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## NOTES ON *DAVIESIA* AND *PULTENAEA* (FABACEAE) IN SOUTH AUSTRALIA

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### Abstract

Four new taxa are described, viz. *Daviesia asperula* subsp. *asperula* and subsp. *obliqua*, *D. benthamii* Meissner subsp. *humilis*, and *D. stricta*. The relationship of the first two species to *D. genistifolia* A. Cunn. ex Benth. is discussed in detail. *D. stricta* is compared with its close relative, *D. wyattiana*, from the east coast. A new combination is made for the tribe Mirbelieae (Benth.) Polhill et Crisp. *Pultenaea elachista* (F. Muell.) comb. nov. is transferred from *Gastrolobium*.

Tribe **Mirbelieae** (Benth.) Polhill et Crisp\*, comb. et stat. nov.

*Podalyrieae* subtribe *Mirbeliinae* Benth., Enum. Pl. Huegel, 35 (April 1837), as 'Mirbelieae'.—*Mirbelieae* (Benth.) Polhill in Polhill et Raven, Advances Legume Syst., 391 (1981), comb. non rite publ.—Type: *Mirbelia* Sm.

*Podalyrieae* subtribe *Pultenaeinae* Benth., loc. cit. p. 30, as 'Pultenaeae'.—Type: *Pultenaea* Sm.

Polhill (1981) has made this combination previously but unfortunately his reference to the base name is not to its original publication, and therefore his combination is invalid. Bentham originally published the base name 'subtribus Mirbelieae' in 'Enum. Pl. Huegel' in April 1837 (Stafleu & Cowan 1976, 751), just two months before he published the same name in his 'Commentat. Legum. Gener.' in June 1837 (Stafleu & Cowan 1976, 175). It is to the latter that Polhill (1981) refers.

***Daviesia asperula* Crisp, sp. nov.**

A *D. genistifolia* A. Cunn. ex Benth. phyllodiis ramulisque asperulis, phyllodiis plerumque in plano verticali compressis vel complanatis, et seminibus late ovoideo-ellipsoideis, arillo crasse bilobo differt.

Type: 6-7 miles [10-11 km] from Rocky River, towards Cape Borda, Kangaroo Island, South Australia, M.E. Phillips s.n., 29.ix.1965 (holo: CBG 021582; iso: AD).

The specific epithet is diminutive of the Latin *asper* (rough) and refers to the slight roughness of the branchlets and phyllodes.

Compact or spreading *shrub* to 2 m tall. *Branchlets* with several longitudinal minutely scabrid ribs. *Phyllodes* arranged spirally, often crowded, spreading, recurved at least at base, vertically compressed or flattened, either subulate or obliquely falcate to narrow-obovate, pungent, articulate at base, 5-25 x 1-4.5 mm, scabridulous, striate with parallel nerves. *Racemes* 1 per axil, 2-3-flowered; rhachis almost nil. *Pedice*l 1-2 mm long. *Calyx* campanulate, with very short subequal lobes. *Corolla*: standard very broad-ovate, emarginate, 7-8 mm long and broad including the c. 1 mm claw, orange or yellow with a deep red centre; *wings* narrow-obovate, auriculate, c. 5.5 x

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\*To be cited as 'Polhill et Crisp', not 'Polhill et Crisp ex Crisp'.

c. 2 mm including the 1.5-2 mm claw, red; *keel* obliquely obovate, beaked, auriculate, saccate, c. 4.5 x c. 2 mm including the 1.5-2 mm claws, red. *Stamens* free, slightly dimorphic. *Pod* broad-obtriangular, constricted to a slightly elongated, stipe-like base, 10-14 x 7-10 mm. *Seed* broad-ovoid-ellipsoid, 3.3-4.0 mm long, 2.4-3.3 mm broad, c. 2.4 mm thick; *aril* thickly 2-lobed, projecting beyond outline of seed in profile. (Fig. 1).

#### *Distribution* (Map 1).

South Australia: Eyre Peninsula, Kangaroo Island and Fleurieu Peninsula.

#### *Habitat*

*D. asperula* is found on poor soils, either sand or laterite, in mallee (dominated e.g. by *Eucalyptus cneorifolia*) or open-forest (dominated by *E. cladocalyx*).

#### *Affinity*

*D. asperula* is closely related to *D. genistifolia*. The resemblance is particularly close in the subulate-leaved form of *D. asperula* (= subsp. *asperula*, below). *D. genistifolia* is readily distinguished from *D. asperula* by its smooth branchlets. In addition, there are some differences in the pod and seed. The pod of *D. genistifolia* has a more sharply curved lower suture than the pod of *D. asperula* (cf. Figs 1 & 2). In *D. genistifolia* the seed is more oblong and more compressed than in *D. asperula* and the aril is only 1-lobed and is not so thick that it obviously projects beyond the profile of the seed (cf. Figs 1 & 2).

*D. asperula* and *D. genistifolia* are separated geographically, and are probably a vicariant species pair in the sense of Croizat, Nelson & Rosen (1974). *D. genistifolia* occurs principally in and near the Great Dividing Range from north-east Victoria, through New South Wales, to southern Queensland. A disjunct population of *D. genistifolia* is in the Flinders Ranges, South Australia, the closest occurrence of that species to *D. asperula* (Map 2). These plants in the Flinders Ranges are a particularly slender form of *D. genistifolia*, with straight terete phyllodes quite unlike the curved flat phyllodes of *D. asperula* on Eyre Peninsula (see subsp. *obliqua* below).

Plants resembling *D. asperula* and *D. genistifolia*, but differing from both in having phyllodes which are continuous with the branchlets, occur in the mallee districts of South Australia, Victoria and New South Wales. These plants belong to a new subspecies of *D. benthamii* (see below).

Plants of *D. asperula* with flattened phyllodes have been referred in some cases to *D. incrassata* Sm. and in others to *D. polyphylla* Benth. (Black, 1924 et auct.). Large inflated pods distinguish both the latter species, which are endemic in Western Australia, from *D. asperula*.

