

Preliminary Checklist of the Family Anacardiaceae in Thailand

KONGKANDA CHAYAMARIT*

A family of trees, shrubs or woody climbers, usually with turpentine smelling sap becoming black when exposed to the air; leaves alternate (opposite in *Bouea*), simple or compound; flowers regular, unisexual, polygamous or bisexual, usually in panicles, fruits drupaceous.

About 70 genera with ca 600 spp., distributed chiefly throughout the tropics and subtropics, occur mainly in primary rain-forest.

Eighteen genera and 58 species occur in Thailand.

KEY TO THE GENERA

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|---|------------------------|
| 1. Leaves simple | |
| 2. Leaves decussate | 1. Bouea |
| 2. Leaves alternate | |
| 3. Calyx calyptriform, at anthesis circumscissile, or bursting irregularly, or splitting on one side. Disc absent | 2. Gluta |
| 3. Calyx distinctly 5- or 4-lobed | |
| 4. Petals villous or wooly on the inner surface. Filaments densely hairy | 3. Melanochyla |
| 4. Petals not villous or wooly on the inner surface. Filaments glabrous | |
| 5. Carpels 5, free, style 1. Stamens 10, all fertile. Drupes lenticular, usually compressed with a sharp margin | 4. Buchanania |
| 5. Carpels 1-5, united; style 1-5. Stamens twice as many as or equal to calyx lobes or petals | |
| 6. Stamens twice as many as calyx lobes or petals | |
| 7. Calyx 4-lobed. Petals 4. Stamens almost all equal in length. Leaves often with dense or sparse, minute, peltate or lobed scales on both surfaces | 5. Campnosperma |
| 7. Calyx 5-lobed. Petals 5. Stamens unequal, 1 much stouter and longer. Leaves without the scales as above | Anacardium |
| 6. Stamens equal to the number of calyx lobes or petals | |
| 8. Ovary with 3 styles | |
| 9. Plant unisexual. Disk hairy. Petals imbricate. Ovary superior. Leaves without appendages at base of petioles; papillae present | 6. Semecarpus |

*The Forest Herbarium, Royal Forest Department, Bangkok 10900, Thailand.

9. Plant polygamous. Disk glabrous. Petals valvate. Ovary inferior. Leaves with appendages at base of petioles; papillae absent **7. Holigarna**
8. Ovary with 1 style
10. Inferior ovary; style with 3 stigmas. Leaf margin strongly wavy with intramarginal vein. Drupe crowned with remaining floral parts **8. Drimycarpus**
10. Superior ovary; style with one stigma. Leaf margin not as above
11. Petals with thickened glandular ridges on the inner surfaces. Stamens unequal, usually only one fertile. Leaves with hair-like fibers shown upon breaking. Fruit with thick layer of pulp **9. Mangifera**
11. Petals without such glandular ridges on the inner surfaces. Stamens equal in length, all fertile. Leaves without hair-like above. Fruit with 5 enlarged wing-like petals. **10. Swintonia**
1. Leaves compound, usually imparipinnate
12. Climbers **11. Pegia**
12. Trees
13. Stamens or staminodes the same number as petals (4 or 5)
14. Flowers 4-merous. Disk hairy. Calyx enlarged in fruit with wing-like lobes **12. Parishia**
14. Flowers 5-merous. Disk glabrous. Calyx not enlarged in fruit **13. Rhus**
13. Stamens twice as many as the petals (8 or 10)
15. Petals valvate. Leaflets with a distinct, continuous, intra-marginal vein **14. Spondias**
15. Petals imbricate, at least at the apex. Leaflets without such intra-marginal vein
16. Ovary 1-celled, hairy. Stamens 10, 5 fertile and 5 staminodes **15. Pentaspadon**
16. Ovary 4–5-celled
17. Ovary 4-celled. Petals 4. Calyx distinctly 4-lobed. Young twigs, leaflets and inflorescences with stellate hairs **16. Lannea**
17. Ovary 5-celled. Petals 5. Calyx distinctly 5-lobed. Young twigs, leaflets and inflorescences with simple hairs. Drupe sub-globose or ellipsoid. Seed with 5 distinct opercula on the top
18. Leaflets 6–9 pairs, usually hairy, entire. Flowers bisexual; anthers sagittate; disk not lobed, hairy. Drupe sub-globose, with equatorial flecks. Seed pentagonal, flat-topped **17. Dracontomelon**
18. Leaflets 3 pairs, glabrous, subserrate. Flowers polygamous, anthers oblongoid, disk lobed, glabrous. Drupe shortly ellipsoid, with 5 prominent depressions on top. Seed ellipsoid **18. Choerospondias**

1. BOUEA

Meisn., Pl. Vasc. Gen.: 75. 1837; Hook.f. in Fl. Br. India 2: 20. 1876; Kurz, Fl. Burma 1: 305. 1877; Engl. in DC. Monogr. Phaner. 4: 238. 1883; Tardieu in Fl. C.L.V. 2: 125. 1962; Airy Shaw, Kew Bull. 20: 87. 1966; Ding Hou, Blumea 24: 4. 1978; in Fl. Mal. 8: 466. 1978; Kochummen in Tree Fl. Mal. 4: 13. 1989.— *Cambessedea* Wight et Arn.; Prod. 1: 170. 1834.— *Tropidopetalum* Turc., Bull. Soc. Nat. Mosc. 32: 265. 1859.— *Matania* Gagnep., Not. Syst. 13: 189. 1948.

Two species in Thailand.

1. Bouea oppositifolia (Roxb.) Meisn., Pl. Vasc. Gen. Comment.: 55. 1837; Walp., Rep. 1: 556. 1842; Tardieu in Fl. C.L.V. 2: 126. 1962; Airy Shaw, Kew Bull. 20: 87. 1966; Ding Hou in Fl. Mal. 8: 466. 1978; Kochummen in Tree Fl. Mal. 4: 14. 1989.— *Mangifera oppositifolia* Roxb., Hort. Beng.: 18. 1814; Fl. Ind. ed. Carey: 640. 1832; Tardieu in Fl. C.L.V. 2: 128. t.8. 1962. incl. var. *roxburghii* (Pierre) Tardieu— *B. burmanica* Griff., Pl. Cantor: 14. 1841; Hook. f. in Fl. Br. India 2: 21. 1876; Kurz, Fl. Burma 1: 306. 1877; Engl. in DC., Monogr. Phaner. 4: 240. 1883; King, J. As. Soc. Bengal 65: 465. 1896; Pierre, Fl.

For. Cochin. t.366B. 1897; Lecomte in Fl. Gén. I.-C. 2: 27. 1908; Craib in Fl. Siam. En. 1: 346. 1926.— *B. microphylla* Griff., Pl. Cantor in J. As. Soc. Bengal 23: 15. 1854; Ridl., Fl. Mal. Pen. 1: 519. 1922; Corn., Ways. Trees: 101. Fig. 18. 1940.

Thailand.— NORTHERN: Lampang, Phrae; CENTRAL: Krung Thep (Bangkok); SOUTH-EASTERN: Chanthaburi (Khlung, Ko Chang); SOUTH-WESTERN: Prachuap Khiri Khan; PENINSULAR: Phangnga, Trang, Songkhla.

Distribution.— Indo-China, China (Yunnan & Hainan), Andamans Islands, Malay Peninsula, Sumatra and Borneo.

Ecology.— Edge of evergreen forests; up to 700 m alt., oftenly cultivated for its fruits.

Vernacular.— Khong (โขง) (Khmer-Surin); ma phang (มะพาง) (Northern); ma yong (มะยง), mayong chit (มะยงชิด) (Central); sa-taa (สะตา) (Malay-Peninsular).

2. *Bouea macrophylla* Griff., Pl. Cantor: 15. 1841; Not. Pl. As.: 420. 1854; Ic. Pl. As. 4. t.567. 1854; Engl. in DC. Monogr. Phaner. 4: 239. t.6. 1883; Hook. f. in Fl. Br. India 2: 21. 1876; King, J. As. Soc. Bengal 65: 465. 1896; Ridl., Fl. Mal. Pen. 1: 520. 1922; Craib in Fl. Siam. En. 1: 346. 1926; Corn., Ways. Trees: 101. 1940; Back. & Bakh. f., Fl. Java 2: 150. 1965; Ding Hou in Fl. Mal. 8: 468. 1978; Kochummen in Tree Fl. Mal. 4: 14. 1989.— *B. gandaria* Blume, Mus. Bot. Lugd.-Bat. 1: 204. 1850; Miq., Fl. Ind. Bat. 1: 635. 1859.

Thailand.— PENINSULAR: Ranong, Pattani, Yala.

Distribution.— Malacca (type), Malay Peninsula, Sumatra and West Java.

Ecology.— Widely cultivated.

Vernacular.— Ma praang (มะปราง) (Pattani).

2. GLUTA

Linn., Mant. 2: 293. 1771; King, J. As. Soc. Bengal 65: 480. 1896; Ding Hou, Blumea 24: 8. 1978; in Fl. Mal. 8: 446. 1978; Kochummen in Tree Fl. Mal. 4: 22. 1989.— *Stagmaria* Jack., Mal. Misc. 3: 12. 1822.— *Syndesmis* Wall. in Roxb., Fl. Ind. ed. Carey: 314. 1832.— *Melanorrhoea* Wall., Pl. As. Rar. 1: 9. 1829; March., Rev. Anacard.: 112 & 185. 1869; Engl. in DC., Monogr. Phaner. 4: 234. 1883; King, J. As. Soc. Bengal 65: 483. 1896.

Nine species in Thailand.

1. *Gluta obovata* Craib, Kew Bull. 1926: 362; in Fl. Siam. En. 1: 347. 1926.

Thailand.— NORTHERN: Chiang Mai (Mae Klang, Bo Luang, Doi Suthep), Phrae.

Distribution.— Thailand (type), Winit 1291.

Ecology.— Common in deciduous and evergreen forests, along streams; 600–1250 m alt.

Vernacular.— Su-ko-mae (ซูกอแม) (Karen–Chiang Mai); hak noi (ฮักน้อย) (Chiang Mai).

2. *Gluta elegans* (Wall.) Hook. f. in Fl. Br. India 2: 22. 1876; Kurz, Fl. Burma 1: 310. 1877; Engl. in DC., Monogr. Phaner. 4: 225. 1883; King, J. As. Soc. Bengal 65: 481. 1896; Ridl., Fl. Mal. Pen. 1: 527. 1922; Burk., Gard. Bull. Str. Settl. 5: 227. 1931; Corn., Ways. Tree: 118. 1940; Ding Hou in Fl. Mal. 8: 461. 1978; Kochummen in Tree Fl. Mal. 4: 25. 1989.— *Syndesmis elegans* Wall. in Roxb., Fl. Ind. ed. Wall. 2: 315. 1824.

Thailand.— **PENINSULAR:** Ranong, Phangnga, Nakhon Si Thammarat (Khao Phota Luang Kaeo); Trang (Khao Chong); Satun (Khuan Pho, Khuan Kalong, Klong Tau, Tarutao).

Distribution.— Malay Peninsula (Penang, type), Burma.

Ecology.— Common in evergreen forests; up to 600 m alt.

