New species of *Olearia* (Asteraceae: Astereae) endemic to Western Australia

N.S. Lander

Western Australian Herbarium, Department of Conservation & Land Management,
P.O. Box 104, Como, Western Australia 6152

Abstract

Lander, N.S. New species of *Olearia* (Asteraceae: Astereae) endemic to Western Australia. Nuytsia 7(2): 141-159 (1990). Seven new species of *Olearia* are described, namely *O. eremaea* Lander, *O. fluvialis* Lander, *O. incondita* Lander, *O. laciniifolia* Lander, *O. mucronata* Lander, *O. occidentissima* Lander and *O. plucheacea* Lander. All are endemic to Western Australia. Five of them may be rare and/or endangered.

Introduction

Work in progress towards an account of *Olearia* Moench for the "Flora of Australia" has revealed many new taxa. It will be some years before this project is completed. This paper provides descriptions of seven distinctive new species in order to make their names available for use in the interim. All of these taxa are endemic to Western Australia, and five of them are considered rare and/or endangered.

It is worthy of note that *O. fluvialis* and *O. mucronata* bring the number of endemic plant species recorded in the Fortescue District from 65 (Sandell et al. 1988) to 67 and the number of these restricted to the Hamersley Range National Park to 12.

Olearia eremaea Lander, sp. nov. (Figure 1)

Species nova ad *Olearium* sectionem *Merismotrichum* pertinens; foliis sessilibus, planis, ellipticis vel obovatis, membranaceis facile distinguitur.

Typus: Beegull [Rockhole], 93 miles [150 km] NE of Cosmo Newberry [Mission], Western Australia, 25 August 1961, *A.S. George* 2881 (holo: PERTH).

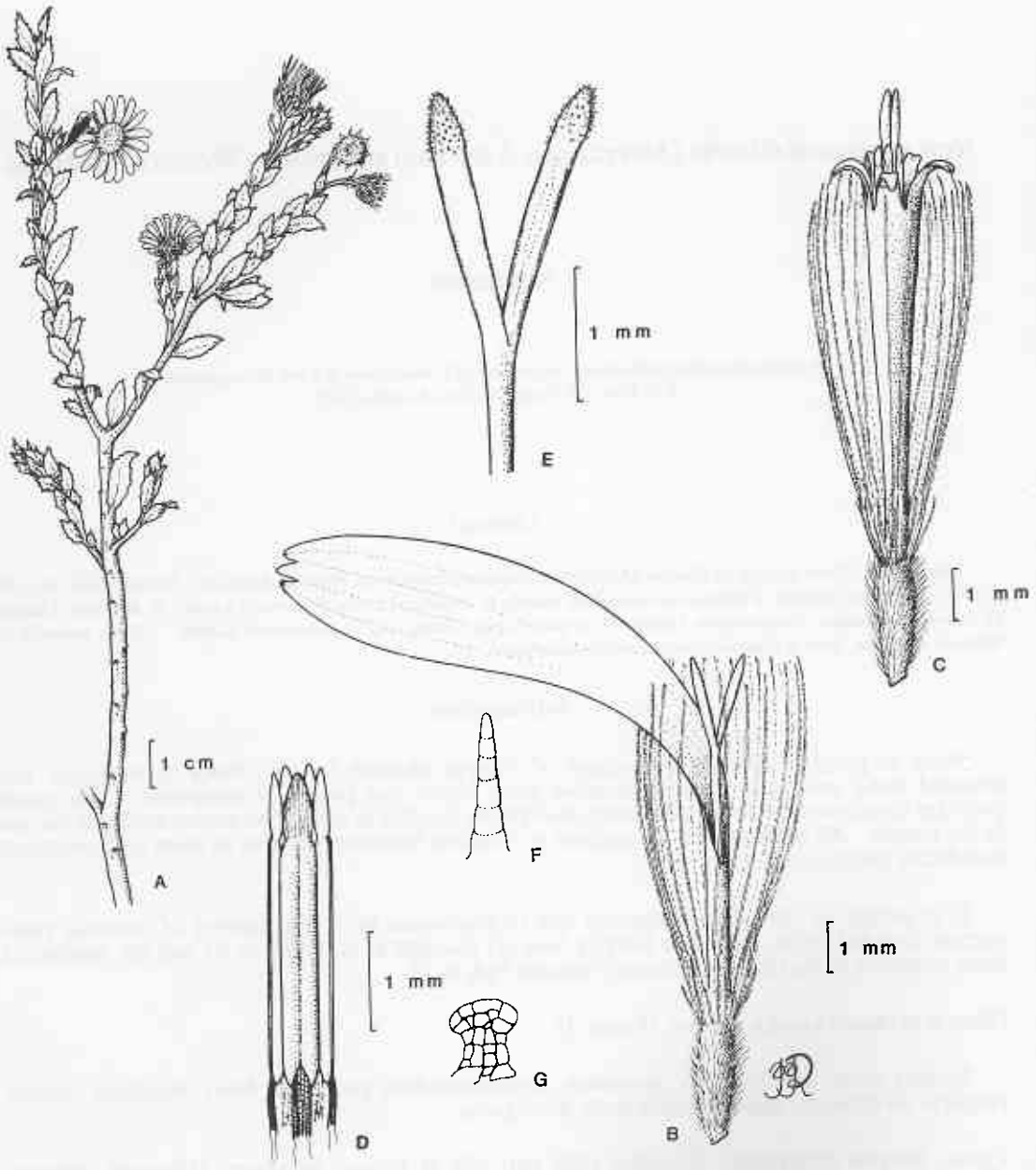

Figure 1. *Olearia eremaea*. A - Habit. B - Ray floret. C - Disc floret. D - Anthers. E - Stylar arms. F - Multicellular, uniseriate simple eglandular hair (from leaf). G - Multicellular, multiseriate capitate glandular hair (from involucral bract). Drawn from *A.S. George* 2881 (holo: PERTH).

Shrub to 1.5 m high. *Vestiture* of vegetative surfaces with minute, sessile glandular hairs and multicellular, uniseriate, simple eglandular hairs. *Stems* erect, reddish when young, becoming brown, viscid, densely glandular and with scattered eglandular hairs. *Leaves* alternate, scattered, ascending, sessile; lamina flat, elliptic or somewhat obovate, 6-16 x 2-5 mm, concolorous, pale green, viscid; venation indistinct apart from midvein; vestiture uniformly densely glandular and with scattered eglandular hairs; texture membranous; base narrowly cuneate; margin serrate, flat; apex acute, muticous. *Heads* terminal, solitary, pedunculate, conspicuously radiate, 15-40 mm diameter; disc 6-15 mm diameter. *Peduncle* to 18 mm long, densely glandular and with scattered eglandular hairs, with several leaflike bracts grading into those of the involucre. *Involucre* hemispheric; bracts 4-6-seriate, 3.4-8.0 x 0.6-1.0 mm. *Outer involucral bracts* linear, somewhat cymbiform; stereome green, viscid, densely glandular and with scattered eglandular hairs abaxially; margin membranous, entire; apex narrowly acute. *Inner involucral bracts* linear, flat; stereome pale green, smooth, glabrous; margin membranous, fimbriate; apex acuminate, sometimes purplish, fimbriate. *Receptacle* flat. *Ray florets* 13-22, biseriate, female, 10.3-18.5 mm long; tube glabrous; limb linear or narrowly ovate, 8.2-15.3 x 2.0-2.4 mm, white, glabrous, acute and minutely 2-3-lobed apically; staminodes absent; stylar arms filiform, 1.3-3.0 mm long. *Disc florets* 41-46, bisexual, yellow, buccinate, 7.6-8.8 mm long, glabrous; lobes 5, 0.7-1.4 mm long, acute; anthers 2.8-3.3 mm long, basally acute and shorter than the filament collar, with narrowly ovate, sterile terminal appendage; filament collar 0.5-0.7 mm long; stylar arms oblong, 1.8-2.4 mm long, with halfconic sterile appendages bearing botuliform collecting hairs above the stigmatic lines. *Achene* narrowly obovoid, somewhat flattened, 3.5-4.6 x 1.2-1.6 mm, pale brown, sericeous with duplex hairs; venation indistinct; carpopodium central. *Pappus* biseriate, with 16-25 free, minutely barbellate bristles more or less equal in length to the tubular florets, and an outer row of several much shorter ones c. $\frac{1}{8}$ as long.

Flowering period. July to August.

Distribution. Endemic to the Eremaean Botanical Province of Western Australia, occurring at scattered localities in the Ashburton and Giles Districts between 25-29° S and 118-127° E (Figure 8).

Habitat. In shallow, stony soil on lateritic breakaways amongst open *Acacia* shrubland.

Conservation status. Although widely distributed, this species has been little collected, occurring only in small populations restricted to a specific habitat; it does not appear to be endangered or vulnerable. It thus appears to warrant the category 3R in the coding system of Leigh et al. (1981).

