubescent, becoming reddish. *Basal leaves* oblanceolate, attenuate at the base, 3-18 mm long, 1-5 mm wide, entire or pinnatipartite with obtuse to subacute lobes, glabrous on the upper surface, pubescent on the lower surface, soon withering. *Cauline leaves* few, obovate to ovate, amplexicaul at the base, 3-9 mm long, 1-5 mm wide, decreasing in size up the stem, pinnatisect with acute segments or the uppermost leaf entire, pubescent. *Peduncles* 2-9 per plant, erect, unbranched, 4-8 cm long, leafless, smooth, glabrous, each terminating a leafy branch of the stem. *Involucral bracts* 9-15, obovate to oblanceolate, 2.3-3.2 mm long, 0.7-1.5 mm wide, membranous, greenish, glabrous; apices obtuse to subacute, minutely erose, often purple. *Receptacle* hemispherical, 2.0-2.5 mm diam., hardly pitted. *Ray florets* 15-27; ligules 4-5 mm long, white to lilac. *Anthers* 0.6-0.7 mm long; connective not produced beyond the loculi. *Achenes* cuneate, hardly flattened, 1.5-1.7 mm long, c.0.6 mm wide; margins wingless, narrow, smooth, greenish, glabrous; dorsal and ventral faces depressed, covered by large crowded ochre-yellow tubercles 0.1-0.2 mm high, glabrous except for a few minute hairs near the apex. *Pappus* prominent, 0.3-0.4 mm long, white, of unequal bristles connate at the base.

B. xanthocarpa is known only from two collections from the Hincks Conservation Park, Eyre Peninsula, where it occurs in mallee scrub on sand dunes.

B. xanthocarpa is related to the other species of the genus which lack sterile anther appendages and which were grouped in the informal ' subgenus' Metabrachycome by Davis (1948). The achenes most closely resemble those of such species as *B. exilis* Sonder, *B. trachycarpa* F. Muell and the disc achenes of *B. ciliaris* which are cuneate, flattened and wingless with thick marginal ridges. In the vegetative state, *B. xanthocarpa* most closely resembles *B. exilis*, but lacks the glandular hairs characteristic of the latter species.

Specimen examined (Paratype)

SOUTH AUSTRALIA: Hincks National Park, north/south access track through Hd. of Nicholls, c. 2 km N of the southern boundary, 10.x.1968, *J.R. Wheeler 982* (AD 96924291).

2. Calotis

The name *Calotis multicaulis* has been applied to populations of annual *Calotis* which were believed to be conspecific throughout the arid zone of Australia. These were shown by Stace (1978) to consist of two species with chromosome base numbers (x) of 4 and 5 respectively. From Stace's data, populations with x=4 appeared to have a more western distribution (in W.A. and S.A.) than those with x=5 (in S.A., Qld and N.S.W.).

Analysis of herbarium collections showed populations with two distinct types of pappus awn, their distributions coinciding with those of the 'chromosomal species' recognized by Stace. In western populations the awns are minutely retrorse-barbellate, dark brown, flexible and wire-like in appearance (Fig. 2 A,B). In eastern populations the awns are plumose with spreading barbs 0.07-0.1 mm long, pallid or chestnut brown, straight and rigid (Fig. 2 C,D). No intermediate awn types were found. Examination of the voucher specimens cited by Stace showed complete correlation between the western awn type and x=4, and between the eastern awn type and x=5 in all collections with achenes.

The holotype of *C. plumulifera* F. Muell., which had been treated as a synonym of *C. multicaulis* by Black (1929), proved to be referrable to the eastern species. The nomenclature of the two sibling species is set out below, and their distribution is shown in Map 1.

Calotis multicaulis (Turcz.) Druce, Rep. Botl Soc. Exch. Club Br. Isl. 1916:611 (1917).

Goniopogon multicaule Turcz., Bull. Soc. Nat. Mosc. 24:174 (1851).

Type: W. Aust., *J. Drummond 4th collection: 115 (n.v.)*.

Calotis multicaulis, species B, sensu Stace (1978).

Selected specimens examined (collections seen: 87)

WESTERN AUSTRALIA: 27 miles SW of Tropic of Capricorn on North-west Coast Highway, 19.viii.1965, *A.C. Beauglehole 11684* (MEL); 47 miles E of Warburton Minor, 26.viii.1971, *S. Smith-White & C. Carter 8145* (CANB); 16 miles N of Leonora, 23.viii.1971, *S. Smith-White 8175* (CANB); 60 miles W of Meekatharra, 25.viii.1971, *S. Smith-White & C. Carter 8222* (CANB).

SOUTH AUSTRALIA: 24 miles N of Port Augusta, 13.viii.1966, *S.Smith-White 66/263* (CANB); Curkin Outstation, 15 km W of Mulgathing, 26.ix.1971, *J.Z. Weber 2807* (AD).

Calotis plumulifera F. Muell., J. Trans. Vic. Inst. 3:57 (1859).

Type: Darling and Murray, *F. Mueller s.n.* (Holo: MEL 104301!).

Calotis multicaulis, species A, sensu Stace (1978).

