

## ***Acacia* Miscellany 11. Miscellaneous taxa of northern and eastern Australia of *Acacia* section *Plurinerves* (Leguminosae: Mimosoideae)**

R.S. Cowan and B.R. Maslin

Western Australian Herbarium, Department of Conservation and Land Management,  
PO Box 104, Como, Western Australia 6152

### **Abstract**

Cowan, R.S. and B.R. Maslin. *Acacia* Miscellany 11. Miscellaneous taxa of northern and eastern Australia of *Acacia* section *Plurinerves* (Leguminosae: Mimosoideae). *Nuytsia* 10 (1): 63-84 (1995). Two new species (*A. kenneallyi* Cowan & Maslin and *A. manipularis* Cowan & Maslin) and one new subspecies (*A. retivenea* F. Muell. subsp. *clandestina* Cowan & Maslin) are described. *Acacia lanigera* Cunn. is distinguished from *A. venulosa* Benth. and is viewed as comprising three varieties, var. *lanigera*, var. *gracilipes* Benth. and var. *whanii* (F. Muell. ex Benth.) Pescott (syn. *A. whanii* F. Muell. ex Benth.). In addition, lectotypes for several taxa are designated herein: *A. subporosa* var. *linearis* Benth. (the base name for *A. cognata* Domin), *A. excelsa* Benth., *A. hemignosta* F. Muell., *A. lanigera* Cunn., *A. lanigera* var. *gracilipes* Benth., *A. leucophylla* Lindley (= *A. pendula* Cunn. ex Don), *A. praelongata* F. Muell., *A. subporosa* F. Muell., and *A. trinervata* var. *brevifolia*. A note concerning the binomial *A. sericata* Cunn. ex Benth. is also included and discussions are presented concerning *A. farinosa* Lindley, *A. latescens* Benth. and *A. trinervata* Sieber ex DC.

### **Introduction**

In the course of the preparation of our contribution for the account of the genus *Acacia* for the "Flora of Australia", we have made many new observations, corrected earlier errors and re-arranged the taxonomy of numerous taxa, in addition to which we have recognized many altogether new entities. These are being published separately from the Flora and in this paper information is presented concerning several miscellaneous species, in addition to a number of new taxa, from the north and east of Australia.

### **Methods**

The species included in this paper are presented under two headings: (1) new and revised taxa, and (2) miscellaneous lectotypifications and notes. In so far as has been possible the species are arranged alphabetically within these two groups.

Our approach to typification is discussed in Maslin & Cowan (in press) and our method of ranking taxa is discussed in Cowan & Maslin (1994).

The conservation status of Western Australian taxa is assessed using the criteria outlined on page 141 of this journal.

All measurements and observations were made from dried herbarium specimens unless specifically stated otherwise.

### New and revised taxa

#### 1. *Acacia kenneallyi* Cowan & Maslin, *sp. nov.*

Arbor vel frutex aperto-ramosus, debilis, 2-7 m altus. Cortex laevis. Ramuli teretes, glabri, pruinosi, atrati. Stipulae persistentes, circa triangulares, minutae. Phyllodia anguste elongato-elliptica ad linearia, attenuata versus apicem acutum, longo-attenuata versus pulvinum pruinatum, 5-7 mm longum, laminae 15-25 cm longis, 6-14 mm latis, tenuiter coriaceis, rectis ad leviter arcuatis, glabris, 1 nervo principali longitudinali elevato, nervis secundariis plus minusve reticulatis, indistinctis, nervis marginalibus incrassatis; glans principalis laminarum prope basem, magna, conspicua, lato-elliptica et in nervo marginalia 1-4 glandes secundaria inserta. Inflorescentiae racemosae, axillares vel terminales, aliquando pedunculis 1-4 in axilla, axibus 2-10 cm longis, glabris, plus minusve pruinosis; pedunculi 8-25 mm longi, 1 ad aliquot per nodum, graciles, glabri; capitula globularia, aurea, circa 5 mm diametro, 46-56-floribus, bracteolis unilateraliter peltatis, minutis. Flores 5-meri. Sepala petalis 2/3-3/4 breviora, 3/4-connata, inter lobos diaphana, lobis late ovatis, rotundatis et apiculatis vel acutis, puberulis. Petala 3/4-connata, inter petalas diaphana, lobis ovatis, puberulis. Staminorum filamenta discreta vel ad basem plus minusve connata. Ovarium glabrum. Legumina (submatura) angustoblonga, 9.5-11 cm longa, 10-11 mm lata, coriacea, recta, plana, aperto-reticulata, marginibus incrassatis. Semina (immatura) obliqua, funiculo lineari, rubro-brunneo, apicaliter in arillum conspicuum abrupte expando, arillo conspicuo, galeato, terminali.

*Typus:* on mainland 8.3 km E and across from Savage Hill on Bigge Island, Western Australia, 5 June 1987, *K.F. Kenneally* 10167 and *B.P.M. Hyland* (holo: PERTH 00870501; iso: CANB, K).

Openly branching, weak tree or shrub 2-7 m tall. Bark smooth. Branchlets terete, glabrous, pruinose, dark-coloured. Stipules persistent, more or less triangular, minute. Phyllodes narrowly elongate-elliptic to linear, 15-25 cm long, 6-14 mm wide, thin-coriaceous, straight to slightly arcuate, glabrous, light- to dark-green; apex tapering to acute tip; base attenuate to the pruinose pulvinus 5-7 mm long; blade with one prominent longitudinal main nerve, one weaker longitudinal nerve commonly present but disappearing in lower half of phyllode, the secondary nerves more or less reticulate, indistinct, the marginal nerves prominent, thickened; main gland conspicuous, situated on phyllode margin at or near base of blade, widely elliptic with raised margins and depressed centre, 1-4 smaller glands on upper marginal nerve. Inflorescences axillary or terminal racemes, or 1-4 heads in phyllode axils, the axes (when present) 2-10 cm long, glabrous, somewhat pruinose; peduncles 8-25 mm long, slender, glabrous; basal peduncular bracts persistent, minute,  $\pm$  triangular; heads globular, golden, c. 5 mm diam., 46-56-flowered, congested; bracteoles unilaterally peltate, the lamina rounded and puberulous. Flowers 5-merous. Sepals 2/3-3/4 as long as petals, 3/4-united, tissue between sepals diaphanous, lobes broadly ovate, rounded and apiculate or acute, puberulous. Petals 3/4-united by

diaphanous tissue between the petals, lobes ovate, densely puberulous with white and pale golden hairs. *Stamen* filaments free or somewhat united basally. *Ovary* glabrous. *Pods* (slightly immature) narrowly oblong, flat, slightly raised over but not constricted between seeds, 9.5-11 cm long, 10-11 mm wide, coriaceous, straight, openly reticulate, glabrous, attenuate basally, apex acute, margins thickened. *Seeds* (slightly immature) obliquely arranged in the pods; funicle linear, red-brown, abruptly expanded into a conspicuous, terminal, dull brownish yellow (probably cream or white when fresh), helmet-shaped aril.

*Other specimens examined.* WESTERN AUSTRALIA: Naturalist Island, Prince Frederick Harbour, M. Evans 12B (PERTH), K.F. Kenneally 9919 (PERTH), 9931 (MEL, PERTH) and 9940 (PERTH); Boomerang Bay on W side of Bigge Island, Bonaparte Archipelago, K.F. Kenneally 10036 (CANB, PERTH); Heywood Island, Bonaparte Archipelago, P.G. Wilson 10901 (PERTH); Byam Martin Island, Bonaparte Archipelago, P.G. Wilson 11467 (PERTH).

*Distribution.* Restricted to the Bonaparte Archipelago area in the Kimberley area from Heywood Island northeast to Bigge Island and the mainland across from Bigge Island, northern Western Australia.

*Habitat.* Grows in sand over sandstone and also on dolerite, commonly in eucalypt woodland.

*Flowering and fruiting periods.* Flowers from late May to June; pods with mature seeds have not been collected.

*Affinities.* The one main longitudinal nerve in the phyllodes might suggest section *Phyllodineae* DC. as the group in which one should search for relatives of *A. kenneallyi*. However, the new species appears to be most closely related to *A. latescens* Benth. which has phyllodes with two longitudinal main nerves, the upper of which disappears well short of the apex. Similarly, *A. kenneallyi* commonly has a second, much weaker, longitudinal nerve which disappears in the lower half of the phyllode or, occasionally, fails altogether to develop. In addition to its phyllode nervature and the fact that it is endemic in Northern Territory, *A. latescens* differs from *A. kenneallyi* in the following ways: branchlets not pruinose, heads cream to pale yellow, petals glabrous to subglabrous, pods 12-15 mm wide and the aril smaller. Moreover, the inflorescences in *A. latescens* regularly are short (10-20 mm long), axillary racemes, whereas in *A. kenneallyi* they are generally much longer, sometimes axillary, sometimes terminal, and just as often non-racemose peduncles occur. The paucity of suitable flowering material of the new species makes it difficult to properly determine the nature of its flowering system.

*Conservation status.* A Priority 3 taxon in the Department of Conservation and Land Management's Declared Rare and Priority Flora List. See end of this issue.

*Etymology.* We take pleasure in naming this species for the collector of most of the material known of it, Kevin F. Kenneally, an authority on the flora of the Kimberleys based on years of collecting and observing the plants of that region.

