

New species of *Acacia* (Fabaceae, Mimosoideae) from tropical Australia

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Abstract

Tindale, Mary D. & Kodela, Phillip G. (National Herbarium of New South Wales, Royal Botanic Gardens, Mrs Macquaries Road, Sydney, NSW, Australia 2000) 1992. New species of *Acacia* (Fabaceae, Mimosoideae) from tropical Australia. *Telopea* 5(1): 53–66. *Acacia arafurica*, *A. cataractae*, *A. delicatula*, *A. gracilentia* and *A. brockii* from the north of Western Australia and the Top End of the Northern Territory are described and illustrated. Although some of these species occur in national parks, several have restricted distributions and should be considered especially in the management plans of Kakadu and Katherine Gorge National Parks.

Introduction

In the last decade or so the Top End and Kimberley regions of northern Australia have been more widely explored, resulting in the discovery of many new plant species. Several of these species are described here, so that they may be published prior to the forthcoming volume on *Acacia* in the *Flora of Australia*. Further collections are required to provide more information on taxonomic variation, distributions and ecology, since existing specimens are often in limited numbers or concentrated from more accessible areas. Recent findings of new taxa emphasise our limited current knowledge of these areas and the potential of future discoveries, which need to be considered in the management of National Parks and future planning for mining and tourism in the region.

The terminology of shapes in the descriptions of species is that defined by Lee (1948: 144). The diameter of flower-heads is only given as a guide, since it is often affected by the degree of pressure on the specimens during drying.

Sect. *Plurinerves* (Benth.) Maiden & Betche, *Triangulares* group

1. *Acacia arafurica* Tind. et Kodela, *sp. nov.*

Ab *Acacia sublanata* Benth. differt phyllodiis crassioribus, 15–34 mm longis, 9–25 mm latis, inflorescentiis spicatis, 10–21 mm longis et pedunculis 2–5 mm longis.

TYPE: NORTHERN TERRITORY: Arnhem Land, Anguldili Creek, Murgarella Road, 11°45'S, 133°10'E, R. Hinz 2, 25 May 1988; holo NSW 235594; iso BRI, CANB, DNA 32714, K, PERTH.

Rounded shrub to 3 m high. *Branchlets* terete, light brown or greyish brown, with a rusty or greyish hue resulting from the indumentum which is sparsely to densely pubescent to cobwebbed (the hairs hyaline, white and/or fawn, often curled, to 0.5 mm long, sometimes intermixed with red-brown papillose hairs); longitudinal ridges to 0.2 mm high. *New shoots and young foliage* reddish brown, resinous, cobwebbed. *Phyllodes* borne singly, subsessile, obliquely ovate-rhomboidal, asymmetrical, the lower margin almost straight to slightly curved, the upper margin abruptly curved to more

than 90° near pulvinus, then curved to apex, 1.5–3.4 cm long, 0.9–2.0(–2.5) cm wide, flat, coriaceous, with a sparse to moderate cover of nonglandular, erect to sub-appressed hairs to 0.5(–0.7) mm long (the hairs being similar to those on the branchlets), with (3–)4(–5) prominent longitudinal nerves, the minor nerves strongly reticulate, the margin thickened, often wavy when dry, the mucro minutely glanduliferous, acuminate, pungent, straight or oblique, 0.4–1.2 mm long; gland on the upper margin of the phyllode prominent, 1.6–2.5(–5.0) mm above the pulvinus, orbicular to elliptical, pale yellow, glabrous, 0.4–0.6 mm long, 0.3–0.5 mm wide, the orifice < 0.1 mm in diam.; *pulvinus* 0.5–1.2 mm long, cobwebbed-pubescent; *stipules* lanceolate to narrow-ovate, 1.5–2.1 mm long, glabrous or ciliolate with hairs to 0.4 mm long, striate with several nerves arising from the base, the apex acute to acuminate. *Inflorescences* spicate, borne singly or very rarely in pairs in the axils of the phyllodes, (10–)15–21 mm long, 4.0–5.5 mm wide, golden yellow; *peduncles* 2–5 mm long, moderately to densely pubescent; *bracteoles* composed of a narrow deltate lamina 0.6–1.1 mm long (the pointed apex longer than the young flower buds), with white hairs to 0.2 mm long on the margin, attached perpendicularly to a glabrous claw 0.2–0.6 mm long. *Flowers* 5-merous; *calyx* membranous, 0.5–0.8(–1.1) mm long, dissected for 1/3–1/2 its total length, with faint midribs or keeled, the apices ciliolate with hairs to 0.2 mm long, otherwise glabrous; *corolla* 1.1–1.4(–1.8) mm long, resinous, dissected for 1/3–1/2 its length, the petals oblanceolate to narrow-obovate, glabrous, with a midrib, the apices thickened, incurved and often cucullate, darker than the rest of corolla; *stamens* with filaments to 3.6 mm long; *ovary* ± oblong or narrow-obovate, red-brown, densely pubescent with white hairs to 0.25 mm long; *style* eccentric, to 2.7 mm long, often curled. *Legumes* linear, tapering gradually at both ends, ± straight, constricted between the seeds, 6.5–10.5 cm long, (2.5–)4.0–4.5 mm wide, chartaceous, raised and longitudinally ribbed over seeds, clothed with appressed to erect, white, usually interwoven hairs to 0.5 mm long. *Seeds* 4–7 arranged longitudinally in the legume, (5.2–)6.0–7.0 mm long, 2.1–3.1 mm wide, black, glossy; *pleurogram* open, very slightly constricted towards the hilum; *areole* same colour as the rest of the seed, 3.8–5.3 mm long, 0.9–1.3 mm wide; *funicle* cream-coloured, expanded into a turbinate aril, folded c. 3 times beneath the seed (only one specimen with fruit and seeds was examined). *Flowering* April–May, July. *Fruiting* September. Figure 1.

DISTRIBUTION: NORTHERN TERRITORY: Darwin and Gulf District: Cobourg Peninsula southeast to Maningrida and Nabarlek. Figure 2.

HABITAT: In sandy soil on coastal river flats or near streams in the gorge country of the inland, sometimes in tall open forest. Often in swampy areas.

ETYMOLOGY: The specific epithet refers to the Arafura Sea which lies to the north of the region in which *A. arafurica* occurs.

NOTES: R. Hinz uses the collecting number '2' for two separate specimens (including the specimen we have chosen as holotype, i.e. NSW 235594), possibly applying the number to indicate that they are the same species.

We are following Pedley's classification (1987) where *Acacia sublanata* has been referred to the Triangulares group in sect. *Plurinerves*, whereas Cowan & Maslin (1990) placed *A. sublanata* with *A. deltoidea* Cunn. ex Don and its allies in sect. *Plurinerves*.