#### *Variation*

Variation in the phyllodes of *D. asperula* is great, ranging from subulate, subterete shapes to flat, obliquely obovate shapes. Subulate-leaved plants are mainly found on Kangaroo Island whereas flat-leaved plants are virtually restricted to Eyre Peninsula. A few intermediates occur on both Eyre Peninsula and Kangaroo Island. These morphologic-geographic populations are treated below as two subspecies. The boundary between these subspecies is somewhat arbitrary, because of the existence of intermediates, but the extremes are very different and the intermediates are few. The subspecies are so different in superficial appearance that previously (Black, 1924 et auct.) they have been referred to different species. Thus, the subulate-leaved forms were referred to *D. genistifolia* and the flat-leaved forms were referred to *D. incrassata* and *D. polyphylla*.

**Key to Subspecies**

- Phyllodes subulate, broadest at or near base ..... subsp. *asperula*
- Phyllodes falcate or obliquely narrow-obovate, broadest at or above middle ..... subsp. *obliqua*

**subsp. *asperula***

*D. incrassata* sensu J.M. Black, Fl. S. Austral., 296 (1924); *ibid.* ed. 2, 435 (1948); *pro parte*, non Sm.  
*D. genistifolia* sensu J.M. Black, Fl. S. Austral., 296 (1924); *ibid.* ed. 2, 435 (1948); *pro parte*, non A. Cunn. ex Benth.

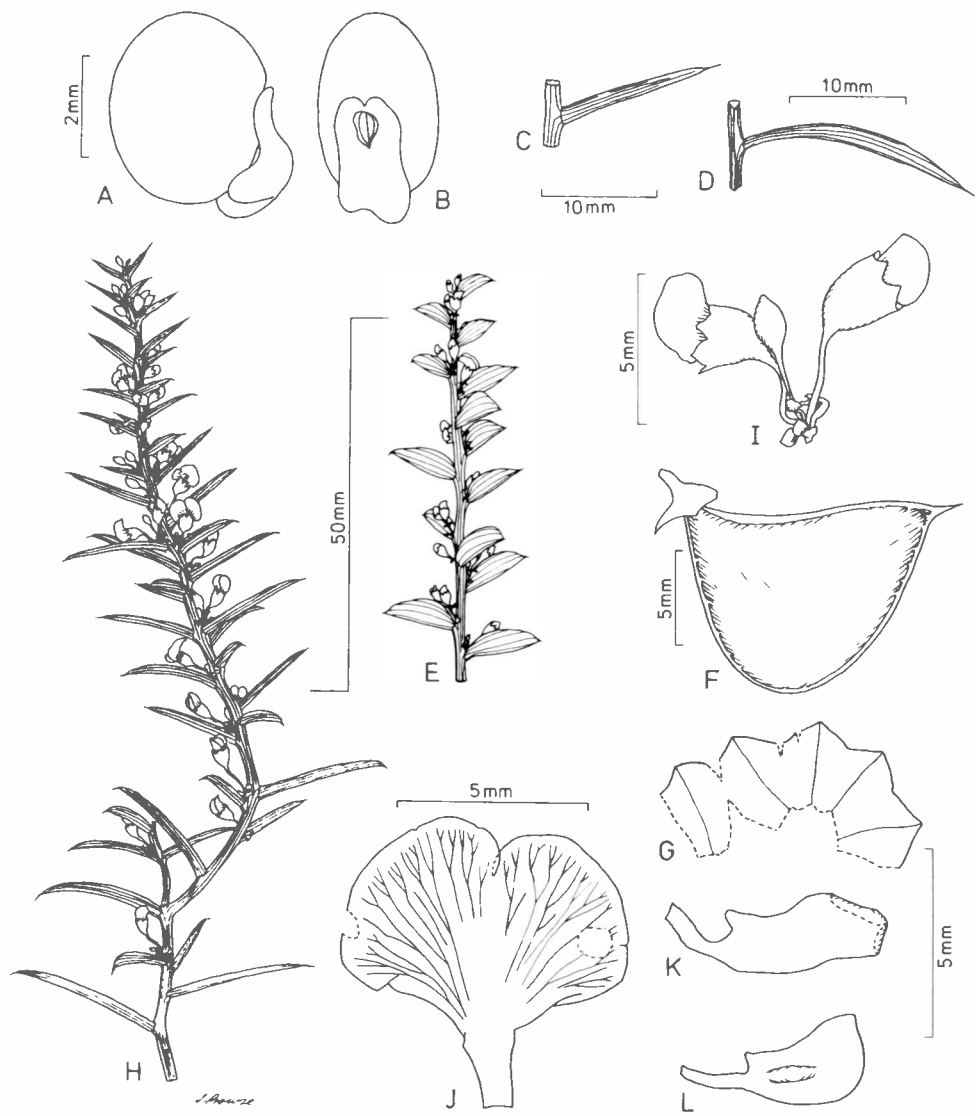


Fig. 1. *Daviesia asperula* Crisp. A-C, subsp. *asperula*. A-B, seed with aril; C, phyllode. D-G, subsp. *obliqua* Crisp. D, phyllode; E, habit; F, pod; G, calyx, opened out, upper lobes at left. H-L, intermediate between subspecies. H, habit; I, inflorescence; J, standard; K, wing; L, keel. Broken lines indicate overlap or damage. (A-B, Choo 13; C, M.E Phillips s.n., Holotype; D, P.G. Wilson 357; E & G, Whibley 1994; F, Brown s.n. (MEL 80939); H-L, Donner 2094). E, F, H & I drawn by A. Prowse.

*Phyllodes* subulate, compressed or subterete, recurved only near base, tapering from base to apex, 1-1.5 mm broad. (Fig. 1, A-C).

*Distribution* (Map 1).

Mainly Kangaroo Island, with one or two outliers on southern Eyre Peninsula, and a single record from Waitpinga, Fleurieu Peninsula.