Vernacular.— Rak (รัก) (Satun).

3. *Gluta renghas* Linn., Mant. Alt. 2: 293. 1771; Engl. in DC., Monogr. Phaner. 4: 226. t.6. 1883; Burk., Gard. Bull. Str. Settl. 5: 224. 1931; Corn., Ways Trees 1: 118. f. 26. 1940; Back. & Bakh. f., Fl. Java 2: 150. 1965; Ding Hou in Fl. Mal. 8: 463. 1978; Kochummen in Tree Fl. Mal. 4: 29. 1989.— *Arbor vernicis* Rumph., Herb. Amb. 2: 259. t.86. 1741.— *Stagmaria verniciflua* Jack ex Hook., Comp. Bot. Mag. 1: 267. 1836.

Thailand.— **CENTRAL:** Krung Thep (Bang Khen); **PENINSULAR:** Ranong, Songkhla, Narathiwat.

Distribution.— Java (type), Malay Peninsula, Sumatra Borneo and Celebes.

Ecology.— In peat swamps, along river banks in fresh water tidal reaches.

Vernacular.— Rak baan (รักบ้าน) (Songkhla); rak khao (รักเขา) (Ranong).

4. *Gluta cambodiana* Pierre, Fl. For. Cochinch. : 368. 1897; in Fl. Gén. I.-C. 2: 20. 1908; Burk., Gard. Bull. Str. Settl. 5: 229. 1931; Tardieu in Fl. C.L.V. 2: 119. 1962.

Thailand.— **PENINSULAR:** Ranong (Kra Buri).

Distribution.— Cambodia (type), Laos, Malay Peninsula.

Ecology.— In scrub, about 20 m alt.

5. *Gluta tavoyana* Wall. ex Hook. f. in Fl. Br. India 2: 22. 1876; Kurz, Fl. Burma 1: 309. 1877; Engl. in DC., Monogr. Phaner. 4: 226. 1883; Craib in Fl. Siam. En. 1: 347. 1926; Tardieu in Fl. C.L.V. 2: 123. 1962; Ding Hou in Fl. Mal. 8: 459. 1978; Kochummen, Tree Fl. Mal. 4: 29. 1989.— *Syndesnis* sp. Griff., Not. Pl. As. 4: 410. 1854.— *G. elegans* var. *helferi* Hook. f. in Fl. Br. India 2: 22. 1876; Engl. in DC., Monogr. Phaner. 4: 225. 1883; King, J. As. Soc. Bengal 65: 481. 1896.— *G. elegans* var. *curtisii* Burk., Gard. Bull. Str. Settl. 5: 228. 1931.

Thailand.— **NORTHERN:** Lampang (Mae Tak).

Distribution.— Burma (type), Vietnam, Hainan.

Ecology.— In evergreen forests, usually in lowland and coastal forests.

Vernacular.— Hak khee muu (ฮักขี้หมู) (Lampang).

Notes.— It is certainly near *G. elegans* but the flowers are smaller; flower yellowish; calyx crimson; fruit purple-green, obliquely round-elliptic, flattened, 3.7 cm long, 3 cm wide.

6. *Gluta wrayi* King, J. As. Soc. Bengal 65: 482. 1896; Ridl., Fl. Mal. Pen. 1: 528. 1922; Burk., Gard. Bull. Str. Settl. 5: 226. 1931; Tardieu in Fl. C.L.V. 2: 122. 1962; Ding Hou in Fl. Mal. 8: 456. 1978; Kochummen in Tree Fl. Mal. 4: 30. 1989.— *G. virosa* Ridl., J. Str. Br. R. As. Soc. 75: 27. 1917; Fl. Mal. Pen. 1: 528. 1922.

Thailand.— PENINSULAR: Pattani (Bacho).

Distribution.— South Vietnam, Malay Peninsula.

Ecology.— In lowland evergreen forests.

Vernacular.— Rak (รัก) (Trat); rak bai nui (รักใบนุ่น) (Satun).

Notes.— The colour of the fruit is the same as *G. renghas* and *G. velutina*, but its shape is distinct, it has no tubercles or crests, and is elongated with a little flattening.

7. *Gluta compacta* Evrard, Bull. Soc. Bot. Fr. 99: 84. 1952; Tardieu in Fl. C.L.V. 2: 118. 1962.

Thailand.— SOUTH-EASTERN: Trat.

Distribution.— Vietnam (type).

Ecology.— In savannas, 600 m alt.

Vernacular.— Rak khao (รักเข้) (Trat).

8. *Gluta usitata* (Wall.) Ding Hou, Blumea 24: 21. 1978.— *Melanorrhoea usitata* Wall., Pl. As. Rar. 1: 9. t.11 & 12. 1829; Hook. f. in Fl. Br. India 2: 25. 1876; Kurz, Fl. Burma 1: 318. 1877; Engl. in DC., Monogr. Phaner. 4: 237. 1883; Pierre, Fl. Cochinch. t. 367B. 1897; Craib in Fl. Siam. En. 1: 346. 1926; Tardieu in Fl. C.L.V. 2: 103. 1962.

Thailand.— NORTHERN: Chiang Mai (Omkoï, Li, Mae Klang), Mae Hong Son (Mae Sariang); SOUTH-EASTERN: Chanthaburi; NORTH-EASTERN: Mukdahan.

Distribution.— India, Burma (type), Laos.

Ecology.— Scattered in deciduous forest, evergreen forest, open grassy-land or on foot hills; 300–1000 m alt.

Vernacular.— Suu (ซู) (Karen–Mae Hong Son); suu (ซู่) (Karen–Kanchanaburi); ma-riai (มะรီး) (Khmer); rak (รัก), rak yai (รักใหญ่) (Central); hak luang (ฮักหลวง) (Northern).

9. *Gluta velutina* Blume, Mus. Bot. Lugd. Bot. 1: 183. 1850, Burk., Gard. Bull. Str. Settl. 5: 225. 1931; Corn., Ways. Trees 1: 118. 1952, Tardieu in Fl. C.L.V. 2: 119. 1962; Ding Hou in Fl. Mal. 8: 461. 1978; Kochummen in Tree Fl. Mal. 4: 30. 1989.— *Syndesmis coarctata* Griff., Not. Pl. As. 4: 409. t.567. 1854.— *Gluta coarctata* Hook. f. in Fl. Br. India 2: 22. 1876; Engl. in DC., Monogr. Phaner. 4: 227. 1883; King, J. As. Soc. Bengal 65: 482. 1896; Pierre, Fl. For. Cochinch. t.368. 1898; Lecomte in Fl. Gén. I.-C. 2: 21. 1908; Ridl., Fl. Mal. Pen. 1: 527. 1922; Craib in Fl. Siam. En. 1: 346. 1926.

Thailand.—PENINSULAR: Surat Thani, Narathiwat (Bang Nara River, Tak Bai).

Distribution.—Malacca (type), Burma, Vietnam, Sumatra, Borneo, Malaysia.

Ecology.—Along mangroves tidal rivers.

Vernacular.—Rak (รัก) (Surat Thani).

Notes.—Similar to *G. renghas* but the habitat, stilt roots, hairy calyx and pedicel distinguish this species.

3. MELANOCHYLA

Hook.f. in Fl. Br. India 2: 38. 1876; Ding Hou, Blumea 24: 29. 1978; in Fl. Mal. 8: 490. 1978; Kochummen in Tree Fl. Mal. 4: 40. 1989.

Only one species in Thailand.

Melanochyla bracteata King, J. As. Soc. Bengal 65: 506. 1896; Ridl., Fl. Mal. Pen. 1: 540. 1922; Ding Hou in Fl. Mal. 8: 496. 1978; Kochummen in Tree Fl. Mal. 4: 42. 1989.

Thailand.—PENINSULAR: Narathiwat (Tak Bai).

Distribution.—Malay Peninsula, Sumatra and Borneo.

Ecology.—Scattered in peat swamp forest.

Vernacular.—Rak (รัก) (Narathiwat).

4. BUCHANANIA

Spreng. in Schrader, J. Bot. 2: 234. 1800; Roxb., Pl. Corom. 3: 58. 1819; Hook.f. in Fl. Br. India 2: 22. 1876; Kurz, Fl. Burma 1: 306. 1877; Engl. in DC., Monogr. Phaner. 4: 179. 1883; Lecomte in Fl. Gén. I.-C. 2: 8. 1908; Ridl., Fl. Mal. Pen. 1: 518. 1922; Tardieu in Fl. C.L.V. 2: 72. 1962; Back. & Bakh.f., Fl. Java 2: 147. 1965; Ding Hou, Blumea 24: 4. 1978; in Fl. Mal. 8: 412. 1978.— *Coniogeton* Blume, Bijdr.: 1156. 1826.

Six species widespread in Thailand.

1. *Buchanania arborescens* (Blume) Blume, Mus. Bot. 1: 183. 1850; Craib in Fl. Siam. En. 1: 348. 1926; Tardieu in Fl. C.L.V. 2: 76. 1962; Ding Hou in Fl. Mal. 8: 415. 1978; Kochummen in Tree Fl. Mal. 4: 16. 1989.— *Coniogeton arborescens* Blume, Bijdr.: 1156. 1826.— *B. florida* Schau., Nov. Act. Ac. Caes. Leop. Car. 19, Suppl. 1: 481. 1843.— *B.*

lucida Blume, Mus. Bot. 1: 184. 1850; Hook.f. in Fl. Br. India 2: 23. 1876; Lecomte in Fl. Gén. I.-C. 1: 9. 1908; Ridl., Fl. Mal. Pen. 1: 518. 1922, incl. var. *laxiflora* Ridl.; Craib in Fl. Siam. En. 1: 348. 1926; Tardieu in Fl. C.L.V. 2: 73. 1962.

T h a i l a n d.— **EASTERN:** Nakhon Ratchasima: C.F. Haines 2975 (Chang Pra Sakaerat); **SOUTH-EASTERN:** Trat: Nai Noe 51 (Khao Saming), Schmidt 526 (Ko Chang); **PENINSULAR:** Chumphon: Kerr 11596 (Ta Ngaw), 11671 (Tasan), 11856 (Pa Sak, Lang Suan); Ranong: Haniff 353, Kerr 11731 (Lam Liang), 16500 (La-un); Surat Thani: Kerr 1313 (Kanchanadit), 16072 (Ko Tao), Put 4191 (Kantuli); Phangnga: Kerr 18387 (Nop Pring), Sangkhachand 1807 (Kaotong, Nang Dum); Krabi: Kerr 18800 (Tambon Kao Panom), 18968 (Ko Pu); Nakhon Si Thammarat: Hansen-Smitinand 12147 (Khao Luang), 12431 (Ko Boi Noi); Trang: Sangkhachand 1522 (Khao Chong); Satun: Kerr 14094 (Adang), 14176 (Tarutao), Put 1533 (Bang Sun); Songkhla: Kerr 13587 (Padang Besa), 15931 (Khao Keo); no locality (Kloss 6567).

D i s t r i b u t i o n.— Tenasserim, Andamans, Indo-China, Formosa. Widely distributed throughout Malesia to New Britain, The Solomons, and Australia.

