Studies in the genus Acacia—2*
—Miscellaneous new phyllodinous species—

By B. R. Maslin

Abstract

Six new species of *Acacia* are described: *A. ampliceps* sp. nov., *A. aphylla* sp. nov., *A. ashbyae* sp. nov., *A. microcalyx* sp. nov., *A. pachypoda* sp. nov., and *A. redolens* sp. nov. These species belong to Bentham's division Phyllodineae, and, except for *A. ampliceps*, all are endemic to Western Australia.

Introduction

The term " pulvinus ", which appears below, is a useful taxonomic character but has rarely been used in *Acacia* descriptions in the past. One definition of this term given by Jackson (1928) is " the swollen base of the petiole, as in *Mimosa pudica* Linn.". This term is normally used with reference to the compound leaves of Caesalpinioideae, Mimosoideae, and certain genera of Papilionoideae. As the phyllodes of *Acacia* species are modified compound leaves, this term may also be applied to them, as Boke (1940) has done. As used by the present author, the term " pulvinus " refers to the yellow, often rugose, structure situated at the base of the phyllodes in most species of *Acacia;* it is normally separated from the branch by a constriction. Boke (l.c.) states that the many vascular bundles of the phyllode " lamina " converge to a single trough-shaped bundle in the pulvinus; the anatomy of the pulvinus is similar to that of an ordinary leaf petiole, its epidermis is heavily cutinized, and the cells between the epidermis and the vascular tissue are typical parenchyma cells, displaying a small number of chloroplasts.

Unless otherwise indicated, the specimens cited in this paper are housed at the Western Australian Herbarium (PERTH).

1. Acacia ampliceps B. R. Maslin sp. nov. (Figures 1, 2, and 4A).

Frutex grandis dumalis vel *arbor* parva ramosa plerumque 2–7 m alta; *ramuli* glabri. *Phyllodia* variabilia plerumque linearia ad lanceolata, 70–250 x 7–30 mm, glabra, pallide viridia, costis prominentibus. *Glans* in margine supero phyllodii ad vel prope extremum distale pulvini, glans minor plerumque sub callo apicali. *Inflorescentia* plerumque racemosa, glabra; *pedunculis* 2–11 per racemo. *Capitula* alba ad luteola, 25–50 floribus. *Flos* 5-merus, glaber; *calyx* sinuato-dentatus; *petala* 3–3·5 mm longa. *Legumen* durum, fragile, glabrum. *Semina* longitudinalia, oblonga, fusca; *funiculus* arillusque flammei.

Type: 19 km N of Sandfire roadhouse (between Broome and Port Hedland), on Great Northern Highway, Western Australia, 9 June 1972, *B. R. Maslin* 2702 (holo: PERTH; iso: BRI, CANB, K, NSW, NY).

Large bushy *shrub* or small shrubby *tree* 2–7 m tall; *trunk* to 0·3 m diam. at ground level, with smooth grey bark; *branches* often pendulous; *branchlets* sometimes flexuose, insignificantly ribbed, smooth, glabrous, yellowish. *Stipules* caducous, broadly triangular, ca. 1·5 mm long, brown. *Phyllodes* variable, normally linear to lanceolate, sometimes narrowly obovate, 70–250 x 7–30 mm, straight to slightly falcate, spreading to pendulous, glabrous, light

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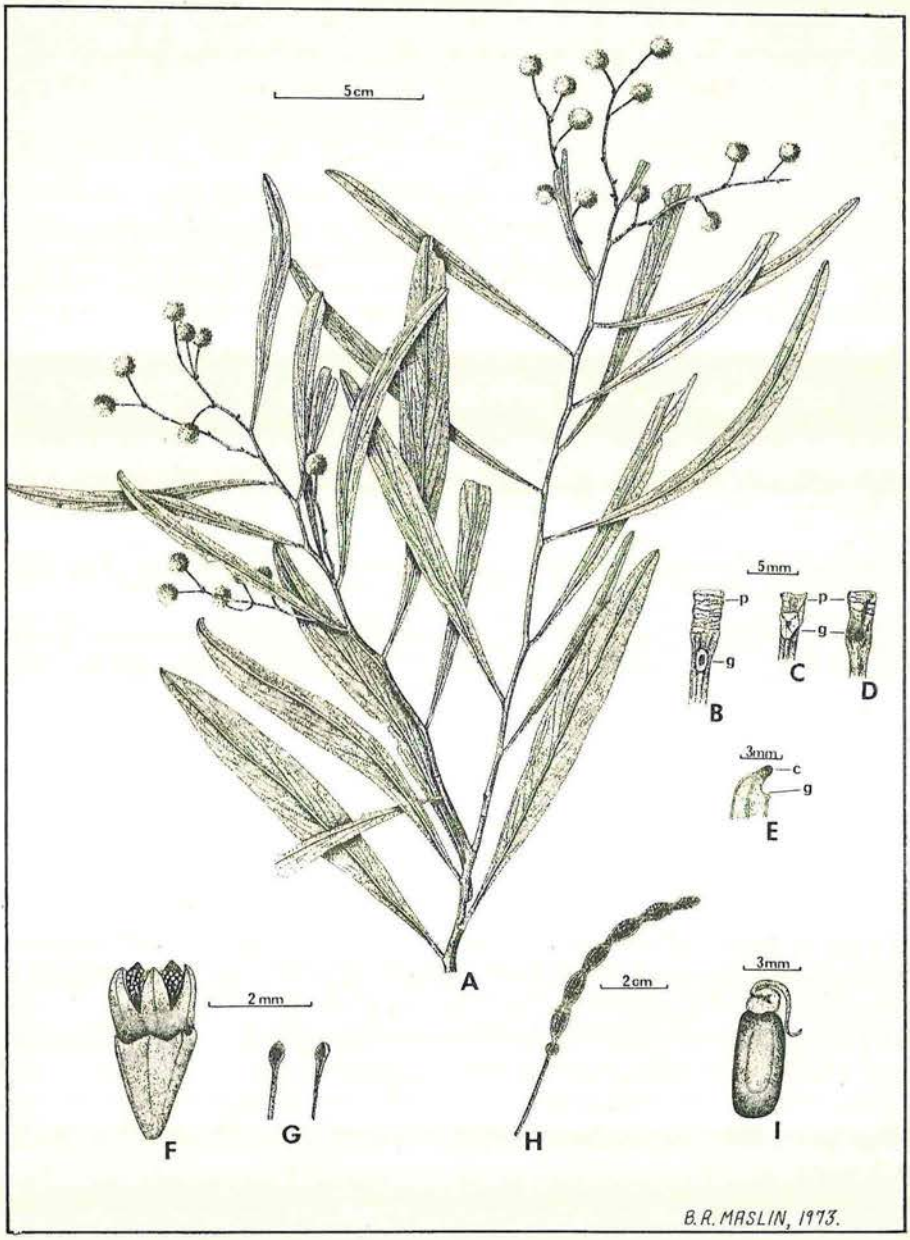

Figure 1—*Acacia ampliceps* sp. nov. A—Portion of branch system (note phyllode deterioration due to insect action). B to D—Base of phyllodes showing pulvinus (p) and gland (g) variability. C—gland lip laterally flattened. D—gland recessed. E—Apex of phyllode showing callus (c) and gland (g). F—Flower. G—Bracteoles. H—Legume. I—Seed. A from R. D. Royce 1962; B from B. R. Maslin 2736; C, F from B. R. Maslin 2676; D, E from B. R. Maslin 2702; G from R. D. Royce 7402; H from M. I. H. Brooker 2059; I from McInnes 2.

green, midrib prominent and yellowish, marginal nerve similar but less prominent, lateral veins openly reticulate, apical callus straight or uncinate; *pulvinus* 2–5 mm long, prominently transversely rugose. *Gland* situated on upper margin of phyllode at (or near) distal end of pulvinus, a smaller gland normally occurs below the apical callus, circular or oblong, 1–2 (2·5) mm diam.,

lip not prominent (sometimes laterally flattened), sometimes recessed. *Inflorescences* normally racemose (sometimes a few inflorescences reduced to solitary flower heads), axillary or terminal, often paniculate when terminal due to phyllode reduction, axis glabrous and up to 100 mm long with two small caducous bracts at the base; *peduncles* 2–11 per raceme, 5–15 mm long (to 25 mm in fruit), longitudinally sulcate, glabrous, subtending bract solitary and caducous. *Flower heads* white to cream, globular, 7–10 mm diam. at anthesis, with 25–50 ± densely packed flowers. *Bracteoles* 1·5 mm long, glabrous, spathulate; laminae slightly concave. *Flowers* 5-merous; *calyx* 1/2 (or slightly more) length of corolla, sinuate-toothed, translucent, glabrous, obscurely 5-nerved to nerveless; *petals* 3–3·5 mm long, connate for 3/4 their length, glabrous, obscurely 1-nerved; *ovary* glabrous. *Legumes* 70–95 x ca. 5 mm, hard, ± brittle, somewhat contracted between seeds, surface undulate, glabrous, light greyish brown; margins hardly thickened, yellow. *Seeds* longitudinal, oblong, 5–6·5 x ca. 3 mm, greyish brown, ± shiny; *pleurogram* open towards the hilum; *funicle* scarlet, slightly dilated, reflexed below a once or twice folded scarlet aril (orange before maturity).