## 2. *Acacia lanigera* and *A. venulosa*

*Acacia lanigera* Cunn. and *A. venulosa* Benth. have been variously treated and are considered together here to clarify their obvious close relationship. They are most reliably distinguished on floral characters and, to a lesser extent, vegetatively; pods are also useful but are not known for all the taxa.

The bracteoles are particularly useful in distinguishing the two species: linear-spathulate with long claws and short,  $\pm$  rounded (rarely apiculate) laminae in *A. venulosa*, and sessile to sub-sessile with large, acute to acuminate laminae in *A. lanigera*. The sepals in *A. venulosa* are free to shortly united at the base, or occasionally, especially specimens from New South Wales, they are free to 1/2-united; in *A. lanigera* the sepals are 2/3-3/4-united. Pods of *A. venulosa* are straight while those of *A. lanigera* are at least arcuate to once-coiled, insofar as they are known, for we have not seen the pods of var. *whanii*.

While indumentum in the two species is variable there are patterns in density, hair type and orientation, particularly on branchlets and peduncles, which make these useful secondary character for distinguishing the species (see descriptions below). The resin-hairs which are common in *A. venulosa* but infrequent in *A. lanigera* are similar to those found in *A. oswaldii* F. Muell. and many other species. They appear similar to the C-hairs Rutishauser and Sattler (1986) described in *A. longipedunculata* Pedley.

The two species replace each other geographically: *A. lanigera* occurs in southern Victoria to northern New South Wales; *A. venulosa* extends from central-eastern New South Wales north to southern Queensland.

#### Key to Taxa of *A. lanigera* and *A. venulosa*

1. Bracteoles with long, linear claws and short, rounded (rarely apiculate) laminae. Sepals free or shortly united at base, occasionally 1/2-united (in some N.S.W. specimens). Pods straight ..... 2.2. *A. venulosa*
1. Bracteoles sessile to sub-sessile and with large acute to acuminate laminae. Sepals 2/3-3/4-united. Pods (where known) curved to coiled.
  2. Peduncles 6-9 mm long; phyllode gland 0-2 mm above base of blade but often obscured by indumentum; branchlets with dense,  $\pm$  spreading to sub-appressed hairs ..... 2.1b. *A. lanigera* var. *gracilipes*
  2. Peduncles 2-4 mm long, to 5 mm in fruit; phyllode gland mostly 3.5-13 mm above base of blade.
    3. Branchlets with  $\pm$  sparse, clearly appressed hairs; phyllodes usually innocuous to scarcely pungent ..... 2.1c. *A. lanigera* var. *whanii*
    3. Branchlets with  $\pm$  dense and spreading hairs; phyllodes sharply pungent ..... 2.1a. *A. lanigera* var. *lanigera*

#### 2.1. *Acacia lanigera* Cunn. in B. Field, Geogr. Mem. New South Wales. 345 (1825)

*Racosperma lanigerum* (Cunn.) Pedley, *Austrobaileya* 2: 350 (1987). Lectotype (here selected): frequent on rocky barren ranges in interior of New South Wales [Bathurst region,  $\pm$  September 1822], *A. Cunningham* [221] (K, flowering specimen with slip-on label; isolecto: BM, K, PERTH 01507915 - fragment ex K). Paralectotypes: See discussion of typification below.

*A. lanigera* var. *brachyphylla* Domin, *Biblioth. Bot.* 89: 250 (1926). Possible type: New South Wales, *W. Macarthur* (K, specimen annotated by Bentham as "*lanigera* Cunn. var. *brevifolia*", see discussion below).

*Illustrations.* R. Graham in Curtis's Bot. Mag., n.s., 3: pl. 2922 (1829); L. Costermans, Nat. Trees Shrubs S.E. Australia 323 (1981); M.H. Simmons, Acac. Australia 1: 199 (1981).

Rigid, dense, erect *shrubs* 1-2 m tall. *Branchlets* apically angular, becoming terete but ridged, sparsely to densely hairy, the hairs straight to  $\pm$  crisped and patent to appressed, resin hairs absent or few, old branchlets with obvious stem-projections at nodes after fall of phyllodes. *New shoots* often  $\pm$  white- or greyish-woolly. *Stipules* persistent, narrowly triangular to subulate, 1-3 mm long, straight, appressed pilose or puberulous. *Phyllodes* narrowly elliptic, linear-elliptic or linear-oblongate, (1.8)3-5.5(7) cm long, 3-7(11) mm wide, coriaceous, patent to ascending, straight to shallowly recurved, somewhat villose on nerves at first, commonly glabrescent; apex acute to obtuse, sometimes shortly acuminate, mucronate or mucronulate, pungent to innocuous, the mucro brown, rigid, often excentric; pulvinus 0.5-2 mm long; stomata raised (x60 mag.); 3 or 4 main, raised, distant, longitudinal nerves per face, several secondary nerves nearly as strongly raised, anastomoses occasional to frequent; gland one, obvious or inconspicuous, at or near base of blade or up to 13 mm above the base, sometimes in a swollen area of adaxial margin of blade. *Peduncles* 1-4 per axil but commonly binate, 2-9 mm long, glabrous to moderately hairy; basal peduncular bract almost semicircular, ovate to lanceolate, acute or obtuse, puberulous or pilose, persistent through anthesis, 1.5-2 mm long; heads globose to subglobose, often distinctly oblongoid in bud, golden, 4.5-6.5 mm diam, 5-7 mm long, 20-30-flowered; bracteoles obovate, lanceolate or elliptic, sessile to sub-sessile, the laminae acute to acuminate, about 3 times as long as the claw, pilose, puberulous or glabrous, usually ciliolate, often persistent on receptacle after anthesis. *Flowers* 5-merous. *Sepals* 1/4-1/2 as long as petals, 2/3-3/4-united, lobes oblong or triangular, obtuse or acute, puberulous, ciliolate. *Petals* 1/2-2/3-united, lobes ovate, acute, glabrous, spreading. *Ovary* white-villose. *Pods* linear, raised over but not or only slightly constricted between seeds, 6-10 cm long, 4-6 mm wide, coriaceous, curved to openly once-coiled, villose-tomentose. *Seeds* longitudinally arranged in pods, oblong to widely elliptic, 4.5-5 mm long, 3 mm wide, 1.5-2 mm thick, dull, dark brown, verruculose; areole 3/4 length of seed; aril terminal, yellow or white. Woolly Wattle, Hairy Wattle.

*Typification.* Although Cunningham listed no collections in the protologue of *A. lanigera*, he cited the locality, "rocky barren ranges in the interior" [of N.S.W.]; the protologue included characters of both flowers and fruit. Several flowering and fruiting collections, labelled and unlabelled, are involved on a number of herb. K sheets. From study of Cunningham Specimen Lists in the archives at K, we have concluded that Cunningham collected flowering material of *A. lanigera* in the Bathurst region and northward around September 1822, to which he gave the number 221; on a return trip in December of the same year he collected fruiting material for which he used the same collection number. This phenology is borne out by modern collections. Because the lower (flowering) specimen on a herb. Hooker sheet at Kew is annotated (on a slip-on label in Cunningham's hand) with "*Acacia lanigera* C" and the locality given in the protologue, we here designate it as the lectotype. This specimen is un-numbered, but it is a very good match for another Kew specimen which has a Cunningham slip-on label that is annotated "221/1822". The lectotype is therefore assumed to be part of Cunningham's 221 collection gathered from the Bathurst region around September 1822. The fruiting material on the lectotype sheet is unlabelled, but may well represent the December gathering of the Cunningham 221 collection and is therefore treated as a probable paralectotype. There are duplicates of these two specimens on the other sheets at Kew. The only other specimen of relevance is Cunningham 19 (in flower) which is labelled as having been collected from near Bathurst in July 1823; we have treated this as a paralectotype.

Bentham (1864) gives a very odd description of the pods of *A. lanigera*, odd until one sees one of the other sheets of the species at K which Bentham would have seen. One of these bears two specimens,

one (lacking a label) which is *A. lanigera sensu lectotypico*, the other a branchlet and a detached pod valve of *A. oswaldii* with the following label data: "Acacia lanigera A. Cunn./Lachlan River/New South Wales, May 1817, A. Cunningham 422". It was this valve that Bentham described as the fruit of *A. lanigera*.

*Synonymy.* We have not seen specimens, either at K or PR, annotated by Domin as *A. lanigera* var. *brachyphylla*; this name was based on a Macarthur collection from N.S.W. However, there is a Macarthur specimen at K, annotated by Bentham as "lanigera Cunn. var. brevifolia", a name which was never published. As this specimen accords well with Domin's very brief protologue and as his epithet "brachyphylla" is the Greek equivalent of Bentham's "brevifolia", it is possible that the Macarthur specimen is the type of Domin's name, even though the author has not annotated the sheet.

*Affinities.* This species has been variously confused with *A. venulosa* which is indeed closely related but branchlets and peduncles of *A. venulosa* have many black resin-hairs intermixed with long ones, shorter stipules that have a thickened base, longer pulvini, velvety peduncles, linear-spathulate bracteoles, free or nearly free sepals and straight pods.