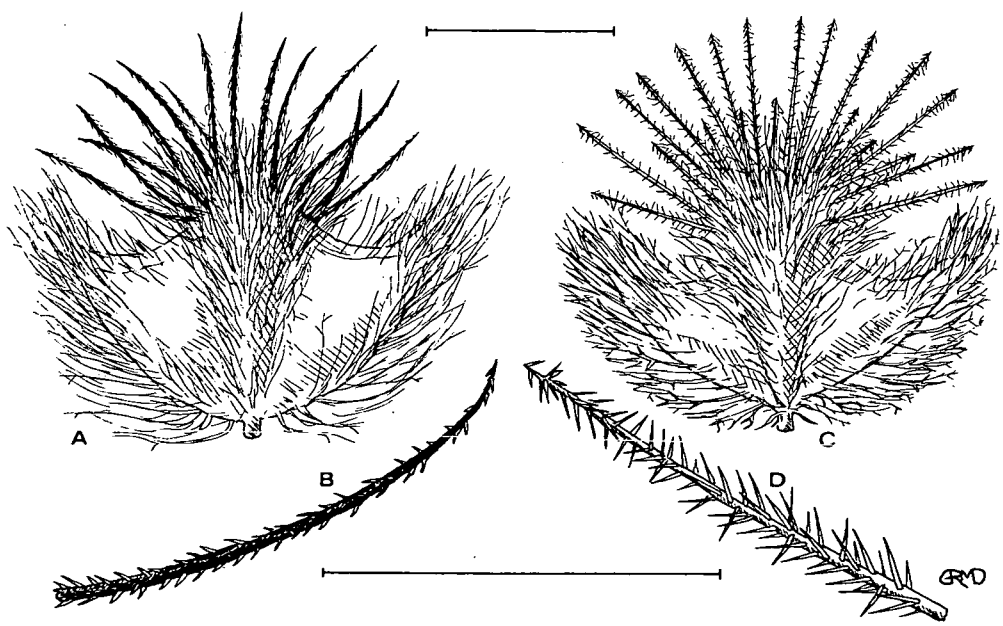


Fig. 2. A-B, *Calotis multicaulis*: A, achene; B, pappus awn (drawn from *Weber 2807*); C-D, *Calotis plumulifera*: C, achene; D, pappus awn (drawn from *Alcock 6358*). Scales: 1 mm.

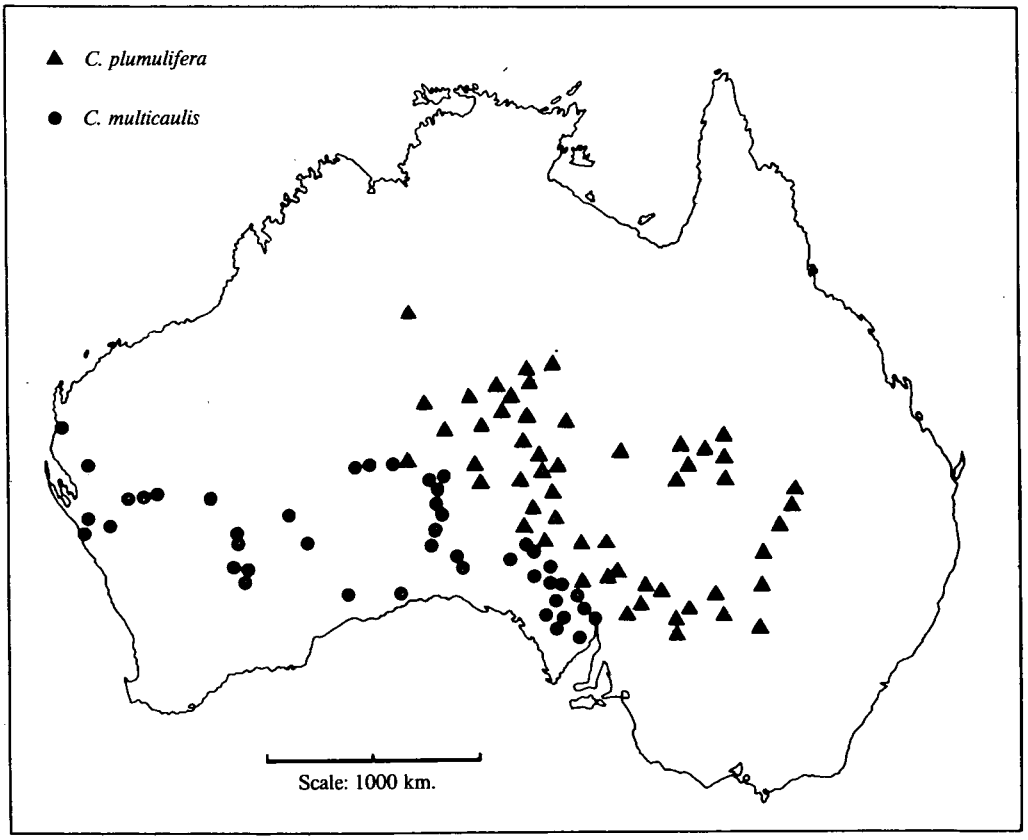
Selected specimens examined (collections seen: 180)

NORTHERN TERRITORY: c.5 km of Alice Springs, 6.vii.1968, *J.Z. Weber 863* (AD).

SOUTH AUSTRALIA: Mound Springs campsite, 26°25'S 135°30'E, 1.x.1968, *C.R. Alcock 6358* (AD); 105 miles S of Oodnadatta, 27.viii.1969, *S. Smith-White & C. Carter 4869* (CANB).

QUEENSLAND: 31 miles N of Qld border at Warri Gate, 2.ix.1971, *H.M. Stace 7703* (CANB).

NEW SOUTH WALES: 28 miles S of Broken Hill on Menindee road, 19.viii.1969, *H.M. Stace 5245* (CANB); 41 miles N of Wilcannia, 17.viii.1970, *H.M. Stace 6224* (CANB).



Map 1. Distribution of *Calotis multicaulis* and *C. plumulifera*.

3. Olearia

Olearia passerinoides (Turcz.) Benth., Fl. Austr. 3:482 (1867). *Diplopappus passerinoides* Turcz., Bull. Soc. Nat. Mosc. 24:62 (1851).