Distribution and habitat: Western Australia and Northern Territory; in Western Australia from the vicinity of Carnarvon northwards to Derby, then extending eastwards through the southern Kimberley region to Renner Springs in the Northern Territory. *Acacia ampliceps* has been recorded from two islands in the Dampier Archipelago (Enderby and Lewis Islands) and as far inland as the Rudall River (near Lake Disappointment) in Western Australia. This species typically grows along creeks and rivers where it often forms dense

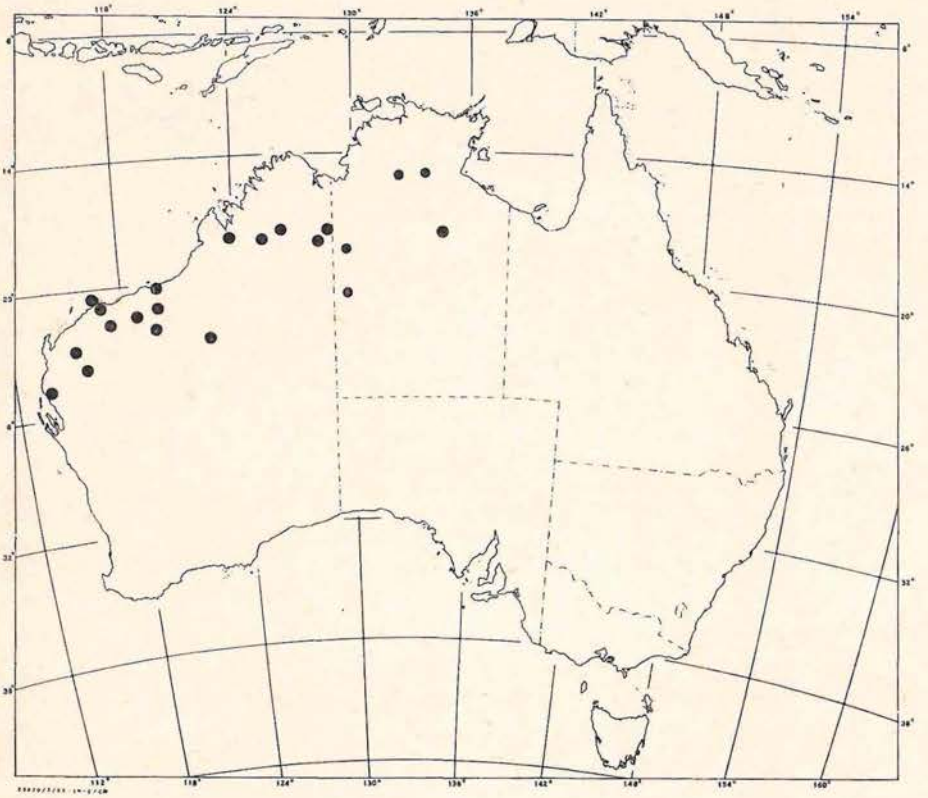

Figure 2—Distribution of *Acacia ampliceps*.

communities. These watercourses have either sandy or clayey beds and sometimes *Arthrocnemum* species grow in association. In some places along the Eighty Mile Beach *A. ampliceps* forms small thickets in hollows between the coastal sandhills (see Burbidge, 1944—there referred to as *A. salicina*).

WESTERN AUSTRALIA: Carnarvon, *G. B. Barnett* s.n.; Albert Edward Range, *J. S. Beard* 5636; Millstream, *M. I. H. Brooker* 2059 (dups. MEL, NSW); Nalgi Station, 80-mile Beach, *N. T. Burbidge* 1287 and 1351; Base of Mount Brennan, *W. V. Fitzgerald* 1191; Fitzroy Crossing, *Mrs. Guppy* 4; 111 km E Broome towards Derby, *B. R. Maslin* 2676 (dups. AD, B, L, NT); Chinnamon Creek on Port Hedland-Wittenoom road, *B. R. Maslin* 2713; Fortescue River crossing, E of Millstream, *B. R. Maslin* 2736; Globe Hill, Ashburton River, *A. Morrison* s.n. (NSW 107162); 41 mi S of Nicholson Station, *R. A. Perry* and *M. Lazarides* 2438 (NSW, PERTH); Rudall River, *M. McInnes* 2 and 7; South Barlee Range, *A. Robinson* s.n., Sept. 1959; Bamboo Springs Station, *R. D. Royce* 1962; West Lewis Island, Dampier Archipelago, *R. D. Royce* 7402; Enderby Island, Dampier Archipelago, *R. D. Royce* 7478; Woodstock, 60 miles SW Marble Bar, *H. Suijdendorp* 119.

NORTHERN TERRITORY: South of Powells Creek, *C. E. F. Allen* s.n. (NSW 107160); near Mataranka homestead, *R. Coveny* 516 (NSW); Tanami, *Jensen* s.n. (NSW 107158); Renners Springs homestead, *J. R. Maconochie* 639 (NT); Roper River, *W. Baldwin Spencer* s.n. (NSW 107157); North of MacDonnell Ranges, *P. A. White* s.n. (NSW 107159).

Flowering and fruiting period: Flowers from May to August; mature legumes are present from late August to November.

According to Bentham's classification (1864) *A. ampliceps* is placed in the Uninerves-Racemosae.

Previously this species was known as either *A. salicina* Lindl. or *A. varians* Benth. However, *A. varians* is a taxonomic synonym of *A. salicina* (see Black, 1920). Bentham applied the name *A. salicina* to *A. ligulata* Cunn. ex Benth. then subsequently described the true *A. salicina* as *A. varians*. Mr L. Pedley, while Australian Liaison Officer at Kew in 1971, supported the above conclusion after consulting the type of *A. varians*. Having inspected the type collection of *A. varians* and having seen a photograph of the type of *A. salicina*, the present author confirms both Black and Pedley's contention that *A. varians* is a taxonomic synonym of *A. salicina*. Having conducted extensive field work in Queensland, Pedley noted that *A. salicina* exhibits considerable phyllode variation; on a single tree the phyllodes can range from extremely broad and somewhat undulate (*A. varians*) to rather narrow (*A. salicina*). The type of *A. salicina* is from the Lachlan River (near Forbes, NSW) while the type of *A. varians* is from the Balonne River (near St. George, SE Queensland). *Acacia ampliceps* occurs in Western Australia and Northern Territory, but does not extend into New South Wales or Queensland.

The glabous racemes, the sinuate-toothed calyx, the hard-valved legumes, the longitudinal seeds with their scarlet funicles and arils, and the presence of a sub-apical as well as a basal gland on most of the phyllodes, relate *A. ampliceps* to *A. ligulata* and *A. salicina*. From both of these species *A. ampliceps* is distinguished by its larger flower heads, its narrower legumes, and its less prominent funicle and aril. Furthermore, *A. ampliceps* is distinguished from *A. ligulata* by its cream-coloured flower heads and its broader, longer, and more thinly textured phyllodes. From *A. salicina*, *A. ampliceps* is again distinguished by its phyllodes drying to a light green colour (grey-green in *A. salicina*) and having a more prominent midrib, its normally longer and more prominently rugose pulvinus, and its grey-brown, oblong seeds.

The growth habit, large and often pendulous phyllodes, glabrous racemes, and large flower heads, render *A. ampliceps* superficially similar to *A. saligna* (Labill.) H. Wendl. (a south-west Western Australian species). However, the flowers and legumes of these two species are quite different.

The phyllodes of the new species seem to be particularly susceptible to insect attack (see Figure 1A).

The specific epithet alludes to the large flower heads which are typical of *A. ampliceps*.