Other specimens examined. WESTERN AUSTRALIA: 103 miles [166 km] W of Warburton Mission, June 1973, *A. Blomberry* s.n. (NSW, PERTH); Scorpion Hill, 'Carnegie', *F.M. Bennett* 169 (PERTH); Robinson Range, N of Meekatharra, *J. Elkington* 329 (PERTH); 124 miles [200 km] SW of Warburton Mission, *A.S. George* 2974 (PERTH); Tugaila Rockhole [as "The Zoo"], Laverton-Warburton road, *A.S. George* 2984 (PERTH); Beegull [Rockhole], Warburton road, *A.S.George* 3763 (PERTH); 14 miles [22.5 km] E of Neale Junction, Great Victoria Desert, *A.S. George* 8420 (PERTH); 'Carnegie', *A. Salkin* 12 (PERTH).

Etymology. The specific epithet draws attention to the distribution of this taxon in the Eremaean Botanical Province of Western Australia.

Notes. The rigid, septate eglandular hairs and the glandular hairs found on the vegetative parts of plants of this species place it in *Olearia* section *Merismotriche* Archer ex Benth.

In the handbook of Grieve & Blackall (1975) specimens of this species will key variously to *O. calcarea* F. Muell. ex Benth. and *O. muelleri* (Sonder) Benth. (*O.* section *Adenotriche* Archer ex Benth.) *O. eremaea* can be distinguished from the latter two species by its leaves, which are membranous rather than incrassate and have serrate rather than entire, dentate or lobed margins; and by its discs, which comprise 41-46 rather than 21-30 (*O. calcarea)* or 12-18 (*O. muelleri)* florets.

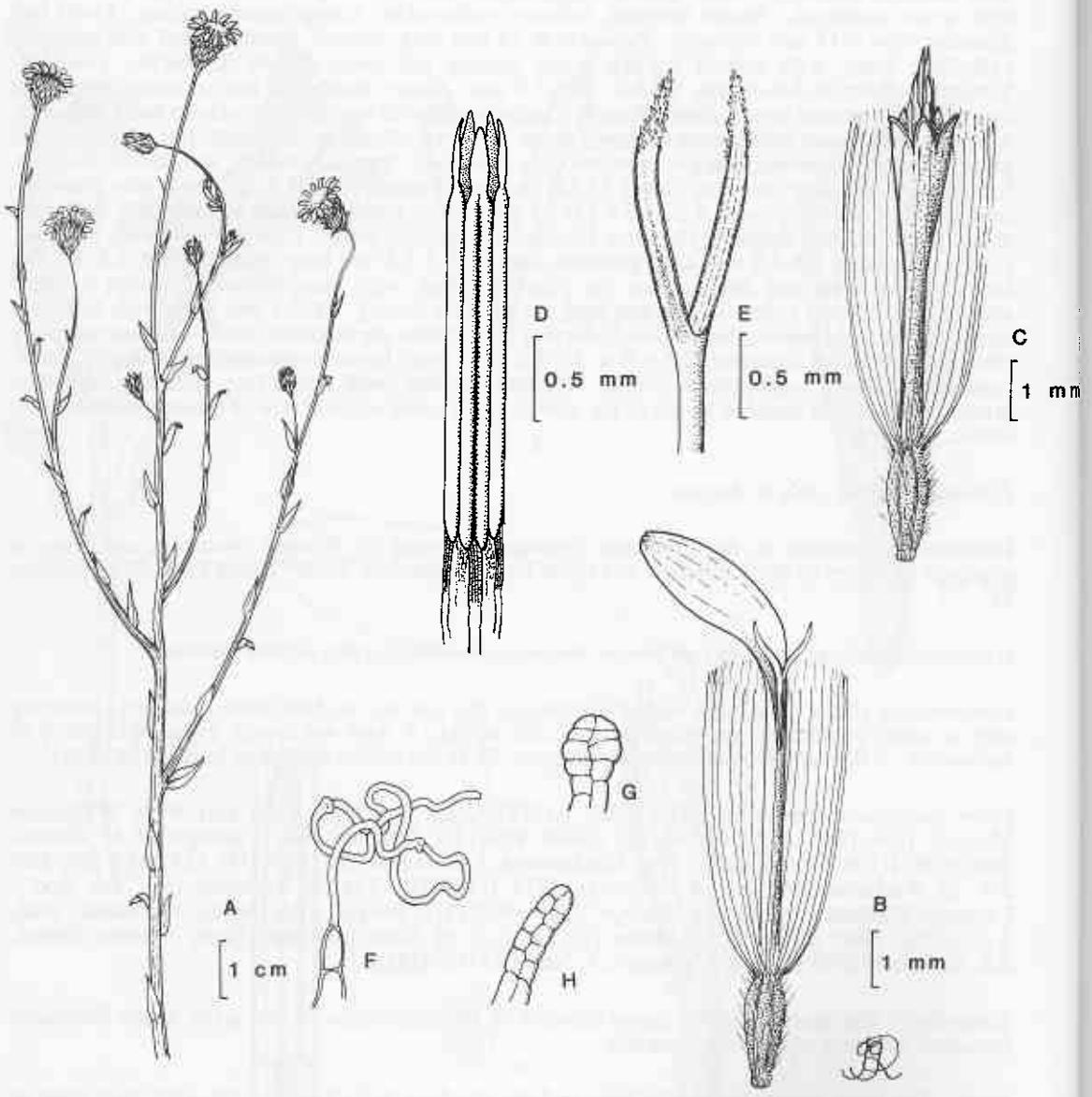

Figure 2. *Olearia fluvialis*. A - Habit. B - Ray floret. C - Disc floret. D - Anthers. E - Stylar arms. F - Long, intricate, articulate, multicelluar, uniseriate, simple eglandular hair (from leaf). G - Minute, multicellular, biseriate, capitate glandular hair (from leaf). H - Multicellular, biseriate, simple eglandular hair (from ray floret). Drawn from *W. Cussock* s.n. (holo: MEL 1547238).

Olearia fluvialis Lander, sp. nov. (Figure 2)

Species nova ad *Olearia* sectionem *Eriotrichum* pertinens; foliis disperis, sessilibus, planis, anguste ovatis, minute bullatis, integris, et capitulis heterochromis conspicue radiatisque facile distinguitur.

Typus: Fortescue River, Western Australia, anno 1895, *W. Cussock* s.n. (holo: MEL 1547238).

Shrub to 0.6 m high. *Vestiture* of vegetative surfaces with long, intricate, articulate, multicellular, uniseriate, simple eglandular hairs and minute multicellular, biseriate, capitate glandular hairs. *Stems* erect, smooth, subglabrous or arachnoid, pale green, striate. *Leaves* alternate, scattered, ascending, sessile; lamina flat, narrowly ovate, 2.0-9.0 x 1.0-2.0 mm, concolorous, green, minutely bullate; venation indistinctly reticulate with prominent midvein; vestiture uniformly subglabrous or weakly arachnoid; texture herbaceous; base rounded; margin entire, flat; apex narrowly acute. *Heads* terminal, solitary, pedunculate, consipicuously radiate, 8.8-12.5 mm diameter; disc 5-8 mm diameter. *Peduncle* to 76 mm long, subglabrous or arachnoid, with several leaflike bracts grading into those of the involucre. *Involucre* obconic; bracts 6-7-seriate, 1.7-9.2 x 0.9-1.3 mm. *Outer involucral bracts* somewhat cymbiform, narrowly triangular or linear; stereome pale green, smooth and subglabrous or weakly arachnoid abaxially; margin membranous, fimbriate; apex narrowly acute or acute. *Inner involucral bracts* somewhat cymbiform, linear; stereome pale green, smooth and glabrous or subglabrous with only eglandular hairs abaxially; margin membranous, fimbriate; apex narrowly acute. *Receptacle* flat. *Ray florets* 12-14, uniseriate, female, 6.8-9.7 mm long; tube subglabrous with multicellular, biseriate, simple eglandular hairs scattered apically; limb elliptic or ovate, 3.8-4.5 x 0.9-1.2 mm, white or mauve, glabrous, broadly acute or obtuse apically; staminodes absent; stylar arms filiform, 1.2-1.8 mm long. *Disc florets* c. 12, infundibular, 5.7-6.8 mm long, yellow, glabrous; lobes 5, 0.7-0.8 mm long, acute; anthers 2.3-2.6 mm long, basally minutely sagittate and shorter than the filament collar, with narrowly ovate, sterile terminal appendage; filament collar 0.4-0.5 mm long; stylar arms oblong, 1.5-1.7 mm long, with narrowly halfconic, sterile terminal appendage bearing botuliform collecting hairs above the stigmatic lines. *Achene* narrowly obovoid, 1.5-2.9 x 0.5-1.0 mm, brown, densely sericeous with duplex hairs, distinctly 6-7 ribbed; carpopodium conspicuous, central. *Pappus* uniseriate, with 31-40 minutely barbellate bristles subequal to the tubular florets.

Flowering period. April.

Distribution. Known from only a single locality in the Hamersley Range National Park between 22-23° S and 118-119° E in the Fortescue District, Eremaean Botanical Province, Western Australia (Figure 8).

Habitat. On iron rich alluvium.

Conservation status. Since it is restricted to a single known population, this species appears to warrant the category 2V in the coding system of Leigh et al. (1981).