*Selected specimens*

SOUTH AUSTRALIA: Kangaroo Island, near estuary of Harriet River, Vivonne Bay, *L.T. Choo* 13, 16.i.1970 (CBG); Fleurieu Peninsula, Waitpinga, *J.G. Fraser s.n.*, 18.x.1955 (AD 97622007); Kangaroo Island, Ropers Flat, between Aerodrome and Big Gums, *G. Jackson* 73, 9.x.1960 (AD); Kangaroo Island, 8.5 miles [13.6 km] from Emu Bay towards Stokes Bay, *M.E. Phillips s.n.*, 26.ix.1965 (AD, CBG 021590); Kangaroo Island, Kelly Hill Caves, 35° 58' S, 136° 54' E, *A.G. Spooner* 6068, 7.x.1978 (AD); Kangaroo Island, Dudley Peninsula, 0.5 km E of Cape Hart turn-off on Sapphire town/Cape Willoughby road, 35° 50' S, 138° 01' E, *J.G. West* 1263, 22.xii.1975 (CBG); Eyre Peninsula, Warunda, *Herb. S.A. White s.n.*, 9.x.1909 (AD 97923312).

subsp. *obliqua* Crisp, subsp. nov.

*D. polyphylla* sensu J.M. Black, Fl. S. Austral., 296 (1924); *ibid.*, ed. 2, 435 (1948), non Benth.

A *D. asperula* subsp. *asperula* phyllodiis complanatis falcatis (lunatis) vel oblique angusto-obovatis versus medium vel supra latissimis (1.5-4.5 mm latis) versus basin contractis dignoscenda.

*Type*: South Australia, southern Eyre Peninsula, between Yalunda Flat and Tumbly Bay, c. 20 km west of Tumbly Bay, *D.J.E. Whibley* 1944, 26.viii.1967 (*holo*: AD).

The subspecific epithet refers to the oblique or unequal-sided phyllodes.

*Phyllodes* falcate (crescentic) or obliquely narrow-obovate, flattened, recurved along the entire length of the upper or both margins, broadest at or above the middle, contracted towards the base, 1.5-4.5 mm broad. (Fig. 1, D-G).

*Distribution* (Map 1).

Eyre Peninsula, mainly south of Yeelanna, but with an outlier between Cowell and Whyalla.

*Selected specimens*

SOUTH AUSTRALIA: Eyre Peninsula: Hundred of Wanilla, section 99, *C.R. Alcock* C. 127, 19.xii.1964 (AD); Hundred of Wanilla, section 100, *C.R. Alcock* 915, 16.viii.1965 (AD); Fishery Bay, Hundred of Sleaford, section 11, *C.R. Alcock* 1627, 17.ix.1967 (ADW); Yeelanna, 34° 09' S, 135° 44' E, *Anon (School) s.n.*, x.1937 (AD 97736536); Port Lincoln, *J.H. Brown s.n.*, 1873 (MEL 80939); c. 8 km E of Yallunda Flat, *B. Copley* 3140, 16.ix.1970 (AD); between Whyalla and Cowell, *M.E. Phillips* 282, 26.viii.1964 (CBG); Port Lincoln, [*C. Wilhelmi s.n.*, sine die (MEL 80352)]; Warrow-Edillilie road, on North Block, Marble Range, 11 km E of Warrow, *P.G. Wilson* 357, 10.x.1958 (AD, K).

*Relationship between subspecies*

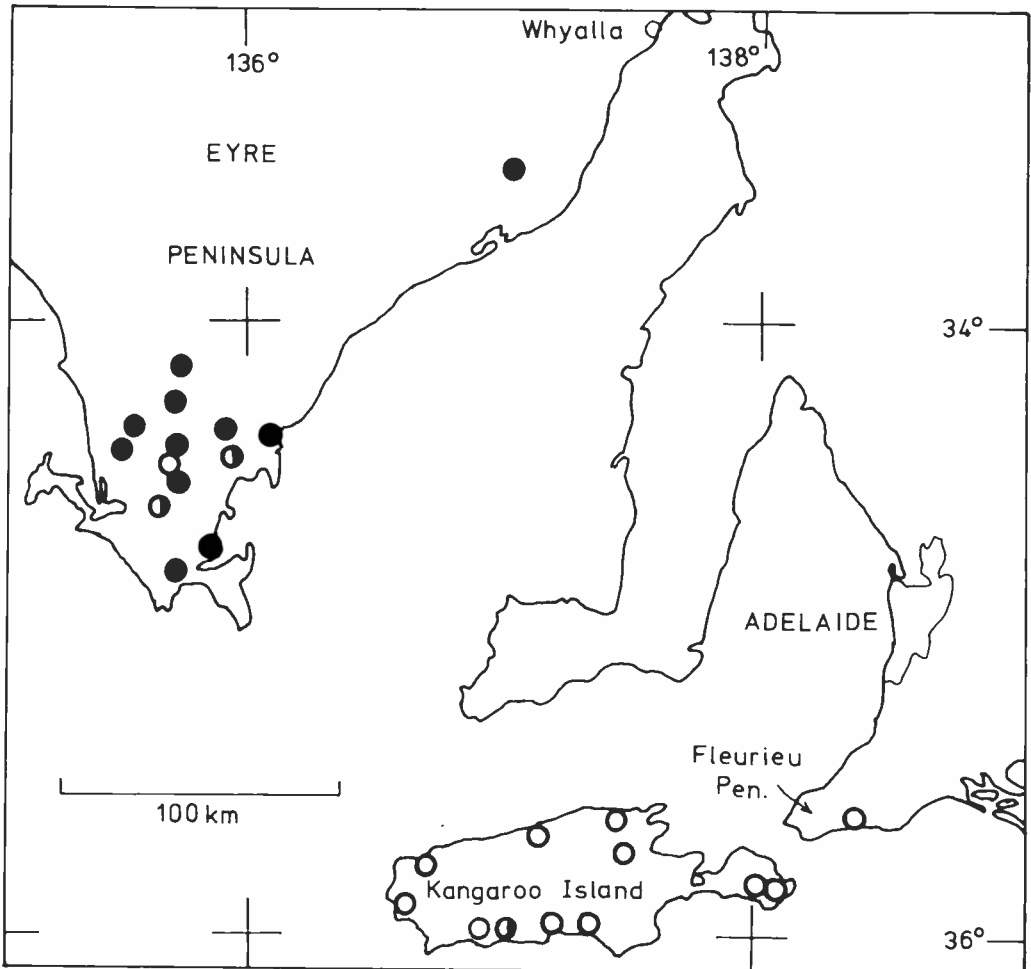
As indicated above, the circumscription of the two subspecies is somewhat arbitrary because of the existence of intermediates. However, there are relatively few intermediates (below and Map 1) compared with the large number of specimens typical of either population. Most specimens from Kangaroo Island have the typically compressed, subulate, straight phyllodes of subsp. *asperula*. In most specimens from Eyre Peninsula they are clearly flattened and falcate, at least along the upper margin, and are typical of subsp. *obliqua*.