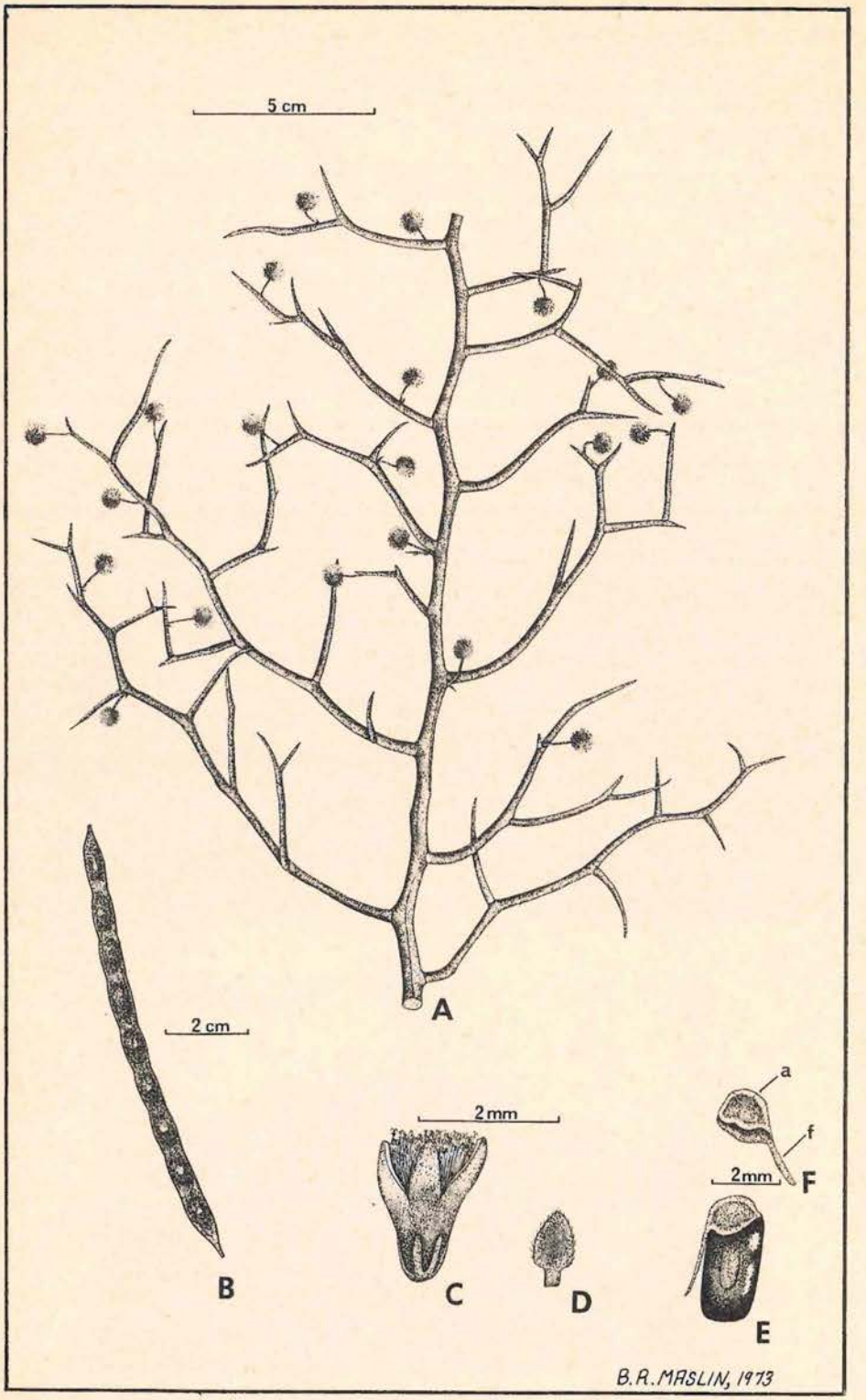

Figure 3—*Acacia aphylla* sp. nov. A—Portion of branch system. B—Legume. C—Flower. D—Bracteole. E—Seed. F—Funicle (f) and aril (a).
A, C, D from B. R. Maslin 669a; B, E, F from R. Wilkie s.n.

2. Acacia aphylla B. R. Maslin sp. nov. (Figures 3, 4B, and 9).

Frutex divaricate-ramosus ad 2 m altus; *rami* spinescentes glabri glauci. *Phyllodia* ad squamas caducas redacta. *Pedunculi* solitarii, ad basin sub anthesi ebracteati. *Capitula* globosa, 26–29 floribus. *Flos* 5-merus (petalis interdum 4); *sepala* ad basin breviter connata, anguste-oblonga; *petala* 2 mm longa. *Legumen* 30–90 x 3–4 mm, glabrum. *Semina* longitudinalia, oblonga, 4–4·5 x 2–2·5 mm, nigra.

Type: About 2 mi downstream from Mundaring Weir (Helena River valley), Western Australia' 4 Aug. 1970, *B. R. Maslin* 669a. (holo: PERTH; is·: B, CANB, K, MEL, NSW, NY).

Divaricately branched *shrub* to 2 m tall; *branches* terete, spinescent, finely and sparsely nerved, smooth or finely wrinkled (especially on branchlets), glabrous, conspicuously glaucous. *Phyllodes* reduced to caducous scales.

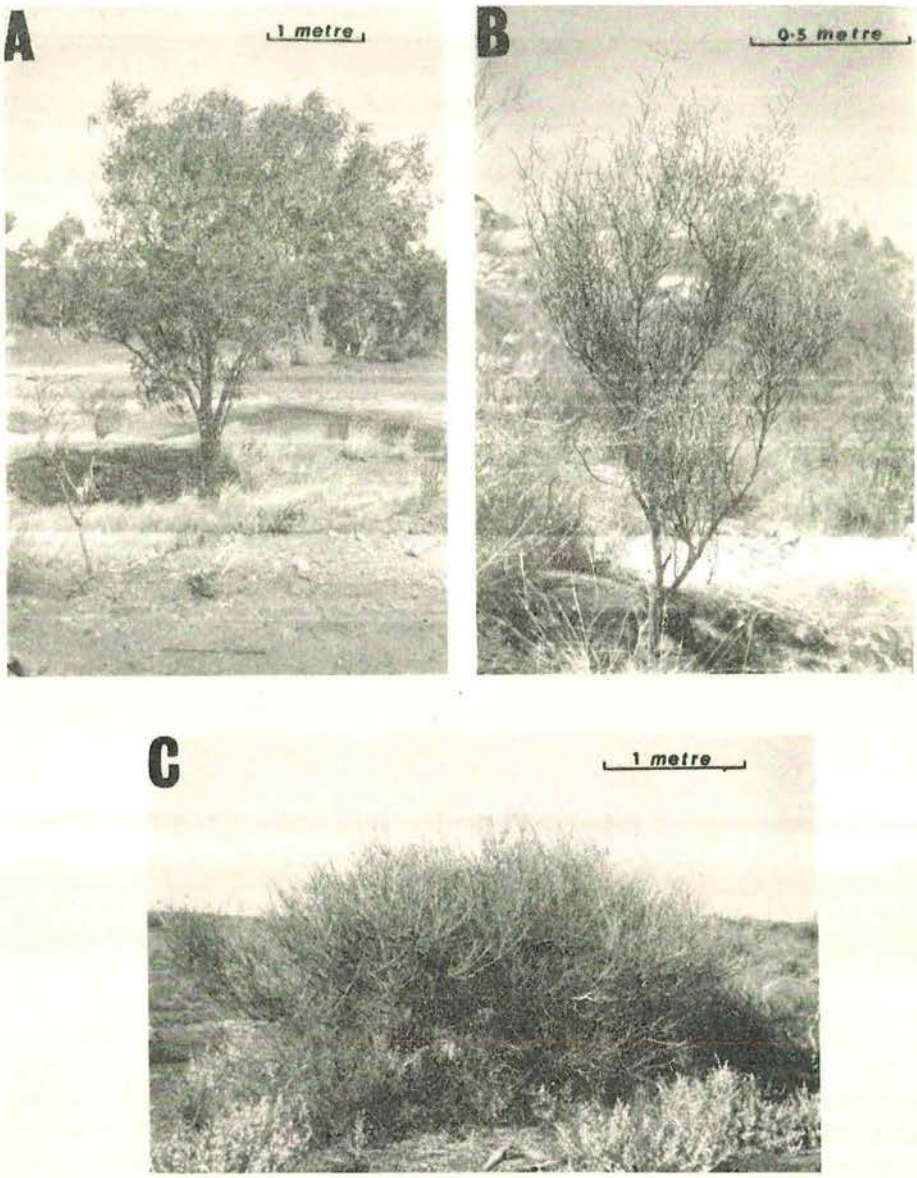

Figure 4—A—*Acacia ampliceps* sp. nov. B—*Acacia aphylla* sp. nov. C—*Acacia microcalyx* sp. nov.

Peduncles solitary, ca. 10 mm long, glabrous, base ebracteate at anthesis. *Flower heads* yellow, globular, 6–7 mm diam. at anthesis, with 26–29 ± densely packed flowers. *Bracteoles* 1 mm long; claws very short; laminae broad, ± ovate, slightly concave, ciliolate, sparsely puberulous abaxially. *Flowers* 5-merous (petals sometimes 4); *sepals* 1 /4–1 /3 length of petals, shortly united at the base, narrowly oblong, ciliolate; *petals* 2 mm long, connate for 1 /3 to 1 /2 their length, glabrous, nerveless or obscurely 1-nerved; *ovary* glabrous. *Legumes* 30–90 x 3–4 mm, slightly contracted between the seeds, surface undulate, finely reticulate, glabrous, slightly pruinose, purplish grey; marginal nerve obscure (more prominent on young legumes). *Seeds* longitudinal, oblong, 4–4·5 x 2–2·5 mm, black, somewhat shiny; *pleurogram* open towards the hilum; *areole* ca. 1·5 x 0·5 mm; *funicle* straight and linear, abruptly expanded into a cream-coloured pileiform aril which has narrow fleshy projections on either side and on the back.