Other specimen examined. Wittenoom area [precise locality withheld], *J.V. Blockley* 148 (KPBG, PERTH).

Etymology. The specific epithet draws attention to the riverine habitat favoured by this species.

Notes. The intricate, arachnoid eglandular hairs and the glandular hairs found on the vegetative parts of plants of this species place it in *Olearia* section *Eriotriche* Archer ex Benth.

In the handbook of Grieve & Blackall (1975) specimens of this species will key (with some difficulty) to *O. propinqua* S. Moore (= *O. pimeleoides* (DC.) Benth. sens. strict.). *O. fluvialis* can be distinguished from the latter by its heads, which are conspicuously pedunculate rather than

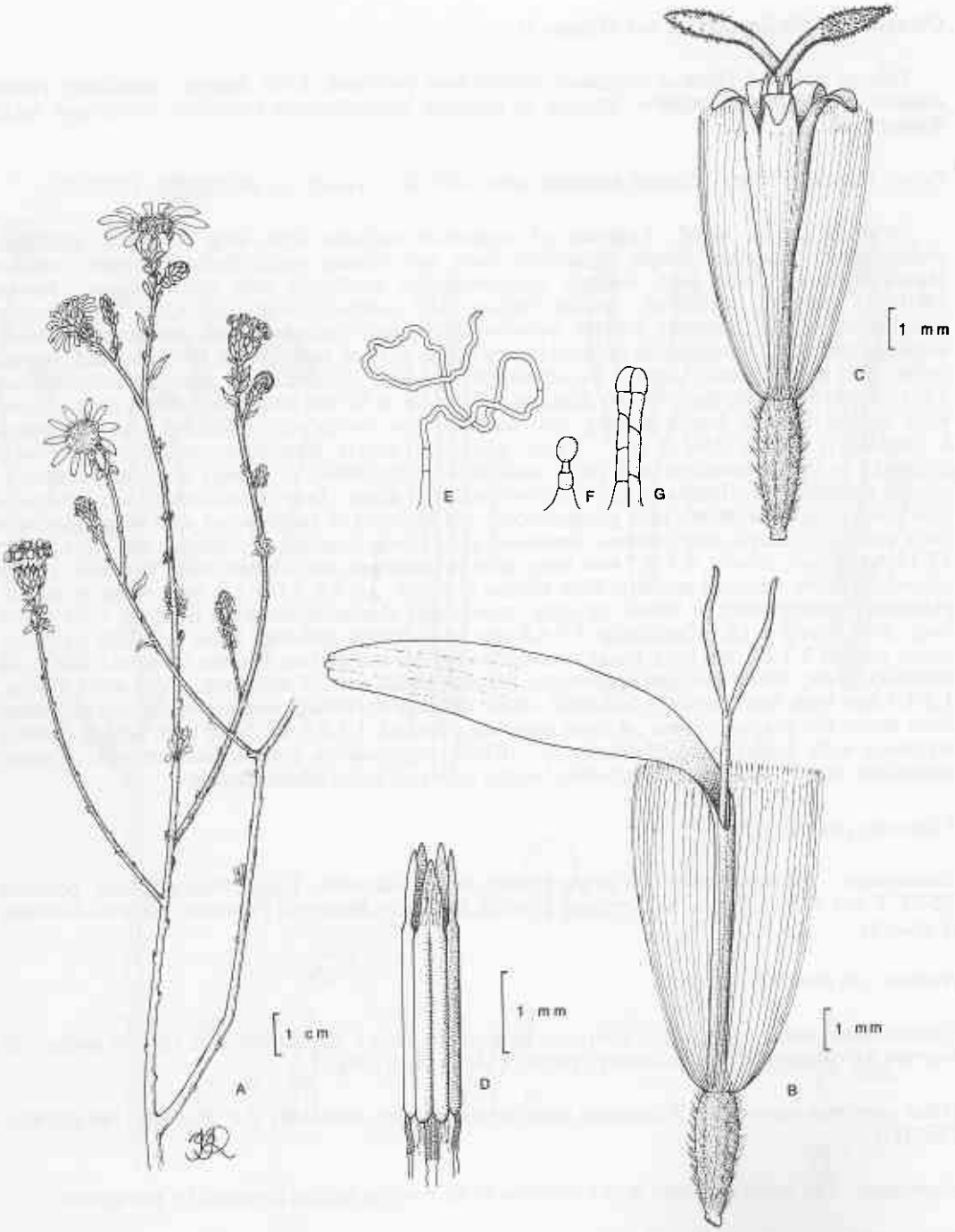

Figure 3. *Olearia incondita*. A - Habit. B - Ray floret. C - Disc floret. D - Anthers. E - Long, multicellular, uniseriate, simple eglandular hair (from leaf). F - Short, uniseriate, capitate glandular hair (from leaf). G - Multicellular, biserate, simple eglandular hair (from disc floret). Drawn from *A.M. Ashby* 2855 (holo: PERTH).

subsessile; by its involucral bracts, which are 6-7 rather than 3-5-seriate; and by its pappus, which comprises 31-40 rather than 39-65 bristles.

Olearia incondita Lander, sp. nov. (Figure 3)

Species nova ad *Oleariam* sectionem *Merismotrichum* pertinens; foliis diminutis, dispersis, anguste ellipticis, dense pustulatis, incrassatis, integris, revolutis facile distinguitur.

Typus: Near Morawa, Western Australia, 15 June 1969, *A.M. Ashby* 2855 (holo: PERTH; iso: AD).

Shrub to 1.3 m high. *Vestiture* of vegetative surfaces with long, multicellular, uniseriate, simple eglandular hairs and short, uniseriate, capitate glandular hairs. *Stems* erect and somewhat spreading, tomentose and brown or green when young, glabrous and dark green when older. *Leaves* alternate, scattered, ascending, sessile; lamina narrowly elliptic, 4-14 x 1-3 mm, concolorous, green, uniformly densely pustulate; venation obscure apart from midrib; vestiture weakly tomentose abaxially, glabrous adaxially; texture incrassate; base narrowly cuneate; margin entire, revolute; apex acute, inconspicuously mucronate. *Heads* terminal, solitary, subsessile with leaves grading into the involucral bracts, conspicuously radiate, 25-35 mm diameter; disc 10-20 mm diameter. *Involucre* hemispheric; bracts 4-seriate, 4.0-10.5 x 1.5-2.0 mm. *Outer involucral bracts* linear or narrowly elliptic, more or less flat; stereome uniformly white-tomentose abaxially; margin entire; apex acute. *Inner involucral bracts* linear, somewhat cymbiform; stereome green, smooth and with an apical tomentose patch abaxially; margin membranous, fimbriate; apex acuminate, purplish. *Receptacle* convex. *Ray florets* 7-10, uniseriate, female, 9.8-12.5 mm long; tube glabrous; limb linear or ovate, 2.0-2.5 x 7.8-10.0 mm, white or pink, glabrous, acute and minutely 3-lobed apically; staminodes absent; stylar arms filiform, 2.7-3.6 mm long. *Disc florets* 10-24, bisexual, buccinate, 8.0-9.5 mm long, yellow, subglabrous with multicellular, biseriate, simple eglandular hairs and glandular hairs adaxially; lobes 5, 0.8-1.6 mm long, acute; anthers 2.5-3.0 mm long, basally acute and shorter than the filament collar, with narrowly triangular, sterile terminal appendage; filament collar 0.5-0.6 mm long; stylar arms oblong, with narrowly half-ovoid, sterile terminal appendages bearing botuliform collecting hairs above the stigmatic lines. *Achene* narrowly obovoid, somewhat flattened, 3.0-6.6 x 0.8-1.0 mm, pale brown, hirsute with duplex hairs and glandular hairs, conspicuously ribbed; carpopodium central or somewhat oblique. *Pappus* biseriate, with 74-102 minutely barbellate bristles more or less equal to the tubular florets, and several much shorter ones c. as long.

Flowering period. January to April.

Distribution. Endemic to the South-West Botanical Province of Western Australia occurring in the Avon and Roe Botanical Districts between 29-35° S and 116-120° E (Figure 8).

Habitat. Found on margins of playa lakes and around granite outcrops.

Conservation status. Although this species is widely distributed it has been little collected, occurring only in small populations restricted to specific habitats in areas likely to experience changes in land use which would threaten its survival. It thus appears to warrant the category 3V in the coding system of Leigh et al. (1981).

Other specimens examined. WESTERN AUSTRALIA: Princess R[oyal] Harbour, May 1868, s.leg. (MEL); King George Sound, anno 1892, *M. Cronin* (MEL); 39 km N of Lake King, *H. Demarz* 8709 (KPBG, PERTH); Swan River, anno 1899, *J. Lewele* s.n. (MEL); King George Sound, s.dat., *G. Maxwell* s.n. (MEL); Golden Valley, anno 1888, *E. Merral* s.n. (MEL); Broomehill, April 1904, *A. Morrison* s.n. (K); Bromehill, Nov. 1904, *A. Morrison* s.n. (PERTH); N of Avon location 24133, 30° 55' S, 117° 22' E, *B.H. Smith* 577 (CBG, MEL, PERTH); 9 km W of Dukin, 30° 57' S, 117° 52' E, *P.G. Wilson* 11875 (PERTH); 15 km W of Dukin, 30° 57' S, 117° 20' E, *P.G. Wilson* 11878 (PERTH).