It is curious that there are one or two specimens typical of subsp. *asperula* (e.g.

*White s.n.*) from Eyre Peninsula, when the obvious barrier separating vicarious groups within *D. asperula* is the 100 km stretch of sea between Eyre Peninsula and Kangaroo Island.

*Intermediate specimens*

SOUTH AUSTRALIA: Eyre Peninsula: c. 1 km S of Pearlah siding, *N.N. Donner 2094*, 26.viii.1967 (AD, CBG, K); a few miles N of Tod Reservoir, Koppio, *A.H. Freund s.n.*, 5.ix.1935 (AD 97701097). Kangaroo Island: Karatta, *Anon. s.n.*, 14.xi.1886 (AD 97622040); Hundred of Gosse, section 55, *G. Jackson 1002*, 8.ix.1974 (AD).



Map 1. Distribution of *Daviesia asperula* subsp. *asperula* (○), subsp. *obliqua* (●) and intermediates between subspecies (◐).

**Daviesia benthamii** Meissner subsp. **humilis** Crisp, subsp. nov.

*D. genistifolia* sensu Benth., Fl. Austral. 2: 82 (1864), *quoad spec. Dallachy*; J.M. Black, Fl. S. Austral., 296 (1924), *pro parte*; *ibid.*, ed. 2, 435 (1948), *pro parte*; non A. Cunn. ex Benth., *sensu stricto*.

A *D. benthamii* subsp. *benthamii* statura humiliore (ad 0.6 m alta) et phyllodiis numerosis ramulos praeter versus basin vestientibus differt.

*Type*: South Australia, Flinders Range, Wilpena Pound, just N of Sliding Rock in Pound Gap, 31° 33' S, 138° 35' E, M.D. Crisp 931, 22.x.1974 (*holo*: CBG; *iso*: K).

The subspecific epithet refers to the low-growing habit of the plants.

Dense, often depressed *shrubs* 0.3-0.6 m tall; branchlets usually clothed with phyllodes to near base, rarely naked up to half-way from base. *Phyllodes* continuous with branchlet, spreading or slightly ascending, terete, pungent, 5-30 mm long, 1-1.75 mm diameter at base, smooth. *Racemes* with 4-6 flowers, rhachis 2-7 mm long. *Flowers* small e.g. *standard* c. 5 x c. 5.5 mm. *Pod* rather small (5.5-7 x 4-5.5 mm) and slightly rounded in outline. (Fig. 3).

*Distribution* (Map 2).

*D. benthamii* subsp. *humilis* is scattered through the mallee districts of South Australia, Victoria and New South Wales, from Eyre Peninsula in the west to Wyalong in the east.

*Selected specimens*

SOUTH AUSTRALIA: Lower Eyre Peninsula, Lock, c. 140 km N of Port Lincoln, J.B. Cleland s.n., 9.xi.1960 (AD 96803458); South East, roadside between Padthaway and Xmas Rocks, c. 35 km WSW of Bordertown, D. Hunt 2147, 19.ix.1964 (AD, CBG); 1.5 miles [2.4 km] N of McDonald Reserve, c. 3 miles [5 km] SE of Hartley, R. & E.J. Melville 71.666, 2.x.1971 (K); South East, Pine Hill, ENE of Bordertown, R.D. Pearce 90, 31.x.1976 (ADW, K); Kangaroo Island, Kingscote, J.G.O. Tepper s.n., xi.1878 (AD 97622061 p.p., MEL 80962).

VICTORIA: Whipstick Mallee Scrub, 18 miles [29 km] NNE of Bendigo, E.F. Constable 5231, 23.x.1964 (K, NSW); 0.5 miles [0.8 km] from Rushworth, M.E. Phillips s.n., 29.xi.1961 (CBG 003665).

NEW SOUTH WALES: 10 miles [16 km] from West Wyalong to Rankins Springs, J.W. Wrigley s.n., 15.xii.1971 (CBG 043516).

*Habitat*

*D. benthamii* subsp. *humilis* occurs in mallee districts, in slightly more humid areas than does subsp. *benthamii* in South Australia (Map 2). It is found on a variety of soils e.g. skeletal soil on mountain slopes, sandy loam over limestone, and gravelly clay. The vegetation of its habitat is typically mallee (dominated by shrubby *Eucalyptus* spp.) but is occasionally heath or woodland.

