1. ACACIA

Acacia Miller, *Gard. Dict*. abridg. ed. 4 (1754); from the Greek, *ake*, a point, referring to the spiny stipules that characterised the first (African) species described.

Type: *A. nilotica* (L.) Willd. ex Delile

Phyllodoce Link, *Handbuch* 2: 132 (1829), *nom. illeg. non* Salisb. (1806); *Acacia* sect. *Phyllodoce* (Link) Kuntze, in T.E. von Post & C.E.O.Kuntze, *Lex. Gen. Phan*. 2 (1903). T: not designated.

Senegalia Raf., *Sylva Tellur*. 119 (1838). Lecto: *S. triacantha* Raf. (nom. illeg. = *S. senegal* (L.) Britton).

Racosperma Mart., *Hort. Reg. Monac*. 188 (1829) *nom. inval*.; *Consp. Regn. Veg*. 206 (1835). T: *R. penninerve* (Sieber ex DC.) Pedley.

Woody trees or shrubs, rarely (in Australia) lianas; branches rarely (in Australia) with prickles. Leaves bipinnate or modified to polymorphic phyllodes, rarely reduced to scales or absent; foliar glands normally present; stipules normally present (but commonly caducous) and scarious, sometimes spinose. Inflorescences simple or racemose, infrequently paniculate; flowers white to golden (rarely mauve-pink), 2 or more aggregated into globular heads or oblongoid to cylindrical spikes, (3–) 4 or 5 (–6)-merous; sepals free to united, rarely absent; stamens numerous, normally free, rarely united basally into a short tube or irregularly faciculate; ovary single (rarely to 5), sessile or (rarely in Australia) stipitate. Legumes dehiscent or (rarely in Australia) indehiscent. Seeds normally with a pleurogram and without endosperm; funicle arillate or exarillate.

Chromosome numbers (*fide* C.Hamant, *et al.*, Taxon 24: 667–670 (1975): subg. *Acacia*: 2*n* = 52, 104, 208; subg. *Aculeiferum*: 2*n* = 26, 40; subg. *Phyllodineae*: 2*n* = 26, 38, 52.

Of the relatively few species examined to date most Australian members of subg. *Phyllodineae* have a diploid complement of 26 chromosomes. However, there are indications that polyploidy might not be uncommon, in at least certain groups from the arid zone, for example, the 'Mulga' complex (*A. aneura* and allies) (2*n* = 52: *fide* L.Pedley, *Austrobaileya* 1: 95, 1978 and B.R.Maslin & H.Stace, pers. comm.) and the 'Myall' complex (*A. papyrocarpa* and allies) (2*n* = 38: *fide* C.Hamant, *et al.*, *loc. cit.*).

A cosmopolitan genus of more than 1500 species occurring mainly in the Southern Hemisphere. *Acacia* is the largest genus of vascular plants in Australia with c. 950 species currently recognized. However, some of these are broadly circumscribed and undoubtedly comprise more than one taxon and there are at least 30 taxa, principally from W.A., which are still undescribed and not included in the present *Flora* volumes. Elsewhere *Acacia* occurs in Africa (more than 130 species), Madagascar (c. 100 species), the Americas (c. 270 species) and the Asia/Pacific area (more than 55 species), *fide* I.Nielsen, *Fl. Malesiana* ser. 1, 11: 35 (1992).

For a list of references see the essay *Introduction to Acacia* (this volume).
(BRM)

On the Use of the Keys

Successful use of any key requires experience with it and the length of time to gain such experience is directly proportional to the number of taxa included in the key. The following keys include more than one thousand taxa, as well as informal variants of many of them, so the user should not expect immediate success. It is always important to follow closely the content of the key leads in any key, but it is critical in this instance to **follow exactly the distinctions provided** (especially, do not guess at measurements); many taxa are keyed-out more than once. Equally important is that users **compare the content of contrasting couplet** statements before coming to a decision. Users are advised to **work with the upper 15–30 cm of the plant** (ignore new shoots and very old nodes unless otherwise stated: this is especially important when assessing indumentum and stipule characters).

These keys were based on dry, herbarium material using, insofar as possible, flowering specimens. However, in the interest of reliability it was occasionally necessary to use

carpological or bark characters as the primary couplet lead. In these cases there are usually relatively few species in at least one of the couplets and therefore users will not be unduly inconvenienced. Nevertheless, future collectors are advised to take note of bark characters (at least when the bark is 'Minni Ritchi') and attempt to collect pods (even dehisced pod valves that persist on the plant or which have fallen on the ground: although in the latter case, care should be taken to ensure that the pods collected do actually belong to the plant from which the foliage and flowers are taken). Insofar as possible the keys employ quantitative, easily-determined characters. An attempt was made to keep the more difficult, qualitative or 'cryptic' characters low down in the keys. Employing potentially difficult characters in these Flora keys is unfortunate; however, in a group the size of *Acacia* one cannot easily arrive at reliable identifications unless these sorts of attributes are used.

The following notes may be helpful when using the keys.

1. *Phyllode nervation* is used extensively throughout the keys. Understanding the subtle differences in phyllode nervature is crucial for the accurate identification of many species, especially those in sections *Plurinerves* and *Juliflorae*. At first the nerves may be difficult to see (often being very fine, or obscured by indumentum or surface wrinklings), however, with experience one can normally develop a 'feel' for this very important character. On dry material phyllode nervature is best observed at ×10 mag. (or more) with an oblique light source. For fresh material, the nervation is normally clearly evident using transmitted light.