Type: W. Aust., *J. Drummond 5th collection:371* (*n.v.*)

Key to subspecies

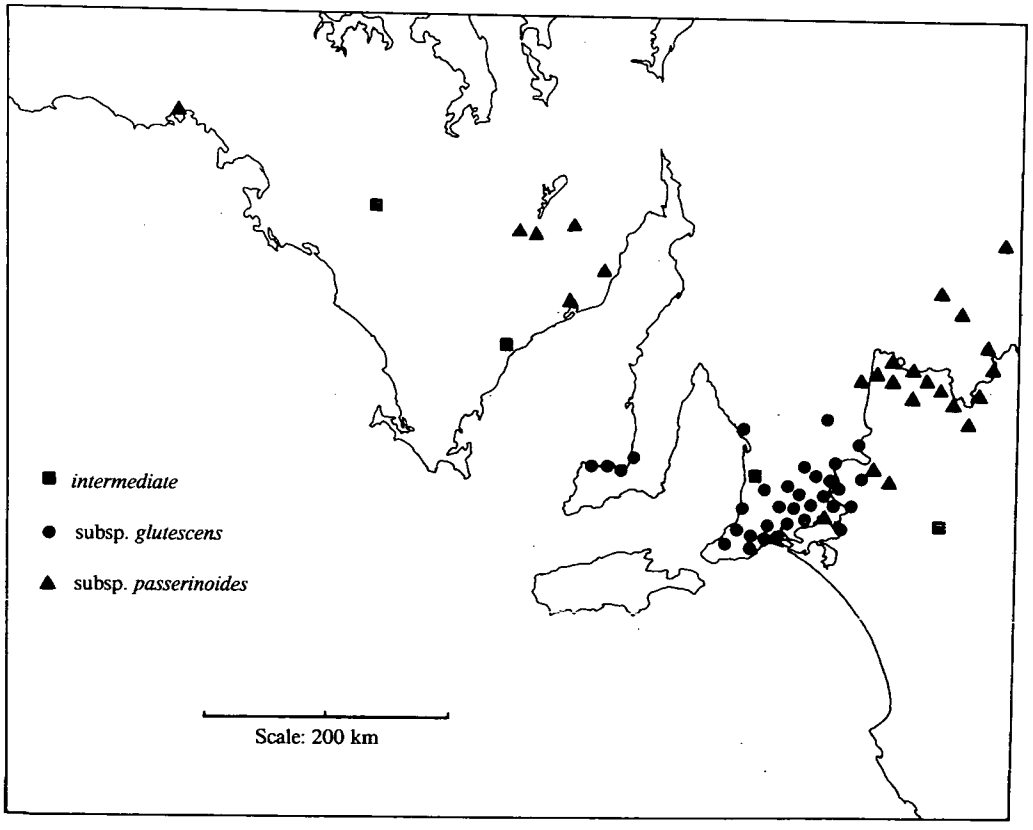
Capitula solitary; ray florets 6-9, ligules 4-6 mm long; leaves 4-12 mm long, erect to subappressed or spreading ..... subsp. *passerinoides*

Capitula in corymbs of 2-8; ray florets 8-15, ligules 6-10 mm long; leaves 10-20 mm long, spreading ..... subsp. *glutescens*

Olearia passerinoides subsp. **glutescens** (Sonder) D.A. Cooke, comb. & stat. nov.

Eurybia glutescens Sonder, Linnaea 25:462 (1853).

Syntypes: Port Gawler, v.1849, *F. Mueller s.n.* (MEL!); ad Murray versus Wellington, *F. Mueller s.n.* (n.v.).



Map 2. Distribution of the subspecies of *Olearia passerinoides* in South Australia.

Olearia passerinoides has two regional facies in South Australia, one of them with short leaves and solitary capitula agreeing with the typical subspecies in Western Australia, the other with larger leaves and capitula in corymbs. They are treated here as subspecies which intergrade but have more less distinct distributions (Map 2). Subsp. *glutescens* is restricted to the higher rainfall regions of South Australia. It was erroneously placed in synonymy under *O. glutinosa* by Bentham (1867) and Black (1929), and placed under *O. passerinoides* by Willis (1956).

Olearia suffruticosa D.A. Cooke, sp. nov.

Suffrutex viscidus 40-70 cm altus surculis gracilibus caudice lignosi exorientibus. *Caules* erecti striati glabri virides, ramis divaricatis paniculam corymbosam laxam formantibus superne. *Folia* sessilia, plus minusve erecta vel subappressa, linearia integra, obtusa vel suprema apiculata, 3-14 (-24) mm longa c. 0.8 mm lata sursum decrescentia, subtereta, supra canaliculata, subtus convexa, glabra, in sicco glebosa glandibus immersis dispersis, inferiora ante anthesin marcescentia. *Capitula* ramos ultimos foliosos paniculae terminantes. *Bracteae involucri* bifariae, ellipticae vel lanceolatae, 2-2.6 mm longae, membranaceae virdulae minutissime glandulosae, ad apicem acutae plerumque purpureae. *Receptaculum* convexum valde scrobiculatum c. 1.5 mm diametro. *Flosculi radii* 14-20, ligulis 7-8 mm longis albis roseisve. *Flosculi disci* 18-28, corollis infundibuliformibus c. 2.5 mm longis roseis. *Achenia* tereta striata pubescentia vel sericea. *Pappus* c. 2 mm longus subroseus, setis 25-36 aequalibus barbellatis. (Fig. 3A).

Type: Bool Lagoon, Hd. of Robertson, c. 25 km S of Naracoorte, 7.iv.1963, *D. Hunt 1545* (Holotype: AD 96319027).

Etymology: Botanical Latin *suffruticosus*, subshrubby or somewhat woody; referring to the habit of the species.

