JOURNAL of the ADELAIDE BOTANIC GARDENS

AN OPEN ACCESS JOURNAL FOR AUSTRALIAN SYSTEMATIC BOTANY

flora.sa.gov.au/jabg

Published by the
STATE HERBARIUM OF SOUTH AUSTRALIA
on behalf of the
BOARD OF THE BOTANIC GARDENS AND STATE HERBARIUM

State Herbarium of South Australia
PO Box 2732
Kent Town SA 5071
Australia

Government of South Australia
Department of Environment, Water and Natural Resources

Board *of the* Botanic Gardens *and* State Herbarium

J. Adelaide Bot. Gard. 10(1): 131-143 (1987)

NOTES ON *LEPTOSEMA* AND *MIRBELIA* (LEGUMINOSAE - PAPILIONOIDEAE) IN CENTRAL AUSTRALIA

M.D. Crisp and J.M. Taylor

Australian National Botanic Gardens, G.P.O. Box 1777,
Canberra, Australian Capital Territory, 2601

Abstract

A combination in *Leptosema* is made for *Brachysema daviesioides* and *L. aculeatum* is described as new. Taxonomy of the *Mirbelia* species with spinescent branchlets and reduced leaves is reviewed for the 'Flora of Central Australia'. Three species, *M. granitica*, *M. rhagodioides* and *M. stipitata*, are described as new. *M. microphylloides* is reduced to synonymy under *M. microphylla* and a neotype is chosen for *M. depressa*. A key to the group is presented.

Introduction

In the course of preparation of a revised treatment of the Leguminosae subfam. Papilionoideae for the second edition of the 'Flora of Central Australia', it has become evident that a few taxonomic changes are necessary. They are dealt with here so that they can be given a fuller treatment than is possible in the Flora. All types cited have been seen, except where otherwise indicated.

1. **Leptosema** Benth.

Leptosema daviesioides (Turcz.) Crisp, comb. nov.

Kaleniczenkia daviesioides Turcz., Bull. Soc. Imp. Naturalistes Moscou 26:252 (1853).

Brachysema daviesioides (Turcz.) Benth., Fl. Austral. 2:13 (1864).

Type: Swan River Colony, *Drummond coll. IV no. 26* (holotype: KW; isotypes BM, CGE, FI-W, G, K, MEL, P, W; photos CBG).

Crisp (1982) has provided evidence in support of this transfer. It is made here to simplify the discussion under *L. aculeatum* (below).

Leptosema aculeatum Crisp, sp. nov.

L. chambersii F. Muell. et *L. daviesioidi* (Turcz.) Crisp affinis sed *ramulis* valde compressis complanatisve glabrescentibus, *ramulis superis* squamis (foliis redactis) plerumque absentibus, *floribus* subsessilibus vel in pedicellis ad 6 mm longis, differt.

Type: Western Australia, c. 35 km W of Plumridge Lakes and 8.5 km WNW of Salt Creek airstrip, 29° 34'S, 124° 50'E, *M.D. Crisp 5814, J.M. Taylor & R. Jackson*, 14.ix.1979 (holotype: CBG; isotypes: AD, BISH, K, MEL, NSW, PERTH).

The epithet is Latin, meaning prickly, and refers to the numerous divergent, spinescent branchlets.

Shrub with woody taproot and a tuft of stems to 0.3 m tall; new stems initiated annually at perimeter of plant; sericeous with laterally attached hairs. *Branchlets* numerous, rigid, divaricate, strongly compressed or flattened, spinescent, glabrescent. Adult *leaves* reduced to appressed, subulate scales 0.5-2 mm long, mostly absent form upper branchlets. *Inflorescences* rosulate, numerous but loosely arranged, spreading along surface of soil, racemose or rarely once-branched, with 2-20 rather distant, secund flowers; rachis to 15 cm long. *Flowers* resupinate, subsessile or on pedicels to 6 mm long, 35-45 mm long; *bracts* ovate, acuminate, c. 3 mm long; *bracteoles* at base of calyx, subulate, c. 3 mm long. *Calyx* 2-lipped, angular, 25-30 mm long; upper lip recurved so that flower gapes, ventricose at base, linear above, conduplicate, divided near apex into two broadly falcate lobes c. 4 mm long; lower lip divided to near base into three linear-triangular lobes as long as upper lip; tube c. 4 mm long. *Corolla* red; *standard* enclosed in calyx, narrow-triangular, long-acute, conduplicate, slightly auriculate, c. 20 x 5 mm including stout c. 3 mm long claw; *wings* linear, ± acute, scarcely auriculate, c. 32 x 2-3 mm including the 2 mm claw; *keel* much exserted, linear, incurved, apiculate, scarcely auriculate, c. 40 mm x 5 mm including the 3 mm claw. *Stamens*: upper three filaments with flared, thickened, sigmoid bases covered with small tubercles; anthers uniform, versatile, narrow-ellipsoid, c. 4 mm long. *Ovary* subsessile, densely sericeous; *style* thickened and hairy at base, glabrous and filiform above, hooked; *stigma* terminal; *ovules* c. 60. Old *pods* sessile, obliquely ellipsoid, beaked, 12 x 15 mm, densely sericeous; seed unknown.

Flowering period: September. *Fruiting period*: unknown.

Distribution

Western Australia; Austin, Coolgardie and Helms districts (for definition of districts, see Beard (1979)). The range of the species is bounded by Sandstone and Mt Jackson in the west and Queen Victoria Spring and Salt Creek in the east. Map 1.

Habitat

L. aculeatum occurs on deep red and yellow sands, in hummock grasslands dominated by *Triodia*, usually with scattered eucalypts (*E. youngiana*, *E. trivalvis* and *E. leptopoda*) and shrubs such as *Grevillea* and *Callitris*.

