

A KEY TO THE WOODY GENERA OF DICOTYLEDONS OF THE BRAZILIAN CERRADO

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ABSTRACT. A key is provided for the 66 families and 220 genera of woody dicotyledons recorded for the Brazilian cerrado (savanna) flora.

Cerrado (savanna) is the predominant natural vegetation of Central Brazil and prior to man's recent activity covered approximately 2 million km², representing about 23% of the total land surface of the country. It is a very ancient vegetation formation dating back probably at least 40 million years and has a large endemic flora. The woody vegetation consists of approximately 800 species and there is a much greater number of herbaceous and semi-herbaceous species. The following key attempts to provide a means of identification of all native cerrado genera of woody dicotyledons. Since, however, it is frequently difficult to draw the line in the cerrado between herbs and small shrubs, users may find plants they consider herbs included and others they regard as shrubs excluded. In the main the genera covered follow the list in Rizzini (1963) and the numbers of species quoted for each genus usually correspond to those given in that account; however, many genera additional to those in Rizzini's list are also included.

The key was originally prepared in tentative form 10 years ago and has been modified as a result of experience gained from its use by students of the University of Brasília. It has also had a preliminary and very limited circulation in both English and Portuguese as an appendix to a guidebook on the vegetation of Fazenda Água Limpa, the ecological reserve and experimental farm of the University of Brasília (Ratter 1980, 1982, 1985).

The key has been designed to identify only the cerrado species of the genera it encompasses and will not necessarily provide correct determinations of the non-cerrado species of the same genera. A number of works are available for the identification of Brazilian plants from other vegetation types, e.g. Freire (1943) and Goldberg & Lyman (1975) give family keys, while Barroso (1946) provides generic keys for 152 families.

KEY TO THE WOODY GENERA OF DICOTYLEDONS OF THE CERRADO

1. All flowers unisexual GROUP E (p. 52)
 - + At least some flowers hermaphrodite 2
2. Perianth of 2 (or rarely more) distinct whorls, differing markedly from each other in size, shape or colour 3
 - + Perianth 0, or of 1 whorl, or of 2 or more similar whorls GROUP D (p. 51)
3. Petals united, at least at the base GROUP C (p. 49)
 - + Petals free 4
4. Gynaeceum superior GROUP A (p. 46)
 - + Gynaeceum inferior GROUP B (p. 49)

GROUP A

*All of the petals free at the base,
gynaeceum superior*

1. Gynaeceum apocarpous; styles free.....2
- + Gynaeceum syncarpous or monocarpellary, or apocarpous with a united style5
2. Perianth consisting of a calyx of 2 cup-like sepals and 6 to numerous almost linear petals **Winteraceae** (*Drimys*) (p. 68)
- + Perianth not as above3
3. Perianth of 3 whorls **Annonaceae** (p. 54)
- + Perianth of 2 whorls4
4. Leaves simple, often sandpapery **Dilleniaceae** (p. 57)
- + Leaves pinnate **Connaraceae** (p. 57)
5. Sepals and petals 4; stamens many; ovary borne on a long gynophore
 Capparidaceae (*Capparis*) (p. 68)
- + Without the above combination of characters.....6
6. Pedicels of some flowers with a nectariferous bract in the form of a spur or pitcher; inflorescence frequently a long raceme
 Marcgraviaceae (p. 63)
- + Without the above combination of characters.....7
7. Sepals 2-3, unequal, reflexed; petals 5, concave, terminating in a biforked linear appendage; staminal filaments fused below, terminating in 5 branches each bearing a cluster of 3 anthers
 Sterculiaceae (*Guazuma*) (p. 67)
- + Without the above combination of characters.....8
8. Styles free9
- + Styles united, at least for part of their length, or style 1.....17
9. Leaves opposite.....10
- + Leaves alternate12
10. Leaves ternate **Caryocaraceae** (*Caryocar*) (p. 68)
- + Leaves simple11
11. Styles 5; stamens in bundles with fused filaments; sepals glandular-punctate..... **Guttiferae** (*Vismia*) (p. 58)
- + Styles 3; stamens free; sepals bearing large, conspicuous, often paired, glands **Malpighiaceae** (p. 62)
12. Leaves compound.....13
- + Leaves simple14
13. Leaves pinnate **Anacardiaceae** (p. 53)
- + Leaves ternate..... **Oxalidaceae** (*Oxalis*) (p. 68)
14. Petals with an appendage on the inner surface
 Erythroxylaceae (*Erythroxylum*) (p. 68)
- + Petals without an appendage on the inner surface15
15. Staminal filaments fused at least at the base, or flower with a long androgynophore **Sterculiaceae** (p. 67)
- + Not as above16
16. Styles 2 **Dilleniaceae** (p. 57)
- + Styles 5 **Ternstroemiaceae** (*Laplacea*) (p. 67)
17. Perianth obviously zygomorphic18
- + Perianth actinomorphic.....23

18. Androecium of 1 stamen **Vochysiaceae** (p. 68)
 + Androecium of more than 1 stamen 19
19. Ovary unilocular 20
 + Ovary bi- or trilocular 21
20. Corolla papilionate, or subpapilionate; all or 9 of the staminal filaments fused for at least one third their length (rarely all filaments free)
 Leguminosae, Papilionoideae (p. 60)
 + Corolla not papilionate; staminal filaments free or only fused at the very base **Leguminosae, Caesalpinoideae** (p. 59)
21. Leaves compound; stamens free **Sapindaceae** (p. 66)
 + Leaves simple; staminal filaments united (monadelphous) 22
22. Ovary bilocular; calyx with two much enlarged lateral petaloid sepals; leaves alternate **Polygalaceae (Bredmeyer)** (p. 68)
 + Ovary trilocular; calyx sepaloid, not as above; leaves opposite
 Trigoniaceae (Trigonia) (p. 68)
23. Receptacle forming a cup or tube 24
 + Receptacle not as above 28
24. Leaves opposite 25
 + Leaves alternate 26
25. Leaves multicostate; anthers dehiscing by pores; connective often developed into variously shaped appendages ... **Melastomataceae** (p. 63)
 + Leaves unicostate (rarely multicostate); anthers dehiscing by slits; connective not as above **Lythraceae** (p. 62)
26. Stamens 5, inserted opposite the small, narrow-based petals; ovary bi- or trilocular **Rhamnaceae** (p. 64)
 + Stamens 3-many, if 5 then not opposite the petals; ovary unilocular (very rarely bilocular) 27
27. Leaves simple; ovary with lateral or terminal style ... **Rosaceae** (p. 64)
 + Leaves compound; style always terminal
 Leguminosae, Caesalpinoideae (p. 59)
28. Leaves compound 29
 + Leaves simple 36
29. Leaves palmate; staminal filaments united, anthers unilocular
 Bombacaceae (p. 56)
 + Leaves ternate, pinnate, or bipinnate; staminal filaments united or not 30
30. Ovary unilocular 31
 + Ovary multilocular 32
31. Leaves pinnate or ternate; staminal filaments free; ovules 2, collateral; seed arillate **Connaraceae** (p. 57)
 + Leaves bipinnate, or if simply pinnate then staminal filaments fused to form a tube; ovules never collateral; seeds without arils
 Leguminosae, Mimosoideae (p. 59)
32. Flowers small, to 4 mm diam., brownish or greenish, in tight axillary clusters; crushed leaves, cut bark, etc., very aromatic
 Burseraceae (Protium) (p. 68)
 + Not as above 33
33. Staminal filaments flattened and scale-like (or bearing scales), often fused to form a tube; if filaments free then a short androgynophore present 34