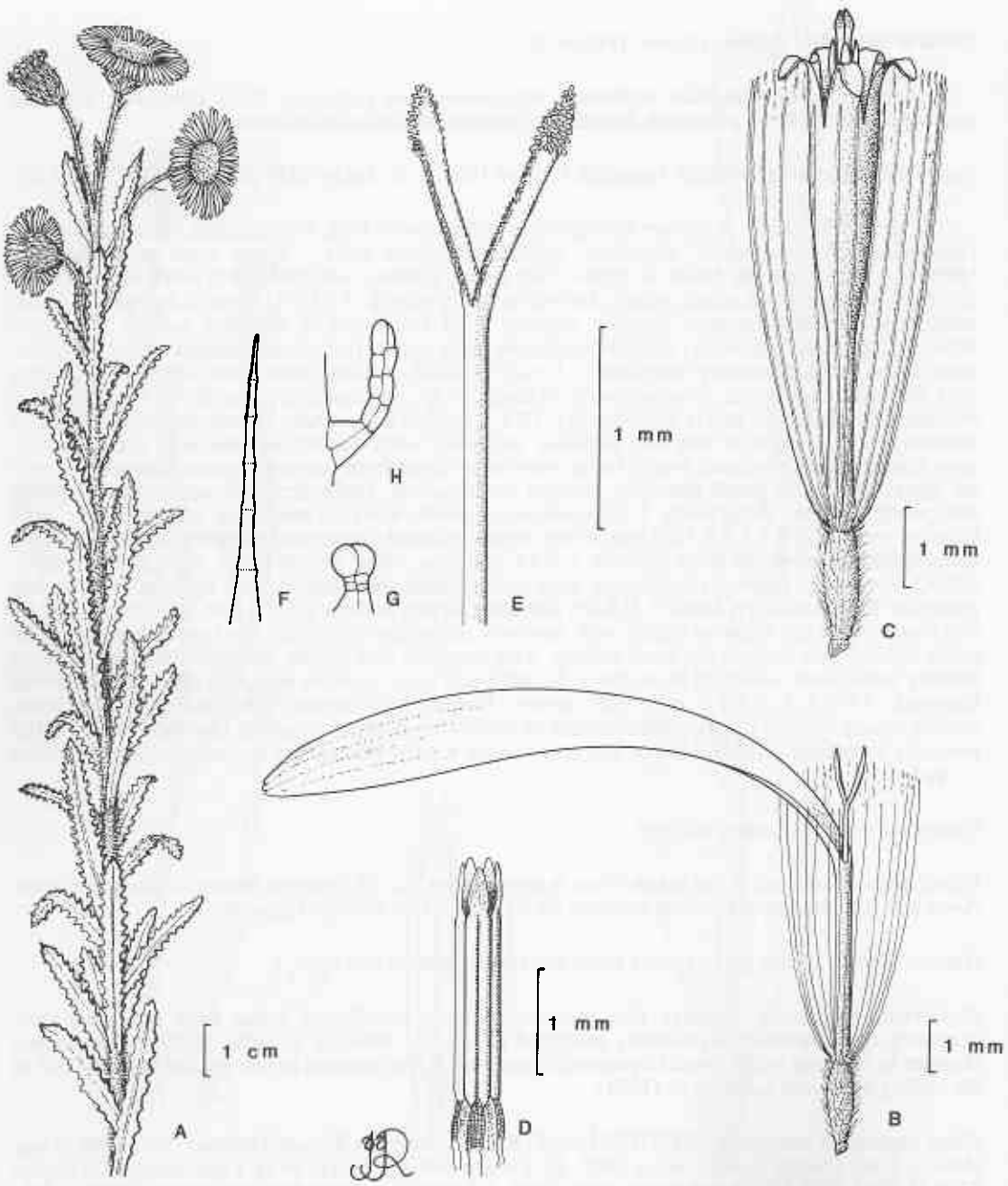

Figure 4. *Olearia laciniifolia*. A - Habit. B - Ray floret. C - Disc floret. D - Anthers. E - Stylar arms. F - Multicellular, uniseriate, simple eglandular hair (from stem). G - Multicellular, biseriate, capitate glandular hair (from leaf). H - Multicellular, biseriate, simple eglandular hair (from ray floret). Drawn from *A.R. Fairall* 1623 (holo: PERTH).

Etymology. The specific epithet refers to the rather unkempt appearance of plants of this taxon.

Notes. The densely intricate, woolly eglandular hairs and the glandular hairs found on the vegetative parts of plants of this species place it in *Olearia* section *Eriotriche* Archer ex Benth.

In the handbook of Grieve & Blackall (1975) specimens of this species will key to *O. pimeleoides* (DC.) Benth. *O. incondita* can be distinguished from the latter by its outer involucral bracts, which are cymbiform rather than flat; by its disc florets, the vestiture of which includes glandular as well as eglandular hairs; and by its pappus, which comprises 74-102 rather than 39-65 long bristles.

Olearia laciniifolia Lander, sp. nov. (Figure 4)

Species nova ad *Olearium* sectionem *Merismotrichum* pertinens; foliis oblongis, scleris, laciniatis, leviter revolutis facile distinguitur.

Typus: Newdegate-Lake Grace road, Western Australia, 22 September 1964, *A.R. Fairall* 1623 (holo: PERTH; iso: KPBG).

Shrub to c. 1 m high. *Vestiture* of vegetative surfaces with long, multicellular, uniseriate, simple eglandular hairs and minute, multicellular, biseriate, capitate glandular hairs. *Stems* erect, pale yellow when young, becoming purplish, hirsute. *Leaves* alternate, scattered, ascending, sessile; lamina flat, oblong, 6-35 x 1-10 mm, concolorous, grey-green, reticulate; venation indistinct apart from the stout midvein; vestiture uniformly glandular; texture sclerous; base narrowly cuneate; margin laciniate, weakly revolute; apex lobed. *Heads* terminal, solitary, pedunculate, conspicuously radiate, 26-35 mm in diameter; disc 12-20 mm diameter. *Peduncles* to 25 mm long, hirsute, with several leaflike bracts grading into those of the involucre. *Involucre* hemispheric; bracts 5-seriate, 2.2-7.5 x 0.6-1.2 mm. *Outer involucral bracts* narrowly triangular, cymbiform; stereome conspicuously vesicular along midrib and glandular abaxially; margin, narrowly membranous, weakly fimbriate; apex acute. *Inner involucral bracts* linear, flat; stereome conspicuously vesicular along midrib and subglabrous with glandular hairs abaxially; margin entire; apex acuminate, purplish, fimbriate. *Receptacle* somewhat convex. *Ray florets*, 35-43, 3-seriate, female, 10.5-18.0 mm long; tube with simple multicelluar, biseriate eglandular hairs scattered abaxially limb narrowly ovate, 8-14 x 1-2 mm, lilac, glabrous, emarginate apically; staminodes absent; stylar arms filiform or very narrowly half-ellipsoid, 1.4-1.6 mm long. *Disc florets* 53-90, bisexual, white below, yellow above, buccinate, 4.8-6.0 mm long, subglabrous, with multicellular, biseriate, simple eglandular hairs scattered abaxially; lobes 5, 0.1-0.8 mm long, acute; anthers 2.2-2.3 mm long, basally acute and shorter than the filament collar, with narrowly elliptic, sterile terminal appendage; filament collar 0.3-0.5 mm long; stylar arms oblong, with half-conic, sterile terminal appendage bearing long, clavate collecting hairs above the stigmatic lines. *Achene* ellipsoid, flattened, 1.2-2.0 x 0.4-0.5 mm, pale brown, sericeous with duplex hairs; venation indistinct; carpopodium oblique. *Pappus* uniseriate, with c. 20 free, minutely barbellate bristles more or less equal in length to the tubular florets.

Flowering period. June to November.

Distribution. Endemic to the Roe District, South-West Botanical Province, Western Australia, occurring between 33-34° S and 118-124° S (Figure 8).

Habitat. Occurs on white sand amongst mallee and *Melaleuca* shrubland around playa lakes.

Conservation status. Although this species is widely distributed it has been little collected, occurring only in small populations restricted to specific habitats in an area likely to experience changes in land use which would threaten its survival. It thus appears to warrant the category 3V in the coding system of Leigh et al. (1981).