Subshrub 40-70 cm high, sticky, with slender shoots arising from a woody stock. *Stems* erect, striate, glabrous, green, with divaricate branches above forming a lax corymbose panicle. *Leaves* sessile, more or less erect to subappressed, linear, entire, obtuse or the uppermost ones apiculate, 3-14 (-24) mm long, c. 0.8 mm wide, decreasing in size up the stem, subterete, channeled above, convex on the lower side, glabrous, in the dried state lumpy with scattered immersed glands, the lower ones withering before flowering. *Capitula* terminating the ultimate leafy branches of the panicle. *Involucral bracts* 2-seriate, elliptic to lanceolate, 2-2.6 mm long, membranous, greenish, very minutely glandular; apices acute, often purple. *Receptacle* convex, deeply pitted, c. 1.5 mm diametro. *Ray florets* 14-20; ligules 7-8 mm long, white to pink. *Disk florets* 18-28; corollas infundibuliform, c. 2.5 mm long, pink. *Achenes* terete, striate, pubescent to sericeous. *Pappus* c. 2 mm long, pinkish, with 25-36 equal barbellate bristles.

O. suffruticosa occurs in south-eastern South Australia and south-western Victoria on swampy ground of low nutrient status. Flowering is recorded from March to May.

Specimens examined (Paratypes)

SOUTH AUSTRALIA: Yallum, 1883, *Allen s.n.* (AD 96917010; AD 96926135); Lucindale, 7.iv.1971, *M. Beek 44* (AD 97121258); Bool Lagoon, 12.v.1963, *D. Hunt 1545b* (AD 96330058).

VICTORIA: Between Woohlpooer and Glenisla, W side of Victoria Range, Grampians, 4.iii.1957, *A.C. Beauglehole 4042* (AD 98015210; MEL 1518616); about midway between Dergholm and Penola, 16.xii.1963, *A.C. Beauglehole 5950* (AD).

This species is closely related to *O. glandulosa* (Labill.) Benth., but is readily distinguished by the subshrubby habit, loose leafy inflorescence, and larger capitula (Fig. 3 A & B). The two species are sympatric and occur in similar habitats, but no transitional specimens have been seen and they have distinct flowering periods (November to March in *O. glandulosa*).

Fig. 3. A, *Olearia suffruticosa* (drawn from *Beek 44*); B, *Olearia glandulosa* (drawn from *Eichler 12198*). Scale: 5 cm.

Olearia pimeleoides (DC.) Benth., Fl. Austr. 3:479 (1867).

Eurybia pimeleoides DC., Prod. 5:268 (1836).

Type: near Peel's Range (New South Wales), 20.vi.1817, *A. Cunningham s.n.* (Holo: G, photo!).

Key to subspecies

Young stems and both surfaces of leaves lanate with grey arachnoid tomentum ..... subsp. *incana*

Young stems and lower surfaces of leaves shortly pubescent with compact whitish tomentum; leaves glabrous to subglabrous above ..... subsp. *pimeleoides*

subsp. **incana** D.A. Cooke, subsp. nov.

Frutex incanus, dense ramosus, 50-150 cm altus. *Ramuli* lanati tomento arachnoideo cineraceo demum glabrescentes. *Folia* in superficiebus ambabus lanata tomento arachnoideo cineraceo. *Capitula* solitaria, raro 2-3 fasciculata.

Type: c. 5 km S of Maralinga, 30.vii.1969, *B. Copley 2695* (Holotype: AD 96937169).

Etymology: Latin *incanus*, hoary; referring to the greyish foliage.

Shrub, hoary-grey, densely branched, 50-150 cm high. *Branchlets* lanate with grey arachnoid tomentum, eventually becoming glabrous. *Leaves* lanate with grey arachnoid tomentum. *Capitula* solitary or rarely in clusters of 2-3.

O. pimeleoides subsp. *incana* occurs in the Great Victoria Desert region of Western Australia and South Australia. Flowering is recorded in August and September.

Selected specimens examined (Paratypes)

WESTERN AUSTRALIA: Victoria Desert, Camp 59, 22.ix.1891, *R. Helms s.n.* (AD 96507001; AD 96926137).

SOUTH AUSTRALIA: 29°17′S 129°04′E, 7.viii.1979, *V.J. Levitzke 190* (AD 98126236); S of Mt. Beadell, 13.viii.1960, *H. Turner s.n.* (AD 96317001); 147 km W of N of Cook, 29°17′15″S 130°13′E, 19.vii.1979. *L.D. Williams 10512* (AD 98125003); near Maralinga, 18.ix.1960, *P. Wilson 1745* (AD 96138003).

The subspecies *incana* appears to be parapatric with the typical subspecies at the south-eastern edge of its range, which is almost entirely through more arid habitats than the range of subsp. *pimeleoides*.

TRIBE INULEAE

4. Podolepis

Podolepis muelleri (Sonder) Davis, occurring in N.S.W. and South Australia, was differentiated from the Western Australian *P. lessonii* (Cass.) Benth. by Davis (1957). Study of South Australian material formerly determined as *P. muelleri* has demonstrated the existence of the related inland species described here.

Podolepis davisiana D.A. Cooke, sp. nov.