- + Not as above 35
- 34. Ovary entire; stigma usually discoid, approaching the diameter of the ovary; fruit a capsule or drupe **Meliaceae** (p. 63)
- + Ovary lobed; stigma usually small and lobed, much narrower than the ovary; fruit simple, one-seeded or a group of follicles
Simaroubaceae (p. 66)
- 35. Leaves glandular-punctate; plant often very aromatic
Rutaceae (p. 66)
- + Not as above **Sapindaceae** (p. 66)
- 36. Stamens more than twice as many as petals 37
- + Stamens twice as many as petals, or fewer 41
- 37. Ovary unilocular 38
- + Ovary multilocular 39
- 38. Ovules many on parietal placentas; anthers dehiscing by terminal pores; leaves palmatisect **Cochlospermaceae** (*Cochlospermum*) (p. 68)
- + Ovules 2; anthers dehiscing by slits; leaves entire
Dilleniaceae (*Davilla*) (p. 57)
- 39. Staminal filaments connate below; connective forming a pointed appendage usually larger than the anther loculi **Humiriaceae** (p. 58)
- + Filaments free, or if fused then connective not forming an appendage larger than the anther loculi 40
- 40. Leaves exstipulate, leathery, unicostate; calyx imbricate; epicalyx absent **Ternstroemiaceae** (incl. *Kielmeyera*) (p. 67)
- + Leaves stipulate (stipules sometimes caducous and then leaves apparently exstipulate), lateral veins so prominent as to give a pseudo-multicostate appearance; calyx valvate; epicalyx sometimes present
Tiliaceae (p. 67)
- 41. Stamens and ovary borne on a long androgynophore
Sterculiaceae (*Helicteres*) (p. 67)
- + Not as above 42
- 42. Stamens as many as the petals or fewer 43
- + Stamens twice as many, or almost twice as many, as the petals ... 50
- 43. Stamens 3 **Hippocrateaceae** (*Salacia*) (p. 68)
- + Stamens more than 3 44
- 44. Stamens opposite the petals 45
- + Stamens alternate with the petals 47
- 45. Calyx very short, often forming a mere ring; petals valvate, often forming a caducous cap **Vitaceae** (*Cissus*) (p. 68)
- + Calyx well-developed; petals not as above 46
- 46. Stamens free; sepals much exceeding the small, narrow-based petals **Rhamnaceae** (p. 64)
- + Staminal filaments fused, at least below; sepals usually shorter than the petals **Sterculiaceae** (*Melochia* & *Waltheria*) (p. 67)
- 47. Ovary 5-locular; petals acute with a narrow, conspicuously inflexed tip; plant glandular-punctate **Rutaceae** (*Hortia*) (p. 66)
- + Without the above combination of characters 48
- 48. Ovary and the inner surface of the petals conspicuously hairy; connective produced above the anther loculi into an apiculate tip
Icacinaeae (*Emmotum*) (p. 68)
- + Not as above 49

49. Disc well-developed, surrounding the ovary; fruit dry, winged (samara)
Celastraceae (*Austroplenckia*) (p. 68)
 + Disc absent; fruit a drupe **Aquifoliaceae** (*Ilex*) (p. 68)
50. Anthers dehiscent by pores 51
 + Anthers dehiscent by slits 52
51. Ovary trilobular, shallowly lobed; each loculus multiovulate
Clethraceae (*Clethra*) (p. 68)
 + Ovary with 5 or more deep lobes, or completely divided into separate
 carpels with a united style; carpels (loculi) uniovulate
Ochnaceae (*Ouratea*) (p. 68)
52. Ovary unilocular, uniovulate; receptacle swelling to form a fleshy
 fruit **Anacardiaceae** (*Anacardium*) (p. 53)
 + Ovary multilocular; fruiting receptacle not as above 53
53. Stamens connate below; connective forming a pointed appendage above
 the anther loculi; petals not conspicuously hairy on inner surface; sepals
 with marginal glands **Humiriaceae** (*Sacoglottis*) (p. 58)
 + Stamens not connate, sometimes adhering to the petals; connective not
 as above; petals with conspicuous hairy tufts on the inner surface; sepals
 without marginal glands **Olacaceae** (p. 64)

GROUP B

*All of the petals free at the base,
 gynaecium inferior*

1. Stamens more than twice the number of petals 2
 + Stamens twice the number of petals, or fewer 3
2. Part of the androecium on one side forming a petaloid 'helmet' bearing
 staminodes; fruit large, woody, opening by a detachable lid; leaves
 alternate **Lecythidaceae** (*Lecythis*) (p. 68)
 + Petaloid androecial helmet absent; fruit usually fleshy; leaves usually
 opposite **Myrtaceae** (p. 63)
3. Leaves simple, multicostate, with a conspicuous system of transverse
 interconnecting veins, or if unicostate connective developed into a spur
 or swelling below the anther loculi; stamens never 5 opposite the
 petals **Melastomataceae** (p. 63)
 + Leaves simple and unicostate, or compound, or if multicostate stamens
 5 opposite the petals 4
4. Leaves opposite; stamens more than 5; flowers sessile in spikes; fruit with
 4 wings **Combretaceae** (*Combretum*) (p. 56)
 + Leaves alternate; stamens 5, inflorescence and fruit not as above 5
5. Stamens opposite the small, narrow-based petals; leaves simple with
 3 main veins **Rhamnaceae** (*Zizyphus*) (p. 64)
 + Stamens alternating with the petals; leaves either palmately compound or
 simple and unicostate **Araliaceae** (p. 55)

GROUP C

Petals united, at least at the base

1. Ovary inferior 2
 + Ovary superior 4

2. Flowers aggregated in a capitulum; calyx represented by a hairy pappus; anthers usually united; ovary unilocular, uniovulate. **Compositae** (p. 57)
- + Flowers separate, or if aggregated in a capitulum calyx not represented by a hairy pappus and anthers never united 3
3. Leaves opposite or whorled; stipules various, often interpetiolar; stamens 4 or 5 **Rubiaceae** (p. 65)
- + Leaves alternate, exstipulate; stamens 5 to many
Symplocaceae (*Symplocos*) (p. 68)
4. 'Calyx' of 3 free 'sepals' (bracteoles); 'corolla' tubular, 5-lobed or 5-toothed at the apex, urceolate and fleshy or \pm straight-sided and villous; stamens 5-10, hypogynous; ovary unilocular, uniovulate; stigma sometimes lacinate **Nyctaginaceae** (p. 64)
- + Without the above combination of characters 5
5. Gynaecium monocarpellary, unilocular; androecium various, often monadelphous; leaves 2-compound, or if simply pinnate then rachis winged and stamens many and monadelphous; fruit a legume of various types **Leguminosae, Mimosoideae** (p. 59)
- + Without the above combination of characters 6
6. Stamens more numerous than the corolla lobes 7
- + Stamens the same number as the corolla lobes or fewer 10
7. Leaves compound 8
- + Leaves simple 9
8. Leaves ternate, opposite **Caryocaraceae** (*Caryocar*) (p. 68)
- + Leaves digitate, alternate **Bombacaceae** (p. 56)
9. Stamens 10; anthers longer than the filaments
Styracaceae (*Styrax*) (p. 67)
- + Stamens usually more than 10; anthers shorter than the filaments
Symplocaceae (p. 68)
10. Fertile stamens opposite the corolla lobes 11
- + Fertile stamens alternating with the corolla lobes 13
11. Staminodial scales (or lobes) alternating with the corolla lobes; milky latex present **Sapotaceae** (p. 68)
- + Staminodes absent; milky latex absent 12
12. Corolla rotate; ovary unilocular; floral parts usually with an indumentum of tiny scales or orange streaks or spots **Myrsinaceae** (p. 63)
- + Corolla tubular with reflexed lobes; ovary trilocular; floral parts lacking a scaly indumentum but with a tuft of hairs on the corolla outside each anther **Olcaceae** (*Schoepfia*) (p. 64)
13. Fertile stamens 4 (didynamous) with the posterior stamen either completely absent or represented by a staminode; perianth often zygomorphic 14
- + Fertile stamens 5, or if 4 then equal in number to the corolla lobes; perianth actinomorphic 16
14. Style gynobasic; ovary quadrilocular with 1 ovule per loculus; posterior staminode absent; leaves simple **Labiatae** (*Hyptis*) (p. 68)
- + Style terminal; ovary bi- or quadrilocular; the posterior stamen often represented by a staminode; leaves compound or simple 15
15. Corolla more than 2 cm; ovules numerous in each loculus; ovary bilocular, never quadrilocular; seeds almost always winged
Bignoniaceae (p. 55)