E c o l o g y.— In evergreen forest, on rocky ground, by bank of stream, in scrub jungle along seashore; at low altitude up to 300 m.

V e r n a c u l a r.— Chaa muang (จ้าม่วง) (Lampang); kra uam (กระอวม), kreet (กรีต) (Ranong); khuan kung (ควนคั้ง), mamuang khwaai (มะม่วงควาย), lueat khwaai (เลียดควาย) (Surat Thani), phum phraao (พุมพร้าว), rak (รัก), waa lo lek (หัวโลเล็ก) (Peninsular); waa luuk hin (หัวลูกหิน), waa lo (หัวโล) (Satun); ya thum (หญ้าทุม) (Northern).

2. *Buchanania glabra* Wall. ex Hook.f. in Fl. Br. India 2: 23. 1876; Lecomte in Fl. Gén. I.-C. 2: 9. 1908; Craib in Fl. Siam. En. 1: 348. 1926; Tardieu in Fl. C.L.V. 2: 81. 1962.

T h a i l a n d.— **NORTHERN:** Chiang Mai: Hosseus 283 (Doi Suthep), Kerr 6657 (Chiang Dao); Lamphun: Winit 1563 (Li, Phae forest); Lampang: Winit 1592 (Mae Sai Kam); Phrae: Beusekom et al 4816 (Mae Klang); Tak: Hosseus 144 (Wang Jao); **NORTH-EASTERN:** Phetchabun: Smitinand & Abbe 6328 (en route to Dan Sai); Chaiyaphum: Kerr 19960; **SOUTH-WESTERN:** Kanchanaburi: Beusekom et al 3801, Kerr 10179 (Si Sawat), 19881 (Praten).

D i s t r i b u t i o n.— Laos, Vietnam, Cambodia, Burma.

E c o l o g y.— Common in deciduous forest; at low altitude up to 900 m.

V e r n a c u l a r.— Mamuang nok (มะม่วงนกก) (Northern).

3. *Buchanania lanzan* Spreng. in Schrader, J. Bot. 2: 234. 1800.— *B. latifolia* Roxb., Fl. Ind. 2: 385. 1832; Lecomte in Fl. Gén. I.-C. 2: 10. 1908, Craib in Fl. Siam. En. 1: 348. 1926; Tardieu, Fl. C.L.V. 2: 77. 1962.

T h a i l a n d.— **NORTHERN:** Chiang Mai: Kerr 946, 1732 (Doi Suthep); Lampang: Kerr 4816 (Palat), Vanpruk 167 (Lakon), Winit 1588 (Mae Sai Kham, Phae forest); Tak: D. Bourke s.n. (Raheng); **SOUTH-WESTERN:** Kanchanaburi: Kerr 10148 (Si Sawat), 19889 (Praten).

Distribution.— Laos, Vietnam, Indes, Burma and Yunnan.

Ecology.— Open deciduous forest on stony ground; 50–500 m alt.

Vernacular.— Mamuang maeng wan (มะม่วงแมงวัน) (Lampang); mamuang hua maeng wan (มะม่วงหัวแมงวัน) (Nakhon Ratchasima, Ratchaburi); rak muu (รักมู) (Peninsular); hua maeng wan (หัวแมงวัน) (Sukhothai); hak phuu (ฮักฝู), hak muu (ฮักมู) (Northern).

4. *Buchanania reticulata* Hance, J. Bot. 15: 332. 1877; Lecomte in Fl. Gén. I.-C. 2: 11. 1908; Craib in Fl. Siam. En. 1: 349. 1926.

Thailand.— **NORTHERN**: Uttaradit: Chanthanamuk 79 (Huai Maeng); **NORTH-EASTERN**: Loei: Charoenphol & Larsen & Warncke 4935 (Na Noi foothill of Phu Kradueng); **EASTERN**: Nakhon Ratchasima: Kerr 8114, 8114A (Pak Thong Chai), Phengnaren 596 (Wang Nam Khieo), Put 2184 (Huai Taleng); **SOUTH-EASTERN**: Chon Buri: Collins s.n. (Si Racha), 815 (Tapeboot), 1444 (Na Kate); **SOUTH-WESTERN**: Kanchanaburi: Beusekom et al 4056 (Salak Pra Wildlife Sanctuary, Sadong, Kerr 10123); Ratchaburi: C.F. Field 3798 (Koh Lak), Kerr 20615, 20635 (Thung Luang); Phetchaburi: Collins 1586 (Nong Khae, west coast of Gulf of Thailand); Prachuap Khiri Khan: Kerr 13466, 16129 (Hua Hin), Kerr 10982, Larsen 33729 (Sam Roi Yot), Marcan 2448 (Khao Tao); **CENTRAL**: Chai Nat: Put 2638.

Distribution.— Laos, Vietnam, Cambodia.

Ecology.— Common in dry deciduous forest, on sandy, open scrub behind beaches, limestone range; up to 450 m alt.

Vernacular.— Kreet (กรีด) (Surat Thani); rak khao (รักเขา) (Nakhon Si Thammarat); wapaadee (วะปาดี), aa sai (อาชัย) (Narathiwat); hua maeng wan (หัวแมงวัน) (Phitsanulok).

5. *Buchanania sessilifolia* Blume, Mus. Bot. 1: 184. 1850; Craib in Fl. Siam. En. 1: 349. 1926; Ding Hou in Fl. Mal. 8: 418. 1978; Kochummen in Tree Fl. Mal. 4: 16. 1989.

Thailand.— **PENINSULAR**: Surat Thani: Kerr 18320 (King Panom); Phangnga: Kerr 17340 (Koh Yao Yai); Songkhla: Kerr 15852 (Ban Prakaup); Pattani: Lakshnakara 597, 770 (Ban Kalubi, Toh Moh).

Distribution.— Laos, Malesia: Sumatra, Malay Peninsula, and Borneo (Brunei, Sarawak, Sabah, SE. Borneo, and incl. Anambas & Natuna Is.).

Ecology.— Common in open deciduous forest, on alluvial plain; 50–200 m alt.

6. *Buchanania siamensis* Miq., Ann. Mus. Lugd. Bat. 4: 118. 1878; Lecomte in Fl. Gén. I.-C. 2: 12. 1908; Craib in Fl. Siam. En. 1: 350. 1921; Tardieu in Fl. C.L.V. 2: 80. 1962.

Thailand.— **EASTERN**: Nakhon Ratchasima: Kerr 8079, 8079A (Si Khiu), Put 1945 (Watana), 4223 (Bua Yai); **SOUTH-WESTERN**: Ratchaburi: Winit 478 (Khao Rak), 479 (Rang Mai Ding); Prachuap Khiri Khan: Put 3183 (Huai Yang).

Distribution.— Laos, Vietnam, Cambodia.

Ecology.— Common in open deciduous forest, on alluvial plain; 50–200 m alt.

V e r n a c u l a r.— Thanonchai (ธนนไชย), see thanonchai (ศรีธนนไชย) (Nakhon Ratchasima); phangphuai nok (พังพวยนกก), phangphuai paa (พังพวยป่า), lan chai (ลันไชย) (Ratchaburi, Peninsular); ruang sai (รวงไทร), raang sai (รวงไทร), raang thai (รวงไทร) (Ubon Ratchathani); lang sai (ล้งไทร) (Prachin Buri).

5. CAMPNOSPERMA

Thwaites in Hook., J. Bot. Kew Misc. 6: 65. 1854, nom. cons.; March., Rév. Anacard.: 71&172. 1869; Engl. in DC. Monogr. Phaner. 4: 316. 1883; Corn., Gard. Bull. Str. Settl. 10: 253. 1939; Ding Hou, Blumea 24: 5. 1978; in Fl. Mal. 8: 524. 1978; Kochummen in Tree Fl. Mal. 4: 18. 1989.

One species in Thailand.

Campnosperma coriaceum (Jack) Hall.f. ex Steen., Fl. Mal. Bull. 3: 74. 1948; Ding Hou, Blumea 24: 5. 1978; in Fl. Mal. 8: 530. 1978; Kochummen in Tree Fl. Mal. 4: 20. 1989.— *Coelopyrum coriaceum* Jack., Mal. Misc. 2.7: 65. 1822.— *Buchanania macrophylla* Blume, Mus. Bot. Lugd.-Bat. 1: 185. 1850.— *Coelopyrum griffithii* March., Rév. Anacard.: 174. 1869; Hook.f. in Fl. Br. India 2: 41. 1876; Engl. in DC., Monogr. Phaner. 4: 320. 1883; King, J. As. Soc. Bengal 65: 494. 1896; Ridl., Fl. Mal. Pen. 1: 534. 1922; Corn., Gard. Bull. Str. Settl. 10: 254. 1939.— *C. macrophylla* Hook.f. in Fl. Br. Ind. 2: 41. 1876; Engl. in DC., Monogr. Phaner. 4: 316. 1883, Corn., Gard. Bull. Str. Settl. 10: 254. 1939; Ways. Trees: 104. 1940.

T h a i l a n d.— PENINSULAR: Narathiwat (Tak Bai).

D i s t r i b u t i o n.— Malay Peninsula; Malesia: Sumatra, Borneo, New Guinea.

E c o l o g y.— In Peat swamp forest.

V e r n a c u l a r.— Khi non phru (ขี้หนอนพรุ) (Narathiwat).

6. SEMECARPUS

Linn.f., Suppl. 25: 282. 1781; Hook.f. in Fl. Br. India 2: 30. 1876; Kurz, Fl. Burma 1: 311. 1877; Engl. in DC., Monogr. Phaner. 4: 472. 1883; Lecomte in Fl. Gén. I.-C. 2: 36. 1908; Ridl., Fl. Mal. Pen. 1: 541. 1922; Tardieu in Fl. C.L.V. 2: 156. 1962; Back. & Bakh.f., Fl. Java 2: 154. 1965; Ding Hou in Fl. Mal. 8: 499. 1978; Kochummen in Tree Fl. Mal. 4: 50. 1989.

Three species in Thailand.

1. Semecarpus cochinchinensis Engl. in DC., Monogr. Phaner. 4: 489. 1883; Ridl., Fl. Mal. Pen. 1: 542. 1922; Tardieu in Fl. C.L.V. 2: 160. 1962; Ding Hou in Fl. Mal. 8: 516. 1978; Kochummen in Tree Fl. Mal. 4: 51. 1989.— *S. glomerulata* Ridl., J. Str. Br. R. As. Soc. 54: 39. 1910; Fl. Mal. Pen. 1: 542. 1922.

Thailand.—NORTHERN: Chiang Mai; NORTH-EASTERN: Nakhon Ratchasima (Pak Thong Chai); EASTERN: Chaiyaphum; SOUTH-WESTERN: Phetchaburi, Prachuap Khiri Khan (Bang Saphan); SOUTH-EASTERN: Prachin Buri (Sa Kaeo), Chon Buri (Si Racha); CENTRAL: Saraburi; PENINSULAR: Surat Thani, Nakhon Si Thammarat (Tha Khanon), Phuket.

Distribution.—Indo-China and Malay Peninsula.

Ecology.—Deciduous forests, on rocky limestone hill; up to 450 m alt.