Herba annua, 8-16 cm alta, subincana vestimento araneoso eglanduloso. *Caules* ascendentes, parce ramificantes, teretes, brunneo-vinosi, sparsim arachnoidei apprime prope nodos. *Folia basilaria* pauca, elliptica vel oblanceolata, 1-4 cm longa, arachnoidea, marcescentia. *Folia caulina* lanceolata vel elliptica, basi amplexicaulia, apice acuta, 1-4 cm longa, 3-8 mm lata, margine aliquanto revoluta, super arachnoidea vel lanata, subtus densiore lanata. *Capitula* homogama, pedunculata, 1-3 in bostryche laxo folioso ramum unoquoque terminante. *Pedunculus* capillaris, 1-4 cm

longus, subglabrus, brunneo-vinosus, filo cupreo similis. *Involucrum* hemisphaericum, 8-10 mm diametro, bracteis quasi sexfariis. Laminae bractearum late ovatae, acutae, scariosae, laeves vel leviter caperatae, stramineae, prope apicibus saepe plusminusve aerugino-tinctae. Bracteae extimae brevissime, laminis integris sessilibus; serierum intermediarum usque ad 5 mm longae, laminis magnioribus plusminusve ciliatis, in stereomatibus incurvatis successive longioribus herbaceis glandulosis; intimae c. 4 mm longae, non nisi ad basim adhaerentes, stereomatibus spathulatis basi dilatatis herbaceis glandulosis, scarioso-hyalinae marginatae. *Receptaculum* planum, nudum, scrobiculatum. *Flosculi* 40-90, omnes similares, bisexuales, fertiles, involucrum excedentes, exteriores deflexi impendentes. *Corolla* tubularis, flava; tubus anguste cylindricus, 2.5-3 mm longus; lobi 5, lanceolati, patentes, marginibus incrassatis in sicco fuscatis. *Antherae* 5, subperfecte exsertae, c. 1.4 mm longae cum apicibus lanceolatis sterilibus c. 0.4 mm longis. *Achaenium* ellipsoideum vix compressum, c. 1.5 mm longum cum fundo angustato 0.25 mm longo, 0.4 mm latum, sparsim papillatum, brunneum. *Setae pappi* 9-14, uniseriales, equales, 2-2.6 mm longae, subplumosae, albidae, brevissime connatae annulum formantes. (Descriptio typi.) (Fig. 5).

Type: western edge of Lake Torrens, c. 3 km N of South Gap Station Homestead, 3.ix.1968, *R. Swinbourne 19* (Holotype: AD 96929450; isotype: MEL).

Etymology: Named after Professor Gwenda L. Davis, who first revised *Podolepis* and several other genera of Australian Compositae.

Annual herb 8-16 cm high, almost hoary with an arachnoid non-glandular vestiture. *Stems* ascending, sparsely branched, terete, brown-vinaceous, sparsely arachnose especially near the nodes. *Basal leaves* few, elliptic to oblanceolate, 1-4 cm long, arachnose soon withering. *Cauline leaves* lanceolate to elliptic, amplexicaul at the base, acute, 1-4 cm long, 3-8 mm wide, somewhat recurved at the margins, archnose to lanate above, more densely lanate below. *Capitula* homogamous, pedunculate, 1-3 in a leafy bostryx terminating each branch. *Peduncle* capillary, 1-4 cm long, subglabrous, brown-vinaceous, resembling copper wire. *Involucre* hemispherical, 8-10 mm diam., with bracts in about 6 series. Bract laminae broadly ovate, acute, scarious, smooth or slightly wrinkled, stramineous, often somewhat blue-green tinted near the apex. Outermost bracts very short with entire sessile laminae; intermediate bracts up to 5 mm long with larger more or less ciliate laminae on successively longer herbaceous glandular incurved stereomes; innermost bracts c. 4 mm long, adhering at the bases only, with herbaceous scarious-hyaline margined glandular spathulate stereomes dilated at the base. *Receptacle* flat, naked, pitted. *Florets* 40-90, all similar, bisexual, fertile, exceeding the involucre, the outer ones deflexed and overhanging. *Corolla* tubular, yellow; tube narrowly cylindric, 2.5-3 mm long; lobes 5, lanceolate, patent, with thickened margins darkening when dried. *Anthers* 5, almost fully exserted, c. 1.4 mm long including the sterile lanceolate apices c. 0.4 mm long. *Achene* ellipsoid, slightly compressed, c. 1.5 mm long including a narrowed base 0.25 mm long, 0.4 mm wide, sparsely papillose, brown. *Pappus bristles* 9-14, uniseriate, equal, 2-2.6 mm long, subplumose, whitish, very shortly connate to form a ring at the base.

P. davisiana occurs in the Lake Eyre Basin, Gairdner-Torrens Basin and northern Flinders Ranges regions of South Australia. This distribution does not overlap that of *P. lessonii* (in Western Australia west of about 124°E), or of *P. muelleri* (restricted in South Australia to the southern Flinders Ranges and coastal cliffs of the Southern Lofty region). Habitat is on stony slopes and gibber plains. Flowering is recorded in August and September.

Specimens examined

SOUTH AUSTRALIA: Hills overlooking Lake Torrens, 5.ix.1968, *S. Barker 233* (AD 96842043); Christensen Place, Andamooka, 23.viii.1978, *E. Brown s.n.* (AD 97843444); c. 2 km W of Pimba, 7.ix.1966, *N.N. Donner 1677* (AD 96834406); The Crab Holes, Pimba, viii.1947, *A.R.R. Higginson s.n.* (AD 97233241); Mt Barry Station, 13.ix.1951, *E.H. Ising s.n.* (AD 96507171); 12 miles W of Mt Barry Station, 12.ix.1955, *E.H. Ising 3829* (AD 96507187); Mt Lyndhurst, viii.1899, *M. Koch 217* (AD 97631663; AD 97631665); c. 20 km W of Pimba, 2.viii.1963, *R.H. Kuchel 539* (AD 96344019); N of Lake Hanson Dam, Wirramina Station, ref. 435125 Kingoonya, 12.viii.1971, *B. Lay 371* (AD 97149215); 5 miles N of Duff Creek, 7.viii.1963, *T.R.N. Lothian 1354* (AD 96338055; MEL); Warrina, 31.vii.1968, *T.R.N. Lothian 4918* (AD 96845292).