Selected specimens (9 examined)

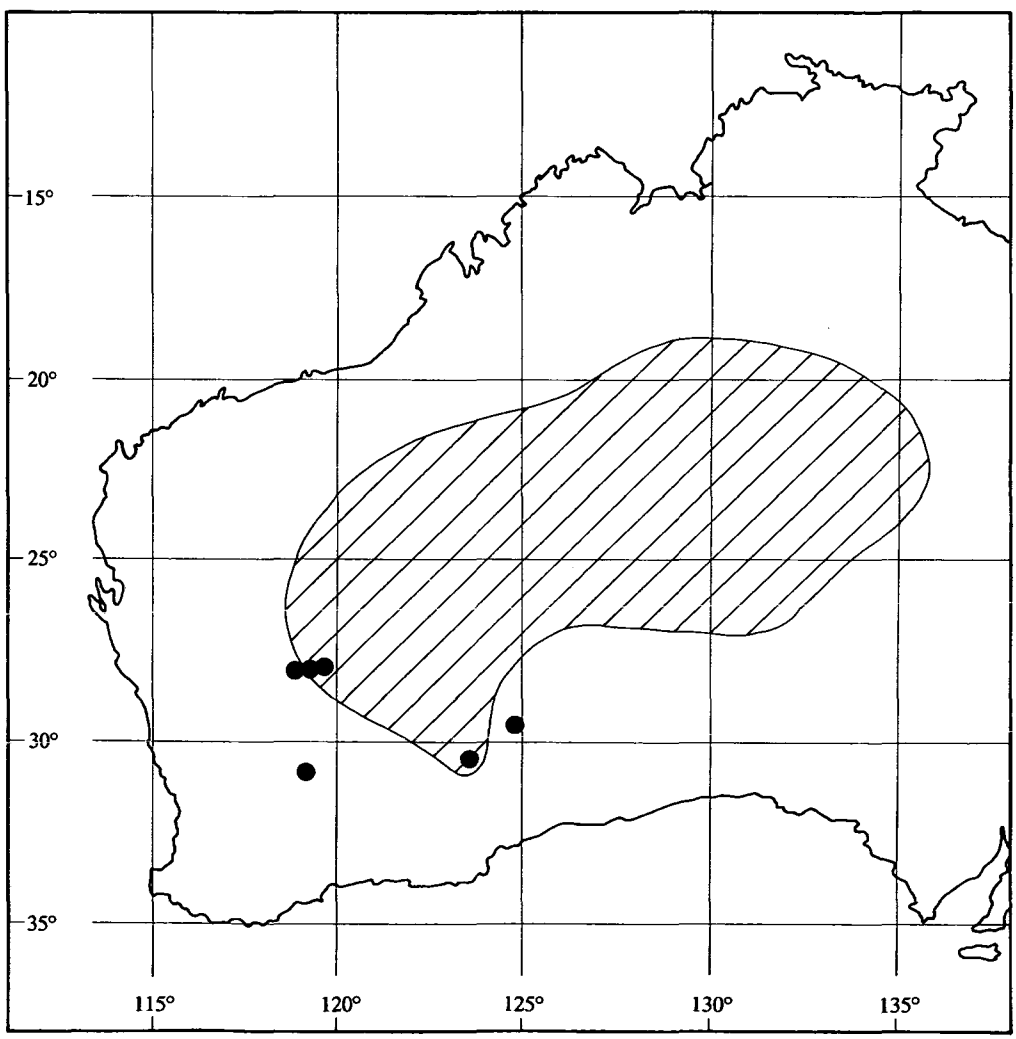
WESTERN AUSTRALIA: Type locality, *M.D. Crisp 5815, J.M. Taylor & R. Jackson*, 14.xi.1979 (CBG, PERTH); Anketall, near Sandstone, *C.A. Gardner 2499*, viii.1939 (BM, K, PERTH), 11 km S of Mt Correll, c. 45 km NNW of Bullfinch, *K.R. Newbey 9597*, 24.ix.1982 (PERTH); Mount Magnet-Sandstone road, 80 miles E of Mount Magnet and 20 miles W of Sandstone, *R.V. Smith 66/455*, 12.ix.1966 (MEL); [Queen] Victoria Spring, *J. Young s.n.*, [ix-x.1875] (MEL 91363).

Affinity

A cladistic analysis of *Leptosema*, made before *L. aculeatum* had come to light (Crisp 1982), showed that *L. chambersii* and *L. daviesioides* belonged to a monophyletic group characterized by spinescent branchlets. In a more recent analysis, to be published elsewhere, *L. aculeatum* was consistently placed in the same group. No other species of *Leptosema* has spinescent branchlets. From *L. chambersii* and *L. daviesioides*, the new species is readily distinguished by the flattening of its branchlets. By contrast, the stems and branchlets of *L. chambersii* are slender and apparently terete, although actually angular in cross-section. Those of *L. daviesioides* are quite terete. Both the latter species differ from *L. aculeatum* in having well-developed pedicels, (2) 5-20 mm long and scale-leaves subtending the ultimate branchlets, although in *L. daviesioides* the scale-leaf base is shortly fused to the subtended branchlet. Somewhat less reliably, *L. chambersii* may be distinguished from *L. aculeatum* by its rarely glabrescent branchlets and usually golden-brown indumentum on the calyx. *L. daviesioides* also

differs from *L. aculeatum* in having glabrate branchlets; ± spreading, basally attached hairs (not appressed and peltate); and inflorescences that are shorter (< 8 cm long), more densely packed around the base of the plant and steeply ascending from below ground, not tending to spread along the surface of the soil.

One collection (18 miles E of Sandstone, *A.S. George 8005*, 13.ix.1966 — CBG, K, PERTH) appears to be intermediate between *L. aculeatum* and *L. chambersii*. It is from an area where the ranges of these species overlap (Map 1), and typical specimens of both have been collected from near to *George 8005*. Initially the intermediate specimen seemed to be evidence that these taxa were not specifically distinct. However, the unpublished cladistic analysis referred to above had indicated that *L. chambersii* and *L. daviesioides* are probably more closely related to each other than either is to *L. aculeatum*. Therefore, if *L. aculeatum*



Map 1. Distribution of *Leptosema aculeatum* (dots) in relation to that of *L. chambersii* (cross-hatching).

were to be included within *L. chambersii*, the resultant 'species' apparently would be paraphyletic, as it would exclude an element (*L. daviesioides*) that had descended from the common ancestor of the 'species'.

Specimens of *L. aculeatum* annotated before September 1986 have been determined as '*L. chambersii* subsp. *platyclada*'. These should be corrected. Similarly, specimens determined as '*L. chambersii* subsp. *chambersii*' should be corrected to '*L. chambersii*'.