Vernacular.—*Dao u-nga* (เตาอุงะ) (Malay–Yala); *nam kliang* (น้ำเกลี้ยง), *puun phong* (ปูนฟง), *rak khaao* (รักขาว) (Prachin Buri); *rak* (รัก) (Saraburi, Prachin Buri, Surat Thani); *rak nam* (รักน้ำ) (Chaiyaphum); *hak kheemuu* (ฮักเข็มู), *hak muu* (ฮักหมู) (Chiang Mai).

2. *Semecarpus curtisii* King, J. As. Soc. Bengal 65: 509. 1890; Ridl., J. Str. Br. R. As. Soc. 59: 91. 1911; Ding Hou in Fl. Mal. 8: 511. 1978; Kochummen in Tree Fl. Mal. 4: 51. 1989.

Thailand.—PENINSULAR: Phuket (type).

Distribution.—Malay Peninsula.

Ecology.—Evergreen and deciduous forests, usually on hill slopes, scrubs and bamboo forests; up to 100 m alt.

Vernacular.—*Rak khao* (รักเขา), *rak paa* (รักป่า) (Peninsular); *rue-kha* (เรือชะ) (Malay–Pattani).

3. *Semecarpus reticulata* Lecomte, Bull. Soc. Bot. Fr. 54: 610. 1907; in Fl. Gén. I.-C. 2: 40. 1908; Tardieu in Fl. C.L.V. 2: 174. 1962.

Thailand.—NORTHERN: Chiang Mai; SOUTH-WESTERN: Uthai Thani (Huai Kha Khaeng), Ratchaburi (Chom Bueng).

Distribution.—Laos (type), Vietnam.

Ecology.—In evergreen forests; 50 m alt.

Vernacular.—*Rak* (รัก) (Trat).

7. HOLIGARNA

Buch.-Ham. ex Roxb., Hort. Beng.: 22. 1814, nom. cons., Pl. Corom. 3: 19. t.282. 1820; Hook.f. in Fl. Br. India 2: 36. 1876; Kurz, Fl. Burma 1: 315. 1877; Engl. in DC. Monogr. Phaner. 4: 7. 1883; Craib in Fl. Siam. En. 1: 355. 1926; Tardieu in Fl. C.L.V. 2: 177. 1962.—*Katou-Tsjeroe* Adans., Fam. 2: 84. 1763.—*Hadestaphylum* Dennst., Schluess. Hort. Malab.: 30. 1818.

About 3 species in Thailand.

1. *Holigarna helferi* Hook.f. in Fl. Br. India 2: 37. 1876; Kurz, Fl. Burma 1: 315. 1877.

Thailand.—PENINSULAR: Ranong (Khao Pota Chong Dong), Chumphon (Ban Krayae), Phuket (Thalang).

Distribution.—Burma.

Ecology.—In evergreen forests, bamboo forests; 50–100 m alt.

Vernacular.—Rak paa (รักป่า) (Chumphon).

2. *Holigarna kurzii* King, J. As. Soc. Bengal 65: 512. 1896; Craib in Fl. Siam. En. 1: 355. 1926; Tardieu in Fl. C.L.V. 2: 177. 1962.—*Semecarpus albescens* Kurz, J. As. Soc. Bengal 40: 51. 1871; Engl. in DC., Monogr. Phaner. 4: 488. 1883; Lecomte in Fl. Gén. I.-C. 2: 40. 1908.

Thailand.—NORTHERN: Chiang Rai (Mae Sai), Chiang Mai (Doi Suthep, Chiang Dao); NORTH-EASTERN: Loei (Wang Saphung); SOUTH-EASTERN: Chanthaburi (Soi Dao, Wang Kaphae); SOUTH-WESTERN: Kanchanaburi (Sangkhla Buri, Wangka); PENINSULAR: Yala (Than To).

Distribution.—Burma (type), Vietnam.

Ecology.—Scattered in evergreen and mixed deciduous forests; 150–600 m alt.

Vernacular.—Khee hen (ขี้เหิน), nam kliang khan (น้ำเกลี้ยงขัน), nam kliang chae (น้ำเกลี้ยงแจ้), nam kliang chan (น้ำเกลี้ยงชัน) ma khee hen (มะขี้เหิน), maak khee (หมากขี้) (Loei); rak khee muu (รักขี้หมู) (Central); rak bai yai (รักใบใหญ่) (Yala); hak (ฮัก), hak khee muu (ฮักขี้หมู), hak muu (ฮักหมู) (Northern).

3. *Holigarna longifolia* Roxb., Fl. Ind. ed. Carey: 267. 1874; Kurz, Pegu Rept. A. 42. 1875; Brandis, Ind. Trees: 204. 1921; Kanjilal, Fl. Assam 1: 377. 1937.

Thailand.—NORTH-EASTERN: Loei (Sithan), Khon Kaen (Chumphae); SOUTH-WESTERN: Kanchanaburi (Wangka); CENTRAL: Nakhon Nayok (Wang Takhrui, Nang Rong); PENINSULAR: Nakhon Si Thammarat.

Distribution.—Pakistan (type), Assam, Burma.

Ecology.—Deciduous forests, by streams; 200–400 m alt.

Vernacular.—Ku-yan (กุฮยัน) (Karen–Kanchanaburi); nam kliang (น้ำเกลี้ยง) (Khon Kaen); rak khaao (รักขาว), rak luan (รักหลวง), rak yai (รักใหญ่) (Northern).

8. DRIMYCARPUS

Hook.f. in Benth. & Hook., Gen. Pl. 1: 424. 1862; in Fl. Br. India 2: 36. 1876; Kurz, Fl. Burma 1: 314. 1877; Engl. in DC., Monogr. Phaner. 4: 471. 1883; Lecomte in Fl. Gén. I.-C. 2: 41. 1908; Tardieu in Fl. C.L.V. 2: 179. 1962; Ding Hou in Fl. Mal. I. 8: 520. 1978.

Only one species in Thailand.

Drimycarpus racemosus (Roxb.) Hook.f. in Fl. Br. India 2: 36. 1876; Kurz, Fl. Burma 1: 314. 1877; Engl. in DC., Monogr. Phaner. 4: 471. 1883; Lecomte in Fl. Gén. I.-C. 2: 41. 1908; Kanjilal, Fl. Assam 1: 357. 1936.— *Holigarna racemosa* Roxb., Fl. Ind. 2: 82. 1832.

T h a i l a n d.— NORTHERN: Chiang Mai (Doi Chiang Dao, Doi Inthanon); PENINSULAR: Phangnga (Kapong, Takua Pa), Nakhon Si Thammarat (Khao Luang).

D i s t r i b u t i o n.— Assam (type), Indo-China and Andaman Islands.

E c o l o g y.— Edge of evergreen forests; up to 2000 m alt.

N o t e s.— Leaves with a rather thick, distinct marginal vein, strongly wavy; fruit yellowish.

9. MANGIFERA

Linn., Sp. Pl. 1: 200. 1753; March., Rév. Anacard.: 102 & 188. 1869; Hook.f. in Fl. Br. India 2: 13. 1876; Kurz, Fl. Burma 1: 303. 1877; Engl. in DC., Monogr. Phaner. 4: 195. 1883; Lecomte in Fl. Gén. I.-C. 2: 13. 1908; Ding Hou in Fl. Mal. 8: 423. 1978, Blumea 24: 21. 1978; Kochummen in Tree Fl. Mal. 4: 31. 1989.

About 16 species in Thailand.

1. Mangifera caloneura Kurz in J. As. Soc. Bengal 42: 66. 1873; Hook.f. in Fl. Br. India 2: 14. 1876; Kurz, Fl. Burma 1: 305. 1877; Engl. in DC. Monogr. Phaner. 4: 220. 1883; Pierre, Fl. For. Cochinch. pl. 364G. 1897.

T h a i l a n d.— NORTH-EASTERN: Khon Kaen (Tha Phra); SOUTH-WESTERN: Prachuap Khiri Khan (Bang Saphan); SOUTH-EASTERN: Rayong (Ban Phe, Ko Samet); PENINSULAR: Trang.

D i s t r i b u t i o n.— Burma (type).

E c o l o g y.— In mixed deciduous and evergreen forests. Flowering and fruiting in April–May.

V e r n a c u l a r.— Muang thian (ม่วงเทียน) (Prachuap Khiri Khan); mamuang kalon (มะม่วงกะล่อน), mamuang paa (มะม่วงป่า) (Central); mamuang kheetai (มะม่วงขี้ไต) (Peninsular); mamuang theppharot (มะม่วงเทพพรต) (Ratchaburi).

2. Mangifera camptosperma Pierre, Fl. For. Cochinch. 1: pl. 363A. 1897; Lecomte in Fl. Gén. I.-C. 2: 18. 1908; Craib in Fl. Siam. En. 1: 343. 1926; Tardieu in Fl. C.L.V. 2: 89. 1962.

T h a i l a n d.— NORTH-EASTERN: Nakhon Ratchasima (Klang Dong); CENTRAL: Saraburi (Muak Lek); SOUTH-EASTERN: Chon Buri (Si Racha); PENINSULAR: Surat Thani.

D i s t r i b u t i o n.— Vietnam (type), Burma.

E c o l o g y.— Evergreen forests; 20–200 m alt.

Vernacular.— Baap (บาป), mamuang baap (มะม่วงบาป), sawaai so (สะวายสอ) (General); mak maang (หมักมาง) (Saraburi).

3. *Mangifera cochinchinensis* Engl. in DC., Monogr. Phaner. 4: 205. 1883; Pierre, Fl. For. Cochinch. 1: pl. 362B. 1897; Lecomte in Fl. Gén. I.-C. 2: 15. 1908; Tardieu in Fl. C.L.V. 2: 87. 1962.— *M. sugenda* Genibrel in Crevost & Lemarié, Cat. Prod. Indoch. 1: 234. 1917.

Thailand.— SOUTH-WESTERN: Kanchanaburi; SOUTH-EASTERN: Chon Buri (Si Racha).

Distribution.— Vietnam (type), Laos.

Ecology.— In evergreen forest, about 650 m alt.

Vernacular.— Mamuang kilen (มะม่วงกิลเลน), mamuang khai laen (มะม่วงไข่แล่น), mamuang himmaphaan khao (มะม่วงหิมพานต์เขา) (Peninsular).

4. *Mangifera duperreana* Pierre, Fl. For. Cochinch. 1: t.362. 1897; Lecomte in Fl. Gén. I.-C. 2: 14. 1908; Craib in Fl. Siam. En. 1: 343. 1926; Tardieu in Fl. C.L.V. 2: 85. 1962.— *Phanrangia poilanei* Tardieu, Bull. Soc. Bot. Fr. 95: 779. 1948.

Thailand.— EASTERN: Nakhon Ratchasima (Pak Thong Chai, Non Tathen), Surin (Sangkha); SOUTH-EASTERN: Chon Buri (Si Racha, Nong Khun, Chak Yai), Chanthaburi (Makham), Prachin Buri (Aranyaprathet, Klong Nam Sai), Trat (Khao Saming); PENINSULAR: Chumphon, Ranong (Kapoe), Surat Thani, Nakhon Si Thammarat (Tha Khanom), Trang (Khao Chong).