Acacia sublanata Benth., which occurs in the Top End of the Northern Territory, is allied to *A. arafurica* which has very similar flowers, but there are differences in the phyllodes and shape of inflorescences. In *A. sublanata* the inflorescences are globular or rarely shortly oblong (Pedley 1987: 319, Figure 2f) whereas in *A. arafurica* they are spicate (Figure 1a). In *A. sublanata* the minor reticulate nervation is less distinct and

the areolae more acute, running \pm parallel with the main nerves, whereas the phyllodes of *A. arafurica* are larger and slightly thicker with a strong reticulate network between the main nerves (Figure 1b). The phyllodes of *A. sublanata* are mostly broadest at or above the middle (as stated by Cowan & Maslin 1990). This is particularly noticeable in the specimens of *A. sublanata* with larger phyllodes, e.g. *Maconochie* 1519, but this is not always the case, e.g. *Slee & Craven* 3078, whereas in *A. arafurica* they are broadest at or below the middle.

Pedley (1987) describes the legumes of *A. sublanata* (under *Racosperma sublanatum* (Benth.) Pedley) as 'glabrous'. In the material of *A. sublanata* that we have examined, e.g. *v. Balgooy* 1310 & *Byrnes*, *Lazarides & Adams* 171, *Maloney* NSW 126756, *Must* 771, *Craven* 6068 and *Slee & Craven* 3078, the legumes are pubescent, although in *Specht* 819 the fruit is subglabrous.

SPECIMENS EXAMINED: NORTHERN TERRITORY: Darwin and Gulf District: 12 km N Three Ways, Cobourg Peninsula, 11°13'S, 132°17'E, *Sivertsen* 793, 29 May 1983 (DNA 24309, PERTH); near Tomkinson River, Maningrida, *Brigden*, Apr 1972 (BRI, DNA D4432); Nabarlek, 12°21'S, 133°20'E, *Hinz* 2, 3 Apr 1988 (BRI, DNA 31436, MEL); Arnhem Land, Maningrida, 12°30'S, 134°17'E, *Coleman* 31, 25 Sep 1988 (DNA 36642).

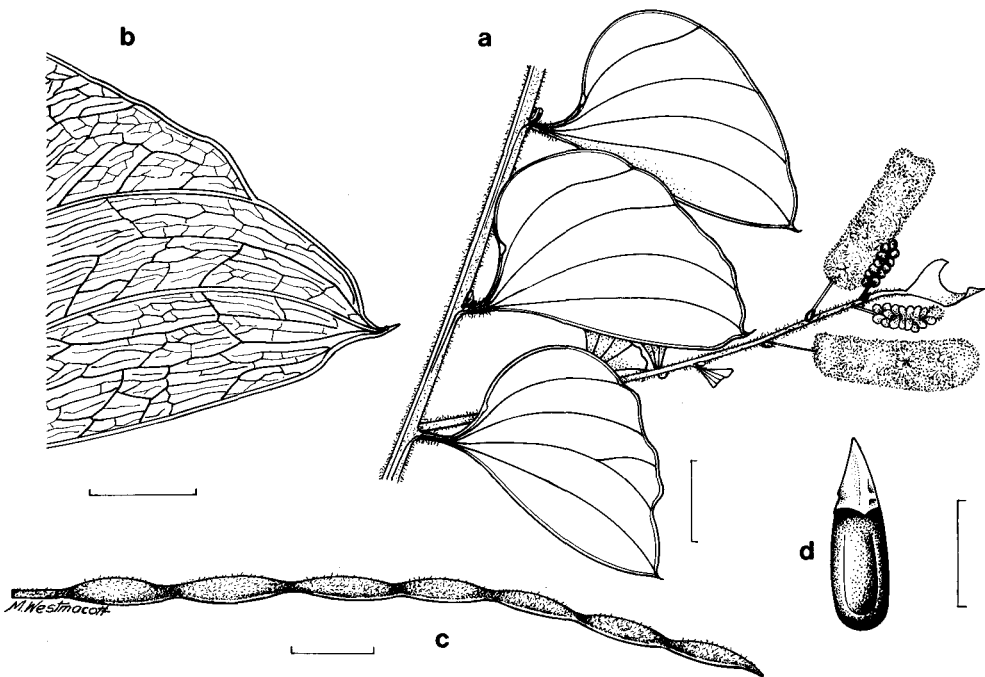


Figure 1. *A. arafurica*. **a**, habit study with spicate inflorescences; **b**, upper portion of phyllode; **c**, legume; **d**, seed (**a, b**, *Sivertsen* 793; **c, d**, *Coleman* 31). **a, c**, scale bar = 1 cm; **b, d**, scale bar = 5 mm.

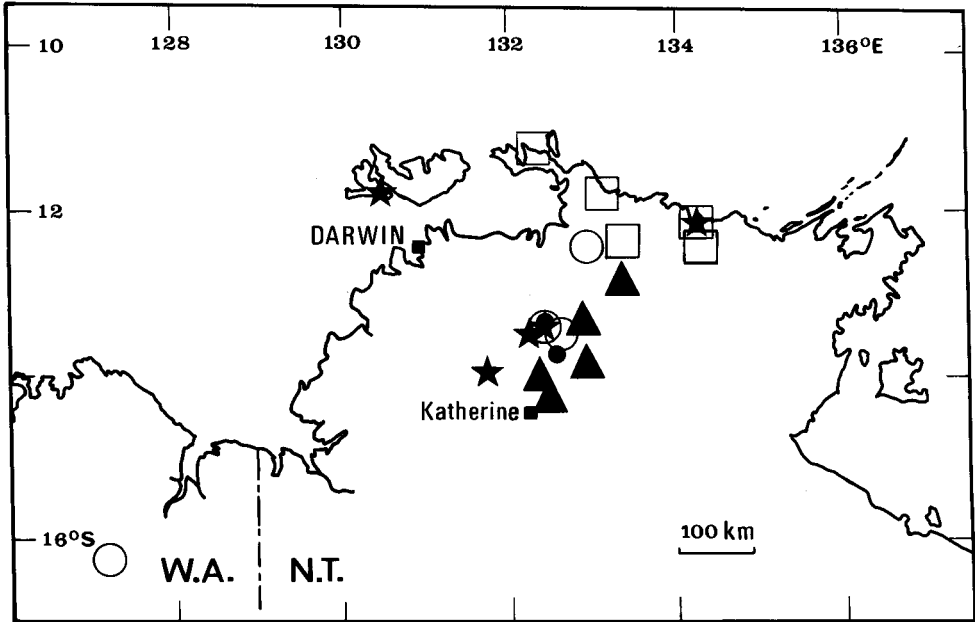


Figure 2. Distribution of *Acacia arafurica* (□), *A. cataractae* (★), *A. delicatula* (○), *A. gracilentia* (▲) and *A. brockii* (●).