### 2.1a. *Acacia lanigera* Cunn. var. *lanigera*

*Branchlets* with dense, ± spreading hairs. *Phyllodes* narrowly elliptic or linear-elliptic, acute, sometimes shortly acuminate, sharply pungent, (1.8)3-5.5(7) cm long, 3-7(11) mm wide, gland mostly 3.5-13 mm above the pulvinus, sometimes in a swollen area of adaxial margin. *Peduncles* 2-4 mm long, to 5 mm in fruit, glabrous to moderately hairy; heads 6.5 mm diam, 6-7 mm long, globular to sub-globular.

*Other specimens examined.* NEW SOUTH WALES: Bumberry, near Parkes, J.L. Boorman 103858 (NSW); near The Rock, Milton, August 1965, H. Boyd (PERTH 01268228); Black Mountain, 12.8 km W of Queanbeyan, R.H. Cabbage 3084 (NSW); 20.8 km from Bathurst on Fremantle road, E.F. Constable 4735 (NSW, PERTH); Bunbury [Bumberry] State Forest, 32 km E of Parkes, E.F. Constable 7296 (NSW, PERTH); Mullions Range, 22.4 km NNE of Orange, R. Coveny 4152 and 4160 (both NSW); 5.3 km SE of Baldry P.O. on Cumnock road, R. Coveny 12086 & P. Hind (NSW); 3.1 km from centre of Coonabarabran town towards Baradine, N. Hall H78/14 (PERTH); 1 km NE of Trunkey Creek on road to Bathurst, B.R. Maslin 5900 (PERTH); on Kandos-Glen Alice road, W. McReaddie AC/54 (NSW); Euchareena, H.M.R. Rupp (NSW 222621); Crokers Range, H. Salasoo (NSW 222602) and T. Tame 1536 (PERTH).

VICTORIA: beside Murray Valley Highway at base of north slope of Pine Mountain, M.G. Corrick 5984 (MEL, PERTH).

*Distribution.* Frequent in Parkes-Bathurst areas extending north to Pilliga in New South Wales and south to just inside the Victorian border between Pine Mountain (36° 01'S, 147° 49'E) and Mount Pilot near Beechworth (36° 15'S, 146° 40'E).

*Habitat.* Found in open eucalypt forest on shale and granite hills in shallow stony or sandy soils.

*Flowering and fruiting periods.* Flowering August-October; mature fruits with seed in December.

*Discussion.* A specimen collected from "near a granite hill between Tiltalra & Walwa, Victoria" (Anonymous, 24 Feb. 1957, NSW 222600) has atypically wide phyllodes (8-11 mm) and as such

resemble those of *A. venulosa*. However, it is clearly var. *lanigera* on account of its strongly curved pods.

*Conservation status.* Not considered rare or endangered.

**2.1b. *Acacia lanigera* var. *gracilipes* Benth., Fl. Austral. 2: 325 (1864)**

*Lectotype* (here selected): Genoa River, Victoria, September 1860, *F. Mueller s.n.* (K; isolecto: MEL 235214, NSW 222549, PERTH 01507931 - fragment ex K).

*Branchlets* with dense,  $\pm$  patent to sub-appressed hairs. *Phyllodes* narrowly elliptic, (1.8)3.5-4 cm long, 3-4(6) mm wide, acute, pungent to coarsely pungent; gland 0-2 mm above blade-base, not prominent and commonly obscured by dense indumentum which extends from the pulvinus. *Peduncles* 6-9 mm long, glabrous; heads about 5 mm diam., globular.

*Other specimens examined.* NEW SOUTH WALES: junction of Imlay Creek and Wallagaraugh River, *D.E. Albrecht* 3938 (MEL); Yambulla State Forest, Newtons Crossing picnic area, *M. Parris* 9867 (MEL).

VICTORIA: East Gippsland: Genoa River, c. 1 km downstream from the Tasker track crossing, Wangarabell area, *D.E. Albrecht* 4878 (MEL); upper Genoa River, *A.C. Beaughtole* 35088 & *K.C. Rogers* (MEL); Deddick Track, 1.2 km NW of Mount Joan, 13.8 km S Mount Deddick, *S.J. Forbes* 162 (MEL, PERTH); Genoa Gorge, northwest of Genoa, *N.A. Wakefield* 4071 (MEL); Genoa Gorge, 4.8 km above township, *N.A. Wakefield s.n.* (MEL 1500458); rocky island in Genoa River at Genoa, *N.A. Wakefield s.n.* (MEL 235213); Genoa River 0.5 km upstream from Yambulla Creek confluence, *N.G. Walsh* 585 (MEL 615237); Genoa Gorge, c. 9 km NW of Genoa township, *J.H. Willis* (MEL 1500456).

*Distribution.* Occurs in a restricted area from near Mountain Creek (south of Mount Deddick) and the Genoa River area in eastern Victoria, and the neighbouring Wallagaraugh River area in New South Wales.

*Habitat.* Usually grows among granite boulders in open forest or shrubland.

*Typification.* Bentham cited no collections in the protologue for this variety but a specimen at Kew from a Mueller collection at the Genoa River, Victoria, is annotated by the author as this variety. We have designated that specimen as the lectotype.

*Conservation status.* 1E, using the criteria of Briggs & Leigh (1988).

**2.1c. *Acacia lanigera* var. *whanii* (F. Muell. ex Benth.) Pescott, Census Acacia 24 (1914)**

*A. whanii* F. Muell. ex Benth., Fl. Austral. 2: 386 (1864). Type: near Skipton, Victoria, *W. Whan* (holo: K; iso: MEL 30577, NSW 222551, PERTH 01507966 - fragment ex K and 01507958 - fragment ex MEL).

*Branchlets* with  $\pm$  sparse, appressed hairs. *Phyllodes* narrowly elliptic to linear-oblongate, (1.8)4-5.5 cm long, 6-7 mm wide, obtuse to sub-acute, usually innocuous to scarcely pungent by a

hard, commonly excentric mucro; gland 4-10 mm above blade-base. *Peduncles* 2-4 mm long, glabrous to sparsely hairy; heads sub-globular, about 5 mm long and 4.5 mm diam.

*Other specimens examined.* VICTORIA: on the Glenelg Highway, 24 km SW of Ballarat and just E of Linton, *T.B. Muir* 2148 (MEL); Glenluce Road, 10 km W of Malmsbury-Daylesford Road junction and c. 5 km S of Glenluce, *R.V. Smith* 76/43 (PERTH); Ballarat, *D.W. Spence* (MEL 30574 and 235215); Linton, *HBW* (MEL 235216); roadside at Basalt, W of Daylesford, *J.H. Willis* (MEL 504688, PERTH 01267655).

*Distribution.* Widespread in central Victoria from Skipton northeast to near Bendigo and east to Licola. A single collection made in 1922 labelled 'Grampians' requires confirmation.

*Habitat.* Shrubland with scattered trees, as far as known.

*Variation.* The Willis collection cited above is typical of this variety with respect to the branchlet indumentum but the phyllodes are shaped more like those of var. *lanigera*, as are the pungent phyllode tips.

*Discussion.* In a short paper Mueller (1890: 18) noted that *A. lanigera* "... includes *A. venulosa* and *A. Whanii*." and the sheet at MEL collected July 1889 by D.W. Spence is annotated by Mueller as "*Acacia lanigera* var. *Whanii*" in Mueller's handwriting. It was not until 1914, however, that E.E. Pescott validated the combination in his "A Census of the Genus *Acacia* in Australia". This little-known work was privately published by the author (A.B. Court, pers. comm.) but was overlooked by Chapman (1991). It was reviewed in the *Gardner's Chronicle*, ser. 3, 105: 205 (1914).

*Conservation status.* 1R, using the criteria of Briggs & Leigh (1988).

## 2.2. *Acacia venulosa* Benth., London J. Bot. 1: 366 (1842)

*A. lanigera* var. *venulosa* (Benth.) C. Moore & Betche, Handb. Fl. New South Wales 162 (1893); *A. lanigera* var. *venulosa* (Benth.) F. Muell. ex Maiden, *Wattles & wattle-barks* 3rd edn, 58, 78 (1906), *nom. illeg.*; *Racosperma venulosum* (Benth.) Pedley, *Austrobaileya* 2: 357 (1987). Type: "Liverpool plains. New Holland. 83 AC. see list 1829" [label details probably in error, see discussion below] (holo: K, sheet stamped Herbarium Hookerianum 1867; ?iso (labelled Dumaresq River): K - ex Herb. Bentham and ex LINN, PERTH 01469894 - fragment ex K).

*Illustration.* M. Simmons, *Acac. Australia* 2: 145 (1988); T. Tame, *Acac. S.E. Australia* 72, fig. 56, pl. 56 (1992).