Distribution.— Cambodia (type), Vietnam.

Ecology.— Scattered in deciduous forests, evergreen forests; up to 200 m alt.

Vernacular.— Mamuang kheeya (มะม่วงขี้ยา) (Chiang Mai); mamuang khan (มะม่วงคัน) (Chumphon).

5. *Mangifera flava* Evrard, Bull. Soc. Bot. Fr. 99: 82. 1952; Tardieu in Fl. C.L.V. 2: 88. 1962.

Thailand.— SOUTH-EASTERN: Chanthaburi (Khao Cha Mao National Park) (Shimizu et al t-23499 & 23503); PENINSULAR: Surat Thani.

Distribution.— Vietnam, Cambodia.

Ecology.— Lowland evergreen forest and bamboo thickets; 50–650 m alt.

Vernacular.— Paep (แปป), (Peninsular).

6. *Mangifera foetida* Lour., Fl. Cochinch.: 160. 1790; Hook.f. in Fl. Br. India 2: 18. 1876; Kurz, Fl. Burma 1: 305. 1877; Engl. in DC., Monogr. Phaner. 4: 212. 1883; King, J. As. Soc. Bengal 65: 474. 1896; Lecomte in Fl. Gén. I.-C. 2: 15. 1908; Ridl., Fl. Mal. Pen. 1: 524. 1922; Craib in Fl. Siam. En. 1: 343. 1926; Tardieu in Fl. C.L.V. 2: 97. 1962; Back. & Bakh.f.,

Fl. Java 2: 149. 1965; Ding Hou in Fl. Mal. 8: 435. 1978; Kochummen in Tree Fl. Mal. 4: 35. 1989.—*Manga foetida* Rumph., Herb. Amb. 1: 98. t.28. 1741.—*Mangifera horsfieldii* Miq., Fl. Ind. Bat. 1: 632. 1859.—*M. leschenaultii* March., Rév. Anacard.: 189. 1869.

T h a i l a n d.—PENINSULAR: Chumphon (Langsuan), Surat Thani, Phangnga, Nakhon Si Thammarat (Khiriwong), Trang (Khao Chong), Songkhla (Hat Yai), Phuket (Khao Phra Thaeo).

D i s t r i b u t i o n.—Vietnam (type), Burma, Malay Peninsula, Malesia (Borneo, Sumatra), The Philippines.

E c o l o g y.—Common in evergreen forests, up to 100 m alt., usually cultivated.

V e r n a c u l a r.—Ma chae (มะแจ), maa-chang (มาจัง), maa-chae (มาแจ) (Malay-Peninsular); mamut (มะมุด), malamut thai (มะละมุดไทย) (Peninsular).

7. *Mangifera gedebe* Miq., Sum.: 522. 1861; Engl. in DC., Monogr. Phaner. 4: 209. 1883; Back. & Bakh.f., Fl. Java 2: 149. 1965, Ding Hou in Fl. Mal. 8: 431. 1978.

T h a i l a n d.—PENINSULAR: Surat Thani (Nong Thung Thong), Narathiwat (Phru To Daeng).

D i s t r i b u t i o n.—Malay Peninsula, Malesia (Sumatra, Java).

E c o l o g y.—In lowland evergreen forest, peat swamp forest.

V e r n a c u l a r.—Mamuang paan (มะม่วงปาน) (Narathiwat); ka-due-pae (กะดื้อแป) (Malay-Narathiwat).

8. *Mangifera griffithii* Hook.f., Trans. Linn. Soc. 23: 168. 1860; in Fl. Br. India 2: 14. 1876; Engl. in DC., Monogr. Phaner. 4: 203. 1883; King, J. As. Soc. Bengal 65: 468. 1896; Pierre, Fl. For. Cochinch.: t.364K. 1897; Ridl., Fl. Mal. Pen. 1: 521. 1922; Ding Hou, Blumea 24: 25. 1978; in Fl. Mal. 8: 430. 1978; Kochummen in Tree Fl. Mal. 4: 35. 1989.—*M. microphylla* Griff. ex Hook.f. in Fl. Br. India 2: 17. 1876; Engl. in DC., Monogr. Phaner. 4: 209. 1883; King, J. As. Soc. Bengal 65: 468. 1896; Pierre, Fl. For. Cochinch.: t.364L. 1897; Ridl., Fl. Mal. Pen. 1: 521. 1922; Kew Bull. 1933: 194.—*M. beccarii* Ridl., Kew Bull. 1933: 194.

T h a i l a n d.—PENINSULAR: Narathiwat.

D i s t r i b u t i o n.—Malay Peninsula, Malesia.

E c o l o g y.—In lowland forest; up to 360 m alt.

V e r n a c u l a r.—Mamuang lawaa (มะม่วงละว้า), lawo (ละว้า) (Malay-Narathiwat), mamuang paa (มะม่วงป่า) (Narathiwat).

9. *Mangifera indica* Linn., Sp. Pl.: 200. 1753; Burm.f., Fl. Ind.: 62. 1768; Roxb., Fl. Ind. ed. 1. Carey: 641. 1824; Hook.f. in Fl. Br. India 2: 13. 1876; Engl. in DC., Monogr. Phaner. 4: 199. 1883; King, J. As. Soc. Bengal 65: 472. 1896; Pierre, Fl. For. Cochinch. t.361. 1897; Lecomte in Fl. Gén. I.-C. 2: 18. f.4. 1908; Ridl., Fl. Mal. Pen. 1: 523. 1922; Craib in Fl. Siam. En. 1: 344. 1926; Back. & Bakh.f., Fl. Java 2: 149. 1965; Ding Hou in Fl. Mal. 8: 427. 1978;

Kochummen in Tree Fl. Mal. 4: 36. 1989.— *M. arbor* Hermann, Mus. Zeyl.: 59. 1717.— *Manga domestica* Rumph., Herb. Amb. 1: 93, t.25. 1741.— *Mangifera domestica* Gaertn., Fruct. 2: 95, t.100. 1790.— *M. linnaei* Korth. ex Hassk., Cat. Hort. Bog.: 245. 1844.— *M. laurina* Bl., Mus. Bot. 1: 195. 1850; Miq., Fl. Ind. Bat. 1, 2: 629. 1859; Engl. in DC., Monogr. Phaner. 4: 202. 1883; Pierre, Fl. For. Cochinch. t.364A. 1897; Merr., Int. Rumph.: 331. 1917.— *M. kukula* Blume, Mus. Bot. 1: 192. 1850.— *M. longipes* Griff., Not. Pl. As. 4: 419. 1854; Hook.f. in Fl. Br. Ind. 2: 15. 1876; Kurz, Fl. Burma 1: 303. 1877; Engl. in DC., Monogr. Phaner. 4: 201. 1883; King, J. As. Soc. Bengal 65: 473. 1896; Pierre, Fl. For. Cochinch.: t.365A. 1897; Ridl., Fl. Mal. Pen. 1: 523. 1922; Tardieu in Fl. C.L.V. 2: 95. t.3. 1962; Back. & Bakh.f., Fl. Java 7: 148. 1965.— *M. sumatrana* Miq., Fl. Ind. Bat. 1: 630. 1859.— *M. integrifolia* Gen. ex Crevost & Lemarié, Cat. Prod. Indoch. 1: 234. 1917.

Thailand.— Widespread by cultivation or run wild.

Distribution.— Throughout the tropics and subtropics, usually cultivated also wild. India (type) to Indo-China, Malay Peninsula, Malesia and Micronesia.

Ecology.— Scattered in evergreen and deciduous forests; up to 650 m alt.

Vernacular.— Khu (ခု) (Karen–Kanchanaburi); khok-lae (คอกเลาะ) (Lawa–Kanchanaburi); choh-chok (เจาะชอก), chok (ชอก) (Chong–Chanthaburi); trok (ต๋อรัค) (Chaobon–Nakhon Ratchasima); pao (เปา) (Malay–Peninsular); pae (แป) (Lawa–Chiang Mai); mamuang (มะม่วง), mamuang baan (มะม่วงบ้าน) (General); mamuang suan (มะม่วงสวน) (Central); sa-khoh (สะเคาะ), saa-khoh-saa (สาเคาะสา) (Karen–Mae Hong Son); sa-waai (สะวาย) (Khmer); mak-mong (หมักม่อง) (Shan–Northern); mamuang kaleng (มะม่วงกะเล้ง), mamuang kee kwaang (มะม่วงจี้กวาง) (Peninsular).

10. *Mangifera lagenifera* Griff., Not. Pl. As. 4: 414. t.567. f.3. 1854; Hook.f. in Fl. Br. India 2: 18. 1876; Engl. in DC., Monogr. Phaner. 4: 211. 1883; King, J. As. Soc. Bengal 65 (2): 476. 1896; Pierre, Fl. For. Cochinch. t.365C. 1897; Ridl., Fl. Mal. Pen. 1: 525. 1922; Craib in Fl. Siam. En. 1: 344. 1926; Corn., Ways. Trees 1: 110. 1952; Ding Hou in Fl. Mal. 8: 433. 1978; Kochummen in Tree Fl. Mal. 4: 36. 1989.

Thailand.— PENINSULAR: Surat Thani (Ko Tao), Satun (Thung Nui, Khuan Kalong).

Distribution.— Malay Peninsula (Malacca, type) and Sumatra.

Ecology.— Lowland forest; up to 150 m alt.

Vernacular.— Mamuang pom (มะม่วงป้อม) (Central).

11. *Mangifera linearifolia* Kosterman

Thailand.— EASTERN: Chaiyaphum: Beusekom et al 4086 (Nam Phrom); PENINSULAR: Trang (Khao Chong).

Distribution.— Endemic to Thailand.

Ecology.— Evergreen forest along river, on sandstone.

12. *Mangifera macrocarpa* Blume, Bijdr.: 1158. 1826; Engl. in DC., Monogr. Phaner. 4: 210. 1883; Pierre, Fl. For. Cochinch. t.364D. 1897; Lecomte in Fl. Gén. I.-C. 2: 16. 1908; Back. & Bakh.f., Fl. Java 2: 148. 1965; Ding Hou, Blumea 24: 26. 1978; in Fl. Mal. 8: 439. 1978; Kochummen in Tree Fl. Mal. 4: 37. 1989.— *M. fragrans* Maingay ex Hook.f. in Fl. Br. India 2: 18. 1876; King, J. As. Soc. Bengal 65: 475. 1896; Ridl., Fl. Mal. Pen. 1: 524. 1922.

Distribution.— Cambodia, Malay Peninsula, and Malesia.

Ecology.— In lowland forests.

Notes.— The long and narrow leaves with long petioles is a good diagnostic character of the species.