- + Not as above; receptacle cup-shaped 8
- 8. Leaves exstipulate; perianth 6-merous; stamens 3 or in multiples of 3; dehiscence of anthers by valves opening from below upwards; style terminal **Lauraceae** (p. 58)
- + Leaves stipulate; perianth 5-merous; stamens not usually in multiples of 3; dehiscence of anthers by slits; style lateral **Rosaceae** (p. 64)

GROUP E

*Flowers unisexual (although vestiges of the organs
of the other sex often present)*

- 1. Leaves pinnate; vestigial organs of other sex often present so flower appears hermaphrodite 2
- + Leaves simple; vestigial organs of other sex present or not 5
- 2. Leaves gland-dotted, sometimes bearing thorns; trunk often covered in conical thorns **Rutaceae** (*Fagara*) (p. 66)
- + Leaves not gland-dotted; leaves and trunk unarmed 3
- 3. Filaments of stamens and staminodes flattened to form an appendaged scale-like base; ovary 5-locular... **Simaroubaceae** (*Simarouba*) (p. 66)
- + Filaments of stamens and staminodes not as above; ovary uni- or trilocular 4
- 4. Ovary in female flowers unilocular; disc little-developed; flowers actinomorphic **Anacardiaceae** (p. 53)
- + Ovary in female flowers trilocular; disc well-developed; flowers often zygomorphic **Sapindaceae** (p. 66)
- 5. Perianth of 2 differing whorls (calyx and corolla) 6
- + Perianth absent, or of 1 whorl, or 2 similar whorls 14
- 6. Indumentum of stellate hairs or peltate scales present; ovary of female flowers with 3 uniovulate loculi and styles usually divided into 6 or more branches **Euphorbiaceae** (*Croton*) (p. 57)
- + Without the above combination of characters 7
- 7. Flowers gamosepalous and gamopetalous 8
- + One or both perianth whorls free 11
- 8. Leaves alternate 9
- + Leaves opposite 10
- 9. Plant with white latex in stem and leaves; stamens in the male flowers equalling the corolla lobes and alternating with small scales; style single **Sapotaceae** (*Pouteria*) (p. 68)
- + Plant without latex; stamens in the male flowers more numerous than the corolla lobes; styles separate, or at least divided into distinct branches above **Ebenaceae** (*Diospyros*) (p. 57)
- 10. Interpetiolar stipules present; calyx truncate; ovary of female flowers inferior; stamens of male flowers sessile, included in the corolla tube **Rubiaceae** (*Alibertia* incl. *Thielodoxa*) (p. 65)
- + Interpetiolar stipules absent; calyx 4-lobed; ovary of female flowers superior; stamens of male flowers with long exerted filaments **Verbenaceae** (*Aegiphila*) (p. 67)
- 11. Stamens in male flowers many; ovary in female flowers with 5 or more multiovulate loculi and an equal number of sessile stigmas **Guttiferae** (*Clusia*) (p. 58)

- + Stamens in male flowers 4-10; ovary in female flowers unilocular and uniovulate 12
 - 12. 'Calyx' consisting of 3 separate leaves (bracteoles); 'corolla' united, tubular; stamens in male flowers usually more than 5; style of female flowers slender, often with a lacinate stigma. . . . **Nyctaginaceae** (p. 64)
 - + Without the above combination of characters. 13
 - 13. Plants dioecious; calyx gamosepalous, 4-5-lobed; petals present only in male flowers, free, c. 1.5 mm; lobed disc present in both sexes; stigma in female flowers sessile, \pm as broad as the ovary; stamens in male flowers 4 or 5, inserted opposite the petals; leaves acute-lanceolate
Opiliaceae (*Agonandra*) (p. 68)
 - + Flowers polygamous; calyx and corolla free, 5-merous; petals c. 5 mm or more; style in female flower long, slender, curved near tip; stamens 10, often of very different sizes in male flowers; leaves rounded at the apex. **Anacardiaceae** (*Anacardium*) (p. 53)
 - 14. Flowers arranged in a complex globose or pyriform inflorescence; either both male and female lining the hollow receptacle (*Ficus*) or male covering the surface of the receptacle in which a few female flowers are immersed (*Brosimum*); plant laticiferous **Moraceae** (p. 63)
 - + Inflorescences various, not as above; plant laticiferous or not. 15
 - 15. Perianth of 6 members; receptacle cup-shaped; anthers of male flowers dehiscent by valves opening from below upwards; ovary of female flowers unilocular and uniovulate; fruit with an investing cupule below **Lauraceae** (p. 58)
 - + Without the above combination of characters. 16
 - 16. Female flowers present 17
 - + Female flowers absent 19
 - 17. Ovary trilobular; each loculus with 1 or 2 ovules; plants usually monoecious; male flowers often with a well-developed disc
Euphorbiaceae (p. 57)
 - + Ovary unilocular, uniovulate; plants dioecious 18
 - 18. Perianth with ferrugineous tomentum, tubular, enclosing the ovary, 3-lobed at the apex; disc absent; leaves oblong-acute with lamina abruptly contracted, rounded, truncate or slightly cordate at the base, veins prominent below **Myristicaceae** (*Virola*) (p. 68)
 - + Perianth forming a shallowly lobed ring about the base of the ovary, not ferrugineous-tomentose; lobed disc present, also surrounding the base of the ovary; leaves lanceolate-acute (rhomboid)
Opiliaceae (*Agonandra*) (p. 68)
 - 19. Perianth with ferrugineous tomentum, tubular, apex 3-lobed; stamens, including anthers, connate, forming a united column
Myristicaceae (*Virola*) (p. 68)
 - + Perianth various but never as above; stamens various but never with connate anthers **Euphorbiaceae** (p. 57)
- Anacardiaceae**
- 1. Leaves simple *Anacardium* (6 spp.)
 - + Leaves pinnate 2
 - 2. Leaf-rachis unwinged 3
 - + Leaf-rachis winged 5

3. Fruit a samara; leaflets generally less than 2·5 cm, rounded or emarginate at the apex *Schinopsis* (1 sp.)
- + Fruit unwinged (although sometimes surrounded by a persistent scarious perianth); leaflets more than 2·5 cm, acute or apiculate 4
4. Fruit a fleshy drupe not surrounded by a scarious perianth; tree usually evergreen; leaves generally 3-4-jugate; leaflets with an equal cuneate base *Tapirira* (2 spp.)
- + Fruits coriaceous, surrounded by a persistent scarious perianth (perianth of male flowers also scarious); tree frequently flowering and fruiting when leafless; leaves generally 4-jugate or more; leaflets often with an asymmetrical abruptly contracted base *Astronium* (2 spp.)
5. Leaves 1-3-jugate; leaflets more than 4 cm, margins entire
Lithraea (2 spp.)
- + Leaves usually more than 3-jugate; leaflets less than 4 cm, margins toothed *Schinus* (2 spp.)

Annonaceae

1. Sepals at anthesis about as long as the petals and enclosing them
Cardiopetalum (1 sp.)
- + Sepals at anthesis considerably shorter than the petals 2
2. Petals basally expanded, very long and narrow and at least the inner held erect *Xylopia* (2 spp.)
- + Petals various but not as above 3
3. Petals imbricate 4
- + At least the outer petals valvate 5
4. Indumentum of peltate scales or stellate hairs present; fruit a dry syncarp *Duguetia* (6 spp.)
- + Indumentum, if present, not as above; fruit a group of stipitate monocarps *Guatteria* (2 spp.)
5. Outer petals without wings or spurs *Annona* (9 spp.)
- + Outer petals connate and produced into wings or spurs
Rollinia (1 sp.)