*Affinity*

This new taxon has been placed as a subspecies of *D. benthamii* because like that species, it has phyllodes which are continuous with the branchlets, calyx lobes which are apiculate, and flowers and pods of a similar shape and rather small size (standard up to c. 5.5 mm broad, pod up to 7 x 5.5 mm). Black's (1924) inclusion of it in *D. genistifolia* is not surprising because the habit and phyllodes are similar in these two taxa. However, *D. genistifolia* differs from both subspecies of *D. benthamii* by the articulation at the base of its phyllodes, but its larger flowers (e.g. standard more than 6 mm broad) and by its larger pods (more than 9 x 7.5 mm). In *D. genistifolia* the calyx lobes are not (or scarcely) apiculate, unlike the strongly apiculate calyx lobes of *D. benthamii*. The same

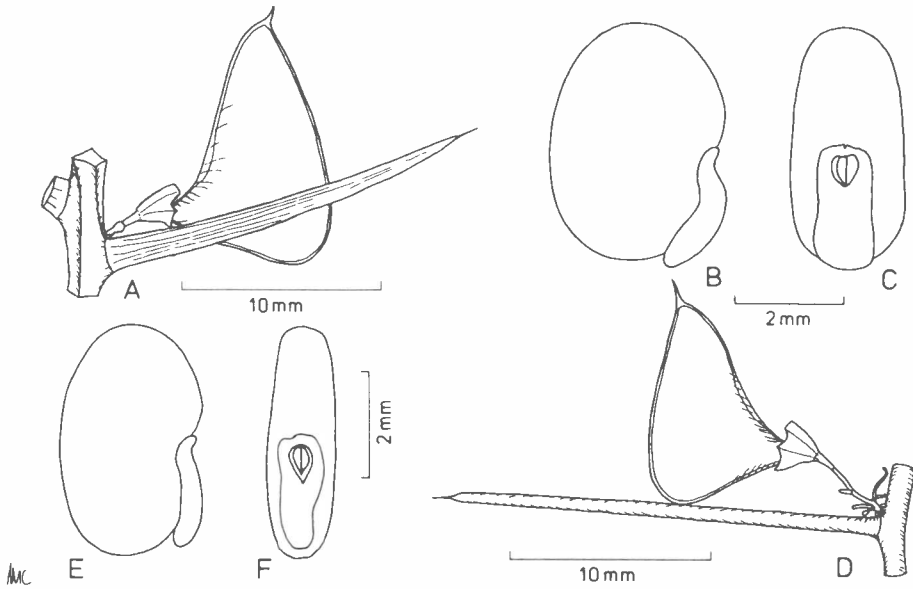


Fig. 2. *Daviesia genistifolia* A. Cunn. ex Benth. A, phyllode and pod; B-C, seed with aril; D, phyllode and pod; E-F, seed with aril. (A-C, Carr 7195 [CBG]; D-F, Shoobridge s.n. [CBG 000864])

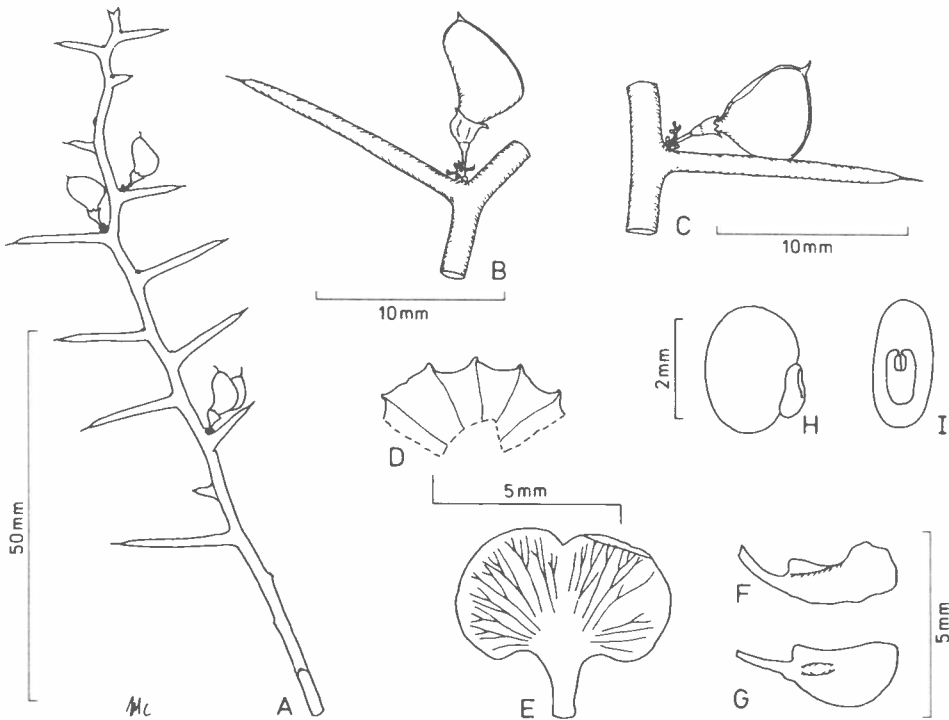
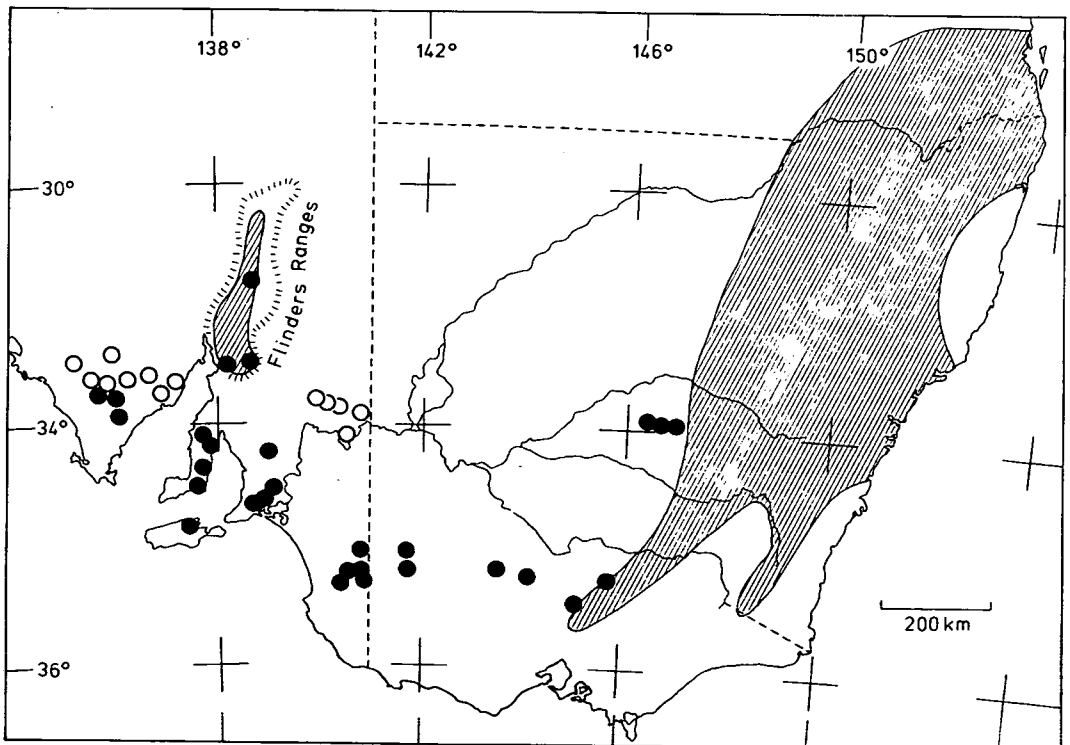