Distribution and habitat: South-west Western Australia; this species has been recorded from only two localities, viz. the Helena River valley about 3·4 km downstream from Mundaring Weir, and from Spencers Brook (which is south of Northam). In both of these areas *A. aphylla* occurred in hilly country, growing among granite outcrops.

WESTERN AUSTRALIA: Hidden Valley, *H. Demarz* 2368; Helena River, 2 mi (3·4 km) downstream from Mundaring Weir, W.A., 31°57′S and 116°08′E, *A. S. George* 6773; Spencers Brook, *R. D. Royce* 8237; Near Mundaring Weir, Darling Range, *R. Wilkie* s.n., 12 March 1972.

Flowering and fruiting period: Flowers from August to October; young legumes appear in October, while mature legumes have been collected in December and March.

The divaricate, spinescent, glaucous branches, which are completely devoid of normal phyllodes (reduced to caducous scales), make *A. aphylla* a very distinctive species in the genus *Acacia.*

The inflorescence characters of this new species are similar to those of *A. exocarpoides* W. V. Fitz. (which may also appear leafless due to the phyllodes being shed upon collection). However, these two taxa differ in many other respects, e.g. branching pattern, legume and seed morphology.

The specific epithet alludes to the absence of normal phyllodes, which is a characteristic feature of this species.

3. Acacia ashbyae B. R. Maslin sp. nov. (Figures 5 and 9).

Frutex densus rotundatus 1·5–2 m altus surculis dense tomentosis eburneo-luteolis; *ramuli* dense tomentosi. *Phyllodia* variabilia, linearia ad anguste obovata, 30–90 x 1–3 mm, plana ad teretia, parce tomentosa, flavovirentia, nervis mediis marginalibusque tenuibus. *Glans* in margine supero phyllodii, 10–20 mm supra pulvinum. *Inflorescentia* racemus brevis axillaris ab bracteis 4 brunneis subtentus; axis racemi surculum saepe faciens. *Capitula* ovoidea, *Flos* 5-merus; *calyx* breviter obtuse-lobatus; *petala* 2 mm longa. *Legumen* ca. 35 x 3 mm. dense tomentosum. *Semina* longitudinalia, oblonga, 3·5–4 x 2–2·5 mm.

Type: Naraling, Western Australia, 27 Aug. 1972, *A. M. Ashby* 4584 (holo: PERTH; iso: AD, CANB, K, NY).

Dense, spreading, rounded *shrub* 1·5–2 m tall and ca. 2 m diam.; *new shoots* densely tomentose (hairs white to creamy white); *bark* smooth, grey; *branches* terete, finely ribbed, densely tomentose (hairs ± matted or appressed). *Stipules* caducous. *Phyllodes* variable, linear to narrowly obovate, 30–90 x 1–3 mm, flat (but slightly thickened) to ± terete, moderately tomentose (hairs confined to pulvinar region on older phyllodes), yellowish green, faintly wrinkled, central and marginal nerves fine (normally recessed upon drying), upper margin medially sulcate at the dilated base (more prominent in broad phyllodes), apex obtuse and obliquely mucronate; *pulvinus* 1–1·5 mm long,

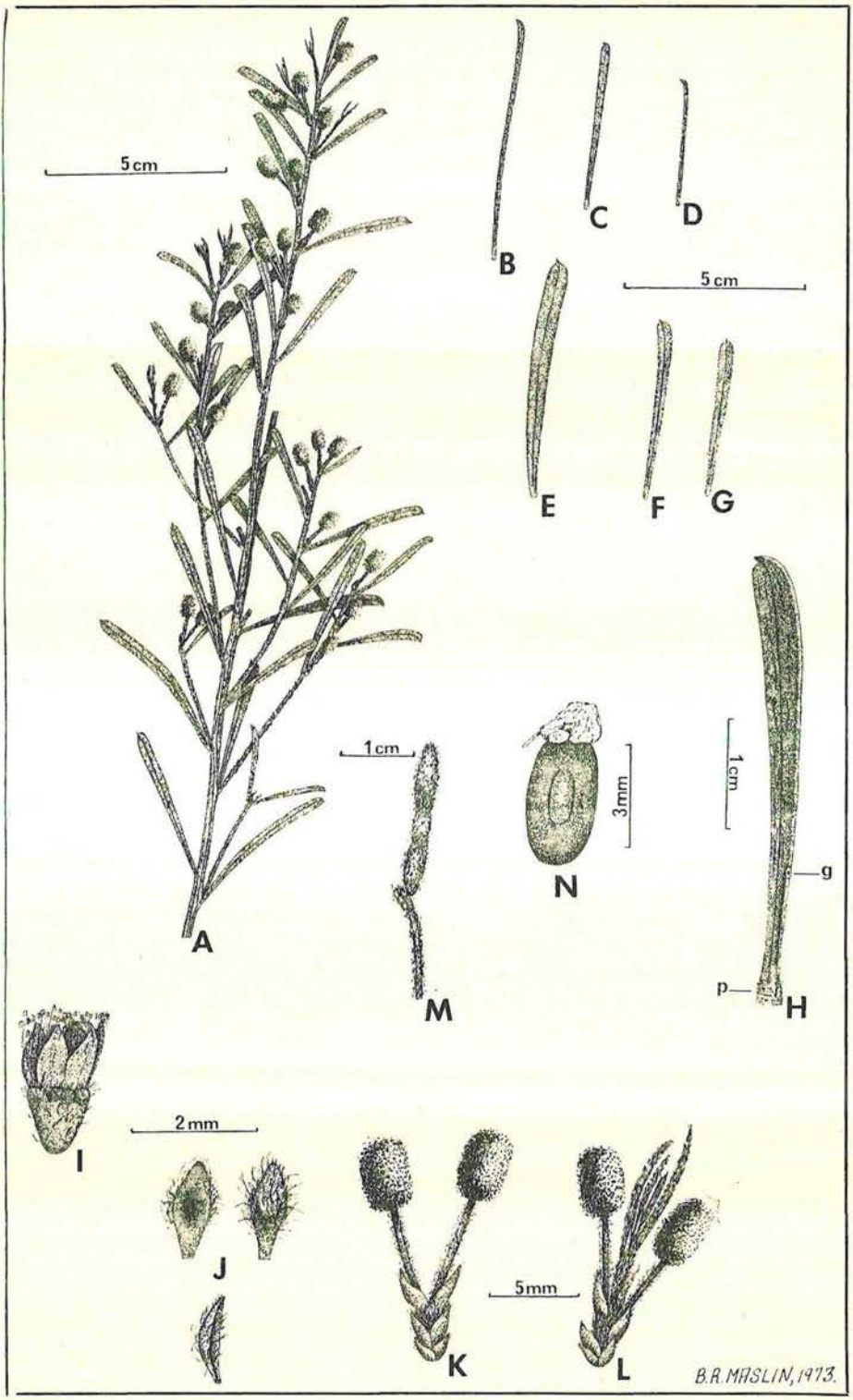

Figure 5—*Acacia ashbyae* sp. nov. A—Portion of branch system. B to G—Phyllode variation. H—Phyllode showing pulvinus (p) and gland (g). I—Flower. J—Bracteoles. K—Inflorescence. L—Inflorescence showing shoot developing at apex of raceme axis. M—Legume. N—Seed.

A, H-J from A. M. Ashby 2909; B from Chambers 91; C from Burns 22; D from Queensland Forestry Department; E, K from A. M. Ashby 1593; F from A. M. Ashby 4590; G from A. M. Ashby 2279; L, M, N from A. M. Ashby 4585.

transversely rugose. *Gland* situated on upper margin of phyllode 10–20 mm above the pulvinus, rarely with a second gland below the apical mucrone, circular to oblong, 0·5–0·6 mm diam., lip not prominent. *Inflorescence* a short axillary raceme which is subtended by ca. 4 ± persistent, brown, scarious, ciliolate bracts (basipetally decreasing in size), the larger of which are finely 6–8 nerved; *raceme axis* 1–3 mm long, densely white tomentose, often growing out as a new shoot at the apex; *peduncles* 1–2 per raceme, 7–11 mm long, densely white tomentose, subtending bract solitary. *Flower heads* ovoid, 6–10 x 5–7 mm at anthesis. *Bracteoles* ca. 2 mm long, protruding from between adjacent flowers in the bud; claws short; laminae ± concave, acuminate, sparsely to moderately tomentose abaxially. *Flowers* 5-merous; calyx 1/2 (or slightly more) length of corolla, divided from 1/6–1/4 its length into obtuse puberulous lobes, tube nerveless and glabrescent; *petals* 2 mm long, connate for ca. 1/2 their length, obscurely 1-nerved, glabrous or sparsely puberulous; *ovary* sessile, sparsely papillate. *Legumes* narrowly oblong, ca. 35 x 3 mm, ± brittle, slightly contracted between seeds, surface undulate, densely tomentose, greyish brown; margins hardly thickened, yellow. *Seeds* longitudinal, oblong, 3·5–4 x 2–2·5 mm, greyish brown, dull; *pleurogram* continuous or open towards the hilum; *areole* ca. 1·5 x 0·5 mm; *funicle* filiform, abruptly expanded into a thickened, once folded, wrinkled, yellowish aril which is narrowed at the hilum.