Key to *A. arafurica* and *A. sublanata*

- 1 Phyllodes (2.5-)5-13(-24) mm long, (1.5-)3-10(-14) mm wide, thinly coriaceous. Inflorescences mostly globular, (4.5-)6-7 mm in diam. or sometimes oblong. Peduncles (4-)7-15(-20) mm long *A. sublanata*
- 1* Phyllodes 15-34 mm long, 9-20(-25) mm wide, coriaceous. Inflorescences spicate, (10-)15-21 mm long. Peduncles 2-5 mm long *A. arafurica*

***Acacia stigmatophylla* Cunn. ex Benth. group**

2. *Acacia cataractae* Tind. et Kodela, sp. nov.

Acacia cataractae: *A. stigmatophyllae* Cunn. ex Benth. affinis, a qua differt phyllodorum nervis 1-3 longitudinalibus margine inferiore plerumque confluentibus, calycibus 0.75-1.0 mm longis, 2/3 partibus vel ad basin dissectis et petalis costa inconspicua.

TYPE: NORTHERN TERRITORY: Above U.D.P. Falls [Gunlom Falls, on Waterfall Creek], C.H. Gittins 2851, 3 May 1975; holo NSW 236250; iso BRI, CANB, DNA, K.

Shrub to 2 m high; bark brown, fibrous. *Branchlets* markedly angled to almost flattened towards apices, greenish brown to mid-brown, glabrous, with resinous, minutely

crenulated ridges to 0.3(–0.5) mm high. *New shoots and young foliage* yellowish green, resinous particularly towards apices. *Phyllodes* borne singly, oblanceolate to narrow-oblanceolate or very narrow-elliptical, sometimes slightly asymmetrical, straight or very slightly curved, (3.5–)4.0–10.5 cm long, (6.5–)7.5–20.0(–23.0) mm wide, (3–)4–8 times as long as wide, grey-green, mid-green or dull dark green, flat, thinly coriaceous, glabrous, the margins nerve-like, crenulated with resin, with 3 prominent longitudinal nerves pale yellow, 2 of these reaching the base while the other usually confluent with the lower margin 0.5–1.7 cm from the pulvinus, sometimes with 4 subprominent longitudinal nerves, all other nerves faint with moderate anastomosing, 1–4 nerves per mm of phyllode width (longitudinal wrinkling produces a fine striated appearance); apex obtuse, often asymmetrically retuse or truncate, with a blunt, red-brown mucro 0.3–0.7 mm long, the gland minute; basal gland prominent, a \pm elliptical swelling on the upper margin just above the pulvinus, (0.8–)1.5–2.6 mm long, 0.4–1.2 mm wide, glabrous, with a \pm circular, slightly exserted, pale yellow lip c. 0.2 mm wide, the \pm circular orifice to 0.2 mm in diam.; *pulvinus* (0.5–)1.0–2.5(–3.5) mm long, glabrous, often mealy; *stipules* deltate, 0.7–1.2 mm long, often somewhat mealy. *Inflorescences* spicate, borne singly or in twos or threes in the upper axils of the phyllodes (when in threes the spikes are often at different stages of development), (10–)14–50 mm long, (4.5–)5.5–7.5 mm wide, usually dense, yellow or bright to golden yellow, often densely mealy between flowers; *buds* obovate to very broad-obovate, very resinous; *peduncles* 4–12 mm long, glabrous, resinous. *Flowers* 5-merous; *calyx* membranous, 0.75–1.0 mm long, deeply cut to c. 2/3–3/4 its length, the sepals often \pm free, 0.1–0.2 mm wide, with a faint midrib, glabrous, the apex usually rounded; *corolla* 1.0–1.5 mm long, dissected 1/3–1/2 its length, glabrous, the petals elliptical to almost broad-elliptical or narrow-ovate, with a faint midrib, often mealy, often resinous, the apex acute; *stamens* with filaments to 3.2 mm long; *ovary* oblong to elliptical, granular, pubescent (especially towards the apex) or almost glabrous with a few minute hairs towards apex; *style* to 3.5 mm long. *Legumes* very narrow-oblanceolate (rarely linear), the base tapering gradually, straight or very slightly curved, 2.6–5.0 cm long, 4–7(–9.5) mm wide, straight-sided, woody, flat, slightly raised over the seeds, brown (greenish brown when young), glabrous, often scurfy, resinous (especially when young), the margins thickened, the surface with conspicuous diagonal nerves and some anastomosing, opening elastically from the apex, the apex \pm hooked. *Seeds* 7–13 obliquely arranged in the legume, ellipsoid or oblongoid, sometimes \pm rhomboidal, (2.7–)3.0–4.0(–5.3) mm long, 1.3–2.0 mm wide, brown, glossy; *pleurogram* open and slightly constricted towards the hilum; *areole* the same colour or slightly darker than rest of the seed, (1.8–)2.3–3.1(–4.2) mm long, 0.7–0.9 mm wide, often with a pale halo; *funicle* expanded into a cupular aril beneath the seed, the combined funicle–aril cream-coloured to tawny, narrowly turbinate. *Flowering* late December–January, March–July. *Fruiting* March–May. Figure 3a–e.

DISTRIBUTION: NORTHERN TERRITORY: Darwin and Gulf District: From Bathurst Island and the Maningrida area, south to Umbrawarra Gorge (13°58'S) near Pine Creek. Recorded in Kakadu National Park at Gunlom Falls, Graveside Gorge and Billiard Creek Road. Figure 2.

HABITAT: Usually found on sandy soil near streams in sandstone plateau–gorge country or on coastal plains, mostly in *Eucalyptus* woodland amongst rocks and boulders.

ETYMOLOGY: The epithet refers to Waterfall Creek at Gunlom (U.D.P.) Falls, about 15 km NW of El Sharana, where this species is locally abundant.

NOTES: It is a member of the *A. stigmatophylla* Cunn. ex Benth. group, which connects the *Juliflorae* with the *Plurinerves* (Tindale 1980). *A. stigmatophylla* is common in the Top End of the Northern Territory and in the Kimberley, Western Australia.

A. cataractae has been confused with other tropical Australian species, viz. *A. limbata* F. Muell. (Kimberley, W.A., northern N.T. and north-western Queensland) and *A. lazaridis* Pedley (northern Queensland). The latter two species have larger legumes and seeds, longer peduncles (except in *Adams 1138*), more asymmetrical phyllodes and cupular calyces that are dissected for 1/4–1/3 of their length. *A. lazaridis* usually has longer flowers than the other two species.