Fig. 3. *Daviesia benthamii* Meissner subsp. *humilis* Crisp. A, habit; B-C, phyllodes with pods; D, calyx opened, upper lobes at left; E, standard; F, wing; G, keel; H-I, seed with aril. Broken lines indicate cuts. (A-B, Wrigley s.n. [CBG 043516]; C, Tepper s.n. [MEL 80962]; D-G, Crisp 931, Holotype; H-I, Tepper s.n. [AD 97622061]).



character states distinguish *D. asperula* from *D. benthamii*. Where the distributions of *D. genistifolia* and *D. benthamii* subsp. *humilis* overlap (Map 2), there appear to be no intermediate plants.

In South Australia, *D. benthamii* subsp. *benthamii* (syn. *D. nudula* J.M. Black) differs markedly from subsp. *humilis* in having the phyllodes reduced to a few short stout spines at the branchlet apices and in its long, slender inflorescence rachides and pedicels. *D. benthamii* subsp. *benthamii* occurs in drier localities in South Australia than does subsp. *humilis* (Map 2), but there is no evidence of a cline in phyllode size or number linking the two populations, nor are there intermediates of any kind. These taxa are so well distinguished in South Australia that if they were considered in that state alone, they could be treated as distinct species. However, as one proceeds westwards into Western Australia, subsp. *benthamii* grades from the extreme form described above into a form with longer, more numerous phyllodes and shorter inflorescence rachides and pedicels. This latter form includes the type of the species, and occurs in the moister western parts of the wheatbelt of Western Australia. It is very similar to subsp. *humilis*, but there are slight differences. In the typical form of subsp. *benthamii* the phyllodes, although reasonably long and numerous, rarely extend further than one third of the way down each branchlet, and the habit is taller (to 1 m) and more open than in subsp. *humilis*. These slight differences, taken with the geographic separation, seem to justify separation of the typical form of *D. benthamii* and subsp. *humilis* at subspecies level.



Map 2. Distribution of *Daviesia benthamii* subsp. *humilis* (●). For comparison, partial distributions of *D. benthamii* subsp. *benthamii* (○), also in western South Australia and Western Australia; and *D. genistifolia* (shading), also in central Queensland.

It is possible that the two populations were once linked along the coastal plain which formerly existed in the Great Australian Bight south of the Nullarbor Plain. This corridor existed at times during the Pliocene-Pleistocene-Holocene (Nelson 1981), and provided an east-west migration route for species which today cannot tolerate the dry conditions and/or calcareous soils of the Nullarbor Plain.

### *Daviesia stricta* Crisp, sp. nov.

Frutices ramulis anguste alatis, phyllodiis planis inermibus glaucescentibus, inflorescentiis umbellatis, lobis calycum aequalibus; *D. wyattiana* F.M. Bailey proxime cognata, sed calyce anguste campanulato viscido in fructu accrescente, lobis eiusdem acuminatis, pedicellis (2-5 mm) pedunculisque (3-7 mm) brevioribus differt.

*Type:* South Australia, Flinders Ranges district, Wilpena Pound, 2 km SE of St Mary's Peak, 31° 31' S, 138° 34' E, *M.D. Crisp 830*, 31.viii.1974 (*holo:* CBG; *iso:* to be sent to AD, BISH, K, L, MEL, NSW, PERTH, US).

The specific epithet is from the Latin *strictus*, meaning very upright or very straight, and refers to the branchlets and phyllodes, which are usually stiffly erect.

Open *shrub* to 1.5 m tall. *Branchlets* usually rigidly erect, compressed-triquetrous, narrowly winged, smooth. *Phyllodes* arranged spirally, erect or ascending, flat, narrow-to linear-elliptic, obtuse or acute, mucronate, articulate at base, 10-100 x 1.5-15 mm, with prominent midrib and obscure venation, coriaceous, glaucescent. *Inflorescence* umbelliform, (1-) 2 (-5) per axil, 3-5 flowered; rhachis 3-7 mm long. *Pedicels* slender, 2-5 mm long. *Calyx* narrow-campanulate, c. 5 mm long; lobes uniform, c. equal to tube, acuminate, recurved at the tips, with raised midribs, viscid, maroon, accrescent in fruit. *Corolla: standard* very broad-ovate, shallowly emarginate, c. 7.5 x 6.5 mm including the broad, 2.5 mm long claw, orange with purplish centre, fading yellow-brown; *wings* obovate, auriculate, purplish; *keel* half elliptic, slightly auriculate, saccate, purplish. *Stamens* free; anthers dimorphic. *Pod* narrow-triangular, acuminately beaked, enclosed at base by enlarged calyx, 9-13 x 5-7 mm. *Seed* compressed, reniform in outline, c. 4.5 x c. 2.5 mm; *aril* not seen. (Fig. 4).

### *Distribution* (Map 3).

South Australia: Flinders Ranges.