Key based on fruits (and vegetative characters)

1. Fruiting carpels fused to form a fleshy or dry syncarp 2
- + Fruiting carpels (monocarps) free 3
2. Ripe fruit dry, woody; undersurface of leaves with lepidote or stellate indumentum *Duguetia* (6 spp.)
- + Ripe fruit fleshy; undersurface of leaves without lepidote indumentum
Annona (9 spp.), *Rollinia* (1 sp.)
(separate on petal characters if available)
3. Monocarps 1-seeded, stipitate *Guatteria* (2 spp.)
- + Monocarps 2- to many-seeded 4
4. Pedicels with bracteoles *Xylopia* (2 spp.)
- + Pedicels without bracteoles *Cardiopetalum* (1 sp.)

Apocynaceae

1. Fruit fleshy 2
- + Fruit follicular 3

2. Ovary unilocular; fruit a berry; latex white, copious (enough to produce rubber); shrub or small tree *Hancornia* (1 sp.)
- + Ovary bilocular; fruit a drupe; latex less copious than the above; subshrub *Rauwolfia* (1 sp.)
3. Seeds winged 4
- + Seeds unwinged 5
4. Inflorescence a panicle cyme, often very crowded; follicles much compressed, much less than $10 \times$ as long as broad; latex sparse
Aspidosperma (9 spp.)
- + Inflorescence simple, appearing articulate; follicles little compressed, at least $10 \times$ as long as broad; latex copious *Himatanthus* (3 spp.)
5. Seeds with a conspicuous tuft of hairs at the micropylar end 6
- + Seeds lacking such a tuft of hairs 8
6. Inflorescence racemose (with opposite flowers) .. *Haemadictyon* (1 sp.)
- + Inflorescence a panicle cyme 7
7. Flowers small, in crowded clusters *Forsteronia* (1 sp.)
- + Flowers large, individually conspicuous, not crowded
Odontadenia (2 spp.)
8. Fruits constricted and disarticulating between seeds (lomentaceous)
Condylocarpon (1 sp.)
- + Fruits not constricted between the seeds (follicular) *Peschiera* (2 spp.)

Araliaceae

1. Leaves palmately compound *Didymopanax* (Schefflera) (7 spp.)
- + Leaves simple *Gilibertia* (1 sp.)

Bignoniaceae

1. Leaves pinnate or bipinnate 2
- + Leaves simple, bifoliolate (often with terminal tendril), ternate or palmately compound 3
2. Trees, shrubs, or subshrubs, never climbing; flowers usually blue or violet; capsule orbicular or oblong, angustiseptate, very woody
Jacaranda (7 spp.)
- + Subshrub or climber; flowers yellow; capsule elongate, latiseptate
Memora (2 spp.)
3. Leaves simple, bifoliolate (often with terminal tendril), or ternate; shrubs or climbers 4
- + Leaves palmately compound; trees or erect little-branched shrubs ... 7
4. Leaves simple, bifoliolate, often with terminal tendrils, or ternate; capsule elongate, linear, at least $10 \times$ as long as broad
Arrabidaea (4 spp.)
- + Leaves never simple, otherwise as above; capsule \pm oblong, ovate, or elliptic, less than $10 \times$ as long as broad 5
5. Leaves ternate, without tendrils; flowers axillary in small groups; capsule elliptic, c. $2 \times$ as long as broad *Anemopaegma*
- + Most leaves bifoliolate, often with terminal tendrils, although ternate leaves also often present; inflorescence a terminal panicle; capsule c. $3-4 \times$ as long as broad 6

6. Calyx 5-toothed or -lobed, often glandular-punctate; bracts large, exceeding the calyx in length; fruit-valves tuberculate; seed wing little-developed *Adenocalymma* (1 sp.)
- + Calyx truncate, never glandular-punctate; bracts small, shorter than the calyx; fruit-valves smooth; seeds with a broad membranous wing
Distictella (1 sp.)
7. Leaflets glabrous, apart from a few hairs along the veins, acuminate; fruit oblong with pointed ends, c.4 × as long as broad; calyx lobes acute
Cybistax (1 sp.)
- + Leaflets glabrous or hairy, obtuse or acute but not acuminate; fruit obovate or linear-elongate; calyx lobes obtuse 8
8. Fruit obovate, narrowing at the base, laterally compressed, covered in massed tubercles; corolla 2-3 × as long as calyx; underside of leaves, flowers, etc., densely tomentose *Zehyeria* (1 sp.)
- + Fruit linear, at least 7 × as long as broad, pericarp smooth; corolla more than 3 × as long as calyx; underside of leaves, flowers, etc., tomentose or not *Tabebuia* (5 spp.)

Bombacaceae

1. Staminal tube entire or divided into 5 filaments above; anthers 5, dithecous; leaflets serrate, or at least crenulate; trunk often swollen into a 'belly' and usually thorny *Chorisia* (1 sp.)
- + Staminal tube divided above into many filaments; anthers many, monothealous; leaflets or leaf-lobes entire; trunk often very thick but not swollen into a 'belly', unarmed 2
2. Pachycaul with conspicuously thick twigs and rather swollen trunk usually showing green tissue in the fissures of the bark; flowers very large, 9-22 cm long with 180-900 stamens; leaves large, palmate or palmatisect, with leaflets or lobes 7.5-30 cm long; capsule oblong- or obovoid-cylindrical, 9-30 cm long *Pseudobombax* (4 spp.)
- + Tree of normal form; flowers smaller, 2.8-3.9 cm long with about 110-120 stamens; leaves generally smaller, palmate, coriaceous, with leaflets readily disarticulating; capsule pear-shaped, 4-6 cm long
Eriotheca (2 spp.)

Cactaceae

1. Plant with the habit of a normal dicotyledon; leaves flat, persistent; groups of spines occurring on the stem at the base of the leaves
Pereskia (1 sp.)
- + Plant an upright stem-succulent with glochidia occurring in many vertical rows; no flat foliage leaves present *Cereus* (? spp.)

Combretaceae

1. Petals present; fruit with 4 equally developed wings... *Combretum* (1 sp.)
- + Petals absent; fruit not as above 2
2. Calyx divided into distinct lobes; anthers versatile; fruit 2-winged, or if 3-5-winged then 2 much larger than the others... *Terminalia* (5 spp.)
- + Margin of calyx almost entire; anthers adnate, immobile; fruit a 5-angled drupe *Buchenavia* (1 sp.)

Compositae

1. Trees or large shrubs with thick, often very tomentose, *Pseudobombax*-like stems; often flowering when leafless; capitula very large, 4–12 cm diam.; rocky habitats *Wunderlichia* (3 spp.)
+ Not as above 2
2. Capitula few-flowered; arranged in tight groups (glomerules) looking superficially like capitula themselves 3
+ Capitula larger, not aggregated in glomerules 4
3. Upper panicle branches always with subtending bracts; pappus less than $2 \times$ as long as cypsela *Eremanthus* (2 spp.)
+ Upper panicle branches without subtending bracts; pappus nearly $3 \times$ as long as cypsela *Vanillosmopsis* (1 sp.)
4. Capitula in sessile axillary groups *Piptocarpha* (1 sp.)
+ Capitula in terminal panicles 5
5. Panicle wide, divaricately branched, with one-sided scorpioid branches bearing sessile capitula; involucre bracts green with scarious margins *Vernonia* (1 sp.)
+ Panicle more racemosely branched; involucre bracts entirely scarious *Moquinia* (1 sp.)