Distribution and habitat: Western Australia; chiefly occurring in the region between Ogilvie (which is 24 km north of Northampton) and Mullewa, but has been recorded from as far south as Coorow. *Acacia ashbyae* is not common throughout its range although in some places where disturbance has occurred (e.g. road verges) it does regenerate prolifically.

WESTERN AUSTRALIA: Rock Well, *A. M. Ashby* 1593 (dup. AD) and 2279; Between Naraling and Rock Well, *A. M. Ashby* 2909 (dup. AD); Naraling, *A. M. Ashby* 4585 and 4590 (dups. AD, BRI, MEL, NSW); East of Ogilvie, *A. C. Burns* 22; Coorow, *S. Chambers* 91; 10 mi north of Mullewa, *J. Goodwin* 142 (UWA); Cultivated at Dalby, Queensland, Forestry Department.

Flowering and fruiting period: Flowers from July to September; mature legumes present in November.

Although *A. ashbyae* appears to occur in the Uninverves-Racemosae (Bentham, 1864), the ovoid flower heads and sometimes ± terete phyllodes are unusual for this group. In addition, the racemes are somewhat atypical in that they are modified to 1–2 pedunculate flower heads borne on a short axis, the distal end of which often develops into a new shoot (see Figure 5L).

The densely tomentose peduncles and new shoots (hairs white to cream), the modified racemes, the brown scarious ± persistent inflorescence bracts, the ovoid flower heads, and the obliquely mucronate phyllodes, give *A. ashbyae* a distinctive appearance.

This species is named in honour of Miss A. M. Ashby, who, for many years has made valuable collections of the Western Australian flora.

4. Acacia microcalyx B. R. Maslin sp. nov. (Figures 4C, 6, and 9).

Frutex densus ramosissimus rotundatus 1·5–3 m altus; *ramuli* spinescentes glabri. *Phyllodia* linearia, 20–50 x 1–3 mm, glabra, obscure nervosa. *Glans* in margine supero phyllodii, 2–10 mm supra pulvinum. *Inflorescentia* plerumque racemus brevis axillaris. *Capitula* globosa, luteola. *Bracteolae* minutae. *Flos* 5-merus, glaber; *calyx* truncata, enervis; *petala* 2–2·5 mm longa, ± enervia. *Legumen* ± moniliformis, solide chartaceum, glabrum. *Semina* longitudinalia, globosa ad elliptica.

Type: 28 mi W of Overlander, on Shark Bay road, Western Australia, 19 Feb. 1962, *A. S. George* 3241 (holo: PERTH; iso: K).

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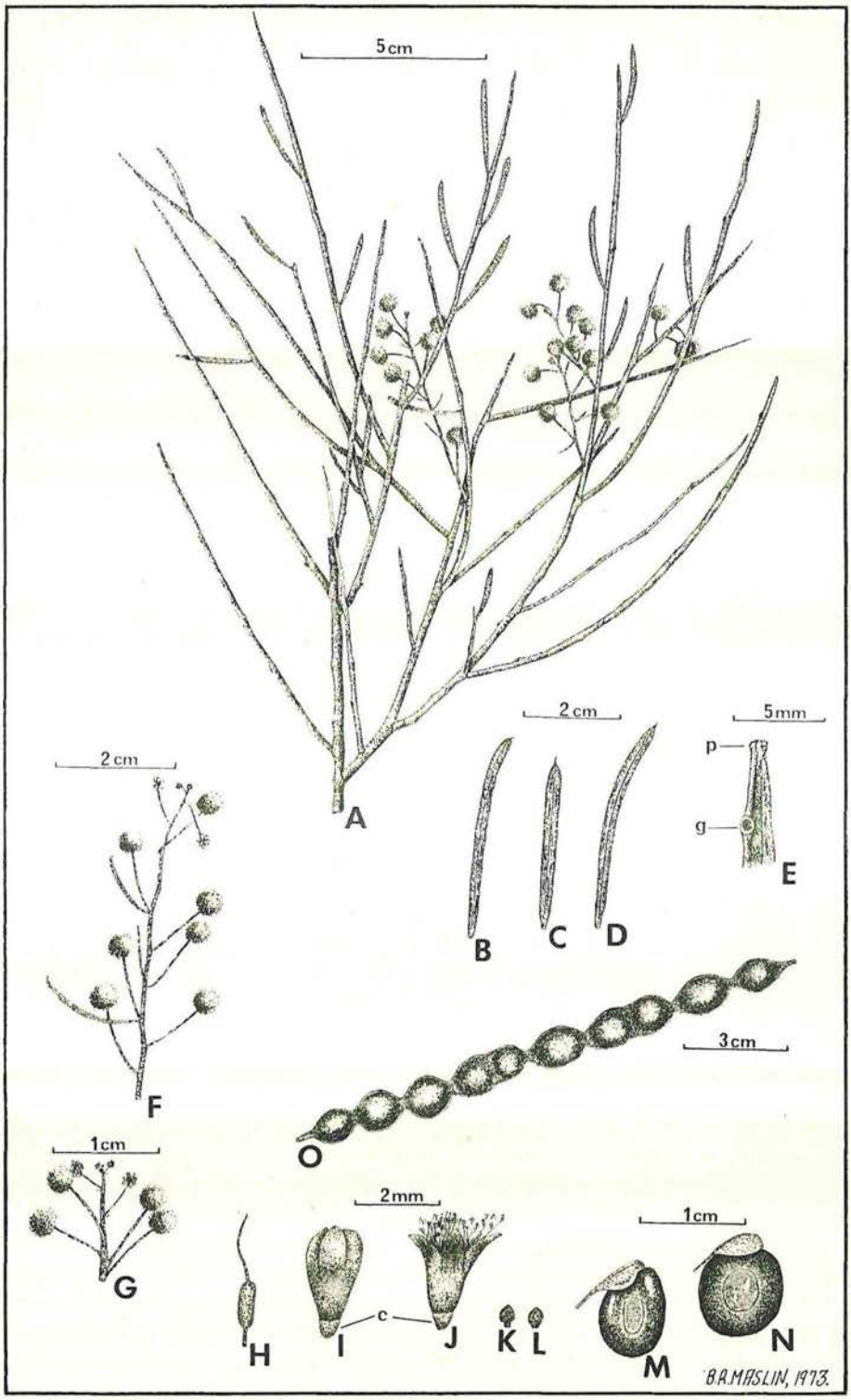

Figure 6—*Acacia microcalyx* sp. nov. A—Portion of branch system. B to D—Phyllode variation. E—Base of phyllode showing pulvinus (p) and gland (g). F—Short lateral branch with terminal raceme. G—Axillary raceme with abortive terminal flower heads. H—Stipitate ovary. I, J—Flower showing reduced calyx (c). K, L—Bracteoles. M, N—Seeds. O—Legume.
A, D, E, G-K, N from A. S. George 3241; B, C, M, O from B. R. Maslin 2774; F from S. M. G. Carr 409; L from E. M. Scrymgeour 300.