### *Selected specimens*

SOUTH AUSTRALIA: Flinders Ranges: Gammon Plateau, 7 miles [11 km] E of Arcoona Creek Camp. *C.W. Bonython, G.F. Gross & F.J. Mitchell s.n.*, 19.ix.1956 (AD 95735023); Bibliando Station, N boundary of West Bore Paddock, 31° 50' S, 139° 03' E, *M.D. Crisp 759*, 14.iv.1974 (CBG); Wilpena Pound, 2 km SE of St Mary's Peak 31° 31' S, 138° 34' E, *M.D. Crisp 829*, 31.viii.1974 (CBG, K); Wilpena Pound, by creek near Cooina Camp, 31° 32' S, 138° 33' E, *M.D. Crisp 834*, 31.viii.1974 (AD, ADW, CBG); Bibliando Station, c. 50 km E of Hawker, summit of the Bluff, 31° 51' S, 139° 00' E, *M.D. Crisp 898 & 899*, 20.x.1974 (AD, BISH, BM, BRI, CBG, K, L, MEL, MO, NSW, NT, PERTH); Mt Hack, c. 50 km SE of Leigh Creek, *T.R.N. Lothian 5282 & 5283*, 9.ix.1973 (AD, NT).

### *Habitat*

*D. stricta* occurs on ridge-tops and precipitous mountain slopes, apparently always on skeletal, quartzite-derived soils. The vegetation is shrubland, usually dominated by mallee *Eucalyptus*, with an understorey of heath-like shrubs or *Triodia*.

### *Affinity*

*D. stricta* has only one very close relative, from the east coast of Australia,

*D. wyattiana*. Despite obvious similarities, these two species are readily separable by characters of the calyx, inflorescence and pod. In *D. wyattiana* the calyx is broadly campanulate, with the lobes narrow-acute but not acuminate and rarely recurved at the tips. It is neither viscid nor enlarged in fruit. The peduncles (7-28 mm) and pedicels (7-14 mm) are longer than in *D. stricta*. In *D. wyattiana*, the pod is slightly smaller and proportionally broader (8-10 x 5-6 mm) than in *D. stricta*, and is not acuminate at the apex. Less reliably, these species can be separated by their phyllodes, which tend to be narrow-linear and longer (up to 200 mm) in *D. wyattiana*. However, specimens of *D. wyattiana* from the south coast of New South Wales and eastern Victoria have shorter, broader phyllodes which cannot be distinguished from those of *D. stricta*.

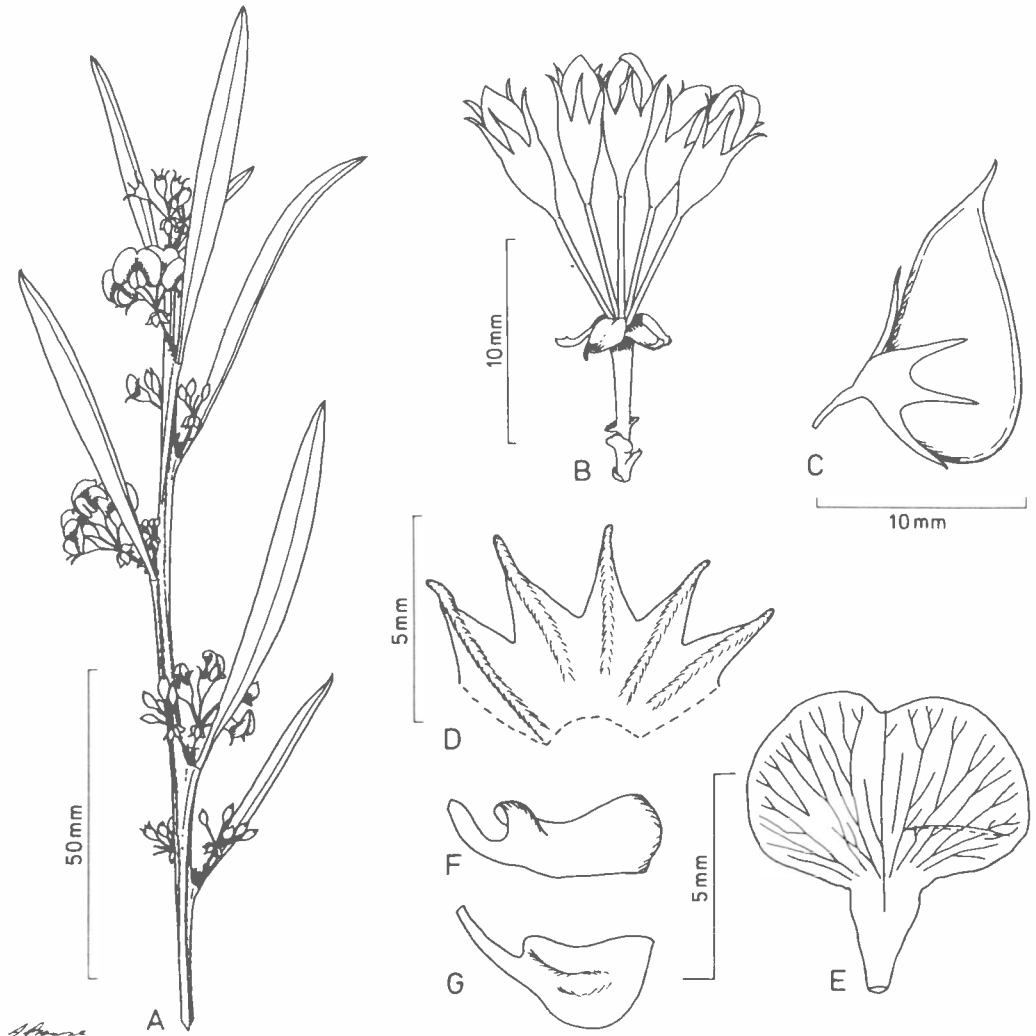
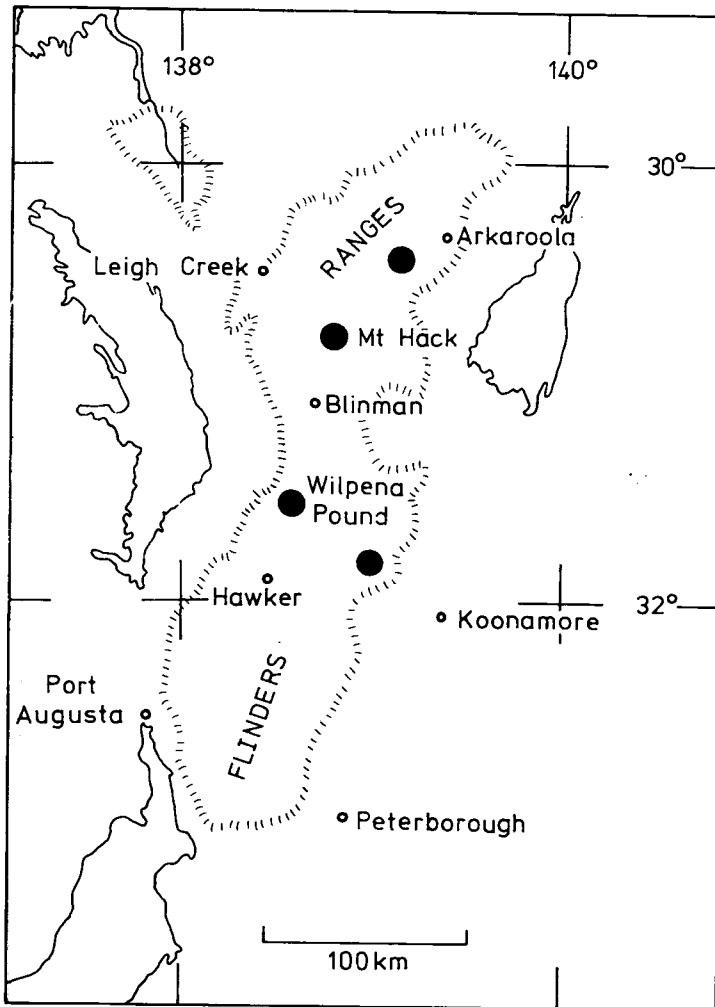