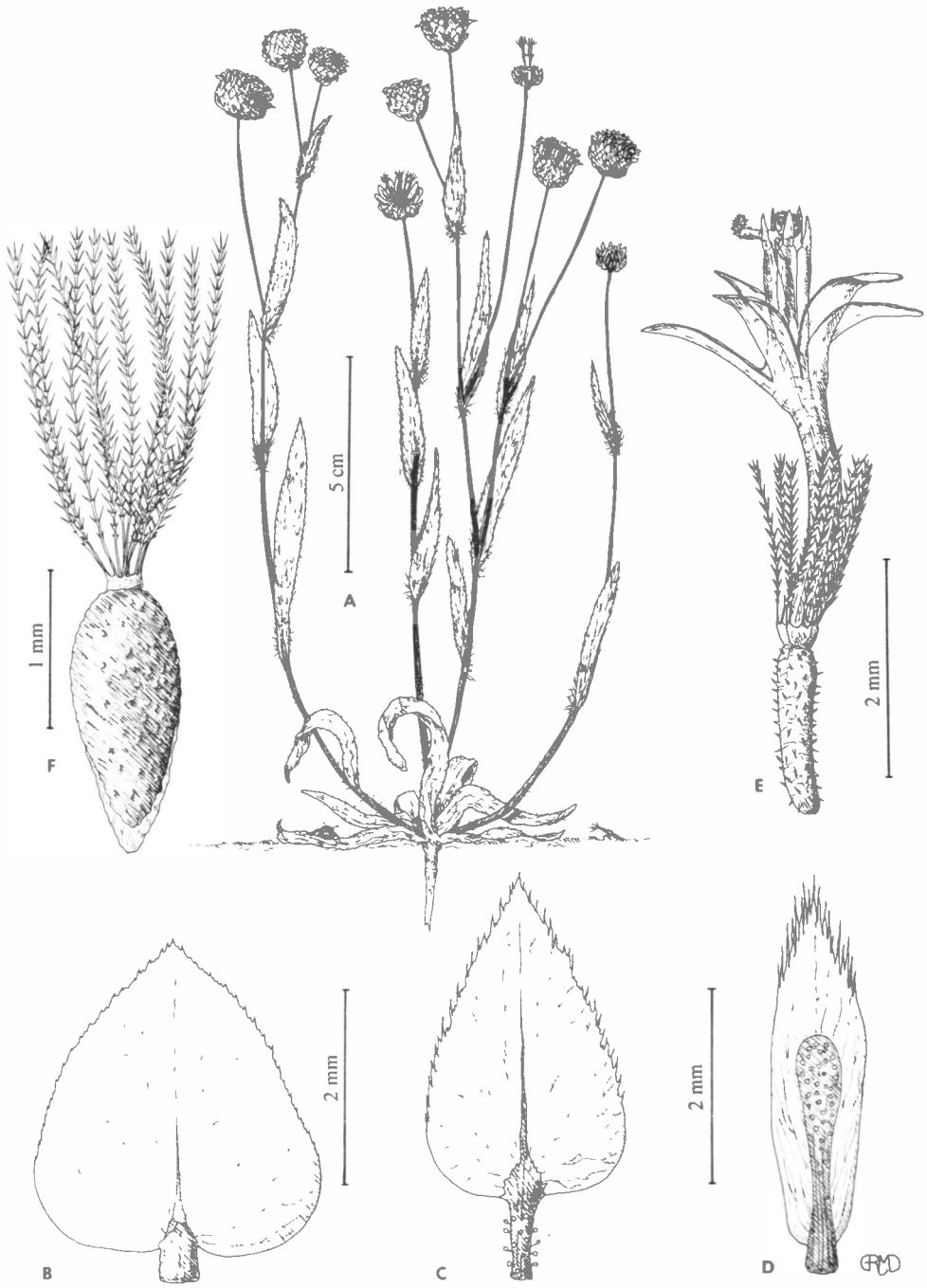


Fig. 4. *Podolepis davisiana*: A, whole plant; B, outer bract; C, intermediate bract; D, inner bract showing the stereome dilated at base only; E, floret; F, achene (drawn from holotype).

P. davisiana is closely related to *P. lessonii* and *P. muelleri*, both of which are annuals with wiry stems, amplexicaul leaves, small discoid capitula on long naked peduncles, and broad, membranous involucral bracts. In both these species the outer florets are female, with 3 or 4 corolla lobes and a variously reduced pappus; thus, *P. davisiana* is unique in the genus in having homogamous capitula.

The stereomes of the innermost series of involucral bracts are also of diagnostic importance in these species. In *P. lessonii* they are narrowly oblanceolate, completely free and surrounded by membranous margins; in *P. muelleri* they are broadly oblong, fused for about half their length and greatly thickened to form a cup around the florets. The condition in *P. davisiana* is between these extremes, with the stereomes adhering at the base only.

Podolepis tepperi (F. Muell.) D.A. Cooke, comb. nov.

Helichrysum tepperi F. Muell., *Wing's Southern Science Record* 2:1 (1882).

Type: Mulloowurtie, Yorke Peninsula, South Australia, 28.ix.1880, *J.G.O. Tepper 79* (Holo: MEL!).

Podolepis tepperi is a small, short-lived annual or ephemeral of poor soils, apparently an inbreeder on the evidence of the low pollen-ovule ratio (Short, 1981), and consequently has capitula and florets which are reduced in structure and inconspicuous. Mueller (1882) placed it in *Helichrysum* on the basis of the narrow, shortly lobed corollas and the almost filiform female florets. However, *P. tepperi* closely resembles the three species discussed above in habit, vestiture, leaf form and involucre. It appears to be more appropriately treated as a reduced *Podolepis* related to these species and more distantly to *P. capillaris* (Steetz) Diels than as an anomalous *Helichrysum*.