Connaraceae

1. Fruit stipitate; calyx nor accrescent; carpels 1 or 5 ... *Connarus* (2 spp.)
+ Fruit sessile; calyx accrescent; carpels 5 *Rourea* (2 spp.)

Dilleniaceae

1. Petals white; sepals subequal *Curatella* (1 sp.)
+ Petals yellow; sepals very unequal, the 2 internal cup-shaped and much larger than the outer *Davilla* (5 spp.)

Ebenaceae

1. Perianth 4- to 6-merous *Diospyros* (3 spp.)
+ Perianth 3-merous *Maba* (1 spp.)

Euphorbiaceae

1. Leaves 3- to many-lobed 2
+ Leaves simple and undivided (sometimes with serrate margins) 3
2. Inflorescence a dichotomous cyme; leaves palmatifid or pinnatifid (oak-like) with acute spiny teeth along margins; stinging hairs sometimes present; perianths less than 1.5 cm long *Jatropha* (2 spp.)
+ Inflorescence racemose; leaves usually almost ternate, margins entire; stinging hairs absent; perianths usually more than 1.5 cm long *Manihot* (4 spp.)
3. Plants dioecious; both male and female flowers borne in small globose involucre; plant with lepidote or stellate indumentum *Pera* (1 sp.)
+ Plants monoecious; inflorescence generally with a few female flowers below and the male flowers above, but sometimes with female flowers throughout the inflorescence; flowers not borne in small globose involucre; lepidote or stellate indumentum present or not 4

4. Indumentum of stellate hairs or peltate scales present (usually very obvious on leaves, inflorescence and flowers) *Croton*
+ Indumentum not as above 5
5. Leaves broadly ovate, entire, petiolate; male flowers massed to form a compact inflorescence little longer than broad; staminal filaments often fused *Maprounea* (1 sp.)
+ Leaves without the above combination of characters; male flowers in a panicle or spike much longer than broad; staminal filaments free ... 6
6. Leaves elliptic, lanceolate-acuminate, with a light-coloured central longitudinal strip on the underside (orangish when dried); flowers orange; male part of the inflorescence a panicle; male 'flowers' consisting of a globular mass of many stamens inserted on a hemispherical receptacle, anthers almost sessile; female flowers large with a united stylar column 1 cm or more long *Mabea* (1 sp.)
+ Leaves never acuminate; male part of the inflorescence a spike or spicate panicle; male flowers with 2-3 stamens and well-developed filaments; female flowers with styles free or connate only to form a very short stylar column 7
7. Bracts biglandular; calyx bilobed; leaves with 2-4 glands at the base of the lamina or at the apex of the petiole; latex very copious *Sapium* (2 spp.)
+ Bracts eglandular; calyx 3-partite; leaves without glands at the base of the lamina or at the apex of the petiole; latex absent or sparse *Sebastiania* (1 sp.)

Flacourtiaceae

1. Stamens 10-15; flowers less than 15 mm diam. *Casearia* (3 spp.)
+ Stamens 25-30; flowers 15-30 mm diam *Ryania* (1 sp.)

Guttiferae

(*Kielmeyera* is also included here in the Ternstroemiaceae)

1. Leaves alternate; style 1; seeds winged *Kielmeyera* (5 spp.)
+ Leaves opposite; styles more than 1, or stigmas sessile; seeds not winged ... 2
2. Flowers hermaphrodite; stamens arranged in fused (hypericoid) bundles; styles 5; leaves and floral parts glandular-punctate *Vismia* (2 spp.)
+ Flowers unisexual (sometimes appearing hermaphrodite because of the presence of staminodes); stamens many, free or united below into a crown, not arranged in bundles; stigmas sessile or almost sessile; leaves and floral parts not glandular-punctate *Clusia* (2 spp.)

Humiriaceae

1. Stamens 50-180; anther loculi bilocellate *Vantanea* (1 sp.)
+ Stamens 10-20; anther loculi unilocellate 2
2. Anthers bearded; ovary loculi biovulate *Humiria* (1 sp.)
+ Anthers glabrous; ovary loculi uniovulate *Sacoglottis* (2 spp.)

Lauraceae

1. Fertile stamens 3; anthers 2-celled; flowers hermaphrodite; fruit without persistent cupule derived from hypanthium; leaves sessile, subverticillate, crowded at tips of branches *Mezilaurus* (2 spp.)

- + Fertile stamens 9; anthers 4-celled; flowers hermaphrodite or unisexual; hypanthium forming a cupule at the base of the fruit; leaves alternate... 2
- 2. Anther cells in one slightly arcuate or horizontal row; flowers hermaphrodite *Nectandra* (2 spp.)
- + Anther cells \pm superposed in two vertical rows; flowers hermaphrodite or unisexual 3
- 3. Flowers hermaphrodite *Phoebe* (1 sp.)
- + Flowers usually unisexual *Ocotea* (5 spp.)

Leguminosae

Mimosoideae

- 1. Stamens many, or if only twice the number of the petals then fused below to form a tube 2
- + Stamens twice the number of the petals or fewer; always free 7
- 2. Pollen aggregated into 2-6 masses in each pollen sac; inflorescences various; stamens usually many, sometimes 10 3
- + Pollen not aggregated into masses; inflorescence a large, long-stalked, flat or round head; stamens 10 *Parkia* (1 sp.)
- 3. Stamens free *Acacia* (1 sp.)
- + Staminal filaments fused below to form a tube (sometimes rather short) 4
- 4. Leaves pinnate *Inga* (2 spp.)
- + Leaves bipinnate 5
- 5. Small shrubs, not exceeding 1.5 m; legume straight, thickened at the margins *Calliandra* (2 spp.)
- + Trees or shrubs exceeding 1.5 m; legume often twisted or horseshoe-shaped 6
- 6. Legume horseshoe-shaped, or further coiled in a plane spiral, with the stalk inserted part way along the inner surface *Enterolobium* (3 spp.)
- + Legume various but with stalk at end *Pithecolobium* (3 spp.)
- 7. Fruit a flat lomentum, with persistent thickened margins *Mimosa* (4 spp.)
- + Fruit not as above 8
- 8. Pinnules tiny, less than 1 cm, opposite *Anadenanthera* (2 spp.)
- + Pinnules 1-2 cm, alternate 9
- 9. Legume much compressed *Plathymenia* (1 sp.)
- + Legume not compressed *Stryphnodendron* (5 spp.)

Leguminosae

Caesalpinoideae

- 1. Corolla absent or of 1 or 2 petals; fruits short, 1-seeded (sometimes rather massive (*Swartzia*) and possibly many-seeded); seeds often arillate... 2
- + Corolla of 5 petals, sometimes very narrow; fruits various (many-seeded legume, samara, etc.), if 1-seeded never arillate 4
- 2. Leaflets stipellate, rachis often winged or marginate; petal 1, well-developed, differentiated into a claw and a broad, often cordate-based limb, c. 7-10 \times 10-20 mm; stamens dimorphic, more than 10; seeds arillate *Swartzia* (3 spp.)
- + Leaflets and rachis not as above; petals 0 or 1-2, inconspicuous; stamens 10 or fewer, monomorphic; seeds arillate or not 3