Erect, sparingly branched *shrubs* 0.5-3 m tall. *Bark* smooth, grey. *Branchlets* angular and strongly ribbed at tips, older ones terete and slightly ribbed, indumentum dense but variable, the hairs straight to curved or  $\pm$  crisped, patent to appressed and with intermixed red-brown to black resin-hairs, phyllode scars more or less projecting. *Stipules* persistent, triangular with thickened base, about 1 mm long, puberulous. *Phyllodes* narrowly elliptic, (3)5-9 cm long, 4-15 mm wide, rigid-coriaceous, ascending, straight to somewhat incurved, glabrous or sub-glabrous except margins sometimes with minute  $\pm$  appressed hairs, black resin-hairs often persistent on phyllode faces; apex obtuse or occasionally acute, mucronate to mucronulate, innocuous to coarsely pungent by indurate mucro; pulvinus 2.5-3 mm long; 3 main nerves per face and numerous secondary nerves raised, anastomoses frequent; gland



one, distinct, 1-4 mm above blade/pulvinus junction in swollen area of upper margin of blade. *Peduncles* paired or more commonly in short 2-6-headed racemes with axes to 1 cm long, 3-10 mm long, indumentum similar to that of the branchlets; bract at base of racemes or base of peduncles caducous to persistent through anthesis, ovate to lanceolate, 2-3.5 mm long, densely puberulous; heads globular, golden, 6-9 mm diam., 30-40-flowered; bracteoles linear-spathulate, the laminae concave, rounded, or rarely minutely apiculate, about 1/2 as long as the linear, slender claws, puberulous and with many red resin-hairs, ciliolate. *Flowers* 5-merous. *Sepals* 1/2 as long as petals, free or shortly united at base, sometimes to 1/2-united in N.S.W. specimens, linear-spathulate, the tips somewhat cupulate, puberulous and with red resin-hairs, ciliolate. *Petals* 1/2-2/3-united, glabrous, lobes ovate, acute. *Ovary* densely white-villose. *Pods* linear, slightly raised over seeds, to c. 7.5 cm long and 6 mm wide, thinly crustaceous, straight, densely white-villose. *Seeds* longitudinally arranged in pods, 4.5 mm long, c. 3 mm wide, the aril terminal.

*Other specimens examined.* QUEENSLAND: Jolly's Falls near Stanthorpe, I.B. Armitage 787 (PERTH); 36 km NW of Stanthorpe on Amiens Road, M.E. Ballingall 2082 (PERTH); ridge above Mountain Station near Mount Tully Road, 10 km SSE of Stanthorpe, M.E. Ballingall 2411 (PERTH); Pyramids Road, Girraween National Park, R.S. & R.A. Cowan A-793 (CANB, K, PERTH). NEW SOUTH WALES: Boonoo State Forest E of Tenterfield, M.E. Ballingall 2414 (PERTH); 9.6 km SW of Coaldale towards Copmanhurst, R. Coveny 2195 (NSW, PERTH); New England Highway, 70.4 km S of Tenterfield, R. Coveny 2247 (NSW, PERTH); Copmanhurst-Coaldale road, near Smiths Creek, T. Tame 1884 (PERTH); Boonoo Boonoo Falls road NE Tenterfield, T. Tame 2023 (PERTH); 12.8 km S of Wagga Wagga, 19 December 1951, G. Withers (NSW).

*Distribution.* Most common in the Stanthorpe region of southeast Queensland and adjacent parts of New South Wales; it also occurs further north on the Blackdown Tableland near Blackwater in central Queensland and to the south in the Warrumbungle Range and near Wagga Wagga, New South Wales.

*Habitat.* Grows in understorey of eucalypt woodland in sandy, gravelly and loam soils on granite hills, occasionally in heathland.

*Flowering and fruiting periods.* Flowers June-November; fruits with mature seeds December-January.

*Typification.* Pedley (1978: 207) cited Cunningham 85 [sphalm "25" in Pedley] collected in May 1827 from "Barren country lying north of the Dumaresq River, in 29°S" as the holotype of *A. venulosa*. This collection originated from Cunningham's herbarium and was donated to K in 1862; it comprises a large and a smaller branchlet, the latter with a Cunningham field tag annotated "85/1827". While the two branchlets described above are undoubtedly part of Cunningham's original collection of *A. venulosa* there are reasons to question whether Bentham actually used this material in drawing up the protologue: (1) in the lower right hand corner of the sheet Bentham has written "152 *A. venulosa*" which was probably added after publication because the "152" is the taxon number under which the species appeared in the original publication; (2) the collecting locality does not agree with that given in the protologue, namely, "Liverpool plains". Indeed, the only specimen we have seen with the locality given in the protologue and annotated "*A. venulosa*" in Bentham's hand, is the one originating from Hooker's herbarium at K and which we have listed above as the holotype. The specimen is labelled (in an unknown hand): "*Acacia clavata*"/ 83 AC. see list 1829"; this list is in the archives at K, entitled "Kew Collectors. A. Cunningham. Miscellaneous 1816-38 VI. Specimens of plants of NSW sent to Dr. W.J. Hooker 1829". In referring to number 83 in the list, one finds "*Acacia clavata* m/s. Allied to *A. falciformis* and *penninervis* Decandolle/ this spec<sup>s</sup> of *Acacia* is frequent in barren forest-land in the north of Liverpool Plains / flowering in July." It is unlikely that Cunningham could have related

the material of *A. venulosa* to either of the listed species, for they are extremely unlike *A. venulosa*. Consequently, we conclude that this label is probably wrongly attached to this specimen, but this does not alter its status as holotype. The Cunningham 85/1827 specimens, plus the specimen stamped Herbarium Benthamianum, mounted on the same sheet, are regarded as probable isotypes, even though they are said to have been collected from north of the Dumaresque River.

*Affinities.* Closely related to *A. lanigera* var. *lanigera* (with which it has often been merged as a variety) which lacks black resin-hairs on the branchlets; its bracteoles are sessile or nearly so; its sepals are at least two-thirds united and the pod curved to coiled.

*Discussion.* Bentham (1842: 367) described *A. venulosa* var. *lanata* based on Cunningham 91 and 98, collected July 1827; later he wrote on the sheet bearing Cunningham 98: "*A. ixiophylla* Benth. var. / (*A. venulosa*  $\beta$  *lanata* Benth. in Lond. Jour.)". Both specimens represent the same taxon and do indeed appear to be very young material of *A. ixiophylla* with somewhat more obtuse than usual, smaller phyllodes.

*Conservation status.* Neither rare nor endangered.

### 3. The "Acacia subternata Group"

At present there are three species in this "Group" (*A. delicatula* Tind., *A. manipularis* Cowan & Maslin *sp. nov.* and *A. subternata* F. Muell.), all very similar at first glance but differing substantially from each other. They have many characteristics in common: (1) resinous branchlets; (2) minute stipules; (3) fasciculate, terete or sub-terete phyllodes; (4) solitary, elongate peduncles bearing globular heads of pentamerous flowers having the sepals and petals joined to varying degrees among themselves; (5) flat, woody pods with a raised, longitudinally oblique,  $\pm$  reticulate nervation originating from only one of the thickened margins; and (6) longitudinal to obliquely arranged seeds, having a large areole and a terminal, conic aril. The following key sets out some of the distinctions among the three species comprising this "Group".

#### Key to taxa of "A. subternata Group"

(only *A. manipularis* is described in this paper)

- |  |                          |
|--|--------------------------|
| 1. Youngest branchlets terete and obscurely ribbed. Phyllodes 20-30 mm long, terete. Bracteole laminae short-acute. Petals 1-nerve .....   | 3. <i>A. manipularis</i> |
| 1. Youngest branchlets angled by prominent ribs. Phyllodes less than 20 mm long.   |                          |
| 2. Phyllodes terete to subterete, 7-18 mm long, mostly 0.3-0.4 mm wide. Bracteole laminae long-acuminate. Petals 1-nerved .....  | <i>A. delicatula</i>     |
| 2. Phyllodes subterete to flat, 4-14 mm long, mostly 0.5-0.7 mm wide. Bracteole laminae short-acute to apiculate. Petals finely striate (central nerve often the most obvious) ..... | <i>A. subternata</i>     |

### 3. *Acacia manipularis* Cowan & Maslin, *sp. nov.*

Frutex 0.75-1 m altus, ramulis teretibus, glabris, verruculosus, resinosis. Stipulae caducae, plus minusve 0.5 mm longae, saepe in resina absconditae. Phyllodia filiformia, teretia, fasciculata, 2-6 in quoque fasciculo, mucronulata, 20-30 mm longa, 0.5 mm diametro, flexibilia, plerumque patentia et

inclinata, glabra, nervis obscuris,  $\pm 16$ , glande minuta, interdum nulla, ad 7 mm supra pulvinam. Pedunculi solitarii, 20-25 mm longi, resinosi; capitula globularia, aurea, 6 mm diametro, circa 38-floribus, bracteolis peltatis, stipitibus longis, laminis ovatis, acutis, papillatis. Flores 5-meri. Sepala longitudine  $2/3$  petali partes aequantia, linearia,  $1/3$ - $1/2$ -connata glabra, lobis apicaliter incurvatis. Petala  $3/4$ -connata, partibus discretis concavis, patentibus, glabris, uninervata. Legumina anguste oblanceolata, plana, contracta ad basem et apicem, nec elevata supra semina nec constricta inter semina, ad 5.5 cm longa, 5-6 mm lata, lignosa, recta, longitudinaliter elevato-reticulata, glabra, resinosa, marginibus incrassatis, verruculosis. Semina obliqua, oblongo-elliptica, 4-5 mm longa, 2 mm lata, 1.2 mm crassitie, nitido-brunnea, areola magna, arillo terminali, parvo, conico-pileato.