2. **Mirbelia** Smith

In Western Australia there occur two groups of *Mirbelia* species with spinescent branchlets and more or less reduced leaves. One, the '*M. spinosa*' group, has leaves that are developed but very small (mostly < 8 mm long) and more or less clustered or whorled. The other, the '*M. viminalis*' group, has all leaves reduced to scales. Both groups extend into central Australia and both require some taxonomic adjustments for the second edition of the Flora.

Key to *Mirbelia* spp. with spinescent branchlets and reduced leaves

1. Leaves small but with petiole and spreading lamina clearly developed 4

   Leaves reduced to broad-based, sessile, appressed scales 2

2. Calyx with appressed short hairs; lobes acute to acuminate, equal to or longer than tube; buds acuminate ..... *M. viminalis*

   Calyx glabrous; lobes acute or obtuse, shorter than tube; buds not acuminate 3

3. Stems striate to sulcate; scattered short hairs on young shoots and inflorescence; stipe of pod shorter than calyx-tube; ovules 14-18 ..... *M. ramulosa*

   Stems scarcely striate; plant glabrous; stipe of pod longer than calyx-tube; ovules 2 ..... *M. stipitata*

4. Calyx 2-4 mm long, free part of upper lobes obtuse or scarcely acute; pod 5-7 mm long, emergent 6

   Calyx (4) 5-6 mm long, free part of upper two lobes acuminate; pod 2-3 mm long, completely enclosed by persistent petals 5

5. Calyx and upper parts of main (non-spinescent) branches sericeous to glabrescent ..... *M. spinosa*

   Calyx and upper parts of main branches villous ..... *M. trichocalyx*

6. Spinescent branchlets very reduced, neither bearing nor subtended by leaves; plant multi-stemmed from a buried rootstock ..... *M. multicaulis*

   Spinescent branchlets either bearing or subtended by leaves; mostly low-branching but single-stemmed shrubs 7

7. Leaves verticillate, flat or slightly complicate; venation inconspicuous; midrib raised on lower surface; ovary and pod appressed-hairy all over ..... *M. microphylla*

   Leaves not combining the above characters; ovary and pod glabrous at least along adaxial suture 8

8. Leaves elliptic or ovate or orbicular, flat or slightly complicate; venation conspicuous; ovary and pod sericeous, except glabrous along upper suture ..... *M. depressa*

   Leaves narrow-obovate or linear, not complicate and usually with revolute margins; venation obscure; ovary and pod glabrous except for few hairs at base of style 9

9. Indumentum tomentose; calyx 3-4 mm long; pod depressed, broad-ovate (6-8 mm broad), obtuse or truncate, with very conspicuous lateral ribs ..... *M. rhagodioides*

   Indumentum sericeous; calyx 2-3 mm long; pod ovoid (2-3 mm broad), acute, turgid, deeply grooved or depressed along upper suture, with inconspicuous lateral ribs ..... *M. granitica*

The '*Mirbelia spinosa*' group

The '*M. spinosa*' group was known to be represented in Central Australia but was not included in the first edition of the Flora except as a footnote because suitable material was not available to us at the time. Confusion has prevailed in this group because of the close similarity of its members and the diminutive size of their parts. The existence of several undescribed species has added to the confusion. By using a combination of vegetative and pod characters we have been able to resolve the taxonomic problems, at least within Central Australia. Here we describe two new species. The key provided above includes all described species in the '*M. spinosa*' group, both within and beyond Central Australia. In south-west Western Australia there appear to be one or two taxa still undescribed, and the relationship of *M. trichocalyx* Domin to *M. spinosa* (Benth.) Benth. remains unclear.

Mirbelia depressa E. Pritzel, Bot. Jahrb. Syst. 35: 20 (1904).

Neotype, here designated: Western Australia, 27 miles E. of Kalbarri, *A.S. George 7933*, 8.ix.1966 (PERTH); isoneotype: CBG.

Original type: 'Hab. in distr. Irwin ad pedem collis White Peak in lutosis glareosis subhumidis deflor. m. Sept. (D.6065)' (holotype: ?B, missing presumed destroyed).

As far as is known, the only material seen by Pritzel was *Diels 6065* (cited above). Presumably the holotype was held in Berlin (Stafleu & Cowan 1976: 646), but destroyed during World War II. A recent search of many herbaria that hold Australian types, particularly B, BM, CANB and MEL failed to locate a sheet of *Diels 6065* or any other likely to have been seen by Pritzel.

We have chosen the neotype from among several recent collections from the Geraldton-Kalbarri area, where the original type collection was made. No specimen matched Pritzel's description perfectly, although all agreed with it sufficiently for us to be confident that they belonged to the same taxon. The particular specimen selected agrees with the protologue as well as any other and is good material bearing buds flowers and young fruits.

Mirbelia granitica Crisp et J.M. Taylor, sp. nov.

Frutex 0.3-1 m altus indumento sericeo; *ramulis* dispersis divergentibus spinescentibus, ultimis brevissimis aphyllis; *foliis* dispersis fasciculatisve breviter petiolatis, nunc linearibus obtusis marginibus revolutis nunc angusto-obovatis acutis marginibus recurvis, 2-6 mm longis, 0.5-1 mm latis, venatione obscura; *floribus* solitariis in axillis; *calyce* 2-3 mm longo, lobis tubo brevioribus, duobus supernis in labium emarginatum connatis; *vexillo* latissime ovato; *alis* obovato-oblongis; *carina* triangulari; *ovario* glabro praeter pilos paucos ad basim styli, ovulis 2-6; *legumine* ovoideo acuto, secus suturam adaxialem depresso vel profunde canaliculato, c. 5 mm longo, 2-3 mm lato, reticulato, dissepimentis falsis secus ambo suturas evolutis.

Type: Western Australia, Kumarl to Lake King road, 24 km west of its junction with Peak Charles road, 32°43'S, 121°02'E, *M.G. Corrick 9489*, 21 Sep. 1985 (Holotype: CBG; isotypes: MEL, PERTH, n.v.).

The epithet refers to the habitat of the species, which is usually on or near granitic outcrops.