SELECTED SPECIMENS: NORTHERN TERRITORY: Darwin and Gulf District: Bathurst Island, 11°45'S, 130°35'E, *Stevenson 159*, 28 Dec 1975 (DNA); Maningrida area, 12°02'S, 134°17'E, *Clark 1306*, 26 Jul 1987 (BRI, DNA); Kakadu, Graveside Gorge 13°19'S, 132°33'E, *Brock 190*, 30 Dec 1986 (DNA); U.D.P. Falls, Sth Alligator R., *Byrnes 1783*, 4 Mar 1970 (BRI, DNA, K, NSW, NT); Kakadu National Park: U.D.P. Falls area: 0.7 km upstream from the top of falls, on Waterfall Creek, 13°25'S, 132°24'E, *Slee & Craven 3045*, 30 Apr 1990 (CANB, NSW); Waterfall Creek, *Hancock 364*, 26 May 1991 (CANB, DNA, K, NSW, PERTH); Kakadu National Park, Billiard Creek Road, 13°30'S, 132°14'E, *Menkhorst 297*, 4 Mar 1989 (DNA); road to Umbrawarra Gorge, 13°56'S, 131°45'E, *Brock 205*, 13 Jan 1987 (DNA); Umbrawarra Gorge Rd, 13°58'S, 131°40'E, *Brock 94*, 13 Mar 1986 (DNA).

3. *Acacia delicatula* Tind. et Kodela, sp. nov.

Acacia delicatula: *A. subternatae* F. Muell. affinis, sed phyllodiis linearibus-filiformibus, semiteretibus, 0.2–0.5 mm latis, capitulis 4.0–6.5 mm diametro, calycibus 0.6–1.0 mm longis, ad dimidiam vel plus dissectis, sepalorum apicibus plus minusve subulatis vel acuminatis et corollis 1.3–1.75 mm longis.

TYPE: NORTHERN TERRITORY: 2.7 km W of 'Rock Pools' (Bulbe gardar) along high track skirting the base of 'Geringbah' Escarpment [SW of Cahills Crossing], 12°28'S, 132°55'E, C.F. Puttock & J.T. Waterhouse, 24 July 1980; holo NSW 237163; iso DNA, K, UNSW 10162.

Erect to ascending, often spreading, resinous shrub to 1.5 m high, branching from the base; bark finely fissured. Branchlets ± terete, striated, becoming markedly angular towards apices, light brown to brown, sometimes grey or greenish brown, glabrous, sometimes mealy, often resinous, the minutely crenulated ridges to 0.2 mm high. Phyllodes single or in clusters of 2–6, linear to filiform, semiterete, (4.5–)7–13(–18) mm long, (0.2–)0.3–0.4(–0.5) mm wide, straight or slightly curved, glabrous, nerves inconspicuous, the mucro acute to ± aristate, often fawn-coloured, straight or oblique, to 0.5 mm long, bearing a minute gland. Capitula borne singly, 4.0–6.5 mm diam.; peduncles (5–)8–15(–18) mm long. Flowers 5-merous, 34–38 per capitulum; calyx 0.6–1.0 mm long, dissected for 1/2–3/4 of its length, glabrous, the sepals 0.1–0.2 mm wide, usually with ± subulate to acuminate apices; corolla c. twice the length of the calyx, 1.3–1.75 mm long, dissected by 1/2 or more of its length, the petals very narrow-elliptical to narrow-lanceolate or narrow-oblancoate, 0.2–0.4 mm wide, glabrous, with a distinct midrib, the apex thickened and often cucullate; stamens with filaments to 3 mm long; ovary glabrous, usually with a bulbous yellow cap on the summit. Legumes straight-sided or slightly indented between the seeds, very narrow-oblancoate or sometimes ± linear, basally tapered, (2.0–)3.0–4.0(–4.4) cm long, 3–4 mm wide, flat, woody, glabrous, resinous (especially when young), opening elastically from the apex, obliquely to longitudinally nerved with minor anastomosing nerves, margins and partitions between seeds prominent, the apex hooked. Seeds 2–10, obliquely arranged in legume, ellipsoid or oblongoid (often irregularly shaped), (2.6–)3.0–3.9 mm long, (1.1–)1.3–2.1 mm wide, brown; pleurogram open, with a pale halo; areole slightly darker brown than rest of the seed; funicle-aril narrowly turbinate. Flowering January, March–April, July. Fruiting January, March–April, July–August. Figure 3f–j.

DISTRIBUTION: Occurs in north-western Western Australia and Kakadu National Park, Northern Territory. Figure 2.

HABITAT: Usually in shrubland or open eucalypt savannah on rocky or stony plateaux and hill slopes.

ETYMOLOGY: The epithet refers to the fine, narrow phyllodes of this species.

NOTES: *A. delicatula* is closely allied to *A. subternata* F. Muell., which occurs in drier areas further south than the former (between c. 14°20'S and 16°17'S) in the Northern Territory near Borroloola, Tanumbirini and Willeroo. Another closely allied species *A. manipula* Cowan & Maslin ms., from the Kimberley area, Western Australia, differs from the former species in having less angular branchlets without prominent, minutely crenulated, resinous ridges and has longer phyllodes to 23 mm long. We have only seen one specimen of *A. manipula* ms., i.e. 9 miles [14.5 km] NE of Tablelands Homestead, Kimberleys, *M. Lazarides* 6398.

These species are members of the *A. stigmatophylla* group, which connects the *Juliflorae* with the *Plurinerves* (Tindale 1980). They differ from the other species listed in that their phyllodes are usually in groups of 2–6. In *A. delicatula*, *A. subternata* and *A. manipula* ms. there is often a bulbous, yellow or brown cap on top of the ovary.

SELECTED SPECIMENS: NORTHERN TERRITORY: Darwin and Gulf District: Kakadu, c. 2 km S East Alligator Ranger Stn, 12°25'S, 132°59'E, *Noske*, Aug 1987 (DNA 37225); near East Alligator River Ranger Station, Kakadu National Park, 12°29'S, 132°56'E, *Russell-Smith* 936, 23 Jan 1984 (CANB, DNA, PERTH); Jabiluka Outlier, East of Ja Ja, l.c. 12°30'S, 132°55'E], *Waterhouse & Sanderson*, 30 Mar 1980 (DNA, NSW, UNSW 9618); U.D.P. Falls, 7 miles [11.2 km] NW of El Sharana, [13°25'S, 132°25'E], *Martensz AE560*, 24 Jan 1973 (BRI, CANB, DNA, NT); 13 miles [21 km] E of El Sharana Mine, 13°31'S, 132°42'E, *Lazarides* 7971, 2 Mar 1973 (CANB, NSW, PERTH). WESTERN AUSTRALIA: Fitzgerald: Gibb River – El Questro road, Karungi [Karunje] Station turn-off, c. 130 km SW of Wyndham, [16°16'S, 127°12'E], *Beaglehole* 51489, 28 May 1976 (BRI, PERTH); 50 metres E of turnoff to Pentecost Downs (Karunje), Gibb River Road, *Keith* 225 & *Pellow*, 7 Jul 1986 (NSW, SYD).