*Typus*: Tableland Station, Kimberley Region [precise locality withheld for conservation reasons], Western Australia, 27 July 1959, *M. Lazarides* 6398 (holo: PERTH 00150819; iso: DNA, NSW).

Low, spreading, viscid *shrub* 0.75-1 m tall, branching from base. *Branchlets* slightly angular at first, soon terete, obscurely ribbed, glabrous, verruculose, resinous. *Stipules* often obscured by resin-masses, caducous,  $\pm 0.5$  mm long. *Phyllodes* filiform, terete, fasciculate, 2-6 in each fascicle, 20-30 mm long, 0.5 mm diam., soft, flexible, patent to inclined, straight to slightly curved, glabrous, very finely longitudinally wrinkled when dry; apex mucronulate; pulvinus distinct, not wrinkled transversely,  $\pm 0.5$  mm long; apparently c. 16-nerved but nerves not or scarcely evident superficially; gland minute, sometimes lacking, to 7 mm above blade base. *Peduncles* solitary, 20-25 mm long, glabrous, resinous; heads globular, golden, 6 mm diam., c. 38-flowered; bracteoles peltate, the claws long, slender, the laminae perpendicular to claw and ovate and acute. *Flowers* 5-merous. *Sepals*  $2/3$  as long as petals, linear, membranous,  $1/3$ - $1/2$ -united, obtuse apex incurved, glabrous. *Petals*  $3/4$ -united, free portions concave, spreading, acute, glabrous, uninerved. *Pods* narrowly oblanceolate, flat, tapering to both ends, neither raised over nor constricted between seeds, to 5.5 cm long, 5-6 mm wide, woody, straight, reticulated with an open, irregular net of longitudinally oblique, raised nerves originating from only one margin, glabrous, strongly resinous-viscid, tan-coloured, dehiscing elastically from apex, the margins thickened, verruculose. *Seeds* obliquely arranged in pod and separated from each other by woody ridges, oblong-elliptic, 4-5 mm long, 2 mm wide, 1.2 mm thick, glossy-brown; areole nearly as long and wide as seed; aril a small terminal conic cap.

*Other specimen examined*. WESTERN AUSTRALIA: Mount House Station [precise locality withheld for conservation reasons], *J.S. Beard* 4199 (PERTH).

*Distribution*. Known only from Mount House and Tableland Stations in the Kimberley region of northern Western Australia.

*Habitat*. The type is recorded as co-dominant with *Melaleuca* sp. and *Eucalyptus brevifolia* over *Plectrachne pungens* in scrub. The Mount House Station specimen was collected from a shale plateau. No other information is available.

*Flowering and fruiting periods*. Flowering material with mature pods collected in July.

*Affinities*. The three species of the "A. *subternata* Group" are closely related and all have a similar appearance; they differ in details of the branchlet ribbing, phyllode and peduncle length, bracteole morphology, petal nervation and pod size, among others. *Acacia manipularis* and *A. delicatula* have uni-nerved petals while those of *A. subternata* are striate but with commonly the central nerve the most pronounced. *Acacia manipularis* is nearest *A. delicatula* which has  $\pm$  crenulate-ridged branchlets,

smaller phyllodes (7-18 mm long and mostly 0.3-0.4 mm wide), shorter peduncles (mostly 8-15 mm long), proportionately shorter sepals (c. 1/3 as long as petals), much less united petals, long-acuminate bracteoles, smaller pods (1.2-4.4 cm x 3-4 mm) and seeds with an elongate-conic aril.

*Discussion.* Bentham (in Mueller 1859: 124) commenting on Mueller's *A. subternata* remarked: "The arrangement of the phyllodia (should it prove constant) is singular; they are neither verticillate ..... nor solitary at each node ....; but in most cases in fascicles of 2, 3, or 4 from each node ....". The arrangement of the phyllodes remains the best indicator of the group: from small protuberances (reduced branchlets?), often clothed in a resin-mass, arise several slender, terete phyllodes, each with its minute stipules. From the same knobs arise either fully developed branchlets, solitary peduncles or both.

In Tindale and Kodala (1992: 59) *A. manipularis* is referred to under an earlier manuscript name that we had applied to this species, namely, "*A. manipula*".

*Conservation status.* A Priority 1 taxon in the Department of Conservation and Land Management's Declared Rare and Priority Flora List. See end of this issue.

*Etymology.* The new species takes its name from the fascicled arrangement of the phyllodes; the name is an adjectival form of *manipulus*, Latin for handful, sheaf or bundle.

#### 4. *Acacia retivenea* F. Muell., *Fragm.* 3: 128 (1863)

*Racosperma retiveneum* (F. Muell.) Pedley, *Austrobaileya* 2: 354 (1987). Type: Short's Range, [Northern Territory], *J. McDouall Stuart* (holo: MEL; iso: K).

Erect, open, divaricately branching *shrubs* 1-3 m tall, rarely shorter. *Bark* dark brown or grey, exfoliating in large irregular flakes or smooth. *Branchlets* terete, crispate-villose or tomentose, rarely glabrous. *Stipules* more or less persistent, ovate to broadly ovate, rounded or cordate basally, 2-2.5 mm long, 1.5-5 mm wide, rather thick, acute, villose or tomentose. *Phyllodes* ± inequilaterally elliptic to widely elliptic, ovate or sub-rotund, 3.5-12 cm long, 2.8-5.8 cm wide, rigid, present only on upper part of branchlets, patent, upper margin more or less crenate, crispate-villose or tomentose, rarely glabrous and lucid, grey-green, sometimes glaucous; apex rounded to retuse with small, excentric mucro, the base rounded to sub-cordate; *pulvinus* 3-5 mm long, villose or tomentose; blade with 3 or 4, distant, strongly raised main nerves and numerous, prominent anastomoses, marginal nerves prominent; gland large, round or widely elliptic, at top of pulvinus, secondary glands present in adaxial margin crenations. *Inflorescences* initiated on new shoots with solitary peduncles arising from within axil of developing phyllodes, the phyllodes normally mature by anthesis but occasionally are suppressed so that raceme-like structures occur; peduncles 17-40 mm long, furrowed, crispate-villose to tomentose; heads globular, bright to dull deep golden-yellow, 10 mm diam., 71-105-flowered, densely congested; bracteoles exerted or not, fusiform to spatulate, the claws sometimes marginate, the laminae flat, thin, acute to acuminate or fleshy and more or less semicircular in cross-section, acute to often apiculate, sub-appressed villose and ciliate to sparsely puberulous or glabrous. *Flowers* 5-merous. *Sepals* 1/3-3/4 as long as petals, 1/2-3/4-united, sub-appressed villose to puberulous. *Petals* 2/3-3/4-united, sub-appressed villose to puberulous. *Ovary* densely pilose-sericeous to glabrous. Pods oblong, rounded at both ends, often apiculate, shallowly biconvex or flat and raised only over the seeds, 25-62 mm long, 12-20 mm wide, deflexed, thin- to thick-coriaceous or hard-crustaceous, straight or one margin curved, densely tomentose to crispate-villose, sometimes arachnoid-villose, sparsely hairy to sub-

glabrous at maturity in subsp. *clandestina*, reticulately nerved (nerves obscured by indumentum in subsp. *retivenea*), margins thickened, stipe 4-8 mm long. *Seeds* transversely arranged in pods, widely elliptic to oblong, 4.8-6 mm long, 3.2-4 mm wide, 2 mm thick, compressed, dull, brown-black; pleurogram U-shaped, open at hilar end; areole 2.5-4 mm long, 1.5 mm wide; aril small, terminal, scalloped marginally.

*Nomenclature.* The specific epithet has often been spelled "*retivenia*", beginning with Bentham, but Mueller clearly intended the spelling adopted here, for he used this spelling in the protologue and in his subsequent publications. In our opinion, this is not one of the class of orthographic errors which may be corrected under the provisions of the "International Code of Botanical Nomenclature".

The species is widespread in inland northern Australia and comprised of two well-marked, mostly allopatric entities, which we consider distinct subspecies. The species is related to *A. auricoma* Maslin which has stellate pubescence on branchlets and inflorescences.

#### Key to subspecies of *A. retivenea*

1. Stipules 2-3 x 1.5-2 mm. Phyllodes widely elliptic to sub-rotund, densely tomentose ( $\pm$  felty to touch), rarely glabrous. Bracteole laminae thick and fleshy, exserted in bud. Pods very densely tomentose (unknown for glabrous variant) ..... 4a. subsp. *retivenea*
1. Stipules 3-5.5 x 3-5 mm. Phyllodes elliptic to ovate, indumentum normally less dense than above. Bracteole laminae thin, flat, not conspicuously exserted in bud. Pods sparsely hairy to sub-glabrous at maturity (indumentum denser when young) ..... 4b. subsp. *clandestina*

#### 4a. *Acacia retivenea* F. Muell. subsp. *retivenea*

*Illustration.* M. Simmons, *Acac. Australia* 2: 139 (1988).