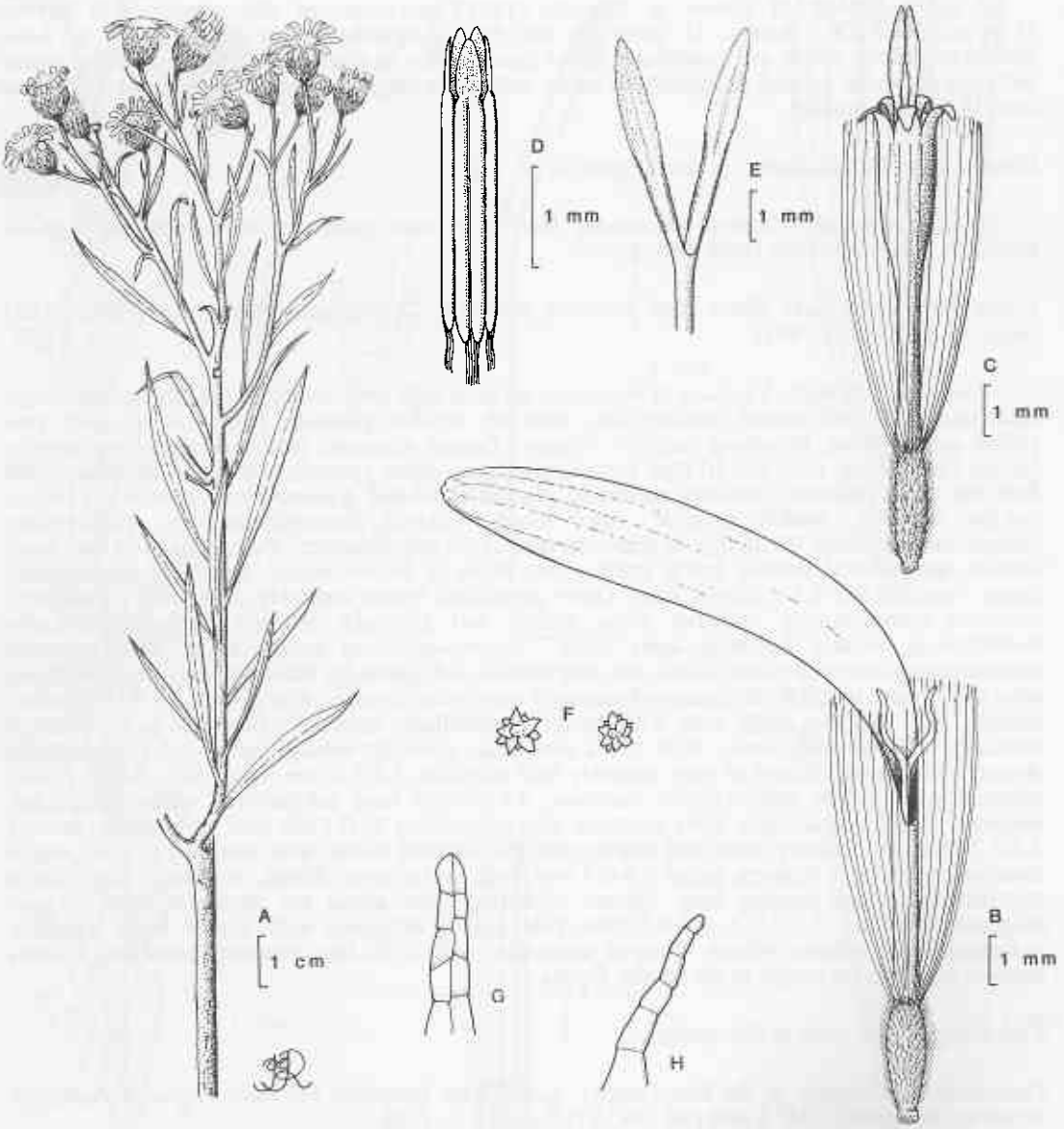

Figure 5. *Olearia mucronata*. A - Habit. B - Ray floret. D - Disc floret. D - Anthers. E - Stylar arms. F - Druses (from florets). G - Multicellular, biseriate, simple eglandular hair (from ray floret). H - Multicellular, uniseriate, simple eglandular hair (from leaf). Drawn from *McGuire* 18 (holo: PERTH).

Other specimens examined. WESTERN AUSTRALIA: W of Kukerin, *A.M. Ashby* 5235 (AD, CHR, K, MEL, NSW, NT, PERTH); 5.5 km NE of Clyde Hill, 33° 17' 35" S, 123° 00' 54" E, *M.A. Burgman* 1792 (PERTH); Lake King, 72 miles [116 km] E of Lake Grace, Nov. 1980, *N. Steedman* s.n. (BM, PERTH); Lake King road, *E. Wittwer* 173 (KPBG, PERTH); Dowels-Lake King road, 32° 40' S, 120° 30' E, *E. Wittwer 1435* (KPBG).

Etymology. The specific epithet draws attention to the narrowly lobed leaves characteristic of this taxon.

Notes. The patent, septate eglandular hairs and the glandular hairs found on the vegetative parts of this plant place it in *Olearia* section *Merismotriche* Archer ex Benth.

In the handbook of Grieve & Blackall (1975) specimens of this species will key (with difficulty) to *O. rudis* (Benth.) F. Muell. ex Benth. *O. laciniifolia* can be distinguished from the latter by the vestiture of its vegetative surfaces, which comprises glandular as well as eglandular hairs; by its conflorescences, which are solitary-headed rather than compound corymbose; by its ray, which comprises 35-43 rather than 39-75 florets; by its disc, which comprises 53-90 rather than 86-241 florets; and by its pappus, which comprises c. 20 long bristles only rather than 31-42 long bristles with 10-14 much shorter ones.

Olearia mucronata Lander, sp. nov. (Figure 5)

Species nova ad *Olearium* sectionem *Adenotrichum* pertinens; foliis sessilibus, planis, linearibus vel anguste obovatis, scleris, integris, mucronatis et crystallis ("druses") characteristicis in floribus radii discique facile distinguitur.

Typus: Wittenoom area [precise locality withheld], Western Australia, January 1972, *McGuire* 18 (holo: PERTH).

Shrub to 1 m high, strongly and unpleasantly aromatic. *Vestiture* of vegetative surfaces with multicellular, uniseriate, simple eglandular hairs and multicellular, biseriate, capitate glandular hairs. *Stems* erect, pale green when young, becoming reddish, subglabrous with eglandular hairs. *Leaves* alternate, crowded, ascending, sessile; lamina flat, linear, sometimes obovate, 13-46 x 1-5 mm, concolorous, dark green, reticulate; venation with distinct midvein only; vestiture uniformly subglabrous with eglandular hairs; texture sclerous; base attenuate; margin entire or with a few teeth; apex acute, mucronate. *Heads* terminal, solitary, pedunculate, conspicuously radiate, 6.4-13.7 mm diameter; disc 1.0-1.7 mm diameter. *Peduncle* to 23 mm long, subglabrous with eglandular hairs, with several leaflike bracts grading into those of the involucre. *Involucre* campanulate; bracts 5-seriate, 3.5-5.5 x 0.7-1.0 mm. *Outer involucral bracts* somewhat cymbiform, narrowly triangular; stereome yellowish, vesicular along midrib and weakly glandular abaxially; margin narrowly membranous, minutely fimbriate; apex acuminate. *Inner involucral bracts* narrowly ovate, flat; stereome pale yellowish, vesicular along midrib and glabrous abaxially; margin broadly membranous, fimbriate; apex acute. *Receptacle weakly* convex. *Ray florets* 9-12, uniseriate, female, 14.7-15.5 mm long; limb narrowly elliptic, 5.4-14.0 x 1.4-2.5 mm, white, glabrous or subglabrous with multicellular, biseriate, simple eglandular hairs abaxially, obtuse and entire or minutely 3-lobed apically; staminodes sometimes present; stylar arms filiform, 1.8-2.4 mm long. *Disc florets* 39-45, bisexual, buccinate, 6.8-7.0 mm long, yellow, glabrous; lobes 0.9-1.3 mm long, narrowly acute; anthers basally acute and shorter than the filament collar, with ovate, sterile terminal appendage, obtuse apically; filament collar c. 0.7 mm long; stylar arms filiform, with narrowly half-ovoid, sterile terminal appendages 2.8-3.0 mm long bearing minute collecting hairs above the stigmatic lines. *Achene* narrowly obovoid, somewhat flattened, 3.0-3.4 x 0.8-1.0 mm, sericeous with duplex hairs; venation indistinct; carpopodium central. *Pappus* uniseriate, with 19-27 free, minutely barbellate bristles more or less equal in length to the tubular florets.

Flowering period. August to January.