2. *Phyllode pungency* is a character commonly employed in the keys. The apex of the phyllodes can vary from sharply pungent (i.e. gradually or abruptly narrowed to needle-like points that readily pierce the skin upon touch) through coarsely pungent (i.e. narrowed to hard, often rigid, points, however, these do not readily pierce the skin upon touch) to innocuous. Clearly these are qualitative terms and it is sometimes difficult to decide which is appropriate to a particular specimen. In these equivocal cases the taxa are keyed out under both leads of the couplet.

3. *Flower mery* is a 'good' character and is best observed by counting the petals in mature, unexpanded buds (by gently depressing the centre of the flower with a needle the petals normally separate readily). Likewise, the numbers of flowers per head and petal nervature are best observed (at ×10 mag.) in mature, unexpanded buds.

4. *Calyx division* is a fairly reliable character in *Acacia* and is therefore used quite extensively in the key. Unfortunately this 'cryptic' character is often difficult to observe. In some cases, however, calyx division can be determined quite readily with the use of a ×10 hand lens; this is especially true of species with united sepals (free sepals are often very slender and difficult to see with a ×10 lens). See note 6 below concerning fruiting specimens.

5. *Inflorescence bracts*, especially those at the base of the raceme axis and peduncles, are normally 'good' characters, but the bracts are often small and/or caducous. Scars at the base of the raceme axis are normally quite visible (at ×10 mag.) after the bracts have dropped. In the case of basal peduncular bracts, this character is not used unless the bracts are clearly persistent.

6**.** *Fruiting specimens* will be difficult (often impossible) to identify. However, some progress can often be made by inspecting the receptacle for the presence of flower scars, thus the shape of the flower-head can often be determined (however, care should be taken when using this method because in species with spikes, the receptacle distal to the uppermost pod often withers, thus rendering the fruiting receptacle artificially short). Calyx remnants sometimes persist around the base of the pod stipe (thus calyx division can sometimes be determined, especially for species with united sepals). Peduncle length on fruiting specimens is sometimes slightly longer than given in the keys (which are based on flowering material); also, peduncle indumentum is often sparser (or absent) than on flowering peduncles.

7. *Bark characters*, with the exception of the distinctive 'Minni Ritchi' bark (see Glossary), have not been used in the keys. 'Minni Ritchi' sometimes extends to the branchlets and is therefore seen on herbarium material. However, it is often confined to the trunks and main branches of the plants but in these cases collectors invariably note its presence on their labels, therefore the character is usually not a major constraint in the use of the keys.

KEY TO GROUPS

1 Leaves (mature plants) reduced to phyllodes or scales, or absent; bipinnate foliage found on 'reversion shoots' and seedlings, or rarely persisting with phyllodes on mature plants

2 Flowers arranged in cylindrical spikes (at least 1.5 times as long as wide) [note 1]; phyllodes absent or flat to terete or quadrangular and normally with many parallel, longitudinal nerves **Group 9**

2: Flowers arranged in globular or obloid heads (less than 1.5 times as long as wide) [note 1]

3 Phyllodes absent, rudimentary or reduced to scales **Group 7**

3: Phyllodes present and normally numerous and conspicuous (occasionally few and/or difficult to distinguish from branchlets)

4 Branchlets winged usually by decurrent phyllodes (wings broad or narrow) **Group 6**

4: Branchlets angled to terete, not winged (but phyllodes sometimes continuous with branchlets)

5 Phyllodes all whorled in regular or sometimes oblique whorls which are clearly separated from one another **Group 10**

5: Phyllodes scattered, spiral, fasciculate or opposite (occasionally a few subwhorled)

6 Phyllodes terete to subterete, trigonous, quadrangular, pentagonal, hexagonal or plano-convex in section [note 2] **Group 5**

6: Phyllodes flat (although when very narrow and thick they may approach subterete or slightly rhombic in section)

7 Phyllodes with 0–2 longitudinal nerves on each face [note 3] **Group 4**

7: Phyllodes some or all with more than 2 longitudinal nerves on at least one face [note 3], or reticulately nerved without discrete longitudinal nerves **Group 8**

1: Leaves all bipinnate

8 Inflorescences elongated racemes (exceeding 1 cm long) or paniculate; stipules inconspicuous; prickles absent (eastern Aust.) **Group 3**

8: Inflorescences simple (peduncles solitary to clustered) or in very short racemes < 5 mm long

9 Peduncles with an involucel of bracts above the base (sometimes at apex of peduncles and hidden by flowers); stipules spinose, at least on young plants; prickles absent (northern Aust. and arid zone) **Group 1**

9: Peduncles without an involucel of bracts (although 1 or more bracts sometimes present at extreme base of peduncles in some species of section Pulchellae from SW W.A.); stipules not spinose (except in a few taxa of section Pulchellae)

10 Branches usually armed with recurved prickles (northern N.T. & Qld) **Group 2**

10: Branches without prickles (SW W.A., S.A., Vic., N.S.W.) **Group 11**

Note 1. On fruiting specimens the head/spike shape can often be determined by inspecting the receptacle for flower scars. However, care should be taken when applying this method to species with spikes because the receptacle distal to the uppermost pods often withers, thus rendering it shorter than it was when in flower.

Note 2. A number of species included in this Group are variable for phyllode transverse sectional shape and are therefore included also in other groups below.

Note 3. Nerves sometimes very fine, obscured by indumentum or surface wrinkling, observe carefully at ×10 magnification.