Key to *A. delicatula* and *A. cataractae* and close allies

- 1 Phyllodes usually in clusters of 2–6, cultrate to filiform, or sometimes ± narrow-oblancoelate, 4–18 mm long, 0.2–0.85 mm wide, nerves inconspicuous.
 - 2 Phyllodes linear to filiform, (0.2–)0.3–0.4(–0.5) mm wide. Capitula 4.0–6.5 mm in diam. Calyx 0.6–1.0 mm long, dissected by 1/2–3/4, the sepals with ± subulate or acuminate apices. Corolla 1.3–1.75 mm long, the petals with midrib only *A. delicatula*
 - 2* Phyllodes cultrate to linear or sometimes ± narrow-oblancoelate, (0.4–)0.5–0.8 (–0.85) mm wide. Capitula (5.0–)6.5–8.5 mm in diam. Calyx (0.9–)1.1–1.2(–1.4) mm long, dissected c. 1/2, the sepals ± spathulate with broadly rounded apices. Corolla 1.7–2.3 mm long, the petals striated longitudinally *A. subternata*
- 1* Phyllodes borne singly, oblancoelate to narrow-oblancoelate, or narrow-elliptical to very narrow-elliptical, 2.5–10.5 cm long, 6–23 mm wide, with several prominent longitudinal nerves.
 - 3 Phyllodes with 1 of the 3 prominent longitudinal nerves usually confluent with the lower margin. Calyx 0.75–1.0 mm long, dissected by 2/3 or to the base. Petals with faint midrib *A. cataractae*
 - 3* Phyllodes with 3 prominent longitudinal nerves reaching the base. Calyx 0.5–0.75 mm long, cupular, dissected by 1/8–1/5. Petals with prominent midrib *A. stigmatophylla*

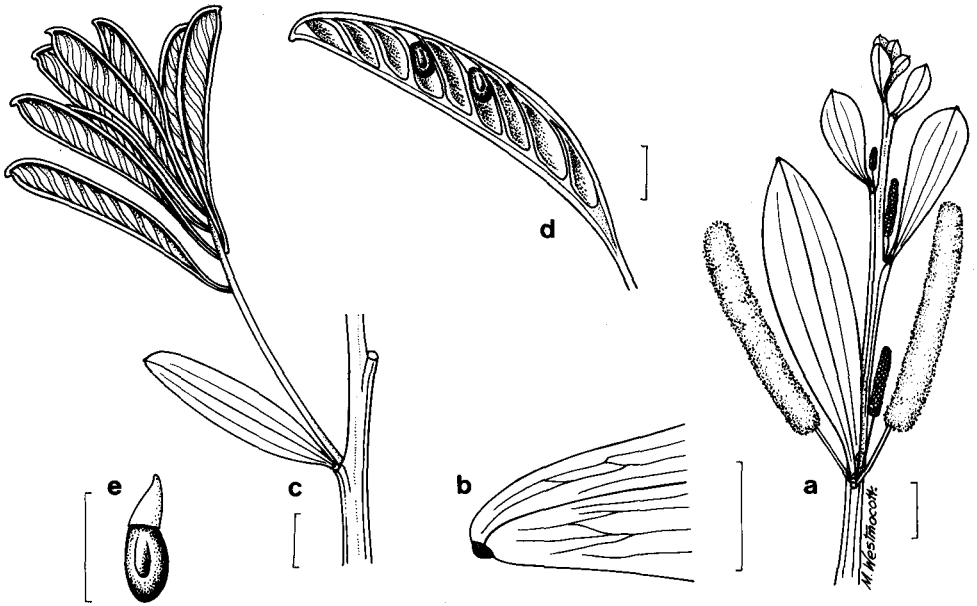


Figure 3. *A. cataractae*. a, habit study with spicate inflorescences; b, upper portion of phyllode; c, habit study with legumes; d, inside of legume; e, seed (a,c, Brock 94; b,d,e, Menkhorst 297). *A. delicatula*: f, habit study with young capitula; g, phyllode; h, inside of legume; i, outside of legume; j, seed (f,g, Russell-Smith 936; h-j, Puttock & Waterhouse UNSW 10162). a,c,f,h,i, scale bar = 1 cm; b,d,e,g,j, scale bar = 5 mm.

Sect. *Juliflorae* (Benth.) Maiden & Betche

4. *Acacia gracilentia* Tind. et Kodela, sp. nov.

Acacia gracilentia: *A. linarioidi* Benth. affinis, sed phyllodiis late dispositis, non rigide erectis, 2.7–10.2 cm longis et 1.4–6.5 mm latis, stipulis basi 0.3–0.6 mm latis, ramulis, pedunculis et inflorescentiarum axibus glabris vel fere glabris et ramulis minus angularibus statim diagnoscenda.

TYPE: NORTHERN TERRITORY: Arnhem Land, Upper East Alligator R., 12°50'S, 133°20'E, J. Russell-Smith 5270 & D. Lucas, 22 Apr 1988; holo DNA 36422; iso BRI, NSW 235962.