Fig. 4. *Daviesia stricta* Crisp. A, habit; B, inflorescence; C, pod with accrescent calyx; D, calyx opened out, upper lobes at left; E, standard; F, wing; G, keel. Broken lines indicate overlap or cuts. (A, Crisp 829; B-G, Crisp 830, Holotype). A-C drawn by A. Prowse.

In South Australia, the only other species of *Daviesia* with horizontally flattened, non pungent phyllodes is *D. mimosoides* R. Br. This species differs from *D. stricta* by its green, not glaucescent phyllodes, and by its racemose inflorescence.



Map. 3. Distribution of *Daviesia stricta*.

***Pultenaea elachista* (F. Muell.) Crisp, comb. nov.**

*Gastrolobium elachistum* F. Muell., *Fragm. Phytogr. Austral.* 9: 67 (1875)—*Type*: 'In eremo interiore trans sinum Fowler's Bay; E. Giles' (MEL, *n.v.*).

*Pultenaea cymbifolia* J.M. Black, *Trans. Proc. R. Soc. S. Austral.* 39: 96, t. 10 (1915).—*Type*: 'Between Kingscote and Cassini, K.I., flowering May, 1914 (H.W. Andrew)' (*holo*: AD (*n.v.*); *iso*: K).

This species has all the essential characters of *Pultenaea*, and it is surprising that the new combination has not been made before. The leaves have typically scarious stipules which are shortly united at the base, sheathing the petiole. The phyllotaxis is decussate, and although this feature is not common in *Pultenaea*, it is seen in a few other species e.g. *P. arida* E. Pritzl, *P. obcordata* (R. Br.) Benth. and *R. rotundifolia* (Turcz.) Benth. The inflorescences are within the range described for the genus by Sands (1975, Fig. 1), with flowers solitary in the axils of upper leaves. These subtending leaves have slightly larger stipules and a more persistent indumentum than normal leaves. They correspond with the 'SL' bract category of Sands (1975, Fig. 2). The bracteoles are typical for the genus, being at the base of the hypanthium, large and persistent. Other characters consistent with *Pultenaea* are the two ovules per ovary and the aril on the seed. The stamens are quite free from each other and from the petals, excluding this species from the closely related genus *Phyllota*.

A note by C.A. Gardner on the isotype in K of the synonym *Pultenaea cymbifolia* states that the bracteoles are not persistent. Thus Gardner excludes *P. cymbifolia* from *Pultenaea* and places it under *Gastrolobium elachistum*. In fact, this specimen has persistent bracteoles, as do the other specimens I have seen. Perhaps Gardner later changed his mind, because an invalid new combination of *G. elachistum* under *Pultenaea* in Blackall & Grieve (1954) is attributed to him. Blackall and Grieve's combination is not validly published because there is no reference to the basionym.

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### References

- Black, J.M. (1924). "Flora of South Australia", part 2. (Govt. Printer: Adelaide).  
 Blackall, W.E. & Grieve, B.J. (1954). "How to know Western Australian wildflowers", part 2. (Univ. W. Austral. Press: Perth).  
 Croizat, L., Nelson, G. & Rosen, D.E. (1974). Centers of origin and related concepts. *Syst. Zool.* 23: 265-287.  
 Nelson, E.C. (1981). Phytoecography of southern Australia. In Keast, A. (ed.), "Ecological Biogeography of Australia", pp. 735-759. (W. Junk: The Hague).  
 Polhill, R.M. (1981). Tribe 25. Mirbelieae. In Polhill, R.M. & Raven, P.H. (eds.), "Advances in Legume Systematics", pp. 391-392. (Royal Botanic Gardens, Kew: London).  
 Sands, V.E. (1975). The cytoevolution of the Australian Papilionaceae. *Proc. Linn. Soc. N.S. Wales* 100: 118-155.  
 Stafleu, F.A. & Cowan, R.S. (1976). "Taxonomic literature", ed. 2, vol. 1. (Bohn, Scheltema & Holkema: Utrecht).