5. Scyphocoronis

This genus has been regarded as monotypic, with the species *S. major* (Turcz.) Druce occurring in Western Australia and South Australia. Schodde (1963) referred two anomalous specimens from the far north-west of South Australia to an undescribed taxon of uncertain affinities; further collections have made it possible to describe this taxon as a species of *Scyphocoronis*.

Scyphocoronis incurva D.A. Cooke, sp. nov.

Herba annua, 2-8 cm alta, vestimento brevissimo viscido. *Caules* plerumque e basi aliquot, ascendentes ramis brevibus erectis vel suberectis, teretes, glanduloso-pubescentes. *Folia basilaria* pauca, linearia, unumquidque caulem subtendens, marcescentia. *Folia caulina* alterna vel inferiora subopposita, erecta, linearia vel oblanceolata, subacuta, 3.5-22 mm longa, 0.7-1.2 mm lata, margine integra, utrinque virida glanduloso-pubescentia. *Capitula* homogama, pedunculata, terminalia, solitaria. *Pedunculus* erectus, (4)-7-24 mm longus, pubescens et pilis glandulosis brevissimus et pilis eglandulosis laxis longioribus. *Involucrum* cyathiforme, 3-4 mm longum. Bracteae 6-8-(10), unifariis, aequales, non nisi ad basim connatae vel subdiscretae, ellipticae vel oblanceolatae, herbaceae, dense glandulosae, apicibus acutis scarioso-hyalinis. *Receptaculum* planum, nudum, scrobiculatum. *Flosculi* 10-20, omnes similares, bisexuales, fertiles, involucrum excedentes, exteriores deflexi. *Corolla* tubularis, flava; tubus 2-2.4 mm longus, inferne anguste cylindricus et parce glandulosus, superne infundibuliformis; lobi 5, acuti, aequales, patentes, 0.7-0.8 mm longi. *Antherae* 5, c. 1.25 mm longae cum apicibus lanceolatis sterilibus 0.25 mm longis. *Rami styli* lineares apicibus dilatatis papillosis. *Achenium* anguste cylindricum, basi truncatum, c. 3 mm longum, inferne c. 0.5 mm diam., superne abrupte dilatatum cupulam 0.5 mm longam 0.7-0.9 mm diam. margine incurvo integro formans, laeve, parce glandulosum, nigrum. *Pappus* absens. (Fig. 5).

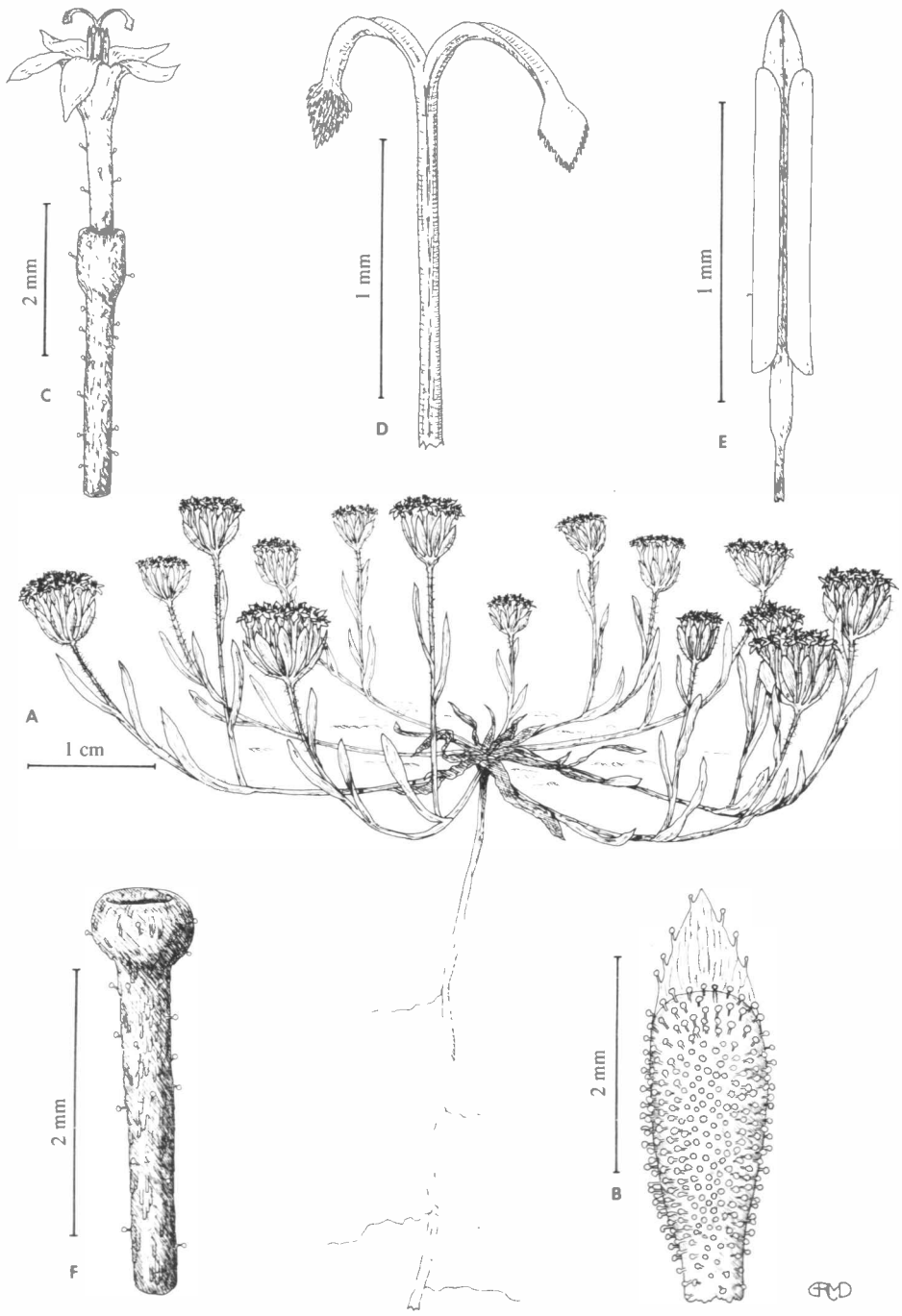


Fig. 5. *Scyphocoronis incurva*: A, whole plant; B, bract; C, floret; D, style; E, anther; F, achene (drawn from holotype).