13. *Mangifera odorata* Griff., Not. Pl. As. 4: 417. 1854; Hook.f. in Fl. Br. India 2: 17. 1876; Engl. in DC., Monogr. Phaner. 4: 210. 1883; King, J. As. Soc. Bengal 65: 474. 1896; Ridl., Fl. Mal. Pen. 1: 524. 1922; Back. & Bakh.f., Fl. Java 2: 149. 1965; Ding Hou, Blumea 24: 26. 1978; in Fl. Mal. 8: 437. 1978; Kochummen in Tree Fl. Mal. 4: 37. 1989.— *M. oblongifolia* Hook.f. in Fl. Br. India 2: 16. 1876; Engl. in DC., Monogr. Phaner. 4: 204. 1883; King, J. As. Soc. Bengal 65: 473. 1896; Pierre, Fl. For. Cochinch. t.364I. 1897; Lecomte in Fl. Gén. I.-C. 2: 16. 1908; Ridl., Fl. Mal. Pen. 1: 523. 1922; Craib in Fl. Siam. En. 1: 344. 1926. — *M. foetida* var. *odorata* (Griff.) Pierre, Fl. For. Cochinch.: t.365B. 1897.

Thailand.— NORTHERN: Chiang Mai (Doi Suthep), Lampang.

Distribution.— Malay Peninsula (Malacca, type).

Ecology.— Not common in evergreen forests; 400–1000 m alt.

Vernacular.— Kinning (กินนิง) (Narathiwat), mamuang chingreet (มะม่วงจิ้งหรีด), mamuang paa (มะม่วงป่า) (Central).

14. *Mangifera pentandra* Hook.f. in Fl. Br. India 2: 14. 1876; Engl. in DC., Monogr. Phaner. 4: 198. 1883; King, J. As. Soc. Bengal 65: 472. 1896; Pierre, Fl. For. Cochinch. t.364F. 1897; Ridl., Fl. Mal. Pen. 1: 522. 1922; Corn., Ways. Trees: 111. 1940; Ding Hou, Blumea 24: 28. 1978; in Fl. Mal. 8: 426. 1978; Kochummen in Tree Fl. Mal. 4: 38. 1989.— *M. lanceolata* Ridl., J. Str. Br. R. As. Soc. 59: 90. 1911; Fl. Mal. Pen. 1: 522. 1922.

Thailand.— SOUTH-WESTERN: Prachuap Khiri Khan.

Distribution.— Malay Peninsula (Malacca, type).

Ecology.— In lowland forests. Flowering December–January; fruiting February–March.

Vernacular.— Mamuang paa (มะม่วงป่า) (Central).

Notes.— This is very similar to *M. indica* but the reticulation in the leaves are finer and more distinct on both surfaces. Panicles more densely hairy, the flowers have five stamens, the sepals are broader and more coarsely pubescent, the petals are shorter and are situated nearer the edge of the disc. The bases of the leaves are also less cuneate than in *M. indica*.

15. *Mangifera quadrifida* Jack in Roxb., Fl. Ind. ed. Wall.: 440. 1824; Hook.f. in Fl. Br. India 2: 16. 1876; Engl. in DC., Monogr. Phaner. 4: 206. 1883, incl.; var. *spathulaefolia* (Blume) Engl., l.c. 207; King, J. As. Soc. Bengal 65 (2): 471. 1896; Pierre, Fl. For. Cochinch. t.364H. 1897; Ridl., Fl. Mal. Pen. 1: 522. 1922; Corn., Ways. Trees: 111. 1940; Ding Hou, Blumea 24: 28. 1978; in Fl. Mal. II. 8: 429. 1978; Kochummen in Tree Fl. Malaya 4: 38. 1989.— *M. rigida* Blume, Mus. Bot. 1: 200. 1850; Miq., Fl. Ind. Bat 1: 633. 1859; Engl. in DC., Monogr. Phaner. 4: 207. f.16. 1883.— *M. maingayi* Hook.f. in Fl. Br. India 2: 17. 1876; Engl. in DC., Monogr. Phaner. 4: 208. 1883; King, J. As. Soc. Bengal 65: 469. 1896; Ridl., Fl. Mal. Pen. 1: 522. 1922.— *M. longipetiolata* King, J. As. Soc. Bengal 65: 470. 1896; Ridl., Fl. Mal. Pen. 1: 522. 1922; Corn., Ways. Trees: 110. f.22. 1940.

Thailand.— PENINSULAR: Yala (Bo Hin).

Distribution.— Malay Peninsula, Sumatra and Borneo.

Ecology.— In lowland forests.

Vernacular.— Mamuang khan (มะม่วงคัน) (Peninsular).

16. *Mangifera sylvatica* Roxb., Fl. Ind. 1: 644. 1832; Hook.f. in Fl. Br. India 2: 15. 1876; Kurz, Fl. Burma 1: 304. 1877; Engl. in DC., Monogr. Phaner. 4: 200. 1883; Pierre, Fl. For. Cochinch. t.364B. 1897; Parkins., Fl. Andam.: 139. 1923; Craib in Fl. Siam. En. 1: 345. 1926; Kanjilal, Fl. Assam 1: 336. 1936.— *M. indica* Wall., Cat. 8487, non Linn.

Thailand.— NORTHERN: Chiang Mai (Doi Pha Khao), Lampang (Wang Kwang); NORTH-EASTERN: Loei (Phu Kradueng); PENINSULAR: Satun (Khuan Kalong).

Distribution.— Assam (type), India, Burma, Nepal, Andaman Islands.

Ecology.— In evergreen forests, by stream, and on hill; 50–1500 m alt.

Vernacular.— Kho-maeng-saa (โห้แมงสา) (Karen–Lampang); mamuang kheetai (มะม่วงขี้ไต) (Trat); mamuang chaang yiap (มะม่วงช้างเหี้ยบ), mamuang paep (มะม่วงแปบ) (Northern); som muang kluai (ส้มม่วงกล้วย) (Peninsular).

10. SWINTONIA

Griff., Proc. Linn. Soc. Lond. 1: 283. 1846; Hook.f. in Fl. Br. India 2: 26. 1876; Engl. in DC., Monogr. Phaner. 4: 228. 1883; Ding Hou in Fl. Mal. 8: 440. 1978.— *Astropetalum* Griff., Not. 4: 411. t.1854.— *Anauxanopetalum* Teijsm. & Binn. in Miq., J. Bot. Néerl. 1: 368. 1861.

Only two species in Thailand.

1. *Swintonia schwenkii* (Teijsm. & Binn.) Teijsm. & Binn. [Cat. Bot.: 230. 1866, nomen] ex Hook.f. in Fl. Br. India 2: 26. 1876; Kurz, Fl. Burma 1: 316. 1877; Engl. in DC., Monogr. Phaner. 4: 432. 1883; King, J. As. Soc. Bengal 65: 489. 1896; Ridl., Fl. Mal. Pen. 1: 533. 1922; Craib in Fl. Siam. En. 1: 353. 1926; Tardieu in Fl. C.L.V. 2: 108. 1962; Ding Hou, Blumea 24: 39. 1978; in Fl. Mal. 8: 443. 1978.— *Astropetalum* sp. 1 Griff., Not. Pl. As. 4: 411. 1854; Ic. Pl. As. 4. t.565. f.2b-d. 1854.— *Anauxanopetalum schwenkii* Teijsm. & Binn. in Miq. J. Bot. Néerl. 1: 368. 1861.

Thailand.— PENINSULAR: Yala (Banang Sata).

Distribution.— Sumatra (type), Malacca, Burma, Cambodia.

Ecology.— Edge of evergreen forests; about 50 m alt.

Vernacular.— Kaa-yuu mue-beng (กายูมือเบ็ง), kaa-yuu mue-yaeng (กายูมือแยง) (Malay-Peninsular); kaan tong (ก้านตอง), kaan thong (ก้านทอง) (Satun); khan thong (ขันทอง) (Krabi); priang (เปรียง) (Yala).

2. *Swintonia floribunda* Griff., Proc. Linn. Soc. Lond. 1: 283. 1846; March., Rév. Anacard.: 186. 1869; Grey-Wilson, Kew Bull. 26 (1): 145. 1971; Ding Hou in Fl. Mal. 8: 445. 1978.— *S. griffithii* Kurz, J. As. Soc. Bengal 39: 75. 1870; Hook.f. in Fl. Br. India 2: 26. 1876; Kurz, Fl. Burma 1: 316. 1877; Tardieu in Fl. C.L.V. 2: 110. 1962.— *S. helferi* Hook.f. in Fl. Br. India 2: 26. 1876; Kurz, J. As. Soc. Bengal 45: 207. 1876.— *S. puberula* Pearson, Kew Bull. 1906: 3; Ridl., Fl. Mal. Pen. 1: 532. 1922.

Thailand.— PENINSULAR: Phuket (Thalang), Satun (Adang, Thung Wa), Trang (Ko Libong).

Distribution.— Burma (type), Vietnam.

Ecology.— Common in evergreen forests; 10–100 m alt.

11. PEGIA

Colebr., Trans. Linn. Soc. 15: 364. 1872; Steen., J. Bot. 72: 10. 1934; Ding Hou in Fl. Mal. 8: 488. 1978.— *Phlebochiton* Wall., Trans. Med. Phys. Soc. Calcutta 7: 230. 1835; Engl. in DC., Monogr. Phaner. 4: 262. 1883.

Only one species in Thailand.

Pegia nitida Colebr., Trans. Linn. Soc. 15: 364. 1827; Craib in Fl. Siam. En. 1: 351. 1926; Tardieu in Fl. C.L.V. 2: 153. 1962.— *Phlebochiton extensum* Wall., l.c.: 231. 1835; Engl. in DC., Monogr. Phaner. 4: 263. 1883.— *Tapiria hirsuta* Hook.f. in Fl. Br. India 2: 28. 1876; Kurz, Fl. Burma 1: 320. 1877; Kanjilal, Fl. Assam 1: 339. 1937.

Thailand.— NORTHERN: Chiang Rai (Chiang Saen, Mae Chan).

Distribution.— Assam (type), Nepal, Burma, China, Borneo.

Ecology.— Scrub jungle by river; about 400 m alt. Flowering and fruiting in January–May.

12. PARISHIA

Hook.f., Trans. Linn. Soc. 23: 169. 1860; in Fl. Br. India 2: 29. 1876; Engl. in DC., Monogr. Phaner. 4: 308. 1883; Ding Hou in Fl. Mal. 8: 541. 1978.— *Astronium* Jacq. sect. *Parishia* (Hook.f.) March., Rev. Anacard.: 177. 1896.

Only one species in Peninsular Thailand.

Parishia insignis Hook.f., Trans. Linn. Soc. 23: 176. f.26. 1860; in Fl. Br. India 2: 30. 1876; Kurz, Fl. Burma 1: 319. 1877; Engl. in DC., Monogr. Phaner. 4: 309. t.10. 1883; King, J. As. Soc. Bengal 65: 492. 1896; Ridl., J. Str. Br. As. Soc. 59: 91. 1911; Fl. Mal. Pen. 1: 536. 1922; Parkins., For. Fl. Andam.: 142. 1923; Craib in Fl. Siam. En. 1: 352. 1926; Corn., Ways. Tree. 1: 112. f.23. 1952; Ding Hou in Fl. Mal. 8: 545. 1978.— *Astronium insigne* March., Rév. Anacard.: 177. 1869.— *P. pubescens* Hook.f. in Fl. Br. India 2: 30. 1876; Engl. in DC., Monogr. Phaner. 4: 310. 1883; King, J. As. Soc. Bengal 65: 493. 1896; Ridl. Fl. Mal. Pen. 1: 535. 1922; Corn., Ways. Trees 1: 113. 1952.— *P. rosea* Ridl., J. Str. Br. As. Soc. 59: 90. 1911; Fl. Mal. Pen. 1: 536. 1922; Craib in Fl. Siam. En. I: 353. 1926.