3. Sepals 4; stamens 8 or 10; seeds arillate; leaves paripinnate
Copaifera (5 spp.)
- + Sepals 5; stamens 2; seeds not arillate; leaves imparipinnate
Dialium (1 sp.)
4. Leaves bifoliolate, or simple and bilobed, bifid or rarely with an entire tip 5
- + Leaves pinnate or bipinnate 7
5. Leaves simple, bilobed or rarely entire, or if bifoliolate legume many-seeded and not woody and indehiscent; inflorescence not appearing articulated *Bauhinia* (6 spp.)
- + Leaves always bifoliolate; legume not as above; inflorescence with an articulated appearance 6
6. Legume short, flat, usually 1-seeded, dehiscing by 2 valves
Peltogyne (1 sp.)
- + Legume very thick, often massive, woody, indehiscent, frequently exuding gum from cracks in the pericarp *Hymenaea* (3 spp.)
7. Leaves bipinnate; androecium of 5 fertile stamens alternating with 5 staminodes *Dimorphandra* (2 spp.)
(Sometimes placed in Mimosoideae)
- + Leaves pinnate; androecium not as above 8
8. Individual flowers small, not or hardly exceeding 1 cm diam., almost actinomorphic, in dense panicles 9
- + Individual flowers exceeding 1 cm diam., conspicuous, \pm obviously zygomorphic 12
9. Leaves imparipinnate; leaflets equal at the base; staminal filaments glabrous 10
- + Leaves usually paripinnate; leaflets oblique and often conspicuously unequal at the base; staminal filaments often very hairy 11
10. Leaflets alternate; petals linear; fruit a samara with linear median seed extending for most of its length . . . *Myrocarpus* (1 sp.) (Papilionoideae)
- + Leaflets opposite or subopposite; petals somewhat expanded; fruit flattened, seed or seeds circular in outline
Acosmium (*Sweetia*) (5 spp.) (Papilionoideae)
11. Petals linear or ovate; legume flat, indehiscent; seeds flat, unwinged
Sclerolobium (3 spp.)
- + Petals ovate, never linear; legume flat, bivalved; seeds winged
Diptychandra (3 spp.)
12. Stamens 10, monomorphic; anthers versatile, dehiscing by lateral slits, much shorter than the filaments *Cenostigma* (1 sp.)
- + Stamens 10 or fewer, frequently dimorphic; anthers biporose, basifixed, usually much exceeding the filaments in length *Cassia* (9 spp.)

Leguminosae

Papilionoideae

(From Caesalpinoideae key *Myrocarpus* (1 sp.), *Acosmium* (5 spp.))

1. Tree flowering when leafless; flowers orange to scarlet with short wing petals less than one third the length of the keel; seeds bean-like, scarlet
Erythrina (3 spp.)
- + Not as above 2

2. Leaves unifoliolate (apparently simple) or trifoliolate 3
- + Leaves pinnate with more than three leaflets 7
3. Leaves unifoliolate, often with stipules forming wings on the stem, or trifoliolate; anthers dimorphic *Crotalaria*
- + Leaves trifoliolate; anthers monomorphic 4
4. Wing petals less than one third the length of the keel; keel conspicuously incurved; petals usually orange to scarlet *Erythrina* (3 spp.)
- + Not as above 5
5. Calyx glabrous within *Collaea* (1 sp.)
- + Calyx sericeous within 6
6. Legume stipitate *Camptosema* (3 spp.)
- + Legume sessile *Dioclea* (1 sp.)
7. Stamens free 8
- + Staminal filaments fused 9
8. Corolla yellow, subpapilionate, with a broad posterior standard and the other 4 petals narrowly oblong and subequal; legume indehiscent, with 1 basal seed and the upper portion forming a wing
Ferreirea (1 sp.)
- + Corolla blue-purple, papilionate; legume indehiscent, flat, many-seeded *Bowdichia* (2 spp.)
9. Calyx forming two elongate, entire lips in the antero-posterior plane; androecium monadelphous with long and short anthers alternating
Harpalyce (1 sp.)
- + Calyx not as above; anthers monomorphic 10
10. Fruit a disarticulating lomentum, conspicuously constricted between each seed *Aeschynomene* (1 sp.)
- + Fruit not a lomentum 11
11. The 2 posterior sepals developed to form 2 lateral (*Polygala*-like) wings; the 3 other sepals small and inconspicuous; fruit a woody drupe, compressed or not 12
- + Sepals not polygaliform; fruit drupaceous or not 13
12. Drupe very woody, nut-like (resembling an almond), unwinged, very aromatic; leaf-rachis winged, leaflets 10-11, 5-8 cm long with asymmetrical bases; wing sepals green; petals cream (standard with a violet spot) *Dipteryx* (1 sp.)
- + Drupe much compressed, pericarp \pm extended into a wing around the seed; rachis unwinged, leaflets much more numerous, 2-4 cm long without strikingly asymmetrical bases; flowers deep purple, blue, lilac, pale pink or white *Pterodon* (2 spp.)
13. Fruit a globose or ovoid drupe *Andira* (5 spp.)
- + Fruit not as above 14
14. Fruit a 1-seeded samara with the seed at one end 15
- + Fruit 1- or more-seeded; if winged then the seed \pm central 19
15. Seed distal (furthest from stalk), proximal part of fruit developed as a wing *Platypodium* (2 spp.)
- + Seed proximal (nearest to stalk), distal part of fruit developed as a wing 16
16. Pericarp covering seed bearing conspicuous rigid hairs
Centrolobium (1 sp.)
- + Pericarp covering seed without such hairs 17

17. Leaflets oblong, large, to 12×8 cm, with apices somewhat emarginate; leaves 2-3-jugate, terminal leaflet large and prominent; flowers violet *Vatairea* (1 sp.)
- + Leaflets smaller, of various forms; flower colours various 18
18. Petals yellow, glabrous *Tipuana* (1 sp.)
- + Petals greenish-black, violaceous, or dirty-white, standard pilose or sericeous on the back *Machaerium* (7 spp.)
19. Leaflets opposite *Lonchocarpus* (2 spp.)
- + Leaflets alternate, or if subopposite then greyish in colour, often with scattered black spots 20
20. Flowers ± 15 mm long, bright orange-yellow; fruit almost circular in outline with the wing surrounding the seed *Pterocarpus* (1 sp.)
- + Flowers considerably less than 15 mm long; standard petal blackish violet; fruit elongate with seed in the middle *Dalbergia* (4 spp.)

Loganiaceae

1. Lower part of each flower invested by a multipartite imbricate involucre; seeds winged *Antonia* (1 sp.)
- + Flowers without such involucres; seeds unwinged ... *Strychnos* (3 spp.)

Lythraceae

1. Flowers 6-merous; small slender shrubs *Diplusodon*
- + Flowers 8- to 16-merous; trees or larger shrubs 2
2. Petals cream *Lafoensia* (3 spp.)
- + Petals rose-purple *Physocallyma* (1 sp.)

Malpighiaceae

(by Dr Bronwyn Gates, University of Michigan, apart from a modification to include *Tetrapteryx*)

1. Fertile stamens 5; staminodes frequently present 2
- + Fertile stamens 10 3
2. Five conspicuous staminodes present; large, fused, Rubiaceae-like, interpetiolar stipules present *Peixotoa*
- + Staminodes absent; interpetiolar stipules minute, not fused. *Schwannia*
3. Fruiting pericarp unwinged; calyx with either 10 or no glands 4
- + Fruiting pericarp winged (fruit a group of samaras); calyx usually with 8 glands 5
4. Calyx bearing 10 glands *Byrsonima* (10 spp.)
- + Calyx eglandular *Galphimia* (1 sp.)
5. Each samara with 4 wings *Tetrapteryx*
- + Each samara with only a single wing 6
6. Samaras with wings encircling the loculi *Mascagnia* (1 sp.)
- + Samaras with dorsal wings (resembling *Acer* fruits and the group \pm like the blades of an aircraft propeller) 7
7. Upper margin of samara-wing thickened; stigmas capitate; pedicel with bracteoles only at the base, not articulated *Banisteriopsis* (2 spp.)
- + Lower margin of samara-wing thickened; stigmatic surfaces excentric, borne towards the inside of the flower; pedicel bearing a pair of bracteoles, articulated at the point of their insertion *Heteropteryx*

Marcgraviaceae

1. Nectariferous bract without basal lobes, stalked from the base of the pedicel, frequently much exceeding the flower; stamens more than 5
Norantea (1 sp.)
- + Nectariferous bract bilobed below, sessile on the pedicel, not or little exceeding the flower; stamens 5 *Souroubea* (1 sp.)