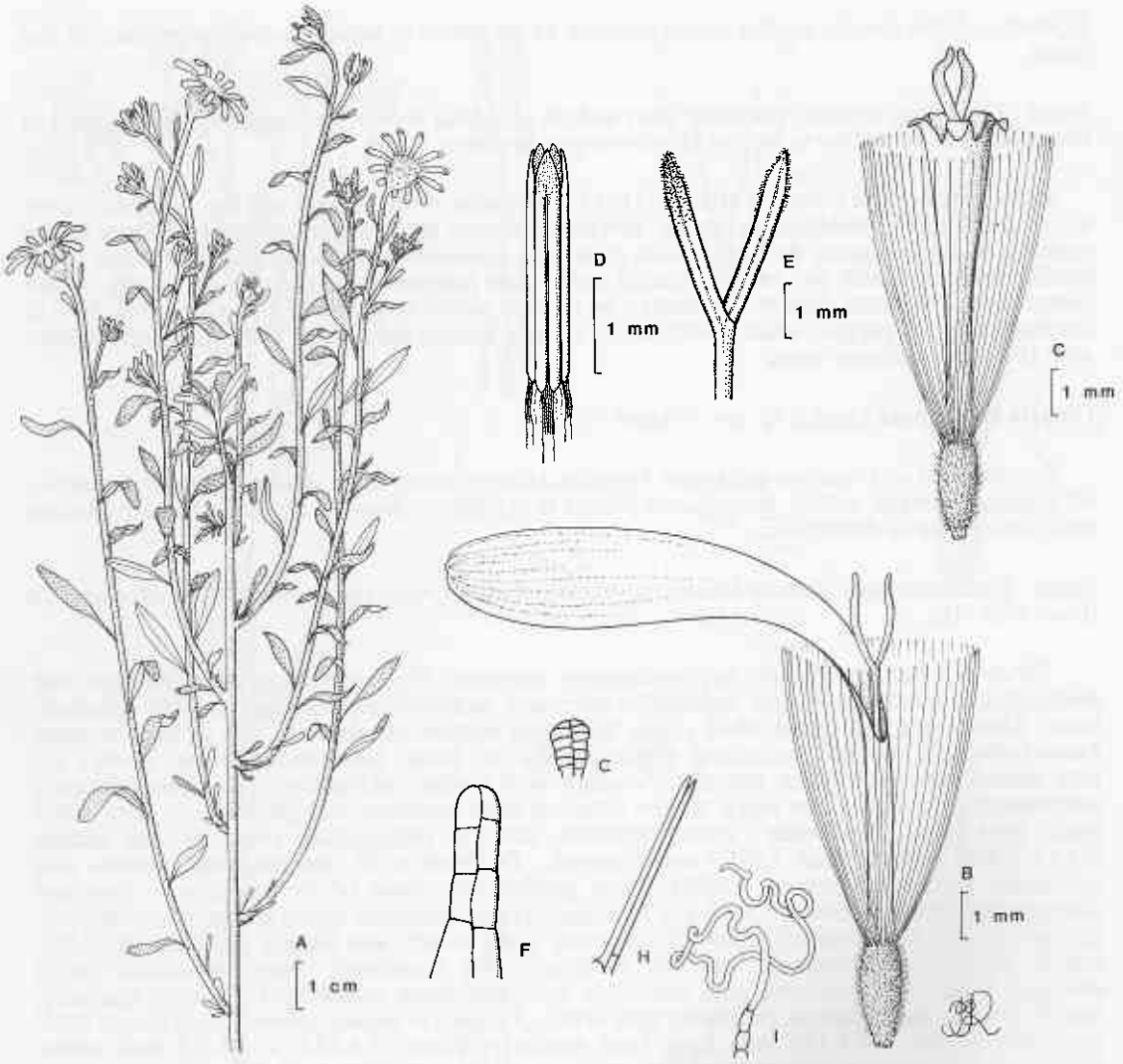

Figure 6. *Olearia occidentissima*. A - Habit. B - Ray floret. C - Disc floret. D - Anthers. E - Stylar arms. F - Multicellular biseriate, simple eglandular hair (from disc floret). G - Multicellular, biseriate, capitate glandular hair (from leaf). H - Duplex hair (from ray floret). I - Multicellular, uniseriate, simple eglandular hair (from leaf). Drawn from *A.S. George* 11568 (holo: PERTH).

Distribution. Known from only two localities between 21-23° S and 117-119° E in the Fortescue District, Eremaean Botanical Province, Western Australia (Figure 8).

Habitat. Schistose hills.

Conservation status. Since it is restricted to two populations a mere 60 km apart, this species appears to warrant the category 2V in the coding system of Leigh et al. (1981).

Other specimens examined. [locality withheld], *W.E. Blackall* 435 (PERTH); [locality withheld], *C.A. Gardner* 2477 (BM, K, PERTH).

Etymology. The specific epithet draws attention to the mucronate leaves characteristic of this taxon.

Notes. The glabrous vegetative parts of plants of this species (apart from the scattered eglandular hairs on the leaves and a few glandular hairs on the stereome of the involucral bracts) place it in *Olearia* section *Adenotriche* Archer ex Benth.

In the key of Grieve & Blackall (1975) specimens of this species key (with difficulty) to *O. stuartii* (F. Muell.) F. Muell. ex Benth. (*Olearia* section *Merismotriche*). *O. mucronata* can be distinguished from *O. stuartii* sens. lat. (see Lander 1989) by its outer involucral bracts, the midribs of which are vesicular; by the ray, which comprises 9-12 rather than 21-64 florets; and by the ray florets, which are 14.7-15.5 mm long rather than 7-11.5 mm long.

The ray florets of this species are remarkable for the scattered crystalline deposits in the cells of the tube and limb (Figure 5F). To date I have observed such druses elsewhere in *Olearia* in the tubular florets of *O. ferresii* (F. Muell.) F. Muell. ex Benth. which is placed in section *Merismotriche*, and of *O. pimeleoides* var. *incana* D.A. Cooke, which is placed in section *Eriotriche* Archer ex Benth.

Olearia occidentissima Lander, sp. nov. (Figure 6)

Species nova ad *Olearium* sectionem *Eriotrichum* pertinens; habitu effuso, foliis petiolatis, planis, lanatis, flaccidis, integris, revolutis et floribus radii discique pilis duplicibus distinguitur.

Typus: Dirk Hartog Island [precise locality withheld], Western Australia, 5 September 1972, *A.S. George* 11568 (holo: PERTH; iso: K, NSW).

Shrub to 0.2 m high. *Vestiture* of vegetative surfaces with densely intricate, long, multicellular uniseriate, simple eglandular hairs, patent, shorter, multicelluar, uniseriate, simple eglandular hairs and multicellular, biseriate, capitate glandular hairs. *Stems* prostrate (wind-pruned) or erect, white and lanate when young, becoming grey and somewhat arachnoid with waxy bark. *Leaves* alternate, scattered, spreading, petiolate; lamina flat, narrowly elliptic, 6-24 x 3-6 mm, discolorous, white-lanate abaxially, and grey-green adaxially, smooth; venation indistinct apart from the midrib; vestiture lanate abaxially, somewhat arachnoid adaxially; texture flaccid; base narrowly cuneate; margin entire, revolute; apex acute, ± mucronate. *Heads* terminal, solitary, subsessile with leaves grading into the involucral bracts, conspicuously radiate, 25-30 mm diameter; disc 15-18 mm diameter. *Involucre* hemispheric; bracts 4-seriate, 4.5-9.0 x 1.5-2.0 mm. *Outer involucral bracts* narrowly elliptic, flat; stereome white-lanate abaxially, apically weakly arachnoid adaxially; margin entire; apex acute. *Inner involucral bracts* linear or spathulate, somewhat cymbiform; stereome pale green, basally smooth and glabrous but apically densely glandular and with scattered long, eglandular hairs abaxially; margin broadly membranous, fimbriate; apex narrowly acute. *Receptacle* somewhat convex. *Ray florets* 10-12, uniseriate, female, 12-18 mm long; tube white, with duplex hairs scattered abaxially; limb obovate, 7.4-11.0 x 2.5-3.5 mm, white or pink, glabrous, obtuse and minutely 3-lobed apically; staminodes absent; stylar arms filiform, 2.2-2.4 mm long. *Disc florets* c. 25, bisexual, white (tinged violet), buccinate, 7.5-8.0 mm long, 5-lobed, with

multicellular, biseriate, simple eglandular hairs and duplex hairs scattered adaxially; lobes c. 1.0 mm long, acute; anthers 2.0-2.5 mm long, basally acuminate and shorter than the filament collar, with narrowly triangular, sterile, terminal appendage; filament collar 0.4-0.6 mm long; stylar arms oblong, 2.6-3.0 mm long, with narrowly half-conic, sterile terminal appendages bearing long, botuliform collecting hairs above the stigmatic lines. *Achene* obovoid, c. 2.5-2.8 x c. 0.8 mm, sericeous with duplex and glandular hairs; venation indistinct; carpopodium central. *Pappus* biseriate, with c. 75 free, minutely barbellate bristles equal to or subequal to the tubular florets.

Flowering period. September.

Distribution. Endemic to Dirk Hartog Island in the Carnarvon District, Eremaean Botanical Province, Western Australia, occurring between 25-26° S and 112-113° E (Figure 8).

Habitat. In shallow sand above limestone amongst tall open heath (shrub steppe) on coastal cliff-top.

Conservation status. This species is known only from its type locality. The 'kwongan' vegetation in which it occurs extends over several 100 hectares. There are no stock in the vicinity. Extensive searching on the adjacent mainland by me in 1986 failed to locate populations there.

The presence of *O. occidentissima* on Dirk Hartog Island reinforces recent proposals to declare the island as a National Park (Anonymous 1987). In particular, any proposal to modify vegetation at the northern end of the island should be rejected unless further, viable populations of *O. occidentissima* are located in areas free from interference.

O. occidentissima is clearly a vulnerable species, not presently endangered but possibly at risk over a longer period. It thus appears to warrant the category 1V in the coding system of Leigh et al. (1981).