Type: "Unnamed Conservation Park", NW portion, just E of S.A. and W.A. border and W of Serpentine Lakes, along the track, 28°32'S 129°00'E, 25.viii.1980, *J.Z. Weber 6461* (Holotype: AD 98040027).

Etymology: Botanical Latin *incurvus*, incurved, referring to the rim of the cup surmounting the achene.

Annual herb 2-8 cm high, with very short viscid vestiture. *Stems* usually several from the base, ascending with short erect or suberect branches, terete, glandular-pubescent. *Basal leaves* few, linear, each subtending a stem, soon withering. *Cauline leaves* alternate or the lower ones subopposite, erect, linear or oblanceolate, subacute, 3.5-22 mm long, 0.7-1.2 mm wide, with an entire margin, green and glandular-pubescent on both surfaces. *Capitula* homogamous, pedunculate, terminal, solitary. *Peduncle* erect, (4)-7-24 mm long, pubescent with very short glandular hairs and longer lax non-glandular hairs. *Involucre* cyathiform, 3-4 mm long. Bracts 6-8-(10), uniseriate, equal, connate at the base only or almost free, elliptic or oblanceolate, herbaceous, densely glandular, with acute scarious-hyaline apices. *Receptacle* flat, naked, pitted. *Florets* 10-20, all similar, bisexual, fertile, exceeding the involucre, the outer ones deflexed. *Corolla* tubular, yellow; tube 2-2.4 mm long, narrowly cylindric and sparsely glandular below, infundibuliform above; lobes 5, acute, equal, patent, 0.7-0.8 mm long. *Anthers* 5, c. 1.25 mm long including the sterile lanceolate apices 0.25 mm long. *Style branches* linear with dilated papillose apices. *Achenes* narrowly cylindric, truncate at the base, c. 3 mm long, 0.5 mm diam. below, abruptly dilated above to form a cup 0.5 mm long, 0.7-0.9 mm diam. with an entire incurved rim, smooth, sparsely glandular, black. *Pappus* absent.

S. incurva occurs from the Cosmo Newberry area of Western Australia through the Great Victoria Desert into the Northwestern region of South Australia; the range does not overlap that of *S. major*. Habitat is on sand dunes and inter-dune swales. Flowering is recorded from July to September.

Table 1. Comparison of *S. incurva* and *S. major*

	S. incurva	**S. major**
Habit	loosely spreading	compact
Peduncle length	(4-)7-24 mm	1.7 mm
Peduncle vestiture	short glandular hairs exceeded by arachnoid nonglandular hairs	short glandular hairs only
Bract number	6-8(-10)	3-8
Bract shape	elliptic to oblanceolate	linear to narrowly elliptic
Florets	all 5-merous	4-merous and 5-merous
Corolla tube length	2-2.4 mm	1-1.6 mm
Corolla lobe length	0.7-0.8 mm	0.2-0.3 mm
Anther cell length	c. 1 mm	c. 0.3 mm
Anther appendage length	c. 0.25 mm	c. 0.1 mm
Achene cup rim	entire, incurved	irregularly toothed or jagged, erect

Specimens examined

WESTERN AUSTRALIA: 32 km ENE of Cosmo Newberry, 1.ix.1973, *R.J. Chinnock 686* (AD 97343202).

SOUTH AUSTRALIA: Camp 22 (Elder Exploring Expedition), 16.vii.1891, *R. Helms s.n.* (AD 95732062; AD 96923020); Cook-Vokes Hill road 1 km S of Camp 2, Great Victoria Desert, 19.viii.1980, *G. Jackson 1247* (AD 98048098); Seismic line running N from Vokes-Serpentine road, Great Victoria Desert, 28°33′S 130°41′E, 22.viii.1980, *G. Jackson 1419* (AD 98048029); c. 130 km N of Cook along track, Cook-Vokes corner, 29°36′S 130°08′E, 19.viii.1980, *J.Z. Weber 6330* (AD 98037029); 7.84 km E of W.A. border on track from Serpentine Lakes, 28°30′15″S 129°04′45″E, 29.vii.1979, *L.D. Williams 10699* (AD 98125042).

Most of the specimens cited above had previously been determined as *Millotia greevesii* F. Muell. var. *helmsii* (F. Muell. & Tate) Schodde, which is readily distinguished from *Scyphocoronis* by the white lanose vestiture, the presence of a small pappus and the absence of a cup on the achene.

The most notable morphological differences between *Scyphocoronis incurva* and *S. major* are summarised in Table 1.

Specimens of *S. major* used in comparison

SOUTH AUSTRALIA: c. 7 km NE of Daly Head, 13.x.1968, *W.R. Barker 641* (AD 96927226); c. 0.75 km NW of Bascombe Well Homestead, 8.x.1967, *Hj. Eichler 19350* (AD 96825179); Point Sinclair, 16.ix.1971, *Hj. Eichler 21366* (AD 98242425); Hincks National Park, 10.x.1968, *J.R. Wheeler 981* (AD 96924290).

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