Thailand.—PENINSULAR: Ranong (Ko Bangkhen), Phangnga (Takuapa, Ko Yao Yai), Krabi (Ko Pepe), Trang (Khao Chong), Satun (Tarutao), Pattani (Bacho).

Distribution.—Malay Peninsula (Malacca, type).

Ecology.—Common in evergreen forests, rocky limestone hills; 50–200 m alt.

Vernacular.—Thong chon (ทองซอน) (Satun); ngok khaang (หงอกค้าง) (Pattani); chong ling (ชองลิง) (Pattani); chan ruuchee (ชันรุจี) (Phatthalung); tee na (ตีนะ) (Ranong); toei na (เตยนะ) (Phangnga); la chae (ละจะ), laa chae (ล่าจ๊ะ), lue-moh baa-bee (ลือเมาะบาบี) (Malay–Narathiwat).

Notes.—Further differs from *Gluta* spp. in the quarternary flowers, the small disk, and few stamens.

13. RHUS

(Tourn., Inst. Rei Herb.: 611. 1700.) Linn., Sp. Pl. 1: 265. 1753; Gen. Pl. ed. 5: 129. 1754; March., Rév. Anacard.: 84 & 179. 1869; Engl. in DC., Monogr. Phaner. 4: 376. 1883; Lecomte in Fl. Gén. I.-C. 2: 34. 1908; Craib in Fl. Siam. En. 1: 341. 1926; Ding Hou, Blumea 24: 34. 1978; in Fl. Mal. 8: 534. 1978.— *Toxicodendron* (Tourn., Inst. Rei Herb.: 610. 1700.) Miller, Gard. Dict. abridged ed. 4. 1754, ed. 8. 1768; Barkley, Ann. Mo. Bot. Gard. 24: 417. 1937.— *Melanococca* Blume, Mus. Bot. 1: 236. 1850.— *Duckera* Barkley, Am. Midl. Nat. 28: 472. 1942. nom. superfl.

Two species in Thailand.

1. *Rhus chinensis* Miller, Gard. Dict. ed. 8. sub n.7. 1768; Tardieu in Fl. C.L.V. 2: 182. 1962; Ding Hou in Fl. Mal. 8: 537. 1978.— *R. semialata* Murray, Comm. Soc. Goett. 5: 27. t.3. 1784; DC., Prod. 2: 67. 1825; Hook.f. in Fl. Br. India 2: 10. 1876; Engl. in DC., Monogr. Phaner. 4: 380. 1883; Lecomte in Fl. Gén. I.-C. 2: 35. 1908; Collet, Fl. Simla: 105. 1921; Kanjilal., Fl. Assam 1: 331. 1937.— *R. javanica* (non Linn.) Thunb., Fl. Jap.: 121. 1785; Lour., Fl. Coch.: 183. 1790; Craib in Fl. Siam. En. 1: 342. 1926; Walker, Fl. Okinawa & S. Ryukyu: 661. f.3. 1976.

Thailand.—NORTHERN: Chiang Mai (Doi Suthep, Bo Luang, Hot), Chiang Rai (Doi Lang Ka), Mae Hong Son (Ban Pa Pae); NORTH-EASTERN: Loei (Phu Luang).

Distribution.—Widely distributed in temperate and subtropical Asia. India, Burma, Laos, Cambodia, Vietnam, China, Taiwan, Japan, Ryukyu Isl. and Malesia (Sumatra).

E c o l o g y.— In evergreen forests on sandy soil; scrub jungles; 900–1200 m alt.

V e r n a c u l a r.— Sung (ซุง), ma liam hin (มะเหลียมหิน) (Chiang Mai); ta-saai (ตะซาย) (Lawa–Chiang Mai); ma phot (มะพด), som phot (ส้มพด) (Chiang Mai, Chiang Rai).

2. *Rhus succedanea* Linn., Mant. 2: 221. 1771; Wight, Ic. 2: t.560. 1842; Hook.f. in Fl. Br. India 2: 12. 1876; Engl. in DC., Monogr. Phaner. 4: 399. 1883; Craib in Fl. Siam. En. 1: 342. 1926; Back. & Bakh.f., Fl. Java 2: 154. 1965; Ding Hou in Fl. Mal. 8: 539. 1978; Kochummen in Tree Fl. Mal. 4: 50. 1989.— *R. pubigera* Blume, Bijdr.: 1165. 1826.— *Toxicodendron succedanea* Moldenke, Phytologia 2: 142. 1946; Tardieu in Fl. C.L.V. 2: 185. 1962.

T h a i l a n d.— NORTHERN: Chiang Mai.

D i s t r i b u t i o n.— India, Burma, Laos, Cambodia, Vietnam, China, Japan, Ryukyu Isl., Taiwan and Malesia.

E c o l o g y.— In montane forests, on open slopes; 900–2200 m alt.

V e r n a c u l a r.— Kado ling (กะดอลิง), sadao chaang (สะเดาช้าง) (Loei); kaen mo (แกนมอ) (Phetchabun); makok kiam (มะกอกเกี่ยม) (Prachuap Khiri Khan); makkak khao (มักกะกเขา) (Trat); hakkai (ฮักไ้) (Chiang Mai).

14. SPONDIAS

Linn., Gen. Pl. ed. 5: 174. 1754; DC., Prod. 2: 74. 1825; March., Rév. Anacard.: 156. 1869; Hook.f. in Fl. Br. India 2: 42. 1876; Engl. in DC., Monogr. Phaner. 4: 242. 1883; Airy Shaw & Forman, Kew Bull. 21: 2. 1967; Ding Hou in Fl. Mal. 8: 479. 1978.— *Solenocarpus* Wight & Arn., Prod. 1: 171. 1834.— *Wirtgenia* Jungh. ex Hassk., Fl. 25. Beibl. 2: 46. 1842.— *Evia* Commers. (ex Juss., Gen. Pl.: 373. 1789, pro syn.) ex Blume; Mus. Bot. 1: 233. 1850.— *Pteronema* Pierre in Bull. Soc. Linn. Paris 2: 1322. 1897.— *Allospondias* (Pierre) Stapf in Hook., Ic. Pl. 27. t.2667. 1900.— *Skoliostigma* Lauterb. in Engl., Bot. Jahrb. 56: 356. 1920.— *Tetramyxis* Gagnep., Not. Syst. 2: 166. 1944.

Five species in Thailand.

1. *Spondias pinnata* (Linn.f.) Kurz, Rep. Pegu. App. A.44 & B.42. 1875; Merr., Int. Rumph.: 332. 1917; En. Philipp. 2: 470. 1923; Craib in Fl. Siam. En. 1: 356. 1926; Burk., Dict. 2: 2067. 1935; Corn., Ways. Trees 1: 116. 1940; Tardieu in Fl. C.L.V. 2: 133. Pl. 8. f. 1–7. 1962; Back. & Bakh.f., Fl. Java 2: 151. 1965; Airy Shaw & Forman, Kew Bull. 21: 8. f.2 (1&2). 1967; Ding Hou in Fl. Mal. 8: 483. 1978; Meijer in Fl. Ceylon 4: 23. 1983.— *Mangifera pinnata* Linn.f., Suppl.: 156. 1781.— *Spondias mangifera* Willd., Sp. Pl. 2: 751. 1799; Hook.f. in Fl. Br. India 2: 42. 1876; Kurz, Fl. Burma 1: 322. 1877; Engl. in DC., Monogr. Phaner. 4: 248. 1883; Lecomte in Fl. Gén. I.-C. 2: 28. 1908; Craib, Kew Bull. 1911: 33; Parkins., For. Fl. Andam.: 141. 1923.— *S. acuminata* Roxb., Fl. Ind. ed. 2: 453. 1832; Hook.f. in Fl. Br. India 2: 42. 1876; Engl. in DC., Monogr. Phaner. 4: 249. 1883; Craib in Fl. Siam. En. 1: 355. 1926.— *Poupartia pinnata* Blanco, Fl. Filip.: 392. 1837, ed. 2: 274. 1845, ed. 3, 2: 146. 1878.— *Spondias dulcis* Soland. ex Forst.f. var. *acida* (Blume) Engl. in DC. Monogr. Phaner.: 247. 1883.

Thailand.—NORTHERN: Chiang Rai (Chiang Saen), Mae Hong Son (Mae Surin), Chiang Mai, Nakhon Sawan (Takhli); NORTH-EASTERN: Loei (Phu Kradueng); EASTERN: Nakhon Ratchasima (Sakaerat); SOUTH-WESTERN: Ratchaburi (Ban Pong); PENINSULAR: Surat Thani (Ko Tao), Nakhon Si Thammarat (Thung Song, Chawang), Trang (Khao Chong, Khao Khao), Satun (Adang).

Distribution.—India (type), Ceylon, Assam, Burma, Cambodia, Vietnam, Hainan, Andaman Isl., Malay Peninsula, Java, China, Philippines, Celebes.

Ecology.—Widely cultivated. Common in mixed deciduous and evergreen forests; 50–500 m alt.

Vernacular.—Kok kuk (กอกกุก), kuuk (กุก) (Chiang Rai); kok-mong (กอกหมอง) (Shan–Northern); kuk (กุก) (Chiang Mai); makok paa (มะกอกป่า) (Nakhon Ratchasima); phai-sae (ไผ่แซะ) (Karen–Chiang Mai); kraa-phai (คราไผ่), phai (ไผ่) (Karen–Kanchanaburi); kok khao (กอกเขาส) (Nakhon Si Thammarat); ma kok (มะกอก) (Central).

2. *Spondias bipinnata* Airy Shaw & Forman, Kew Bull. 21: 4. 1967.

Thailand.—NORTHERN: Nakhon Sawan (Khao Ngo, Khao Sang); EASTERN: Nakhon Ratchasima (Khao Lang Chang, Khao Phaeng Ma, Pak Chong); SOUTH-WESTERN: Kanchanaburi (Khao Salop), Ratchaburi; CENTRAL: Lop Buri, Saraburi.

Distribution.—Thailand (type).

Ecology.—Common on rocky limestone hills, dry evergreen forests; 50–300 m alt.

Vernacular.—Kok kak (กอกกัก) (Nakhon Sawan); ma kok pa (มะกอกป่า) (Nakhon Ratchasima, Kanchanaburi); ma kak (มะกัก); mak kak (หมักกัก) (Saraburi, Ratchaburi).