Erect or spreading shrub, 0.3-1 m tall, with appressed short hairs, glabrescent on stems and upper sides of leaves; *branchlets* mostly scattered, ± rigid, divergent, spinescent; ultimate branchlets very short, leafless. *Leaves* scattered or clustered, shortly petiolate, either linear and obtuse with revolute margins or narrow-obovate and acute with recurved margins,

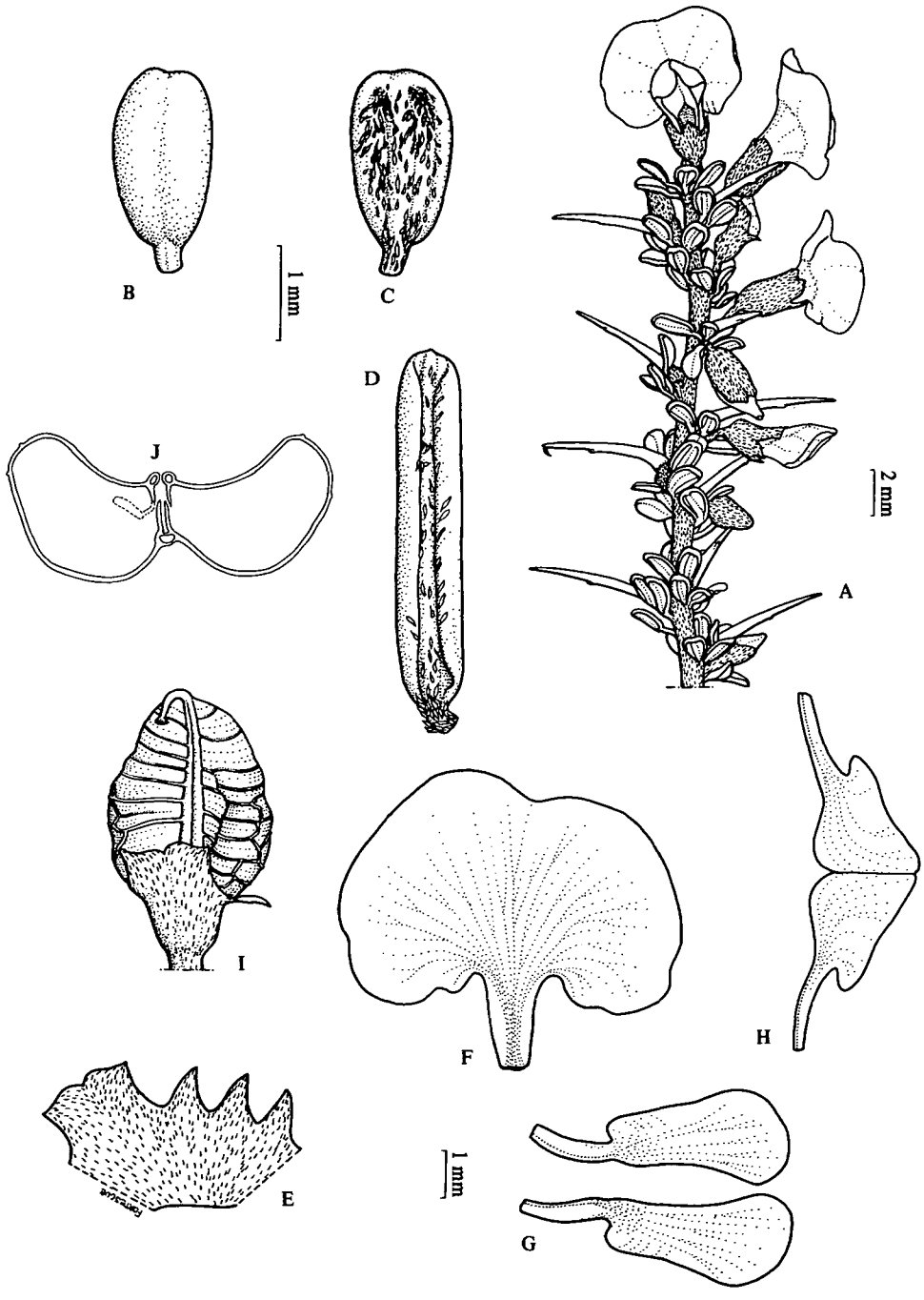


Fig. 1. *Mirbelia granitica*: A, branchlet; B, leaf, adaxial surface; C-D, leaves, abaxial surface; E, calyx, opened out, upper lobes at left; F, standard; G, wings; H, keel; I, pod, adaxial view; J, pod, median transection, adaxial side upwards. A-C, E-H from *Corrick 9489* (BG); D from *Main s.n.* (PERTH); I, J from *Royce 10158* (PERTH).

2-6 x 0.5-1 mm, venation obscure; stipules absent. *Flowers* axillary, apparently solitary. *Pedicels* c. 1 mm long; *bracts* minute, caducous; *bracteoles* minute, attached mid-pedicel. *Calyx* 2-3 mm long; lobes shorter than tube; upper two lobes united into a truncate or slightly rounded, emarginate lip; lower three lobes acute, c. 0.75 mm long. *Corolla*: *standard* very broad-ovate, shallowly emarginate, 5.5-7 x 5-7.5 mm including 1.75-2 mm claw, yellow with dull red markings; *wings* obovate-oblong, scarcely auriculate, 4.5-5.5 x 1.25-3 mm including c. 1.5 mm claw, yellow; *keel* triangular, auriculate, 3-4 x 1.5-2 mm including 1.5-2 mm claw, dull red. *Stamens* with filaments c. 3 mm long, anthers versatile, c. 0.3 mm long. *Gynoecium* 2.5-4 mm long including 0.5-1 mm stipe and 1-1.5 mm incurved style, glabrous except for few hairs at base of style; *stigma* capitate; *ovules* 2-6. *Pod* ovoid, acute, depressed or with a deep groove along adaxial suture, c. 5 x 2-3 mm, reticulate; false dissepiments developed along both sutures, abaxial one more pronounced; seed unknown. Fig. 1.

Flowering period: August to September. *Fruiting period*: November to December.

Distribution

Western Australia; Avon(?), Austin, Coolgardie, Roe and Helms districts. The main area of distribution is between 'Edjudina' (NE of Kalgoorlie), Queen Victoria Spring, Mt Ragged and Peak Charles, with an outlying record from Muntadgin, farther west. Map 2.

Habitat

M. granitica often occurs on or near granitic hills or outcrops. Soils have been variously described as granitic loam, stony loam, loamy sand, aeolian sand and silt. Associated vegetation may be heath with *Leptospermum*, open heath with *Callitris*, or low shrubland with scattered mallee.