*Stipules* 2-3 mm long, 1.5-2 mm wide, ovate, rounded basally, densely tomentose. *Phyllodes* widely elliptic to sub-rotund, (35)40-50(65) mm long, (28)35-45(58) mm wide, densely tomentose, rarely glabrous and lucid; apex retuse, mucronulate with excentric mucro. *Peduncles* (17)20-30(32) mm long, tomentose; *bracteoles* conspicuously exserted in young buds, the laminae ellipsoid, often apiculate, thick, fleshy,  $\pm$  semicircular in cross-section, glabrous or sparsely puberulous, the claws sometimes marginate. *Sepals* 2/3-3/4 as long as petals, 1/2-united, the lobes puberulous. *Petals* 2/3-united, sub-appressed villose, especially on lobes. *Ovary* densely pilose-sericeous. *Pod* often obtuse-apiculate, 25-40 mm long, 12-16 mm wide, more or less coriaceous, flat but raised over seeds, one margin curved, very densely tomentose.

*Selected specimens examined.* WESTERN AUSTRALIA: Macnamara Creek, 32 km N of Glenroy Homestead, T.E.H. Aplin 5110 (K, MEL, PERTH); 22 km N of Nicholson Homestead, T.E.H. Aplin 5393 (BRI, MPU, PERTH, TLF); Fitzroy Crossing, Mrs Guppy J3 (PERTH); between new Halls Creek and Carolyn Pool on site of Duncan Highway, K.F. Kenneally 7228 (CANB, K, MEL, PERTH); Durack Range, 24 km E of Tableland Station, D.E. Symon 10294 (PERTH); King Leopold Range, Inglis Gap, I.R. Telford 6447 (PERTH); SW of Lake Argyle, main CRA Exploration Camp, A.S. Weston 12247 (PERTH).

**NORTHERN TERRITORY:** Barkly Tableland, between Frewena and Queensland border, *A.S. Cudmore s.n.* (DNA 28590); 12 miles [19.3 km] S of Renner Springs, *N. Forde 27* (PERTH); 28 miles [44.8 km] S of Wave Hill, *G. Chippendale 2193* (PERTH); 70 miles [112.6 km] W of Gallipoli Station, *R.A. Perry 1540* (PERTH); 6 km SSE of turn-off to "Helen Springs" on Stuart Highway, *L. Thomson LXT 35* (PERTH).

**QUEENSLAND:** Settlement Creek, *L.J. Brass 353* (PERTH); Lake Moondarra, Mount Isa, *R. Coveny 479* (PERTH); 96.5 km ESE of Camooweal Township, *R.A. Perry 762* (PERTH).

*Distribution.* Northern Western Australia from Fitzroy Crossing and King Leopold Range (c. 130 km north-northwest of Fitzroy Crossing) in the Kimberley area, across the Northern Territory to the Mount Isa area in northwest Queensland with outliers near Pine Creek (c. 190 km southeast of Darwin) and Reynolds Range (c. 150 km north-northwest of Alice Springs) in the Northern Territory and Torrens Creek in Queensland.

*Habitat.* Grows in shallow sandy soil and rocky ground in open low woodland and open shrubland, often associated with *Eucalyptus brevifolia* and *Triodia*.

*Flowering and fruiting periods.* Flowers from late May to early August; pods with mature seeds have been collected in February, August and October.

*Variation.* Although this subspecies is normally characterized by the dense, conspicuous indumentum on the phyllodes, a glabrous form has been recorded in a few localities in Queensland (e.g. *Perry 762*) and Northern Territory (e.g. *Cudmore s.n.*, DNA 28590). According to Pedley (1978: 207) the glabrous variant in Queensland occurs between Camooweal and Mount Isa and is sympatric with the normal form.

*Conservation status.* Not considered rare or endangered.

#### **4b. *Acacia retivenea* subsp. *clandestina* Cowan & Maslin, subsp. nov.**

Stipulae 3-5.5 mm longae, 3-5 mm latae, late ovatae, basaliter cordatae, suberecto-villosae sed marginaliter glabrescentes. Phyllodia elliptica ad ovata, ad apicem rotundata mucronulataque, villosa vel crispato-villosa, plerumque (45)50-65(120) mm longa et 25-40(55) mm lata. Pedunculi 20-40 mm longi, dense crispato-villosi vel villosi; bracteolae spathulatae, inconspicue exsertae, laminae tenuibus, ovatis, acuminatis, dense subappresso-villosis ciliatisque. Legumina oblonga, biconvexa, mucronulata, 43-62 mm longa, 15-20 mm lata, duro-crustacea, recta, parce vel sparse villosa, crispato-villosa vel arachnoideo-villosa.

*Typus:* upper Rudall River area, Western Australia, 5 September 1971, *B.R. Maslin 2127* (holo: PERTH 00701874; iso: BRI, K, NSW, US).

*Stipules* 3-5.5 mm long, 3-5 mm wide, broadly ovate, cordate basally, suberect-villose, marginally glabrescent. *Phyllodes* elliptic to ovate, (45)50-65(120) mm long, 25-40(55) mm wide, villose to crispate-villose, indumentum normally less dense than in subsp. *retivenea*; apex rounded, mucronulate. *Peduncles* 20-40 mm long, densely crispate-villose or villose; bracteoles spathulate, inconspicuously exserted with the laminae appressed to surface of young buds, the laminae ovate, acuminate, thin, flat, densely sub-appressed villose and ciliate, the claws slender. *Sepals* 2/3-3/4 as long as petals, the lobes sub-appressed villose, 1/2-united. *Petals* 2/3-united, the lobes (at least) sub-appressed villose. *Pods*

oblong, shallowly biconvex, mucronulate, 43-62 mm long, 15-20 mm wide, hard-crustaceous, straight, crispate-villose, villose or arachnoid-villose, sparsely hairy to sub-glabrous at maturity.

*Selected specimens examined.* WESTERN AUSTRALIA: Christmas Pool, *D. Goble-Garrett* 297 (PERTH); 1.5 km E of Ardjorie Homestead ruins, Edgar Ranges, *K.F. Kenneally* 9157 (NSW, PERTH); 16 km NE of Bungle Bungle Outcamp, 5 km S of Mining Camp "Playground", *K.F. Kenneally* 9215 (BRI, PERTH); Old Woodbrook Station (probably introduced as ornamental), *B. Koch* 204 (PERTH); Little Sandy Desert, 22° 50' S, 121° 54' E, *A.S. Mitchell* 593 (PERTH); 10 km N of Mount Traine, c. 100 km ENE of Nullagine, *K. Newbey* 10347 (Karratha, MO, PERTH); 8 km S of Quarry Hill, c. 130 km WSW of Tom Price, *K. Newbey* 10759 (Karratha, PERTH); Googhenama Creek, *R.D. Royce* 1806 (PERTH); Barlee Range, Henry River, *R.D. Royce* 6548 (PERTH); 29 km E of Ranger's Residence, outside Hamersley Range National Park, *I. Solomon* 16 (BRI, CANB, PERTH); Rudall River district, *P.G. Wilson* 10432 (CANB, DNA, PERTH).

*Distribution.* Scattered occurrence across inland Pilbara from near Quarry Hill (c. 125 km west of Tom Price) and Barlee Range (c. 190 km southwest of Tom Price) east to Rudall River National Park and Paterson Range on the western edge of the Great Sandy Desert and also in the southern Kimberley area in the Edgar Ranges (c. 110-190 km southeast of Broome) and Bungle Bungle National Park (c. 120 km northeast of Halls Creek), Western Australia.

*Habitat.* Usually grows in rocky creek beds and on hillsides in tall shrubland. In the Pilbara often associated with *Grevillea wickhamii* and in the Kimberley with *Acacia tumida* or Pindan.

*Flowering and fruiting periods.* Flowering specimens collected from April to October; pods with mature seeds not yet collected.

*Affinities.* Subspecies *clandestina* is most easily distinguished from the typical subspecies by its less pubescent phyllodes, larger stipules, thin bracteoles which are appressed to the surface of young buds and larger, less hairy pods.

*Conservation status.* Not considered rare or endangered.

*Etymology.* The name for the subspecies is from *clandestinus*, Latin for secret or hidden, in reference to the long period the entity has gone unrecognized as a distinct taxon.

### Miscellaneous lectotypifications and notes on species of northern and eastern Australia

#### 1. *Acacia cognata* Domin, Biblioth. Bot. 89: 260 (1926), non Maiden & Blakely (1928)

Based on the following.

*A. subporosa* F. Muell. var. *linearis* Benth., Fl. Austral. 2: 382 (1864). Lectotype (here selected): Twofold Bay, *F. Mueller s.n.* (K, lower right-hand flowering specimen on sheet stamped Herb. Hookerianum 1867; isolecto: PERTH 01504738 - fragment ex K). Paralectotypes: (1) left-hand specimen on lectotype sheet (K - in immature bud). (2) upper right-hand flowering specimen on lectotype sheet (K) and a probable duplicate on MEL 1528769 and PERTH 01504746 (fragment ex K).

*Typification.* The type sheet of *A. cognata* at Herb. K supports three specimens which may possibly have been taken from three separate plants and consequently a lectotype has been selected from among them. According to the specimen label, these gatherings were made by F. Mueller at Twofold Bay on the south coast of New South Wales. The lower right-hand specimen has been designated as the lectotype because it best characterizes the taxon; that is, its phyllodes are very narrow, 3-nerved with the mid-nerve more prominent than the flanking nerves, its peduncles are short (3-4 mm long), and the heads have about 12 flowers. The left-hand specimen (paralectotype) is in immature bud and has phyllode nervature identical to that of the lectotype. The uppermost specimen (paralectotype) differs slightly from the other two in that its peduncles are 7-8 mm long and the phyllodes are up to 5-nerved (due to the coalescence of longitudinally trending lateral nerves); these two characters are within the range of variation of *A. subporosa*.