Shrub to 3 m high, often spindly, spreading from a single stem close to the ground (e.g. from c. 15 cm); branches, branchlets and foliage resinous; bark greyish or light brown, ± smooth. Branchlets terete, finely striate, pale green and usually mottled with light brown, glabrous or sometimes with sparsely scattered, subappressed, minute, hyaline hairs, lenticels prominent. New shoots and young foliage greenish brown to red-brown, the margins of the phyllodes with appressed transparent hairs. Phyllodes borne singly or occasionally in pairs, linear or sometimes ± very narrow-elliptical, tapering gradually and equally from the centre or sometimes widest c. 2/3 from the base, straight or slightly curved, (2.7–)4.0–6.0(–10.2) cm long, 1.4–5.0(–6.5) mm wide, 7–30(–45) times as long as wide, bright green, flat, herbaceous, glabrous or with appressed, opaque to transparent hairs to 0.6 mm long on the margin, the stomates prominent, the margins ± nerve-like; main nerves longitudinal, arising from the base of the phyllode; midnerve prominent, usually with 1 semi-prominent nerve either side, (2–)3–6(–7) nerves per 1 mm of phyllode width, sparsely anastomosing; apices acute to obtuse, often slightly constricted, mucro straight to oblique, red-brown to orange-brown, 0.2–0.8 mm long, an inconspicuous gland to 0.2 mm in diam. just below the apex; an inconspicuous gland to 6 mm above the pulvinus, often slightly indented in the upper margin, broad-elliptical to elliptical or oblong, 0.3–0.6 mm long, 0.2–0.3 mm wide, glabrous, the lip usually fawn, the orifice elliptical to slit-like, usually darker; pulvinus 0.5–1.8 mm long, wrinkles mostly transverse and often folded, brown or orange-brown, glabrous, often resinous; stipules 2 either side of pulvinus, 0.5–1.2 mm long, 0.3–0.6 mm wide at base, deltate, glabrous, with midnerve. Inflorescences spicate, borne singly in the axils of the upper phyllodes, 20–55 mm long, (3.5–)4.0–6.5 mm wide, c. 101–107 flowers per spike, golden; buds broad-ovate to very broad-ovate; peduncles 13–26 mm long, finely striate, glabrous, often resinous; bracteoles orange-brown, glabrous, usually resinous, the claw 0.15–0.3 mm long, the lamina ± perpendicular to the claw, 0.25–0.55 mm long, ± narrowly deltate, sometimes dentate. Flowers 5-merous; calyx membranous, inconspicuous, the sepals almost free, cultrate to linear, 0.2–0.3(–0.4) mm long, the apices obtuse or ± spatulate; corolla (0.9–)1.0–1.3(–1.5) mm long, dissected for 1/3–1/2 of the total length (often to the base in older flowers), the petals elliptical to broad-elliptical or narrow-obovate, 0.5–0.7 mm wide, with a distinct midrib, glabrous, often resinous, the apex thickened, often incurved and sometimes cucullate; stamens with filaments to 2.8 mm long; ovary oblong-elliptical, subsessile, brown, glabrous or sometimes with a few scattered, ± appressed, hyaline hairs to 0.15 mm long; style ± eccentric, 1.5–3.0 mm long. Legumes linear, usually curved, constricted between the seeds, coriaceous, (2–)4–9(–12) cm long, 2.5–4.0 mm wide, brown; margins paler, ± prominent; surface ± flat, slightly raised over the seeds, with several longitudinal nerves and minor anastomosing nerves, glabrous, usually resinous. Seeds (1–)6–11 arranged longitudinally in the legume, ellipsoid to narrow-ellipsoid, 3.5–4.3(–5.7) mm long, 1.6–1.9(–2.7) mm wide, very dark brown or red-black to black; pleurogram closed, a very narrow groove separating the areole from the rest of

the seed, often with a shallow trough around the pleurogram; *areole* 1.6–2.0(–2.6) mm long, 0.4–0.55(–1.0) mm wide, flat or slightly depressed, ± the same colour as the rest of the seed, sometimes less shiny; *funicle* cream-coloured, filiform, expanded into a cap-like aril, folded c. 5 times beneath the seed. *Flowering and fruiting* April–May, August. Figure 4.

DISTRIBUTION: NORTHERN TERRITORY: Darwin & Gulf District: Arnhem Land, Kakadu National Park and Katherine Gorge National Park. Figure 2.

HABITAT: Occurs in sandy soils on dissected sandstone plateaux and in gorges; often on slopes near rivers and creeks, growing amongst shrubs and sometimes with spinifex in open eucalypt woodland or *Allosyncarpia* forest.

ETYMOLOGY: The epithet refers to the rather graceful canopy of this member of sect. *Juliflorae*.

NOTES: *A. gracillima* Tind., which is restricted to the Kimberley region of W.A. especially in the King Leopold Ranges, is frequently confused with *A. linarioides*, which is a member of the *A. lysiphloia* group (Tindale 1978). It can be easily distinguished from *A. gracilentia* by its dark red, very curly bark, i.e. 'Minni Ritchi', and long hairs on the legumes. *A. linarioides* Benth. (occurring in the N.T. north of 17°S and on islands in the Gulf of Carpentaria) has slightly more angled branchlets and is more hairy than *A. gracilentia*.

SPECIMENS EXAMINED: NORTHERN TERRITORY: Darwin & Gulf District: Twin Falls, Jim Jim Falls area, 13°18'S, 132°52'E, Fox 559, 17 Aug 1974 (DNA 11803); 20 km south-east of Twin Falls, 13°27'S, 132°54'E, Lazarides 8962, 24 May 1980 (BRI, CANB, NSW 235981); Kakadu National Park, upper Birdie Creek area, 13°53'S, 132°57'E, Snee & Craven 2512, 18 Apr 1990 (CANB, DNA?, NSW 235987); Second Spring, Seventeen Mile Valley, Katherine [Gorge] National Park, 14°06'S, 132°24'E, Tindale 6038 & Dunlop, 8 July 1979 (CANB, K, NSW 235964, UNSW); Katherine Gorge National Park, 14°18'S, 132°28'E, King 117, 2 June 1982 (DNA 23304).

Key to *A. gracilentia* and *A. linarioides*

- 1 Phyllodes ± well-spaced, not stiffly erect, (2.7–)4–6(–10.2) cm long, 1.4–5(–6.5) mm wide. Stipules 0.3–0.6 mm wide at base. Branchlets, peduncles and axes of the inflorescences glabrous or almost so. Legumes 2.5–4.0 mm wide *A. gracilentia*
- 1* Phyllodes numerous, usually crowded, rather stiffly erect, 1–4.3 cm long, 0.4–2 mm wide. Stipules 0.1–0.2(–0.3) mm wide at base. Branchlets, peduncles and axes of the inflorescences usually sparsely to densely clothed with hairs to 0.7 mm long. Legumes 1.0–3.5 mm wide *A. linarioides*

5. *Acacia brockii* Tind. et Kodela, sp. nov.