Selected specimens (13 examined)

WESTERN AUSTRALIA: Muntadgin, *E.T. Bailey 229*, ix. 1947 (PERTH); 48 km W of Coonana near Cardonia Rocks (Transcontinental Railway), 30°57'S, 122°33'E, *R.J. Chinnock 1120*, 18.ix.1973 (AD, PERTH); Woodline, c. 85 km ENE of Norseman, 312°57'S, 122°22'E, *G.J. Keighery 2956*, 8.viii.1980 (PERTH); Cundeelee-Queen Victoria Spring area, *A.R. Main s.n.*, 25.viii.1960 (PERTH); S of Mt Ragged, Cape Arid National Park, *R.D. Royce 10158*, 5.xii.1971 (PERTH); 45 km E of 'Eujudina' H.S., c. 260 km NE of Kalgoorlie, *P.G. Wilson 7576*, 1.ix.1968 (PERTH).

Affinity

M. granitica bears a superficial resemblance to *M. microphylla* (Turcz.) Benth. and *M. depressa*. *M. microphylla* differs in having flat or slightly complicate leaves, sericeous indumentum of the ovary and pod, and a turgid (never depressed) pod. *M. depressa* differs in having leaves that are elliptic, ovate or almost round, often larger (3-7 x 1-4 mm) and usually flat or slightly complicate, although a few specimens have recurved margins. Also, *M. depressa* has prominent venation, a sericeous ovary except for a glabrous band along the adaxial suture, 8-10 ovules and a depressed-spherical pod which is sericeous abaxially and glabrous in the hollow (adaxially).

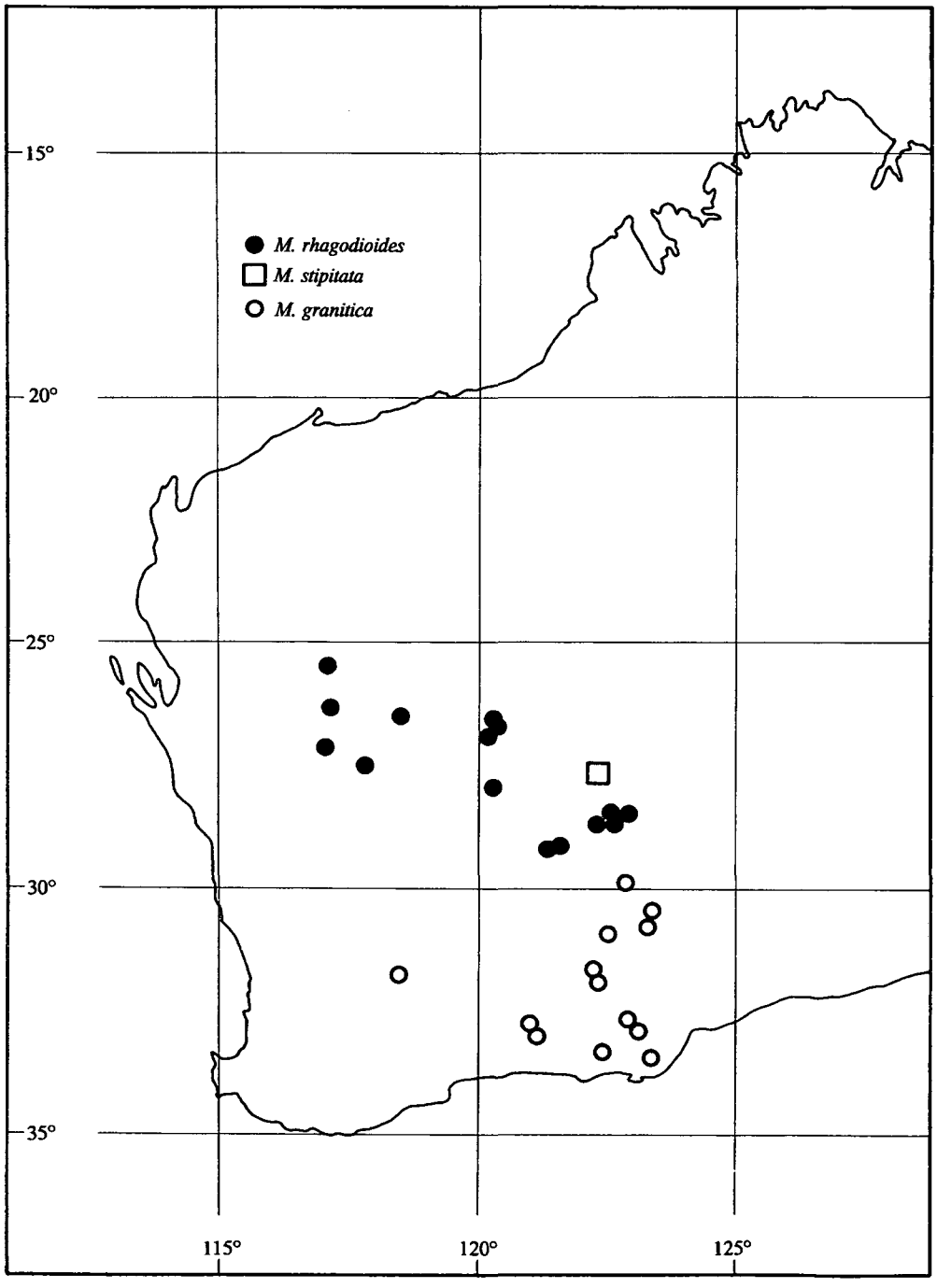
Mirbelia microphylla (Turcz.) Benth., Fl. Austral. 2: 37 (1864).

Dichosema microphyllum Turcz., Bull. Soc. Imp. Naturalistes Moscou 26: 283 (1853).

Type: *J. Drummond Coll. V. no. 34* (holotype: KW; isotypes: BM, K, W; photos CBG).

Mirbelia microphylloides S. Moore, J. Bot., London 35: 164 (1897).

Type: Western Australian goldfields, near Coolgardie, *S. Moore s.n.*, viii.1895 (holotype: BM; isotypes: K, NY; photos CBG).



Map 2. Distribution of *Mirbelia granitica*, *M. rhagodioides* and *M. stipitata*.

M. microphylloides is here reduced to synonymy with *M. microphylla.* Moore attempted to distinguish *M. microphylloides* by characters of leaf shape, degree of fusion of the upper calyx lobes and ovule number. All these show a wider degree of variation than he apparently saw, and his type falls within the range of variation accepted by us for *M. microphylla.*

Mirbelia rhagodioides Crisp et J.M. Taylor, sp. nov.