Other specimens examined. WESTERN AUSTRALIA: Dirk Hartog Island [precise locality withheld], *B.R. Maslin* 4304 (PERTH).

Etymology. The specific epithet draws attention to the fact that this species of *Olearia* is that with the most westerly distribution in Australia.

Notes. The dense, intricate, multicellular, uniseriate eglandular hairs found on the vegetative parts of plants of this species place it in *Olearia* section *Eriotriche.*

In the handbook of Grieve & Blackall (1975) specimens of this species will key to *O. pimeleoides* (DC.) Benth., to which it is probably closely related. *O. occidentissima* can be distinguished from the latter by its habit, which is prostrate rather than erect; by its florets, which bear duplex hairs abaxially; and by its pappus, which comprises c. 75 rather than 39-65 bristles.

The duplex hairs observed on the abaxial surfaces of both ray and disc florets are identical to those found on achenes of this and most other species of *Olearia.* They have not been recorded on the florets of any other species in this genus.

It is no small measure of the need for continuing taxonomic research on the Australian flora that this distinctive species remained apparently uncollected until 1972 and hitherto undescribed in the vicinity of the first recorded landing on Australian shores by a European, namely the Dutchman Dirk Hartog in 1616 (Burbidge & George 1978), and of the first authenticated botanical collections by Europeans in Australia, namely those made in 1699 by William Dampier (George 1971).

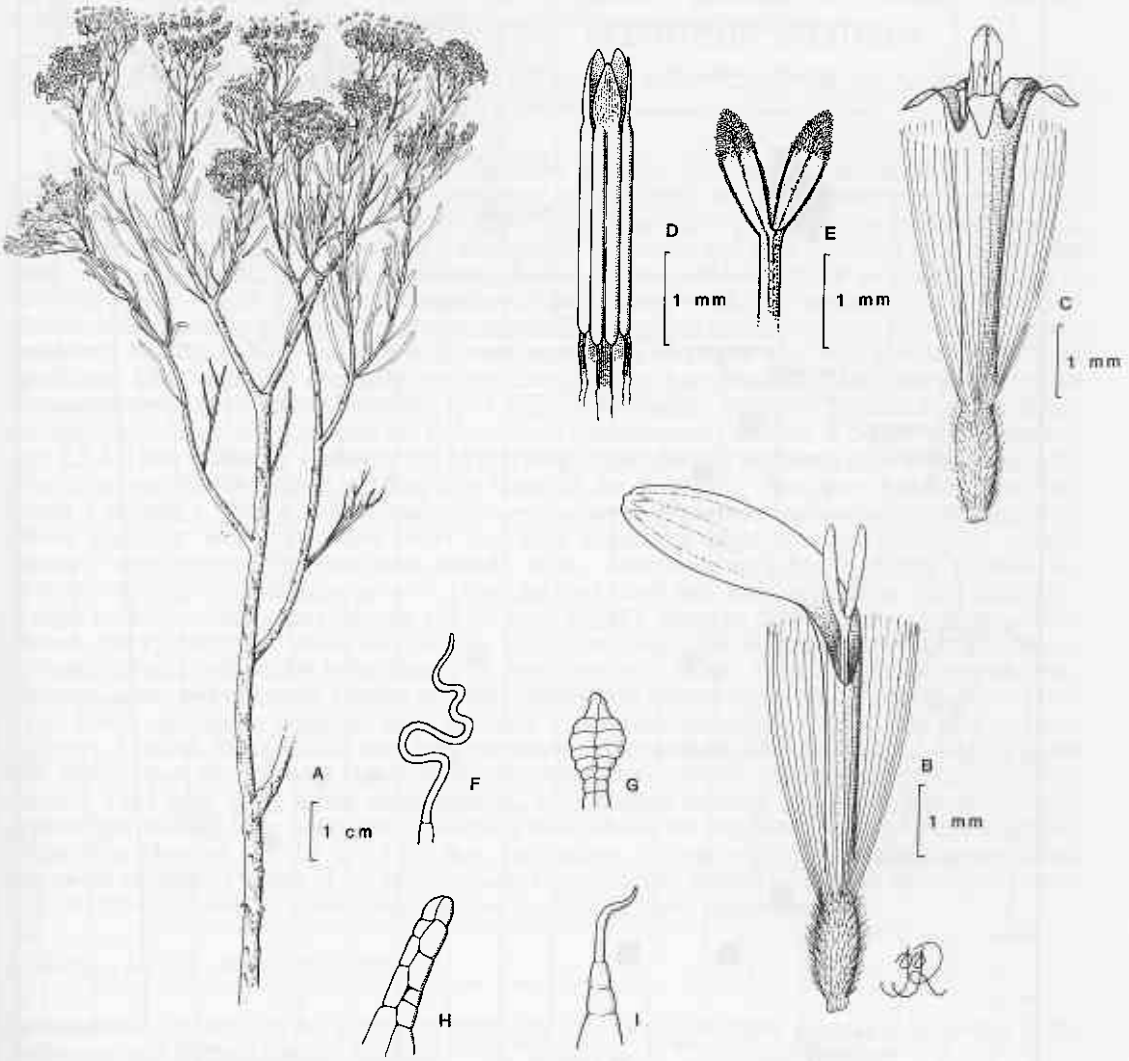

Figure 7. *Olearia plucheacea*. A - Habit. B - Ray floret. C - Disc floret. D - Anthers. E - Stylar arms. F - Multicellular, uniseriate, simple eglandular hair (from leaf). G - Multicellular, biseriate, simple eglandular hairs (from leaf). H - Multicellular, biseriate, capitate glandular hair (from leaf). I - Multicellular, uniseriate, simple eglandular hair (from ray floret). Drawn from *R.J. Cranfield* 6279 (holo: PERTH).

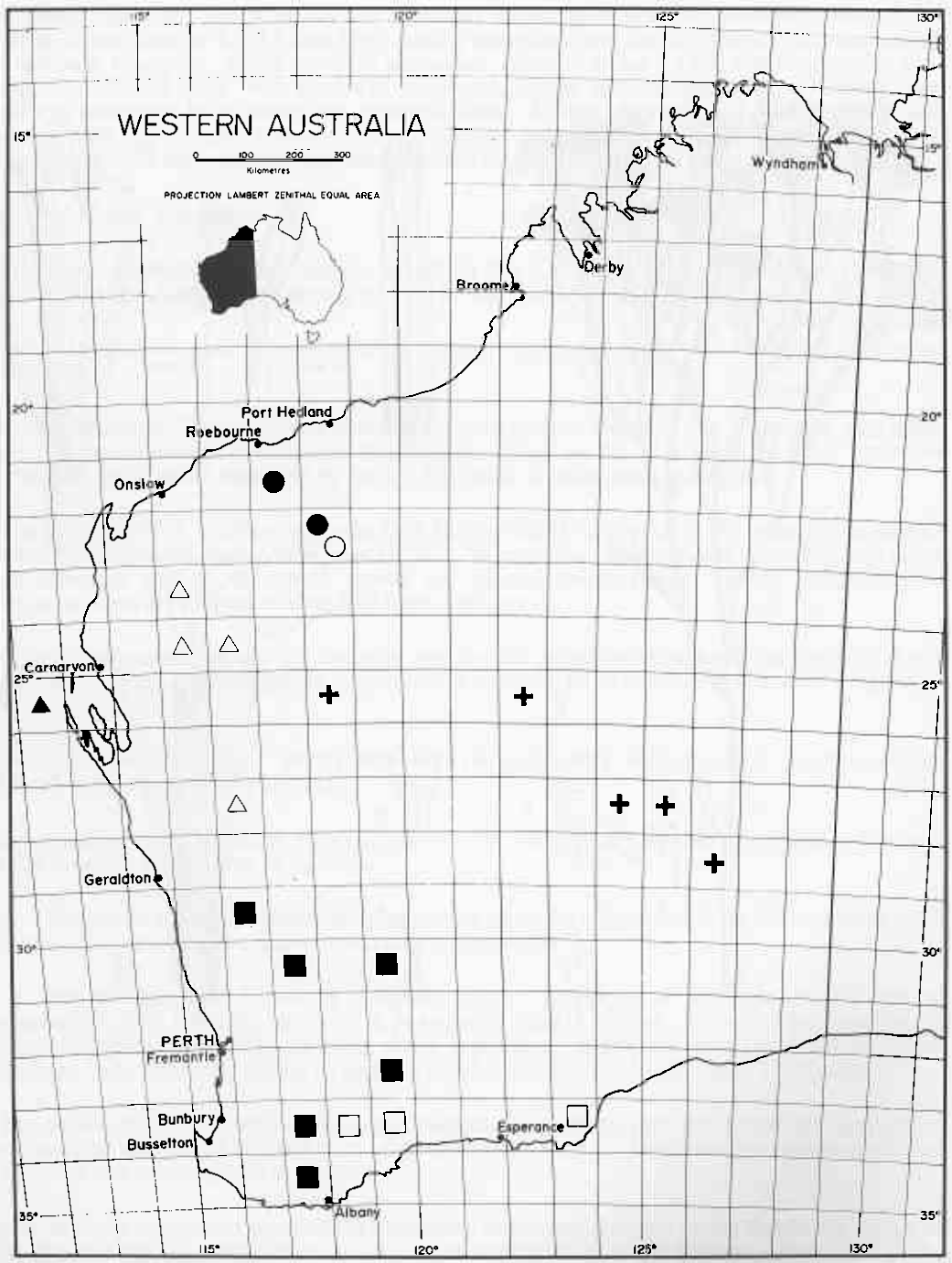

Figure 8. Distribution of *Olearia eremaea* (+), *O. fluvialis* (○), *O. incondita* (■) *O. laciniifolia* (□), *O. mucronata* (●), *O. occidentissima* (▲) and *O. plucheacea* (△), indicating occurrence in 1° x 1° squares.