Melastomataceae

1. Leaves unicostate; perianth 5-merous *Mouriri* (2 spp.)
- + Leaves multicostate, or if apparently unicostate perianth 4-merous . . . 2
2. Perianth 4-merous; connective developed into a conspicuous, sterile, often arcuate structure below the anther; stamens often sickle-shaped . . . 3
- + Perianth usually 5-merous; connective not as above; stamens never sickle-shaped 4
3. Apex of ovary setose *Macairea* (3 spp.)
- + Apex of ovary \pm glabrous, never setose *Comolia* (1 sp.)
4. Petals obtuse *Miconia* (11 spp.)
- + Petals acute *Leandra* (3 spp.)

Meliaceae

1. Stamens free, borne on a short androgynophore (which does not exceed the petals), filaments not flattened; ovules 8-12 per loculus; seeds winged *Cedrela* (1 sp.)
- + Stamens monadelphous, or if free the filaments flattened and wider than the anther, not borne on an androgynophore; ovules 1-2 per loculus; seeds unwinged 2
2. Anthers borne on the inner surface of the 'corona' formed of the fused filaments; disc forming a tube surrounding the ovary . *Cabranea* (1 sp.)
- + Anthers borne at the apex of the 'corona', or on flattened separate filaments which are usually fused below; disc stipitiform or absent
Trichilia (2 spp.)

Moraceae

1. Flowers all lining the inside of a hollow fleshy receptacle . . . *Ficus* (? spp.)
- + Female flower immersed in a receptacle, the surface of which is covered in very reduced male flowers *Brosimum* (1 sp.)

Myrsinaceae

1. Flowers in simple or compound racemes with long peduncles; anthers not apiculate *Cybianthus* (incl. *Weigeltia*) (3 spp.)
- + Flowers in axillary umbellate clusters; anthers apiculate
Rapanea (3 spp.)

Myrtaceae

1. Ovary bilocular 2
- + Ovary with more than 2 loculi 5
2. Calyx 5-lobed; loculi biovulate *Myrcia* (incl. *Gomidesia*) (8 spp.)
- + Calyx 4-lobed; loculi each with 2 or more ovules 3

3. Receptacle clearly prolonged above the ovary; loculi biovulate
Myrciaria (2 spp.)
- + Receptacle not or little prolonged above the ovary; loculi each with more than two ovules..... 4
4. Inflorescence a dichasium or compound dichasium, with the central flower of each dichasium sessile *Blepharocalyx* (2 spp.)
- + Inflorescences various but not as above..... *Eugenia* (9 spp.)
5. Ovary with 4-many loculi, each with 4-20 ovules; berry with only one seed per loculus; pedicels usually long and slender . *Campomanesia* (5 spp.)
- + Ovary with 3-4 multiovulate loculi; berry with many seeds; pedicels usually shorter and thicker..... *Psidium* (4 spp.)

Nyctaginaceae

1. Stamens included in the perianth tube; stigma simple, not lacinate
Neea (1 sp.)
- + Stamens exserted; stigma with a conspicuous terminal tuft of hairs, or lacinate *Pisonia* (5 spp.)

Olaceaceae

1. Corolla gamopetalous with reflexed lobes *Schoepfia* (1 sp.)
- + Corolla polypetalous 2
2. Petals bearing a dense indumentum for most or all the length of the inner surface; calyx little or not accrescent in fruit; plant very spiny
Ximenia (2 spp.)
- + Indumentum on inner surface of petals confined to a tuft about the middle of their length; calyx accrescent to form a broad wing in fruit; plant unarmed *Heisteria* (1 sp.)

Proteaceae

1. Leaves simple, pinnatifid, pinnatisect or imparipinnate. . *Roupala* (7 spp.)
- + Leaves paripinnate, usually with a terminal 'bud' ... *Euplassa* (2 spp.)

Rhamnaceae

1. Plant spiny; leaves 3-nerved (multicostate) *Zizyphus* (1 sp.)
- + Plant unarmed; leaves penninerved (unicostate) 2
2. Leaf-margins entire; lateral nerves 8-12 on each side of the midrib
Rhamnidium (1 sp.)
- + Leaf-margins toothed; lateral nerves 6-8 on each side of the midrib
Rhamnus (1 sp.)

Rosaceae

(Including Chrysobalanaceae)

(Modified from Prance, *Fl. Neotropica*)

1. Ovary inserted at or near the base of the receptacle 2
- + Ovary inserted at or near the mouth of the receptacle..... 3
2. Style lateral; inflorescence a panicle. . . . *Licania* (incl. *Moquilea*) (2 spp.)
- + Style terminal; inflorescence a simple raceme..... *Prunus* (1 sp.)

3. Stamens about as long as the petals, suffrutex or very small shrub
Parinari (1 sp.)
 + Stamens much exceeding the petals; larger shrub or tree 4
4. Stamens 50–125; fruit with no lines of dehiscence, endocarp thick and often fragile *Couepia* (1 sp.)
 + Stamens 10 or less; fruit opening by longitudinal lines of weakness, endocarp hard and thin *Hirtella* (3 spp.)

Rubiaceae

1. Plant with strong axillary spines 2
 + Plant unarmed 3
2. Perianth 5-merous *Machaonia* (1 sp.)
 + Perianth 4-merous *Chomelia* (3 spp.)
3. Low undershrub; leaves pale-fawn tomentose below; flowers in tight axillary whorls; calyces densely lanate; fruit small, fleshy, pink, edible *Sabicea* (1 sp.)
 + Without the above combination of characters 4
4. Ovules 1 per loculus 5
 + Ovules many per loculus, or flowers male 9
5. Ovary 4–6-locular; calyx truncate *Guettarda* (1 sp.)
 + Ovary bilocular; calyx deeply lobed or sepals free 6
6. Stamens epigynous *Chiococca* (1 sp.)
 + Stamens epipetalous 7
7. Flowers cream; young stipules with a group of subulate appendices at the apex; venation strongly marked on the upper side of the leaf
Rudgea (1 sp.)
 + Flowers yellow or orange; stipules entire or bifid; venation strongly marked on the upper side of the leaf or not 8
8. Inflorescence a terminal panicle; stipules bifid; fruit less than 3 × as long as broad *Palicourea* (2 spp.)
 + Flowers in small, delicate, axillary panicles; stipules entire; fruit oblong, at least 3 × as long as broad; plant often fruiting when leafless or when decked with young foliage *Chomelia* (3 spp.)
9. Fruit a capsule; seeds winged 10
 + Fruit indehiscent, often a berry; seeds not winged; or flowers male ... 11
10. Calyx and corolla 5-merous, hispid, corolla pinkish; capsule valves bifid; veins on lower surface of leaf hispid *Remijia* (1 sp.)
 + Calyx and corolla 4-merous, glabrous, corolla yellow-cream; capsule valves entire; veins on lower surface of leaf glabrous
Ferdinandusa (1 sp.)
11. Flowers hermaphrodite 12
 + Flowers unisexual; sometimes with vestigial organs of the other sex present *Alibertia* (incl. *Thielodoxa*) (4 spp.)
12. Corolla 1.5–2 cm long; berry less than 1 cm, somewhat fleshy, nerves prominent between sulci *Hamelia* (1 sp.)
 + Corolla with long slender tube, 7–17 cm long; berry more than 1 cm, fleshy, surface smooth (not sulcate) 13
13. Corolla lobes narrowly oblong, strongly reflexed; fruit golden; corolla and lower surface of leaves glabrous *Posoqueria* (1 sp.)

- + Corolla lobes \pm broadly ovate, never strongly reflexed; fruit blackish; corolla and lower surface of leaves densely villous or not
Tocoyena (2 spp.)