Frutex 0.5-1 m altus, tomento cinereo vel candido vel stramineo; *ramulis* dispersis divaricatis spinescentibus, interdum brevissimis nodis carentibus; *foliis* plerumque fasciculatis breviter petiolatis linearibus vel angustissimo-ellipticis obtusis marginibus revolutis, 3-9 mm longis, 0.5-0.75 mm latis, venatione obscura; *floribus* solitariis in axillis; *calyce* 3-4 mm longo, lobis tubo brevioribus, duobus supernis in labium truncatum emarginatum connatis; *vexillo* late reniformi retuso; *alis* obovatis; *carina* falcato-obovata; *ovario* glabro praeter pilos paucos ad basim styli, ovulis 4-6; *legumine* depresso latissime ovato truncato, c. 6 mm longo, c. 8 mm lato, costis lateralibus prominentibus, versus margines manifeste reticulato, dissepimentis falsis secus ambo suturas evolutis.

Type: Western Australia, near Laverton, N of Kalgoorlie, *W.E. Blackall 418 & C.A. Gardner*, 10.viii.1931 (holotype: PERTH; isotypes CBG, MEL).

The epithet refers to the strong superficial resemblance that the new species shows to species of the genus *Rhagodia* (Chenopodiaceae).

Dense or open shrub, 0.5-1 m tall; grey-, white- or yellowish-tomentose except the ovary and occasionally the mature leaves, the hairs laterally attached (asymmetrically peltate); *branchlets* scattered, divaricate, rigid, spinescent, occasionally very short and lacking nodes. *Leaves* mostly clustered, shortly petiolate, linear or very narrow-elliptic, obtuse often with a small mucro, margins revolute, 3-9 x 0.5-0.75 mm, venation obscure; stipules absent. *Flowers* solitary in axils. *Pedicels* 1-2 mm long; *bracts* minute or absent; *bracteoles* minute, attached at or below middle of pedicel, caducous. *Calyx* 3-4 mm long; lobes shorter than tube; upper two lobes united into a truncate, emarginate lip; lower three lobes a little shorter, acute, c. 1 mm long. *Corolla*: *standard* broad-reniform, retuse, 5.5-7 x 5-7.5 mm including c. 2.5 mm claw, yellow with dark red towards centre; *wings* obovate, slightly auriculate, 5-6 x 1.5-1.75 mm including c. 2.5 mm claw, mostly yellow; *keel* falcate-obovate, auriculate, 4.5-5.5 x 1.5-2 mm including c. 2.5 mm claw, dark red. *Stamens* with filaments 4-5 mm long, anthers versatile, nearly 0.5 mm long. *Gynoecium* 4.5-5 mm long including c. 1.5 mm stipe and 1.5-2 mm incurved style, glabrous except for a few hairs at base of style; *ovules* 4-6; *stigma* terminal, minute. *Pod* depressed, very broad-ovate, truncate, c. 6 x 8 mm, with prominent lateral ribs, prominently reticulate towards margins, margins upturned; false dissepiments developed along both sutures, abaxial one more pronounced ; mature seed unknown. Fig. 2.

Flowering period: June to August. *Fruiting period*: September to October.

Distribution

Western Australia; Ashburton, Austin, ?Coolgardie and Helms districts. *M. rhagodioides* occurs within an area bounded by 'Errabiddy' (which is S of the Gascoyne River and c. 175 km NW of Meekatharra), Wiluna, White Cliffs, Leonora and Cue. Map 2.

Habitat

Recorded in yellowish sand, red loam and skeletal soil on plains and dunes, on rocky hills, near granite and quartz outcrops, lateritic mesas and breakaways, and in rocky places near creeks. Associated vegetation is commonly *Acacia* shrubland.