Dense, profusely branched, ± rounded *shrub* 1·5–3 m tall; *bark* smooth, light grey on main branches, grey-green on branchlets (ashy grey after immersion in alcohol); *branchlets* straight, ± spinescent, terete, finely striate (striae 0·5–1 mm apart), glabrous. *Stipules* caducous. *Phyllodes* readily shed upon collection, linear, 20–50 x 1–3 mm, straight or curved, patent to ascending, flat, glabrous, light grey-green (ashy grey after immersion in alcohol), midrib and lateral veins obscure, faintly wrinkled; *apiculum* short, straight or uncinate, brown; *pulvinus* short, slightly dilated. *Gland* situated on upper margin of phyllode 2–10 mm above the pulvinus, circular to oblong, lip not prominent, orifice brown. *Inflorescence* a short axillary (rarely terminal) raceme, sometimes reduced to solitary flower heads borne on short lateral branches (these branches may appear racemose due to phyllode reduction); *raceme axis* 7–14(20) mm long, glabrous, apex ± narrowed and bearing 1–3 abortive flower heads; *peduncles* 7–15 mm long, glabrous, base ebracteate at anthesis. *Flower heads* cream, globular, 5–6 mm diam. at anthesis, with 14–16 loosely arranged flowers. *Bracteoles* minute (ca. 0·5 mm long), glabrous; claws short; laminae ± elliptic, slightly concave. *Flowers* 5-merous, glabrous, obovoid in bud; *calyx* 1/4 (or less) length of corolla, truncate, insignificantly toothed, nerveless; *petals* 2–2·5 mm long, connate for ca. 1/2 their length, ± nerveless; *ovary* stipitate. *Legumes* ± moniliform, to 20 cm long and 1 cm wide, pendulous, firmly chartaceous, glabrous, dark to medium brown. *Seeds* longitudinal, globose to ± elliptic, 8–9 x 7–9 x 3–9 mm, dark brown to black, shiny; *pleurogram* continuous or open towards the hilum, often bordered by a band of yellow tissue; *areole* 3–7 x 1·5–5 mm, often a lighter brown than rest of seed; *funicle* short and filiform, expanded into a thickened straight aril which is often bordered by two narrow fleshy wing-like projections (these disappear with age).

Distribution and habitat: Western Australia; most common in the Shark Bay district from near Denham to the North West Coastal Highway around the 26° parallel. *Acacia microcalyx* has also been collected from Belele Station which is 60 km due north west of Meekatharra. Around Shark Bay this species grows on flat or undulating country in brown loamy sand in association with *Atriplex* and *Arthrocnemum* species. It appears to be absent from the low rocky hills which occur in this area. The specimen from Belele was collected from a saline area in clayey loamy soil.

WESTERN AUSTRALIA: 26° parallel, North West Coastal Highway, *T. E. H. Aplin* 5214 (dups. CANB, MEL, NY, NSW); 26° parallel, North West Coastal Highway, *A. M. Ashby* 3204; 13 mi from Denham on road to North West Coastal Highway, *S. G. M. Carr* 409 (dup. MEL); Belele Station, NW of Meekatharra, *R. Hacker* s.n., Aug. 1970; 26° parallel, North West Coastal Highway, *B. R. Maslin* 2774; 2·1 m E of "The Loop" turn-off, *E. M. Scrymgeour* 300.

Flowering and fruiting period: Flowers from February to March; mature legumes have been collected in December and March.

Acacia microcalyx appears to fall in the Uninerves-Racemosae (Bentham, 1864), but the ± spinescent branchlets are unusual for this group.

The inflorescence and seed characters indicate that *A. microcalyx* is most closely related to *A. sclerosperma* F. Muell. but it is readily distinguished from this species by its ± spinescent branchlets, its fewer and smaller phyllodes, and its firmly chartaceous legumes.

Acacia microcalyx superficially resembles *A. exocarpoides* W. V. Fitz. (Calamiformes-Plurinerves). Both these species have long, ± moniliform legumes, and straight, terete, ± spinescent branchlets which are often devoid of phyllodes (shed upon collection). However, *A. microcalyx* is recognised by its flat phyllodes, its normally racemose inflorescences, and its truncate calyx.

The specific epithet refers to the reduced calyx which is often less than one quarter the length of the corolla.

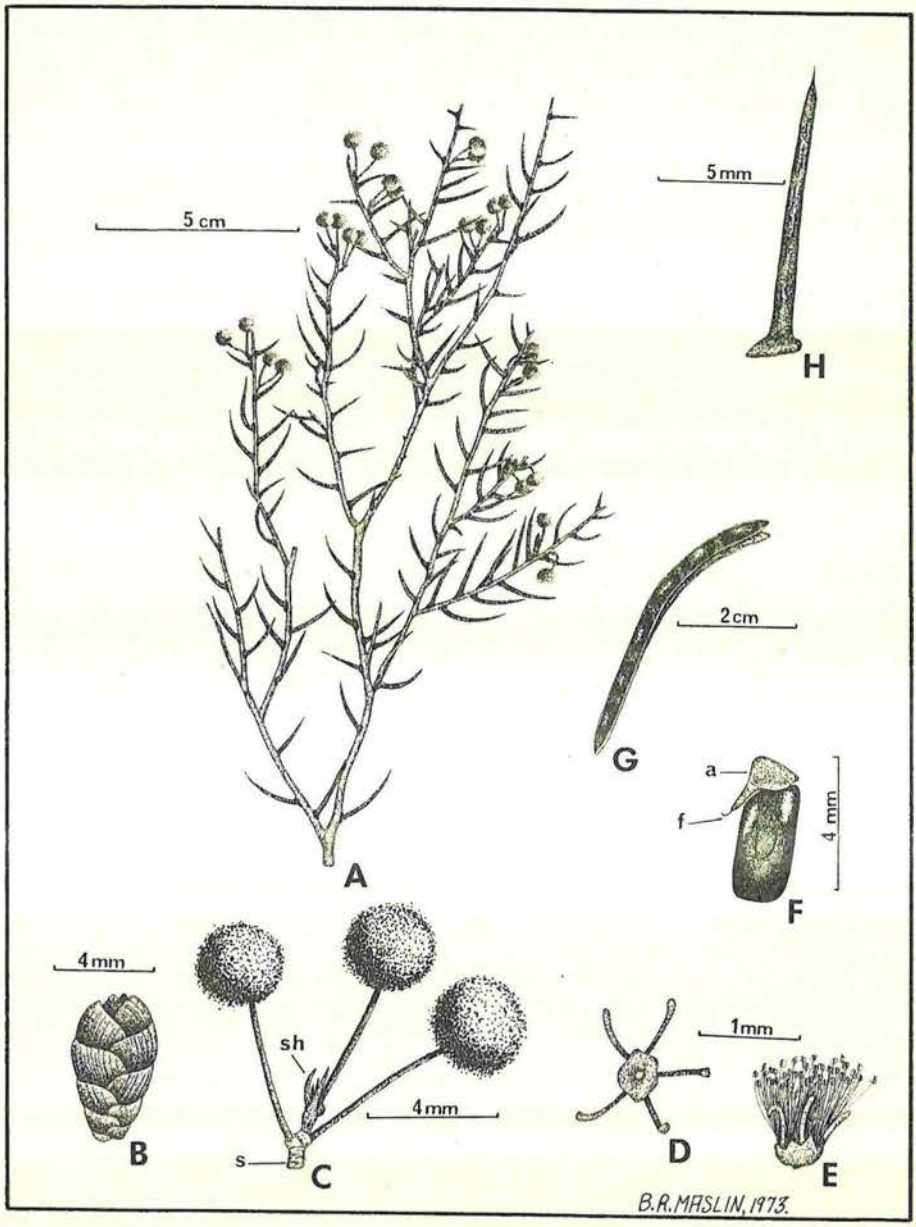

Figure 7—*Acacia pachypoda* sp. nov. A—Portion of branch system. B—Young inflorescence enclosed by conspicuous bracts. C—Raceme showing bract scars (s) on the axis, and new shoot (sh) developing at the apex. D—Flower (from below). E—Flower (side view). F—Seed with minute funicle (f) and pileiform aril (a). G—Legume. H—Phyllode showing dilated base.

A, C, E from P. G. Wilson 7756; B from K. Newbey 2559; D, H from R. D. Royce 3464; F, G from B. R. Maslin 2485.

5. Acacia pachypoda B. R. Maslin sp. nov. (Figures 7 and 9).

Frutex ramosissimus paulo diffusus ad 0·7 m altus, 1–2 m diametro. *Phyllodia* rigida, teretia, patentia vel ascendentia, glabra, basibus manifeste dilatatis; *pulvinus* nullus. *Inflorescentia* racemus brevis axillaris bracteas ± 12 magnas caducas scariosas brunneas ferens, bracteis

superioris capitula juvenia includentibus. *Capitula* globosa, luteola, ca. 8-floribus. *Bracteolae* nullae. *Flos* 5-merus, glaber; *calyx* cupulatus breviter et irregulariter lobatus; *petala* libera, linearia ad lineari-spathulata, 1 mm longa vel minora. *Legumen* lineare, sub-biconvexum, glabrum. *Semina* longitudinalia, oblonga, atro-brunnea.

Type: 5 mi N of Norseman, Western Australia, 8 Aug. 1951, *R. D. Royce* 3464 (holo: PERTH; iso: K).