*Affinities.* *Acacia cognata* is very closely related to *A. subporosa* but is usually distinguished by its narrower, more elongate, usually 3-nerved phyllodes, usually shorter peduncles, fewer flowers per head and slightly narrower pods (see key below). Indeed, when Mueller described *A. subporosa* from material which he collected at Twofold Bay, he included within its circumscription specimens that were later segregated by Bentham as *A. subporosa* var. *linearis*, the basionym of *A. cognata* Domin. The fact that Mueller did not consider the taxa sufficiently distinct in the field to warrant their separation or even mention the two forms in his protologue, attests to their close relationship. The key below reveals that the quantitative differences between these two species are not great and that in some cases the ranges of variation overlap. Judging from herbarium material we have seen, other localities, apart from Twofold Bay, where the two may possibly be sympatric or parapatric are around Bega (New South Wales) and Mallacoota (Victoria) and it is suggested that field studies in these areas may be instructive in trying to determine to what extent (if at all) the two taxa intergrade. Court (pers. comm.) has indicated that sympatry between the two is very limited. In the absence of personally conducted field work, we have followed recent authors, for example Court (1973) and Costermans (1981), in recognizing *A. cognata* as a distinct species.

#### Key to *A. cognata* and *A. subporosa*

1. Phyllodes narrowly linear to linear-elliptic, 1.5-3.5 mm wide (rarely some to 4.5 mm wide), l:w = 20-70, normally 3-nerved per face with the midrib clearly more evident than the very obscure flanking nerves (phyllodes often appearing 1-nerved per face). Peduncles usually 3-6 mm long. Flowers 10-17 per head. Pods 2-4 mm wide ..... *A. cognata*
1. Phyllodes very narrowly elliptic, 4-11 mm wide, l:w = 8-18, 2-5 main nerves per face with several weaker longitudinal nerves between. Peduncles 6-11 mm long. Flowers 20-25 per head. Pods 5 mm wide ..... *A. subporosa* (see # 9 below)

#### 2. *Acacia excelsa* Benth. in T.L. Mitchell, Journ. Exped. Trop. Australia 225 (1848)

*Racosperma excelsum* (Benth.) Pedley, *Austrobaileya* 2: 348 (1987). Lectotype (here selected): subtropical New Holland [east bank of Nogoa River opposite Martins Range, Queensland], 6 July 1846, T. Mitchell "187" (K, lower branchlet on sheet). Paralectotypes: (1) subtropical New Holland, July 1846, T. Mitchell "171" (K - mounted with lectotype). (2) subtropical Australia, T. Mitchell, "7 Bidwill" (K).



*A. daintreeana* F. Muell., *Fragm.* 4: 6 (1863); *A. excelsa* var. *daintreeana* (F. Muell.) Domin (as '*daintreana*'), *Biblioth. Bot.* 89: 264 (1926). T: Clarke River, Queensland, *R. Daintree* (holo: MEL, n.v., *fide* Pedley 1978: 212; iso: K).

*A. excelsa* var. *glaucescens* Domin, *Biblioth. Bot.* 89: 263 (1926). T: Dividing Range near Jericho, Queensland, 1910, *K. Domin* (holo: PR, n.v., *fide* Pedley 1978: 212).

*A. excelsa* var. *polyphleba* Domin, *Biblioth. Bot.* 89: 263 (1926). T: savanna forest near Pentland, Queensland, 1910, *K. Domin* (holo: PR, n.v., *fide* Pedley 1978: 212)..

*A. excelsa* var. *typica* Domin, *Biblioth. Bot.* 89: 263 (1926), *nom. inval.*

*Typification.* There are two sheets of *A. excelsa* at herb. K that support specimens considered to be types. One sheet has two gatherings: the upper three twigs bear a Mitchell label with number 171 and July 1846 as the collecting date; the branchlet below has a similar label with the number 187 on it, as well as the complete date of collection - 6 July 1846. Pedley (1978) listed the latter collection as the holotype but we consider it better, and in keeping with the Code, to treat it as the lectotype. We here formalize that alternative. The second sheet also supports a Mitchell gathering with the annotation "7 Bidwill" appearing on the label.

### 3. *Acacia farinosa* Lindley in T.L. Mitchell, *Three Exped. Australia*, ed. 1, 2: 145 (1838)

*Type:* interior of New Holland [near Lake Charm, Victoria], 22 June 1836, T. Mitchell Exped. "189" (holo: CGE; iso: K, PERTH 01170961 - fragment ex K).

*Type locality.* No details were given in the protologue with regard to the precise place, date or number of the type collection; those given above come from the holotype (collection number and date) and from Mitchell's map and journal of the expedition on which the species was found. Lake Charm is not given on his map but his location on 22 June was certainly in that vicinity.

*Morphological notes.* The morphology of the inflorescence structures is most interesting and unusual. Each peduncle has a subtending basal bract and at or near the peduncle-apex there is an involucre-like ring of five ovate, acute, thickened structures which we have tentatively considered to be sterile bracteoles, i.e. bracteoles without a flower in their axils. All the flowers in the head have fertile bracteoles and these are quite different in shape and consistency. This ring of sterile bracteoles seems homologous with those in the same location in *A. dawsonii*, although in the latter species, the members of the ring subtend individual flowers because the heads usually have only four flowers and consequently no other bracteoles; in rare instances (*R. Carolin* 7268 from Curragh, west of Trunkey Creek Ridges above Abercrombie River, N.S.W.-PERTH) *A. dawsonii* has heads with 6-10 flowers, each one subtended by ordinary (for this group of species) spatulate bracteoles, in addition to the thick-fleshy, semicircular ones at the base of the head. An involucre of bracts joined margin-to-margin on the peduncles is one of the characteristics distinguishing *Acacia* subgenus *Acacia*; we do not, however, interpret these bracteolar structures as an homologous feature, at least not without much more evidence than we have.

#### 4. *Acacia hemignosta* F. Muell., J. Proc. Linn. Soc., Bot. 3: 134 (1859)

*Racosperma hemignostum* (F. Muell.) Pedley, *Austrobaileya* 2: 349 (1987). Lectotype (here selected): "Point Pearce", mouth of Victoria River, Northern Territory, September 1855, *F. Mueller* 87 (K; isolecto: MEL, NSW). Paralectotype: [Albert River], Gulf of Carpentaria, [Queensland], *F. Mueller* 34 (K, MEL).

*A. cloncurrans* Domin, *Biblioth. Bot.* 89: 262 (1926). Type: near Cloncurry, Queensland, 1910, *K. Domin* (holo: PR, *n.v.*, *fide* Pedley 1978: 219).

*Typification.* In the protologue of *A. hemignosta* Mueller cited two of his own collections (no. 87, a flowering specimen from the Victoria River, N.T., selected above as lectotype and no. 34, fruiting specimen from the Albert River, Qld, cited above as a paralectotype). Mueller also listed two other localities (but did not cite specimens), namely, "Gilbert River, Roper River"; we have not found Mueller material of *A. hemignosta* from either of these localities at K or MEL. Although the specimens of Mueller 87 and 34 represent the same taxon it seems desirable to select one as a lectotype. Ordinarily, the material in the author's own herbarium would be a logical choice but the two type sheets at MEL (sheet nos. 117093 and 117094) bear only fragments and on the latter sheet there are bits of both Mueller 34 and 87 mixed. Consequently, we have selected the K sheet as lectotype because (1) it is a complete specimen; (2) its label gives a more precise type-locality; and (3) the sheet bears Bentham's annotation and it was he who shepherded Mueller's manuscript through to publication, often adding significantly to it by way of notes and observations. "Point Pearce" on the lectotype label cannot be located on present-day maps but the MEL 117094 sheet gives "Ad ostium fluminis Victoriae" which appears in the protologue and is in the Northern Territory; both Mueller 87 and 34 have Mueller's handwriting on the labels and his collection numbers.

#### 5. *Acacia latescens* Benth., *London J. Bot.* 1: 380 (1842)

*Racosperma latescens* (Benth.) Pedley, *Austrobaileya* 2: 571 (1988). Lectotype (see Pedley 1974: 2): May Day Island, Van Dieman Gulf, [Northern Territory], May 1818, *A. Cunningham* 295 (K; iso: PERTH 00975559 - fragment ex K; ?isolecto: A, NY).

*A. dineura* F. Muell., J. Proc. Linn. Soc., Bot. 3: 130 (1859) Type: upper Roper River, Northern Territory, *F. Mueller* 31 (holo: MEL; iso: K, PERTH 00975567 - fragment ex MEL).

*A. dissoneura* F. Muell., *S. Sci. Rec.* 2(7): 151 (1882). Syntype (1): vicinity of Port Darwin, Northern Territory, *F. Schultz* 336 (MEL, K, PERTH 00748943 - fragment ex MEL). Syntype (2): near Liverpool River, Northern Territory, *B. Gulliver* (MEL, PERTH 00975540 - fragment ex MEL).