Rutaceae

(*Dictyoloma* under Simaroubaceae)

- 1. Leaves simple *Hortia* (1 sp.)
- + Leaves compound 2
- 2. Leaves pinnate; flowers unisexual *Fagara* (3 spp.)
- + Leaves trifoliolate; flowers hermaphrodite 3
- 3. Flowers showy; petals 20–30 mm *Spiranthera* (1 sp.)
- + Flowers small; petals 2–3 mm *Esenbeckia* (1 sp.)

Sapindaceae

- 1. Leaves bipinnate (with regularly serrate leaflets); inflorescence without tendrils; fruit an elliptical trigonous capsule *Dilodendron* (1 sp.)
- + Leaves ternate, pinnate or biternate, or if bipinnate then plant a slender-stemmed shrub with tendrils in the inflorescence and fruit a winged schizocarp 2
- 2. Leaves ternate, without tendrils; fruit of 3 unwinged cocci (or 2 or 1 by abortion) *Allophyllus* (1 sp.)
- + Leaves not ternate; tendrils present or not; fruit a capsule or winged schizocarp 3
- 3. Fruit a winged schizocarp 4
- + Fruit a capsule, often deeply lobed 5
- 4. Plant with tendrils, at least in the inflorescence, often climbing; leaves pinnate, biternate or bipinnate (if pinnate then rachis winged)
Serjania (? spp.)
- + Plant without tendrils, erect; leaves pinnate with unwinged rachis
Toulicia (1 sp.)
- 5. Petals linear (strap-like), green outside and atropurpureous within; loculi multiovulate; fruit a massive woody capsule, 6–7 \times 8–10 cm, containing many large flat seeds *Magonia* (1 sp.)
- + Petals not as above; loculi uniovulate; capsule 1–2.5 cm long, containing a single arillate unflattened seed per loculus 6
- 6. Calyx cup-shaped, 5-lobed *Matayba* (2 spp.)
- + Sepals free, broadly imbricate *Cupania* (2 spp.)

Simaroubaceae

(*Dictyoloma* is often considered a member of the Rutaceae)

- 1. Flowers polygamous; stamens the same number as petals; fruit a group of small, many-seeded follicles; seeds winged *Dictyoloma* (1 sp.)
- + Flowers hermaphrodite or plant dioecious; stamens twice the number of petals; fruit simple 1-seeded, indehiscent; seeds unwinged 2
- 2. Flowers hermaphrodite; petals valvate *Simaba* (2 spp.)
- + Plants dioecious; petals imbricate *Simarouba* (1 sp.)

Sterculiaceae

1. Flower with a long androgynophore, showy, often bright red-orange; fruit spiral *Helicteres* (3 spp.)
- + Flower without a long androgynophore, small, cream, yellow or purplish; fruit straight 2
2. Petals concave and bearing a long forked appendage terminally; staminal filaments fused below, terminating in 5 branches each bearing a cluster of 3 anthers; capsule spiny or tuberculate *Guazuma* (1 sp.)
- + Petals and androecium not as above; fruit hirsute or tomentose but never spiny or tuberculate 3
3. Ovary 5-locular; stigmas 5 *Melochia* (1 sp.)
- + Ovary unilocular; stigma 1 *Waltheria* (1 sp.)

Styracaceae

1. Stamens 10 *Styrax* (3 spp.)
- + Stamens 5 *Pamphilia* (1 sp.)

Ternstroemiaceae

(*Kielmeyera* included but more usually placed in Guttiferae where it is also keyed out)

1. Styles free; perianth not clearly differentiated into calyx and corolla but members increasing in size from below upwards, polytepalous *Laplacea* (2 spp.)
- + Style single (united); perianth differentiated into calyx and corolla, the latter often sympetalous 2
2. Some sepals deeply glandular dentate; tips of stamens apiculate; seeds unwinged *Ternstroemia* (1 sp.)
- + Sepals entire; stamens not apiculate; seeds winged. *Kielmeyera* (5 spp.)

Tiliaceae

1. Flowers 7 mm in length or less, in panicles, unisexual (or polygamous) but with vestigial organs of the other sex always present; sepals and petals 4, reflexed; ovary bilocular with 2 stigmas; fruit 3-4 mm long, compressed, fringed with long plumose hairs *Heliocarpus* (1 sp.)
- + Flowers at least 1 cm in length and usually much more, hermaphrodite; petals and sepals 5, not reflexed; ovary 5-multilocular; fruit larger than above, not compressed 2
2. Epicalyx absent; capsule depressed-globose, ± 7.5 cm diam. and 4 cm high, densely spiny and tomentose *Apeiba* (1 sp.)
- + Epicalyx present; capsule ovate-oblong or oblong, 5-angled, 2-5 cm long, woody, glabrous or short tomentose *Luehea* (4 spp.)

Verbenaceae

1. Leaves palmately compound *Vitex* (3 spp.)
- + Leaves simple 2
2. Inflorescence cymose; flowers often unisexual; stamens of male flowers and styles of female flowers exerted *Aegiphila* (4 spp.)

- + Inflorescence racemose; flowers hermaphrodite; stamens and styles included in corolla tube 3
- 3. Inflorescence lax; calyx large, conspicuous, with 5 long lobes usually exceeding the corolla and persisting in fruit as a scarious winged structure; fruit a capsule *Petraea* (1 sp.)
- + Inflorescence compact; calyx small, inconspicuous, much shorter than the corolla; fruit fleshy *Lantana* (1 sp.)

Vochysiaceae

- 1. Petals 5, subequal, to 2.5 cm, cream; leaves whorled, obovate, to 30 cm *Salvertia* (1 sp.)
- + Petals 1-3, unequal, colours various; leaves opposite or whorled . . . 2
- 2. Petals 3, rarely 1 or 0, yellow; ovules 2 per loculus; flowers in a terminal panicle *Vochysia* (7 spp.)
- + Petal 1, rarely 2, colours various (incl. yellow); ovules many per loculus; flowers in a terminal panicle or not 3
- 3. Capsule with central column slender or absent (usually breaking away with the valves); exocarp thick woody, adhering to the thinner endocarp; circular crateriform glands often present on the stem at the base of the petiole (stipular); flowers usually in terminal spike-like panicles . . . *Qualea* (7 spp.)
- + Central column thick, persistent; exocarp fragile, separating in irregular fragments from the endocarp; crateriform glands absent; flowers solitary or in groups in the axils of foliage leaves or cataphylls (the latter usually fallen by anthesis), not normally terminal *Callisthene* (4 spp.)

The following families are represented by single genera. Number of species are given in the brackets.

Aquifoliaceae: <i>Ilex</i> (3)	Lecythidaceae: <i>Lecythis</i> (?)
Boraginaceae: <i>Cordia</i> (1)	Myristicaceae: <i>Viola</i> (2)
Burseraceae: <i>Protium</i> (2)	Ochnaceae: <i>Ouatea</i> (6)
Capparidaceae: <i>Capparis</i> (2)	Opiliaceae: <i>Agonandra</i> (1)
Caryocaraceae: <i>Caryocar</i> (2)	Oxalidaceae: <i>Oxalis</i> (1)
Celastraceae: <i>Austroplenkia</i> (1)	Polygalaceae: <i>Bredmeyeria</i> (1)
Clethraceae: <i>Clethra</i> (1)	Sapotaceae: <i>Pouteria</i> (3)
Cochlospermaceae: <i>Cochlospermum</i> (1)	Solanaceae: <i>Solanum</i> (1)
Erythroxylaceae: <i>Erythroxylum</i> (6)	Symplocaceae: <i>Symplocos</i> (3)
Hippocrateaceae: <i>Salacia</i> (incl. <i>Peritassa</i>) (4)	Trigonaceae: <i>Trigonina</i> (1)
Icacinaeae: <i>Emmotum</i> (1)	Vitaceae: <i>Cissus</i> (3)
Labiatae: <i>Hyptis</i> (1)	Winteraceae: <i>Drimys</i> (1)

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