Much branched, rather diffuse *shrub* to 0·7 m tall and 1–2 m in diameter; *branches* terete, glabrous; *epidermis* light to medium grey and often peeling. *Stipules* caducous. *Phyllodes* rigid, terete, 7–26 mm long, pungent, straight to slightly curved, patent to ± ascending, smooth or slightly wrinkled, glabrous, pale green, nerveless, base prominently dilated; *pulvinus* absent. *Gland* inconspicuous, situated on upper surface of phyllode 1–2 mm from the base. *Inflorescence* a short axillary raceme bearing ca. 12 large, caducous, brown, glabrous, finely striate, scarious bracts (basipetally decreasing in size), the upper ones enclosing the developing flower heads; *raceme axis* ca. 1 mm long, glabrous, growing out as a new shoot at the apex; *peduncles* 2–3 per raceme, 5–7 mm long, glabrous. *Flower heads* cream, globular, 3–5 mm diam. at anthesis, with ca. 8 flowers. *Bracteoles* absent. *Flowers* 5-merous, glabrous; *calyx* cupular, less than 0·5 mm long, irregularly shortly lobed, nerveless; *petals* 1 mm (or less) long, free, linear to linear spathulate, nerveless; *ovary* shortly stipiate. *Legumes* linear, 40–50 x 2–3 mm, sub-biconvex, not contracted between the seeds, glabrous, grey-brown; margins not thickened, yellow. *Seed* (only one near-mature sample seen) longitudinal, oblong, 3·5–4 x 1·5–2 mm, dark brown to blackish, shiny; *pleurogram* fine, open towards the hilum; *areole* ca. 1 x 0·5 mm; *funicle* minute, filiform, abruptly thickened into a pileiform aril.

Distribution and habitat: Western Australia; southern goldfields region from near Coolgardie southwards to Kumarl (which is 65 km south of Norseman). *Acacia pachypoda* grows in either rocky brown loam on hillsides or in grey clay on lowlying flatter areas. This species favours shady situations in woodlands where there is not much ground shrub cover.

Western Australia: Widgiemooltha area, *M. M. Cole* 7181; 8 km from Norseman towards Coolgardie, *B. R. Maslin* 2482; Near Moir Rock, *B. R. Maslin* 2485; 10 mi S of Coolgardie, *K. Newbey* 2559; 10 km N of Norseman, *P. G. Wilson* 7756 (dup. CANB).

Flowering and fruiting period: Flowers in August and September; legumes almost mature in mid-December.

Although *A. pachypoda* appears to occur in the Pungentes-Plurinerves (Bentham, 1864), the nerveless phyllodes and the racemose inflorescences are unusual for this group.

In that this new species has short, terete, pungent phyllodes which lack a pulvinus, it superficially resembles *A. colletioides* Benth. and *A. nyssophylla* F. Muell. However, *A. pachypoda* is readily distinguished from these two species by its nerveless phyllodes with prominently dilated bases, its short racemose inflorescences enclosed by large brown bracts in the bud, its lack of bracteoles, its calyx and corolla morphology, and its pileiform aril.

The specific epithet alludes to the prominently dilated phyllode bases, which are diagnostic for this species.

6. Acacia redolens B. R. Maslin sp. nov. (Figures 8 and 9).

Frutex densus expansus saepe rotundatus 1–2(4) m altus, 2–7 m diametro, interdum prostratus, similis vanillae odoratus; *ramuli* resinoso-costati, circa phyllodia minute tomentosi. *Phyllodia* anguste-elliptica ad-obovata, 9–13-nervia. *Inflorescentia* racemus brevis axillaris; *pedunculis* 2–5 per racemo. *Capitula* 4–5 m diam., 20–30-floribus. *Flos* 5-merus, glaber praeter ovarium, aliquantum resinosus; *sepala* oblonga; *petala* 1 mm longa. *Legumen* lineare, glabrum. *Semina* longitudinalia, oblonga ad elliptica, atro-brunnea.

Type: 1 mile east of Ongerup, Western Australia, 16 Sept. 1963, *K. Newbey* 387D (holo: PERTH; iso: CANB, K, NY).

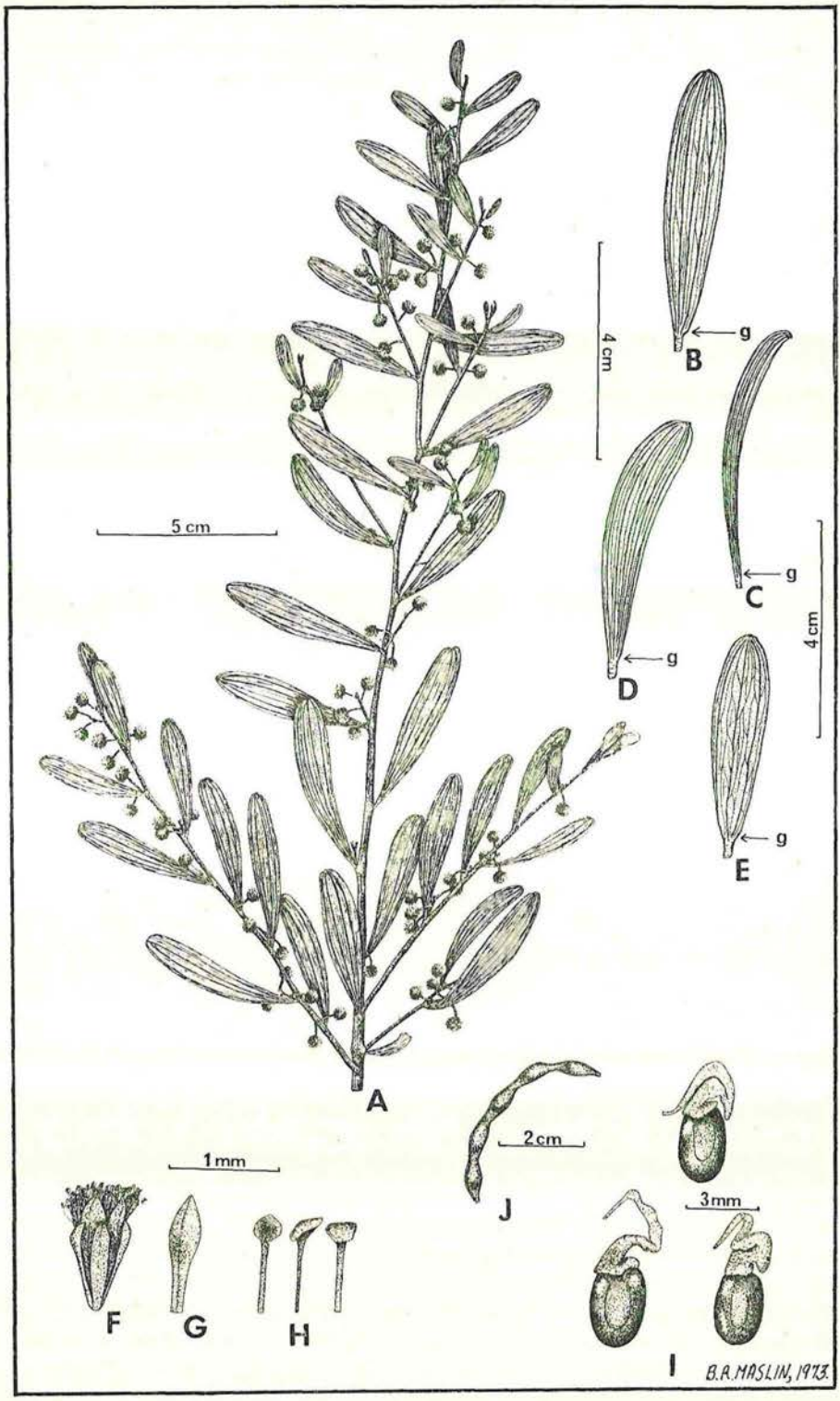

Figure 8—*Acacia redolens* sp. nov. A—Portion of branch system. B to E—Phyllode variation showing gland (g) position. F—Flower. G—Petal. H—Bracteoles. I—Seeds. J—Legume.

A, E, H from K. Newbey 387D; B, F, G from K. Newbey 2634; C from W. E. Blackall 3034; D from P. G. Wilson 10151; I, J from B. R. Maslin 2573.