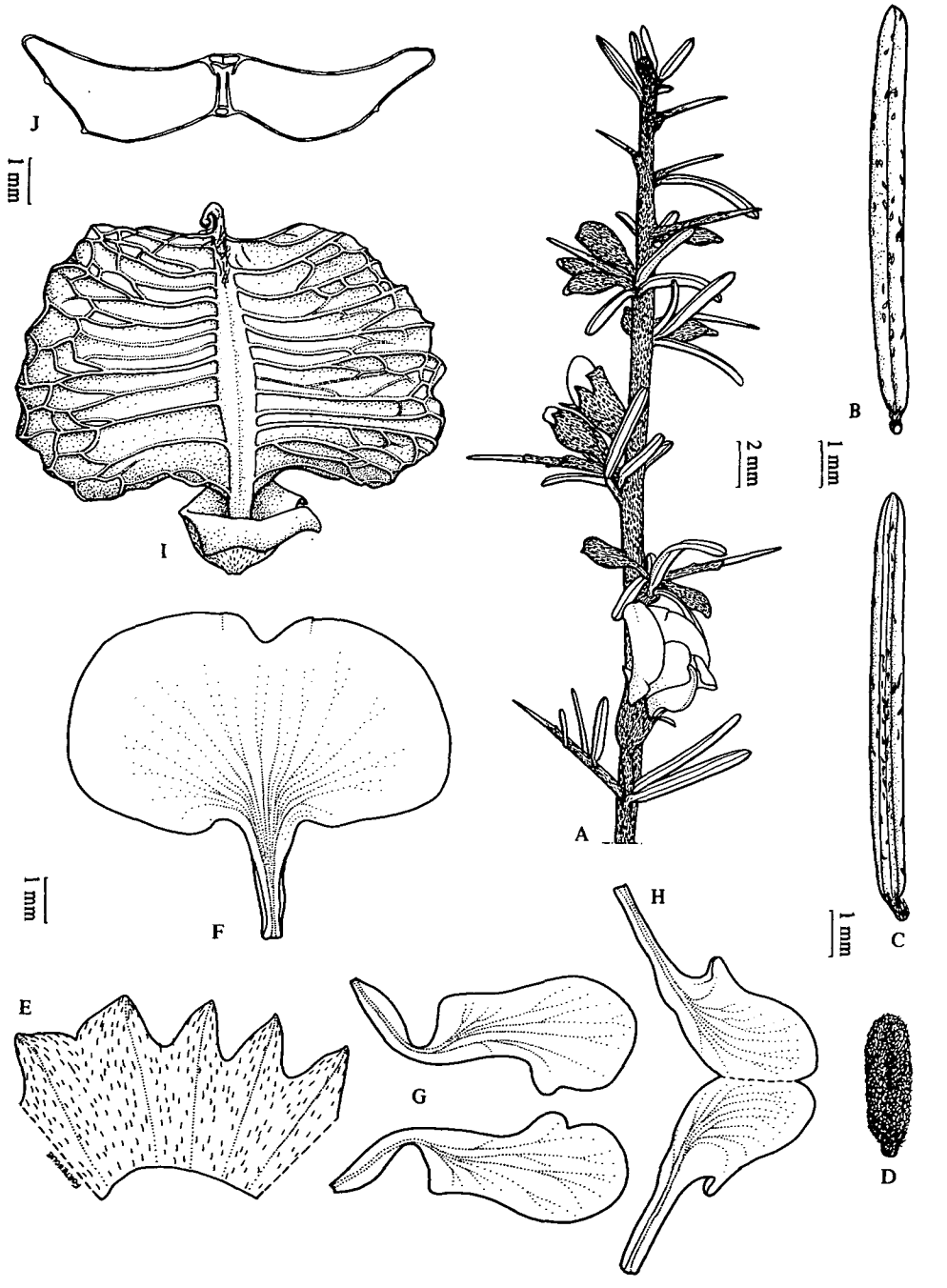


Fig. 2. *Mirbelia rhagodioides*. A, branchlet; B, leaf, adaxial view; C, leaf, abaxial view; D, leaf, adaxial view; E, calyx, opened out, upper lobes at left; F, standard; G, wings; H, keel; I, pod, adaxial view; J, pod, median transection, adaxial surface upwards. A-C, E-H from *George 5568* (PERTH); D, I & J from *Weber 5090* (PERTH).

Selected specimens (16 examined)

WESTERN AUSTRALIA: c. 15 miles E of Laverton, *A.S. George 4500*, 29.vi.1963 (PERTH); 16 miles E of Wiluna, *A.S. George 5623*, 28.vii.1963 (PERTH): 69 miles E of Sandstone, *A.S. George 8012*, 13,ix.1966 (PERTH); Errabiddy Station, *A.A. Mitchell 984*, 6.viii.1982 (PERTH); 11 miles N of 'Mileura' H.S., *N.H. Speck 969*, 15.iv.1959 (CANB, PERTH); 14-18 km E of Wiluna (SW corner of Gibson Desert), *A. Strid 20260*, 6.ix.1982 (PERTH); Cue, *E. Wittwer 1269*, 1.viii.1974 (PERTH).

Affinity

Specimens of *M. rhagodioides* usually have been identified as *M. microphylla*, which they superficially resemble, but there are significant morphological differences between these taxa. In *M. microphylla* the main branchlets are not spinescent as they are in *M. rhagodioides*, the leaves are narrow-obovate and flat or slightly folded up, the ovary is minutely hairy all over and the pod is ovoid and turgid, with a deep adaxial groove. In fact, *M. rhagodioides* is readily distinguished from all other species in the '*M. spinosa*' group by the remarkable morphology of its pods, which are larger (especially broader), strongly depressed and prominently ribbed.

The 'Mirbelia viminalis' group

Hitherto, this group has included two described species: *M. viminalis* (Cunn. ex Benth.) C. Gardner and *M. ramulosa* (Benth.) C. Gardner. Only the former had been recorded from Central Australia until the recent discovery of both *M. ramulosa* and a new species within the region. The new species, *M. stipitata*, is described below. The new record for *M. ramulosa* will be treated in the Flora and is not dealt with further here.

Mirbelia stipitata Crisp et J.M. Taylor, sp. nov.

Frutex c. 0.6 m altus, glabratus; *ramulis* dispersis vel sub-oppositis divaricatis leviter striatis spinescentibus; *foliis* in squamas redactis; *floribus* plerumque versus extrema ramulorum solitariis, alabastris obtusis; *calyce* ad basim obtuso, c. 4 mm longo, lobis tubo brevioribus, duobus supernis in labium connatis apicibus liberis acutis obtusisve; *vexillo* late reniformi emarginato; *alis* obovatis; *carina* oblique late elliptica; *ovario* glabro, ovulis 2; *stylo* leviter compresso; *legumine* immaturo conspicue stipitato ellipsoideo, canale abaxiali profundo, dissepimentis falsis secus ambo suturas praesertim adaxialem evolutis.

Type: Western Australia, c. 100 km N of Laverton, 30 km NE of 'Bandya' H.S., *P.G. Wilson 7349*, 27. viii.1968 (Holotype: PERTH; isotypes CBG, MEL, K).

The epithet refers to the long stipe subtending the ovary and developing pod.

Shrub c. 0.6 m tall, glabrous except for scattered short hairs on bracts and bracteoles, and pubescence inside calyx lobes; *branchlets* alternate or sub-opposite, divaricate, slightly striate, spinescent. *Leaves* reduced to scales < 1 mm long; stipules absent. *Flowers* mostly solitary towards ends of branchlets; buds obtuse. *Pedicels* 2-2.75 mm long; *bracts* ovate, c. 0.75 mm long; *bracteoles* similar, attached near the middle of the pedicel, caducous. *Calyx* obtuse at the base, 4-5 mm long; lobes shorter than tube; upper two lobes united into a lip, acute or obtuse at tips, free parts 0.5 mm long; lower three lobes triangular, acute, 1.25 mm long. *Corolla*: *standard* broad-reniform, emarginate, c. 6 x 8 mm including 2 mm claw; *wings* obovate, auriculate, c. 5.75 x 2.75 mm including 1.5 mm claw; *keel* obliquely broad-elliptic, auriculate, c. 5.25 x 2 mm including 2 mm claw. *Gynoecium* c. 5 mm long including 1.75 mm stipe and 1.75 mm slightly compressed incurved style, glabrous; *ovules* 2; *stigma* capitate. Immature *pod* conspicuously stipitate (the stipe not enclosed by the persistent calyx), ellipsoid with a deep abaxial groove, c. 6 mm long including the c. 3 mm stipe; false dissepiments developed along both sutures, abaxial one much more pronounced; seed unknown. Fig. 3.