Olearia plucheacea Lander, sp. nov. (Figure 7)

Species nova ad *Oleariam* sectionem *Merismotrichum* pertinens; foliis longis, filiformibus vel anguste linearibus, flaccidis, integris vel irregulariter serrulatis vel serratis, revolutis, conflorescentiis dense paniculatis et capitulis anguste obconicis distinguitur.

Typus: 16.5 km N of 'Meka', 27° 17' S, 116° 50' E, Western Australia, 22 September 1987, *R.J. Cranfield* 6279 (holo: PERTH; iso: AD, K, NSW)

Shrub to 1.5 m high. *Vestiture* of vegetative surfaces with minute, multicelluar, biseriate, capitate glandular hairs, scattered, long, spreading, multicellular, uniseriate, simple eglandular hairs and patent, short, multicellular, biseriate, simple eglandular hairs. *Stems* yellowish and somewhat viscid when young, pale brown and dry when older, glandular and with scattered long eglandular hairs. *Leaves* alternate, scattered, ascending, sessile; lamina incurved, flat or recurved, filiform to narrowly linear, 12-45 x 1-5 mm, concolorous, pale green, weakly to strongly viscid; venation obscure apart from the prominent midvein, sulcate above, raised below; vestiture uniformly weakly to densely hirsute on both surfaces with short, eglandular hairs and also with glandular and long eglandular hairs scattered abaxially; texture flaccid; base narrowly attenuate; margin entire or irregularly serrulate to serrate, revolute; apex acute to acuminate, muticous. *Heads* many in dense, terminal, paniculate conflorescences, pedunculate, conspicuously radiate, 9.5-13.5 mm diameter; disc 2.5-4.5 mm diameter. *Peduncles* to 35 mm long, glandular and with long eglandular hairs, with several minute leaflike bracts grading into those of the involucre. *Involucre* narrowly obconic; bracts 4-seriate, 1.7-4.5 x 1.0-1.7 mm. *Outer involucral bracts* obovate, cymbiform; stereome green, glandular and with a few short and long eglandular hairs scattered abaxially; margin narrowly membranous, fimbriate; apex broadly acute. *Inner involucral bracts* elliptic, cymbiform; stereome pale green, subglabrous with glandular and short and long eglandular hairs abaxially; margin broadly membranous, almost entire; apex broadly acute to obtuse. *Receptacle* somewhat convex. *Ray florets* 5-7, uniseriate, female, 5.2-7.0 m long; tube subglabrous with multicellular, biseriate, simple eglandular hairs abaxially; limb narrowly ovate, 1.0-1.2 x 3.5-4.5 mm, white, glabrous, acute and minutely 3-lobed apically; staminodes absent; stylar arms filiform, 1.1-1.7 mm long, yellow. spreading supinate. *Disc florets* 3-5, bisexual, buccinate, 4.8-7.0 mm long, yellow, glabrous, 5-lobed; lobes 1.2-1.3 mm long, narrowly acute; anthers 2.6-2.9 mm long, basally acute and shorter than the filament collar, with narrowly elliptic, sterile terminal appendage; filament collar 0.3-0.4 mm long; stylar arms ligulate, 1.3-1.6 with broadly half-conic, sterile terminal appendages bearing long botuliform collecting hairs above the stigmatic lines. *Achene* narrowly ellipsoid or obovoid, 1.7-2.4 x 0.5-0.8 mm, pale brown, villous with duplex hairs; carpopodium somewhat oblique. *Pappus* of 25-38 uniseriate, free, minutely barbellate bristles somewhat shorter than the tubular florets. *Chromosome number*, n = 9 (P.S. Short, pers. comm.).

Flowering period. August to October.

Distribution. Endemic to the Eremaean Botanical Province of Western Australia, occurring in the Ashburton and Austin Districts, between 23-28° S and 115-117° E (Figure 8).

Habitat. In stony soil on sandstone breakaways amongst open low *Eucalyptus/Acacia* woodland or high shrubland.

Conservation status. This species is widely distributed and has been collected in recent years at four sites. At Mt Augustus K.R. Newbey (pers. comm.) reported 10 or so plants; at his Kennedy Range site he encountered a single plant. P.S. Short & N.S. Lander observed scattered plants at the summit of the Kennedy Range. At 'Meka', R.J. Cranfield noted occasional plants. Although this species is not currently considered endangered it may be at risk over a longer period through continued depletion due to grazing. It thus appears to warrant the category 3V in the coding system of Leigh et al. (1981).

Other specimens examined. WESTERN AUSTRALIA: Sources of the Minilya River [as "Minilyalya"], anno 1882, *J. Forrest* s.n. (NSW); Mt Augustus, *J.R. Cannon* 122 (PERTH); Williambury Trig, Minilya River, *C.A. Gardner* 6157 (PERTH); Mt Augustus, 24° 20' S, 116° 51' E, *S.D. Hopper* 3171 (K, PERTH); Mt Augustus, *K.R. Newbey* 11696 (K, NSW, PERTH); 17.5 km W of 'Lyons River', Kennedy Range, *K.R. Newbey* 11576 (AD, DNA, PERTH); Kennedy Range, 24° 10' S, 118° 13' E, *P.S. Short* 2535 & *N.S. Lander* (MEL, PERTH).

Etymology. The specific epithet draws attention to the fact that this taxon bears a superficial resemblance to species of *Pluchea* from which it can easily be distinguished by the presence of distinctly radiate rather than filiform tubular marginal florets.

Notes. The patent, simple, septate eglandular hairs and the glandular hairs found on the vegetative parts of plants of this species place it in *Olearia* section *Merismotriche.*

In the handbook of Grieve & Blackall (1975) specimens of this species key to *O. rudis. O plucheacea* can be distinguished from the latter by its leaves, which are narrowly linear rather than ovate, obovate or elliptic and 1-5 rather than 6-40 mm wide; by its ray which comprises 5-7 rather than 39-75 florets; by its disc, which comprises 3-5 rather than 86-241 florets; by its achene, which is villous rather than glabrous; and by its pappus, which lacks an outer series of short bristles.

Although the J. Forrest specimen cited above is from F. Mueller's herbarium, I have not encountered a duplicate at MEL. Further, this species is not amongst Mueller's account of plant specimens collected by Forrest during his 1882 trigonometric survey of the Gascoyne region, many of which bear the locality "Minilyalya" (Mueller 1883).

Acknowledgements

I thank Mr J.J. Rainbird for research assistance and for preparing the illustrations, and Mr M.I.H. Brooker for providing the Latin diagnoses.

Much vital background work towards my ongoing revision of Australian *Olearia* was carried out during my assignment as Australian Botanical Liaison Officer at the Royal Botanic Gardens, Kew, London, during 1984-5 and during subsequent visits to the National Herbarium of Victoria, Melbourne, in 1986 and 1987. This work has been further supported by Australian Biological Resources Study Grants in 1988 and 1989.

References

Anonymous (1987). "Shark Bay Region Plan." (State Planning Commission & Department of Conservation and Land Management: Perth.)

Bentham, G. (1867). "Flora Australiensis.", vol. 3. (Lovell Reeve & Co.: London.)

Burbidge, A.A. & George, A.S. (1978). The flora and fauna of Dirk Hartog Island, Western Australia. J. Roy. Soc. Western Australia 60: 71-90.

George, A.S. (1971). The plants seen and collected in North-Western Australia by William Dampier. W. Austral. Naturalist 11: 173-178.

Grieve, B.J. & Blackall, W.E. (1975). "How to Know Western Australian Wildflowers." Part IV. (University of Western Australia Press: Nedlands.)

Lander, N.S. (1989). Taxonomy of *Olearia stuartii* (Asteraceae: Astereae) and allied species. Nuytsia 7: 25-35.

Leigh, J., Briggs, J. & Hartley, W. (1981). "Rare or Threatened Australian Plants." Special Publication 7. (Australian National Parks & Wildlife Service: Canberra.)

Mueller, F.[J.H.] (1883). The plants indigenous to Shark Bay and its vicinity. Parliamentary Papers 26. (Government Printer: Perth.)

Sandell, P. et al. (1988). "Draft Management Plan, Hamersley Range National Park." (Department of Conservation & Land Management: Perth.)

Turner, B.L. (1970). Chromosome numbers in the Compositae. XII. Australian species. Amer. J. Bot. 57: 382-389.