Dense, spreading, often rounded, fragrant (vanilla scented) *shrub*, 1–2(4) m tall (occasionally prostrate) and 2–7 m in diameter; *bark* smooth, grey; *branches* with prominent, rugose, yellow, resinous ribs (resin soluble in alcohol), minutely tomentose around phyllode base. *Stipules* caducous. *Phyllodes* narrowly elliptic to narrowly obovate, 25–50(60) x (2)6–10(13) mm, straight to slightly falcate, glabrous (except around the pulvinus), grey green to glaucous, 9–13 nerved (3–4 primary nerves diverging from the pulvinar region, intervening nerves less conspicuous), sparsely reticulate, nerves resinous (resin soluble in alcohol), minutely apiculate; *pulvinus* cylindrical, ca. 2 mm long, obscurely transversely rugose, densely and minutely tomentose especially on upper surface. *Gland* not prominent, situated on upper margin of phyllode at distal end of the pulvinus, lamina tissue often swollen around the gland. *Inflorescence* a solitary short axillary raceme or panicle (sometimes a few inflorescences reduced to solitary flower heads); *axis* 2·5–20 mm long, normally densely tomentose and resinous; *peduncles* 2–5 per raceme, 2·5–4 mm long, indumentum as on axis, subtending bract small and solitary. *Flower heads* yellow, globular, 4–5 mm diam. at anthesis, with 20–30 densely packed flowers. *Bracteoles* ca. 0·8 mm long, glabrous; claws linear; laminae sub-peltate. *Flowers* 5-merous, glabrous (except for ovary) and somewhat resinous; *sepals* 2/3–3/4 length of petals, shortly united at the base, oblong, obscurely 1-nerved, slightly thickened and inflexed at the apex; *petals* 1 mm long, free, obscurely 1-nerved; *ovary* very sparsely papillate. *Legumes* linear, 20–60 x 2–3 mm, slightly contracted between the seeds, surface prominently undulate, glabrous, slightly resinous, light brown; margins slightly thickened. *Seeds* longitudinal, oblong to elliptic, 3·5–4 x 2–2·5 mm, dark brown to blackish, ± shiny; *pleurogram* open towards the hilum; *areole* ca. 2 x 1 mm; *funicle* often flattened, reflexed below a once or twice folded, ± convoluted, thickened, cream or white coloured aril which is ± dilated at the hilum.

Distribution and habitat: South-west Western Australia; southern regions from about Ongerup to Ravensthorpe and extending northwards to Pingrup and Newdegate. *Acacia redolens* grows in slightly saline or alkaline loam or clay often in association with Salmon Gums (*Eucalyptus salmonophloia* F. Muell.). In the northern parts of its range (around Pingrup and Newdegate) this species often grows with Stocking Gum (*E. kondininensis* Maiden and Blakely) in sandy loamy soil around the margins of salt lakes. For further details see discussion below.

WESTERN AUSTRALIA: Pingrup, *W. E. Blackall* 3034; Ongerup, *E. M. Canning* 7437; South of Mount Madden, *J. Goodwin* 226 (UWA); 9·6 km E of Ravensthorpe towards Esperance, *B. R. Maslin* 2573; ca. 12 mi NW of Ravensthorpe, *K. Newbey* 2634; 312 mile post on Lake King-Ravensthorpe road, *R. A. Saffrey* 349 (duplicates at BRI, MEL, NSW); Fitzgerald River Reserve, *P. G. Wilson* 10151.

Flowering and fruiting period: Flowers from August to October; mature legumes present in December.

According to Bentham's classification (1864) *A. redolens* is placed in the Plurinerves–Nervosae.

Acacia redolens appears to be most closely related to *A. ixiophylla* Benth. The latter species is also resinous (but the resin is more generally distributed over the branch and phyllode surface, not confined to ribs as in *A. redolens*) and has short axillary racemes (but always with two flower heads). *Acacia redolens* is further distinguished from *A. ixiophylla* by its normally larger, narrowly elliptic to narrowly obovate phyllodes (which have more prominent primary nerves and fewer anastomoses), and by its gland being positioned at the distal end of the pulvinus (not some millimetres above it as in *A. ixiophylla*).

In its phyllode morphology *A. redolens* superficially resembles *A. cyclops* Cunn. ex Don (which, like *A. ixiophylla*, has racemes consisting of two flower

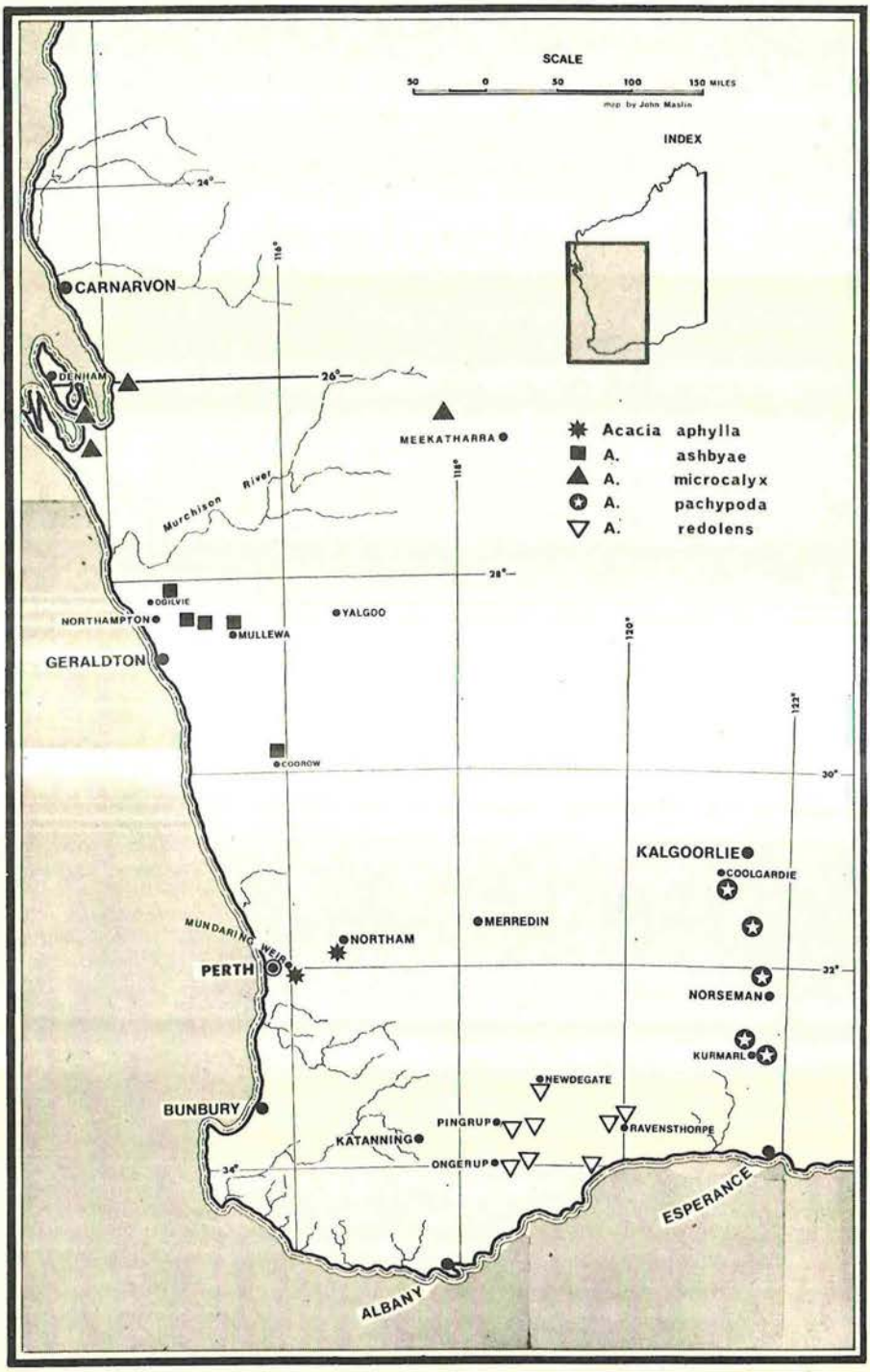

Figure 9—Distribution of *Acacia aphylla*, *A. ashbyae*, *A. microcalyx*, *A. pachypoda*, and *A. redolens*.

heads). However, *A. cyclops* can be readily recognized by its glabrous and non-resinous branchlets, raceme axes, and peduncles, by its shortly lobed calyx, by its larger flower heads, legumes, and seeds, and by its orange or scarlet funicle which encircles the seed.

In the Ongerup–Ravensthorpe area *A. redolens* grows as a dense, ± rounded shrub, 1–2 m tall. Further north, however, this species becomes more upright and openly branched (reaching 3 m tall). In the lower Fitzgerald River area (south-west of Ravensthorpe) *A. redolens* grows into a moderately dense shrub up to 4 m tall.

In 1962, Mr. R. Pecoff of Pecoff Brothers Nursery, California, collected seed of *A. redolens* from plants growing at Ongerup. The seedlings which were subsequently germinated produced some forms that were more prostrate than others. As the species at that time was not described, Pecoff registered the cultivar name " Ongerup " for the most prostrate plant, and all his stock since has been grown from cuttings derived from this original specimen. This species is now grown in Florida, Georgia, Texas, Arizona, and California, where it is used in soil erosion control programmes, in the landscaping of median strips on highways, and in the reclamation of dredged soils containing sand, sodium salt, sea shells, and clay. *Acacia redolens* has a deep fibrous root system; it grows exceptionally well (in the U.S.A.) on the coast under extreme conditions without any wind burn damage. (Above information from Pecoff Brothers Nursery Catalogue, 1968, and from Mr. K. Newbey, pers. comm.)

The specific epithet alludes to the distinctive odour (vanilla scented) which is emitted from the plants, especially during the hotter part of the day.

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