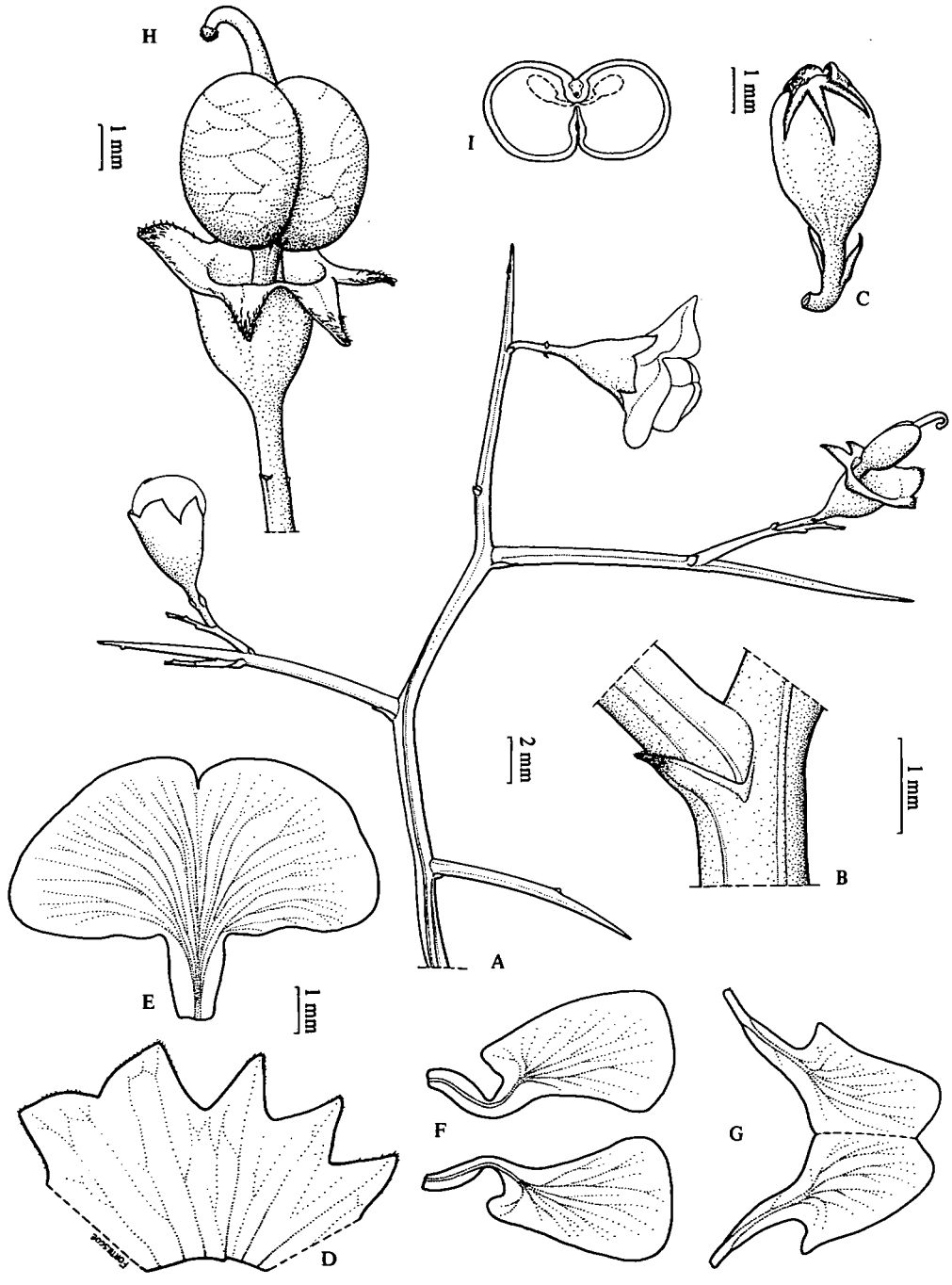


Fig. 3. *Mirbelia stipitata*. A, branchlet; B, detail of branchlets and scale leaf; C, flower bud; D, calyx, opened out, upper lobes at left; E, standard; F, wings; G, keel; H, immature pod with persistent calyx, abaxial view; I, pod, median transection, adaxial surface upwards. Drawn from *Wilson 7349*.

Flowering period: August.

Distribution

Western Australia; Austin/Helms district boundary. Known only from the type locality which is c. 110 km N of Laverton. Map 2.

Conservation status

Rare, coded 1K (criteria from Leigh et al. 1984). Although this species is known from only a single collection, it occurs in a region that is so poorly explored, and is itself such a nondescript plant, that at present there is no basis for suspecting that it is threatened.

Affinity

M. stipitata resembles both *M. ramulosa* and *M. viminalis* insofar as all three species have spinescent branchlets with leaves reduced to scales. It is readily distinguished from both by several characters. *M. viminalis* differs in having conspicuously striate or ribbed branchlets, acuminate flower buds, appressed hairs outside the calyx, calyx lobes usually longer than the tube, 4 ovules and an adaxial groove on the pod. *M. ramulosa* differs in having conspicuously striate or ribbed branchlets which are mostly 3-forked, 14-18 ovules and a pod which is scarcely stipitate (the persistent calyx embraces its base) and only shallowly grooved on the abaxial side.

Acknowledgements

We are grateful to Don Fortescue for preparing fine illustrations. Our thanks go to Mark Clements and Alex George for reading and commenting upon the manuscript. We appreciate the large loan made available by the PERTH herbarium. Production of the manuscript was made possible by a grant from the Nell and Hermon Slade Trust.

References

Beard, J.S. (1979). Phytogeographic regions. In J. Gentilli (Ed.), 'Western Landscapes', pp. 107-121. (Univ. W.A. Press: Nedlands).

Crisp, M.D. (1982). Evolution and biogeography of *Leptosema* (Leguminosae: Papilionoideae). In W.R. Barker & P.J.M. Greenslade (Eds), 'Evolution of the Flora and Fauna of Arid Australia', pp. 317-322. (Peacock Publications: Adelaide).

Leigh, J.H., Boden, R.W. & Briggs, J.H. (1984). 'Extinct and Endangered Plants of Australia' (Macmillan: Melbourne).

Stafleu, F.A. & Cowan, R.S. (1976). 'Taxonomic Literature', edn 2, vol. 1: A-G (Bohn, Scheltema & Holkema: Utrecht).