Arbor gracilis, ad 5 m altam, phyllodiis argenteo-griseis. Ramuli lenticellis, pilis albis plus minusve vestitis. Phyllodia juvenilia resinosa. Phyllodia linearia, recta vel parum curvata, 8.5–25.6 cm longa, 1.4–2.75 mm lata, plana, plus minusve rigida, pilis albis, caducis, appressis; nervis principalibus longitudinalibus, non anastomosantibus; mucrone apicali obliquo, 0.9–2.5 mm longo, glandula modo supra pulvinum disposita. Inflorescentiae spicatae, singulares vel binatim e phyllodiorum axillis ortae, 23–43 mm longae, 3.5–4.5 mm latae, flavidae. Bracteolae florum ciliatae, alabastra superantiae apicibus acuminatis vel subulatis. Flores quinquemeri; calyx 0.8–0.9 mm longus,

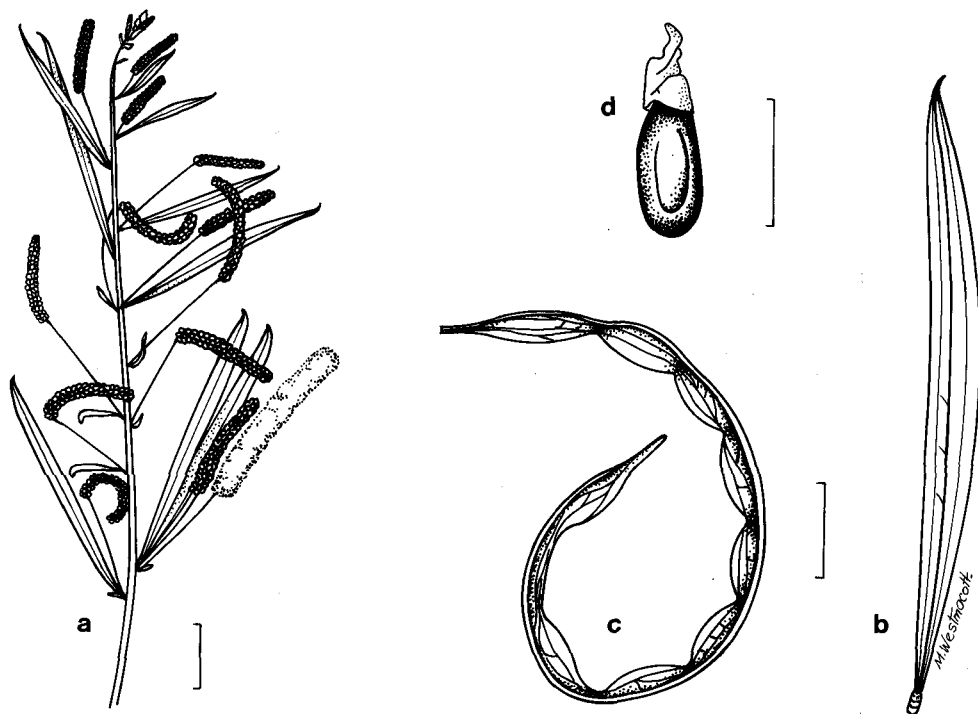


Figure 4. *A. gracilentata*. a, habit study with spicate inflorescences; b, phyllode; c, legume; d, seed (a, Tindale 6038 & Dunlop; b, Slee & Craven 2512; c,d, King 117). a,b,c, scale bar = 1 cm; d, scale bar = 5 mm.

pilis tenuibus argenteis vestiti; corolla 1.2–1.5 mm longa. Legumina linearia, recta vel parum curvata, raro indentata, 8.0–11.7 cm longa, 4.7–6.0 mm lata, papyracea, pallide brunnea, glabra. Semina 9–11, longitudinalia, 3.6–4.7 mm longa, 2.3–2.9 mm lata, brunnea; areolus brunneus; funiculus hinnuleus, ter plicatus arillum cupulum faciens, secus seminis latum unum prolongatus.

TYPE: NORTHERN TERRITORY: Kakadu National Park: 18.5 km S of Gimbat HS [Homestead] (below E edge of Marawal Plateau), 13°44'S, 132°36'E, A.V. Slee & L.A. Craven 2694, 21 Apr 1990; holo NSW 236231; iso BRI, CANB, DNA, K, L, MEL, US.

Slender tree to 5 m high appearing silver-grey due to indumentum of the foliage, bark tight, smooth, dark grey. Branchlets terete, becoming angular towards the apices, red-brown, with lenticels, sparsely to densely (more dense towards apices) covered with appressed to semi-erect whitish hairs, with 5–7 prominent, longitudinal ridges to 0.2 mm high. New shoots and young foliage resinous, reddish brown, densely pubescent with appressed hairs. Phyllodes borne singly, linear, tapering gradually to the base and apex, straight or slightly curved, (8.5–)11.0–25.6 cm long, 1.4–2.75 mm wide, 45–113 times as long as wide, flat, ± rigid, covered with appressed, caducous, silvery hairs to 0.6(–1.2) mm long (mixed with fawn hairs on younger phyllodes), older phyllodes bright green and only partly covered with hairs or almost glabrous; main nerves longitudinal, arising from the base of the phyllode, the midnerve usually slightly more prominent, 5–8 nerves per mm of phyllode width, not anastomosing;

mucro reddish black or orange-brown, oblique or sometimes straight, 0.9–3.0 mm long, often resinous, glanduliferous, the gland cobwebbed to \pm glabrous, 0.2–0.4(–0.6) mm long, 0.2–0.3(–0.4) mm wide; *gland just above the pulvinus* glabrous or covered with appressed hairs, \pm circular to elliptical, (0.3–)0.5–0.8 mm long, 0.3–0.55 mm wide, the orifice circular to elliptical, 0.05–0.2 mm in diam.; *pulvinus* 1.4–2.9(–3.5) mm long, wrinkles mostly transverse, pale yellow to pale brown, glabrous or sparsely to densely hairy; *stipules* 0.7–0.9 mm long, deltate, ciliolate. *Inflorescences* spicate, borne singly or in pairs in the axils of the phyllodes, (15–)20–43 mm long, 3.5–4.0(–4.5) mm wide, pale yellow; immature spikes with bracteoles extending beyond the silvery white, hairy flower-buds; *peduncles* 2–3 mm long, densely pubescent with whitish and fawn to brown hairs; *bracteoles* brown or orange-brown, the claw 0.3–0.6 mm long, pubescent, the lamina perpendicular to the claw, narrowly deltate with an acuminate to \pm subulate apex, ribbed, 1.0–1.7 mm long, with silvery white hairs to 0.3 mm long on the paler margins and usually covering the outer surface. *Flowers* 5-merous; *calyx* cupular, membranous, pale cream to fawn, 0.8–0.9 mm long, dissected for 1/5–1/3 of its total length, ciliolate, covered with silky hairs to 0.2 mm long, markedly incurved at the apices, sepals adaxially keeled; *corolla* 1.2–1.5 mm long, dissected for 2/5–1/2 of its length into 5 narrow-oblongate to narrow-obovate or narrow-elliptical, glabrous petals; *stamens* with filaments to 2.5 mm long; *ovary* subsessile, \pm oblong, sparsely to moderately pubescent; *style* borne centrally on the ovary apex, to c. 2 mm long. *Legumes* linear, straight or very slightly curved, straight-sided or sometimes very slightly constricted between the seeds, 8.0–11.7 cm long, 4.7–6.0 mm wide, papyraceous, pale brown, flat, convex over the seeds, glabrous (only a few mature legumes and no developing legumes were examined). *Seeds* 9–11 longitudinal in the legume, oblongoid to broad-oblongoid or ellipsoid to broad-ellipsoid, 3.6–4.7 mm long, 2.3–2.9 mm wide, mid-brown, smooth, glossy; *pleurogram* open and slightly constricted towards the hilum; *areole* same colour as the rest of the seed, 2–3 mm long, 0.7–1.1 mm wide, with a pale halo 0.15–0.25 mm wide; *funicle* fawn, filiform, expanded into a cap-like aril, folded 3 times beneath the seed and prolonged along one side. *Flowering* April–May, July. *Fruiting* May, October. Figure 5.