*Typification.* Although the protologue of *A. dineura* lists both the Roper and Limmen Bight rivers, the holotype at MEL is annotated with only the Roper River. In our experience it is sometimes difficult to reconcile fully the extant collections with what appears to be cited material in Mueller publications.

*Morphology.* As is the case with several other of the northern, tropical species, the filaments of *A. latescens* are joined irregularly to a level of about the base of the lobes of the corolla.

*Note.* Mueller (1859: 144) described *Acacia latescens* var. *grandifolia*, based on his collection no. 35 which was gathered from between the Dawson and Burnett Rivers. In the absence of having seen

this type it is not possible to determine with certainty the taxon to which this name should be applied. As the Dawson and Burnett Rivers are in Queensland it is not likely that this name is synonymous with *A. latescens* (which is endemic in the Northern Territory) as implied by G. Bentham in an editorial footnote to the protologue.

**6. *Acacia leucophylla*** Lindley in T.L. Mitchell, *Three Exped. Australia*, ed. 1, 2: 12 (1838), non Colvill ex Sweet, *Hort. Brit.* 1st edn, 101 (1826), *nom. nud.*

*Lectotype* (here selected): interior of New Holland [western side of Byrne's Creek near junction with Lachlan River, New South Wales], 24 March 1836, *T. Mitchell* "21" (CGE; isolecto: K). *Paralectotype*: subtropical New Holland, *T. Mitchell* "139" (CGE).

*Typification.* In spite of the fact that this name is a synonym of *A. pendula* Cunn. ex Don, lectotypification seems worthwhile. There is no collection mentioned in the protologue and there are parts of two collections on what is regarded as the type sheet at CGE (see discussion of type locality under *A. farinosa* above). The specimen selected here as lectotype is annotated "*A. leucophylla* m" by Lindley and appears to have been the more important source of data in the protologue.

**7. *Acacia sericata*** Cunn. ex Benth., *London J. Bot.* 1: 380 (1842)

*Nomenclature.* The binomial [*Acacia*] "*sericata* Ait. (ex Loudon)" in Steudel's *Nomenclator Botanicus*, ed. 2 (1840) antedates Bentham's use of the name; both names appear in A. Chapman (1991), *Australian Plant Name Index*, and must be taken into account. In spite of giving "N. Holl." as the place of origin, Steudel cites three *Acacia* names in synonymy, all of which apply to African species and two apparently to the same taxon (J. Ross, pers. comm.); these could be taken as representing an indirect reference to earlier validly published taxa and consequently *A. sericata* Ait. ex Steudel could be considered as having been validated thereby. However, the entry is so illogical that one may suspect some printing defect: it is possible that the three African species names should have been printed under the following entry [*A.*] *seyal* Delile, also an African species. If that had been Steudel's intent, then there is no problem with Bentham's name because the Steudel name is a *nomen nudum*, just as is [*A.*] *simsii* Ait. ex Steudel which appears as the fifth entry below *sericata* in the same column. We conclude that a printing error occurred and that both *A. sericata* Ait. ex Steudel and *A. simsii* Ait. ex Steudel are *nomina nuda*.

**8. *Acacia praelongata*** F. Muell., *Australas. Chem. and Druggist* 6: 32 (1883)

*Lectotype* (here selected): Adams Bay, Northern Territory, *A.C. Hulls* (MEL; isolecto: K, PERTH 01209221 - fragment ex MEL). *Paralectotype*: south of Port Darwin (near the Elizabeth River), Northern Territory, July 1883, *P.H.M. Foelsche* (MEL, PERTH 12109213 - fragment ex MEL). *?Paralectotype*: "*Ac. praelongata*. Pt. Darwin" (in Mueller's hand; no other details) (MEL, PERTH 01209213 - fragment ex MEL).

*Typification.* The Hulls and Foelsche collections were cited in the protologue and they represent the same taxon. We have chosen as lectotype the one from Adams Bay which is more typical morphologically and is equally serviceable as a nomenclatural type.

**9. *Acacia subporosa*** F. Muell., *Fragm.* 4: 5 (1863); also in *Pl. Indig.* 2: 24 (1863), *nom. invalid.*, not effectively published (*fide* A.B. Court *et al.* 1994)

*Lectotype* (here selected): Twofold Bay, [N.S.W.], *F. Mueller s.n.* (MEL 1000861, left-hand flowering specimen on sheet; isolecto: K). *Paralectotypes*: (1) right-hand specimen (in bud) on lectotype sheet. (2) Twofold Bay, "Bark grey and brown variegated", *F. Mueller s.n.* (MEL 1000857); (3) "Forest gullies near Twofold Bay, Arbor 40 ft.", September [18]60, *F. Mueller s.n.* (MEL 1000860).

*Typification.* The specimens comprising the original material of *A. subporosa* are all referable to this species but appear to represent at least three separate gatherings. The lectotype (in flower) and the paralectotype (in immature bud) which are both mounted on MEL 1000861, have broader phyllodes than the other two paralectotypes, i.e. 7-9 mm wide compared with 4-7 mm wide.

*Affinities.* *Acacia subporosa* is most closely allied to *A. cognata*. The differences between the two species are not great and our review of existing herbarium material suggests that they may intergrade (see *A. cognata* above for discussion).

**10. *Acacia trinervata*** Sieber ex DC., *Prodr.* 2: 451 (Nov. 1825)

*Type*: [New South Wales, 1823], *F.W. Sieber* 445 (holo: G-DC; iso: A, BM, FI, K, MO, NY, PERTH 01175637 - fragment ex G-DC, PR, STRAS, W).

*A. taxifolia* Cunn. in B. Field, *Geogr. Mem. N.S.W.* 344 (Apr. 1825), *non* Willd. (1806); *A. cunninghamii* Sweet, *Hort. Brit.* ed. 2, 164 (1830); also Don, *Gen. Hist.* 2: 404 (1832) and E. Steudel, *Nomencl. Bot.* ed. 2, 1: 4 (1840), all based on *A. taxifolia* Cunn. in Field. *Type*: eastern ascent of Blue Mountains, New South Wales, October 1822, *A. Cunningham* 215 (holo: K; iso: A, BM, K).

*A. trinervata* Sieber ex DC. var. *brevifolia* Benth., *Fl. Austral.* 2: 325 (1864), *synon. nov.* *Lectotype* (here selected): Blue Mountains, [New South Wales], no collector or date indicated (K, see discussion below).

*A. trinervata* var. *angustifolia* Benth., *Fl. Austral.* 2: 325 (1864), *synon. nov.*; *A. elongata* var. *angustifolia* (Benth.) Maiden & Betche in J.H. Maiden, *Wattles & wattle-barks* 3rd edn, 58, 73 (1906), as to name only (see discussion below). T: Blue Mtns., N.S.W., Miss [C.L.W.] *Atkinson*; holo: K; iso: NSW, fragment ex K, PERTH, fragment ex K.

[*A. genistifolia auct. non* Link: G. Bentham, *London J. Bot.* 1: 335 (1842).]

*Nomenclature and synonymy.* Although Cunningham's *A. taxifolia* is the earliest name for this species, the name had been used by Willdenow in 1806 and the next available name is *A. trinervata*. Apparently independently, R. Sweet, G. Don and E.J. Steudel recognized the homonymy and each renamed *A. taxifolia* as *A. cunninghamii*.

When Bentham (1864: 325) described *A. trinervata* var. *brevifolia* he provided only meagre descriptive details ("Phyllodia 1/2 to 3/4 in. long."), cited no specimens and listed *A. genistifolia* Link in synonymy. Bentham (1842: 336) had earlier expressed uncertainty about the identity of *A. genistifolia*, but this species is now known to be quite different from *A. trinervata* being easily

distinguished by its 4-merous flowers and its commonly quadrangular phyllodes (or if flat then only 1-nerved per face); *A. trinervata* has 5-merous flowers and flat phyllodes which are strongly 2-3-nerved per face.

There is a Herb. Hooker specimen at K bearing the notation "*A. trinervata* var. *brevifolia*" in Bentham's hand but no indication of who made the collection or when, only that it came from the Blue Mountains (in N.S.W.). The specimen is with immature pods and has phyllodes that are at the lower end of the length range for *A. trinervata* being 11-18 mm (1/2-3/4 inch) long. It is this specimen which was cited by Bentham (1842: 336) under *A. genistifolia* and was almost certainly before him when *A. trinervata* var. *brevifolia* was described. It is therefore regarded as a syntype of var. *brevifolia* (the type of *A. genistifolia* is the other syntype) and we have selected it as the lectotype of the name.

Bentham's var. *angustifolia* is a form with somewhat narrow phyllodes and small heads but within the range of variation for the species. The type at herb. Kew is labelled by Mueller as "*Acacia trinervata* var. *tenuifolia*" but this varietal name was not used when Bentham described the taxon. Maiden (1906) was unclear as to the application of Bentham's name (presumably since he had not seen the type) and incorrectly assumed it to be the same as the plant that occurred "in swampy localities in the Blue Mountains". Therefore, Maiden and Betche's combination under *A. elongata* is actually a misapplication of the name (Maiden and Blakely 1927: 190 subsequently described *A. elongata* var. *angustifolia sensu* Maiden & Betche as a new species, *A. ptychoclada*).

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