DISTRIBUTION: NORTHERN TERRITORY: Darwin and Gulf District: south-western part of Kakadu National Park. Figure 2.

HABITAT: Occurs in dry *Asteromyrtus* heathland on crumbly red kaolinitic soil and in sandstone gorges on deep sands; often near permanent or seasonal streams.

ETYMOLOGY: The specific epithet honours Mr John Brock (1951–), who collected the first specimens of this new species. His extensive collections throughout the Top End have extended our knowledge of its flora as well as raised an awareness of the needs for conservation.

NOTES: *A. brockii* is a distinctive member of sect. *Juliflorae*, being characterised by the caducous, appressed hairs on the phyllodes, the ciliate ribbed bracteoles with acuminate to subulate apices extending beyond the flower-buds, the pale yellow spikes and by fine, long, silvery hairs on the calyces.

SPECIMENS EXAMINED: NORTHERN TERRITORY: Darwin and Gulf District: Barramundie Gorge, 13°19'S, 132°26'E, Brock, 16 May 1984 (DNA 25091); Barramundie Gorge, 13°20'S, 132°25'E, Brock 100, 11 Jul 1986 (DNA 28309), ditto, Brock 109, 8 Oct 1983 (DNA 28310); Kakadu National Park, 13°44'S, 132°37'E, Dunlop 8543 & Munns, 21 Apr 1990 (BRI, CANB, DNA, MEL, MO, NSW 236608, PERTH, UC).

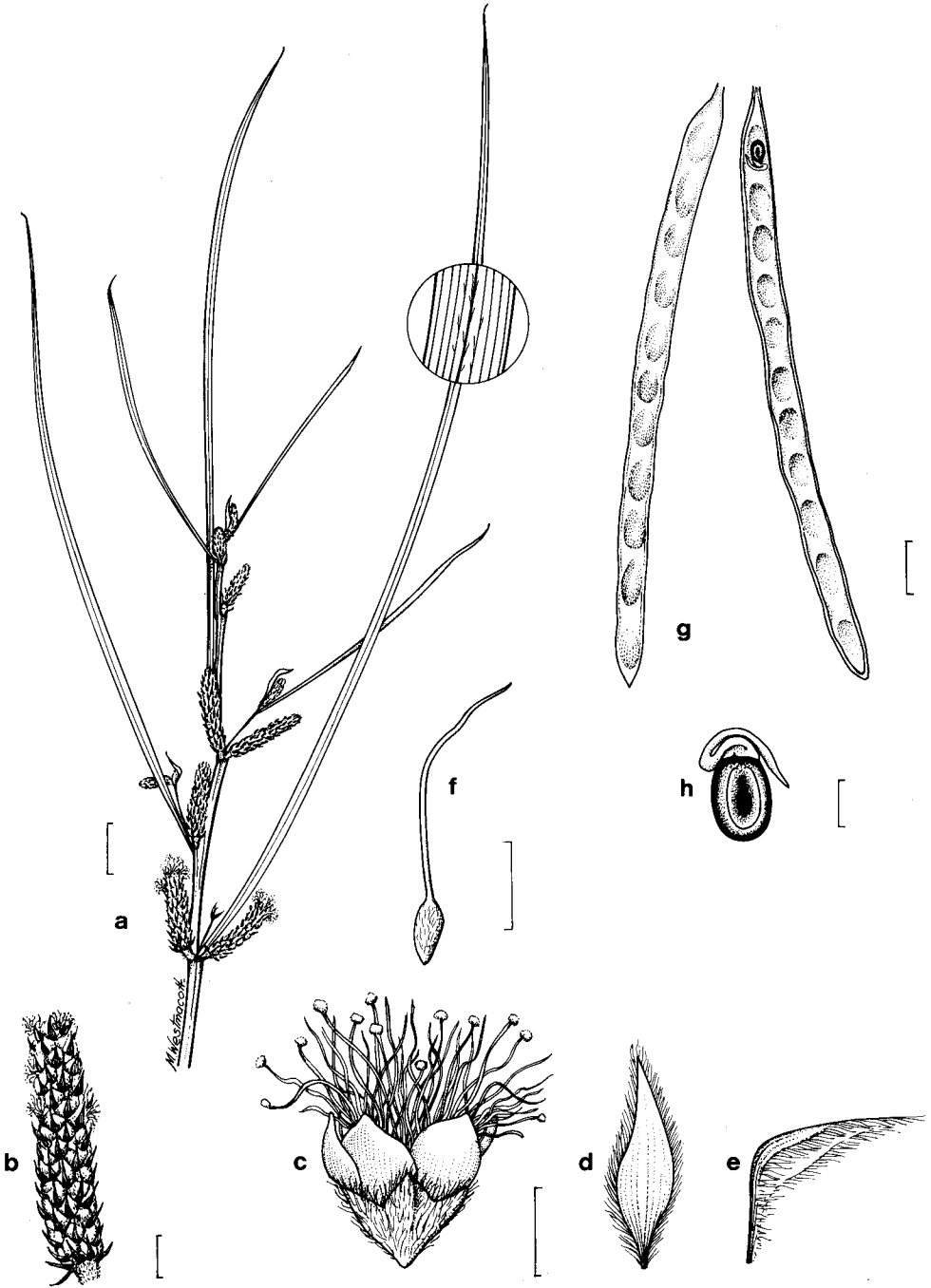


Figure 5. *A. brockii*. **a**, habit study with young inflorescences and inset showing nerves; **b**, young inflorescence; **c**, flower; **d,e**, bracteoles; **f**, gynoeceum; **g**, legume; **h**, seed (a,b, Dunlop 8543 & Munns; c-f, Brock 100; g,h, Brock 109). a,g, scale bar = 1 cm; b,h, scale bar = 2 mm; c,d,e,f, scale bar = 1 mm.

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