3. *Spondias lakonensis* Pierre, Fl. For. Cochinch. 5. (fasc. 24.) t.375. 1898; Lecomte in Fl. Gén. I.-C. 2: 29. 1908; Airy Shaw & Forman, Kew Bull. 21: 13. f.2 (9–10). 1967.—*Allospondias lakonensis* (Pierre) Stapf in Hook.f., Pl. 27. t.2667. 1900; Craib in Fl. Siam. En. 1: 357. 1926; Tardieu in Fl. C.L.V. 2: 130. t.7 (3–10). 1962; Forman, Kew Bull. 16. 158. 1962.—*Poupartia chinensis* Merr., Philipp. J. Sci. 15. 245. 1919.—*Spondias chinensis* (Merr.) Metc., J. Arn. Arbor. 12: 270. 1931.—*Tetramyxis pellegrinii* Gagnep., Not. Syst. 11: 167. 1944.—*T. bonii* Gagnep., Not. Syst. 11: 168. 1944.—*T. rubescens* Gagnep. in Suppl. Fl. Gén. I.-C. 1: 661. 1946.

Thailand.—NORTHERN: Chiang Mai (Doi Chiang Dao), Lampang; NORTH-EASTERN: Nakhon Phanom.

Distribution.—Thailand (type), Laos, Vietnam, Hainan, Southeast China.

Ecology.—In evergreen forests, on slope or by stream; 220–500 m alt.

Vernacular.—Ma ho (มะห่อ) (Northern).

4. *Spondias cytherea* Sonn., Voy. Ind. Orient. 3: 242. t.123. 1782; Burk., Dict. 2: 2067. 1935; Adelb., Blumea 6: 326. 1948; Corn., Ways. Trees 1: 115. 1952; Airy Shaw & Forman, Kew Bull. 21: 10. f.2 (3–4). 1967.—*S. dulcis* Soland ex Parkins., J. Voy. South Seas: 39.

1773; Back. & Bakh.f., Fl. Java 2: 151. 1965; ex Forst.f., Pl. Escul. Ins. Oc. Austr.: 33. 1786; DC., Prod. 2: 75. 1825; Engl. in DC., Monogr., Phaner. 4: 246. 1883; Lecomte in Fl. Gén. I.-C. 2: 29. 1908; Craib in Fl. Siam. En. 1: 355. 1926.— *Evia dulcis* (Forst.f.) Comm. ex Blume, Mus. Bot. 1: 233. 1850.— *Spondias mangifera* Willd. var. *tuberculosa* (Blume) Engl. in DC., Monogr. Phaner. 4: 249. 1883.

T h a i l a n d.— Widely cultivated.

D i s t r i b u t i o n.— Society Islands (type), all over tropics.

E c o l o g y.— Often cultivated.

V e r n a c u l a r.— Ma kok farang (มะกอกฝรั่ง), ma kok waan (มะกอกหวาน) (Central).

5. *Spondias laxiflora* (Kurz) Airy Shaw & Forman, Kew Bull. 21: 14. f.2 (11–12). 1967.— *Buchanania laxiflora* Kurz in J. As. Soc. Bengal 41: 304. 1872; Hook.f. in Fl. Br. India 2: 24. 1876; Kurz, J. As. Soc. Bengal 45: 211. 1876; Fl. Burma 1: 307. 1877; Brandis, Ind. Trees: 206. 1907.— *Pteronema laxiflorum* (Kurz) Pierre Bull. Soc. Linn. Paris 2: 1322. 1897.— *Allopospondias laxiflora* (Kurz) Lace, Kew Bull. 1915: 397; Craib in Fl. Siam. En. 1: 357. 1926.

T h a i l a n d.— NORTHERN: Lampang (Chae Hom); SOUTH-WESTERN: Kanchanaburi (Wangka).

D i s t r i b u t i o n.— Lower Burma (type).

E c o l o g y.— On limestone hills, 200–400 m alt. Flowering January–February.

V e r n a c u l a r.— Ma hian (มะฮิอัน) (Phrae); un pha (อุณฬา) (Northern).

15. PENTASPADON

Hook.f., Trans. Linn. Soc. 23. 168. 1860; Engl. in DC., Monogr. Phaner. 4: 293. 1883; Ding Hou in Fl. Mal. 8: 520. 1978; Kochummen in Tree Fl. Mal. 4: 46. 1989.— *Microstemon* Engl., Bot. Jahrb. 1: 376. 1881; in DC., Monogr. Phaner. 4: 294. 1883; Tardieu in Fl. C.L.V. 2: 190. 1962.

Two species in Thailand.

1. *Pentaspadon velutinus* Hook.f. in Fl. Br. India 2: 28. 1876; Corn., Gard. Bull. Str. Settl. 10: 262. 1939; Ways. Tree: 113. 1940; Ding Hou in Fl. Mal. 8: 523. 1978; Kochummen in Tree Fl. Mal. 4: 47. 1989.— *Microstemon velutina* Engl., Bot. Jahrb. 1: 376. 1881; in DC., Monogr. Phaner. 4: 294. t.9. 1883; King, J. As. Soc. Bengal 65: 498. 1896; Craib in Fl. Siam. En. 1: 358. 1926.

T h a i l a n d.— PENINSULAR: Yala (Banang Sata), Pattani (To Mo, Ban Cha-Boi).

D i s t r i b u t i o n.— Malay Peninsula (Malacca, type).

E c o l o g y.— In evergreen forests, by streams; 100–150 m alt.

V e r n a c u l a r.— Toei na (เตียนะ) (Satun); toei naam (เตียนาม) (Ranong).

2. *Pentaspadon curtisii* (King) Corn., Gard. Bull. Str. Settl. 10: 262. 1939; Ding Hou in Fl. Mal. 8: 524. 1978; Koçhummen in Tree Fl. Mal. 4: 47. 1989.— *Microstemon curtisii* King, J. As. Soc. Bengal 65. 498. 1896; Ridl., Fl. Mal. Pen. 1: 537. 1922; Craib in Fl. Siam. En. 1: 358. 1926; Tardieu in Fl. C.L.V. 2: t.17. 1962.

T h a i l a n d.— PENINSULAR: Pattani (To Mo, Ban Wo).

D i s t r i b u t i o n.— Malay Peninsula (Langawi, type) and Malesia.

E c o l o g y.— In evergreen forest.

16. LANNEA

A. Richard in Fl. Seneg. tent. 1: 153. 1831, nom. cons.; Ding Hou in Fl. Mal. 8: 476. 1978.— *Herbelia* Dennst., Schluss. Hort. Mal.: 30. 1818.— *Odina* Roxb., Fl. Ind. ed. Carey 2: 293. 1832; Engl. in DC., Monogr. Phaner. 4: 263. 1883.— *Wirtgenia* Jungh. ex Hassk., Flora 27: 624. 1844.

Only one species in Thailand.

Lannea coromandelica (Houtt.) Merr., J. Arn. Arbor. 19: 353. 1938; Back. & Bakh.f., Fl. Java 2: 152. 1965; Ding Hou in Fl. Mal. 8: 478. 1978; Meijer in Fl. Ceylon 4: 21. 1983.— *Dialium coromandelicum* Houtt., Nat. Hist. II. 2: 39. t.5. f.2. 1774.— *Odina wodier* Roxb., Fl. Ind. ed. Carey 2: 293. 1832; Hook.f. in Fl. Br. India 2: 29. 1876; Engl. in DC., Monogr. Phaner. 4: 267. 1883; King, J. As. Soc. Bengal 65: 501. 1896; Lecomte in Fl. Gén. I.-C. 2: 34. 1908; Craib in Fl. Siam. En. 2: 352. 1926.— *Lannea wodier* (Roxb.) Adelb., Blumea 6: 326. 1948; Tardieu in Fl. C.L.V. 2: 141. 1960.

T h a i l a n d.— NORTHERN: Chiang Mai (Chiang Dao), Lampang (Mae Ko), Phitsanulok (Thung Salaeng Luang); NORTH-EASTERN: Loei (Dan Sai), Nakhon Phanom (Muk Dahan), Khon Kaen (Phu Wiang); SOUTH-WESTERN: Kanchanaburi (Wangka), Prachuap Khiri Khan (Sam Roi Yot); SOUTH-EASTERN: Chanthaburi (Pong Nam Ron, Khao Soidao Tai); PENINSULAR: Surat Thani (Bangson, Tha Rong Chang, Nong Wai), Phangnga (Yan Yao), Satun (Tarutao).

D i s t r i b u t i o n.— India (type), Ceylon, Burma, Laos, Vietnam, Cambodia, Hainan, China, Andaman Isl., Malay Peninsula, Java.

E c o l o g y.— Common in mixed deciduous forests, scrubs and savannas, on rocky limestone hills; 20–700 m alt.

V e r n a c u l a r.— Kok kan (กอกกัน) (Ubon Ratchathani); kuk (กูก), oi chaang (ออยช้าง) (Northern); chaa koh (ชาทะ), chaang nom (ช้างโน้ม) (Trat); saa keh (ชาทะ) (Surat Thani); ta khram (ตะครำ) (Ratchaburi, Kanchanaburi); pee-chiang (ปีเชียง), se-tho-kee (เสโทเก้) (Karen–Mae Hong Son); mae yuu waai (แม่หยูว้าย) (Karen–Kanchanaburi); seng-luu-khai (เสงลูไค้) (Karen–Chiang Mai); weet (หวัด) (Chiang Mai).

17. DRACONTOMELON

Blume, Mus. Bot. Lugd.-Bat. 1: 231. t.42. 1850; Hook.f. in Fl. Br. India 2: 43. 1876; Kurz, Fl. Burma 1: 322. 1877; Engl. in DC., Monogr. Phaner. 4: 250. 1883; Lecomte in Fl. Gén. I.-C. 2: 30. 1908; Ridl., Fl. Mal. Pen. 1: 543. 1922; Back. & Bakh.f., Fl. Java 2: 151. 1965; Ding Hou in Fl. Mal. 8: 468; Kochummen in Tree Fl. Mal. 4: 20. 1989.

Only one species in Thailand.

Dracontomelon dao (Blume) Merr. & Rolfe, Philip. J. Sc. Bot. 3: 108. 1908; Ding Hou, Blumea 24: 6. 1978; in Fl. Mal. I. 8: 470; Kochummen in Trees Fl. Mal. 4: 20. 1989.—*Pomum draconum* Rumph., Herb. Amb. 1: 157. t.58. 1741.—*Poupartia mangifera* Blume, Bijdr.: 1160. 1826.—*D. mangiferum* (Blume) Blume, Mus. Bot. Lugd.-Bat. 1: 231. t.42. 1850; Hook.f. in Fl. Br. India 2: 43. 1876; Kurz, Fl. Burma 1: 322. 1877; Engl. in DC., Monogr. Phaner. 4: 251. t.7. 1883; King, J. As. Soc. Bengal 65 (2): 513. 1896; Pierre, Fl. For. Cochinch. t.374A. 1898; Lecomte in Fl. Gén. I.-C 2: 31. 1908; Ridl., Fl. Mal. Pen. 1: 543. 1922; Parkins., For. Fl. Andam.: 142. 1923; Craib in Fl. Siam. En. 1: 357. 1926; Corn., Ways. Trees: 104. f.21. 1940; Tardieu in Fl. C.L.V. 2: 146. 1962.—*D. puberulum* Miq., Sum.: 524. 1861; Back. & Bakh.f., Fl. Java 2: 151. 1965.

T h a i l a n d.—NORTHERN: Chiang Mai (Doi Chiang Dao); NORTH-EASTERN: Loei (Phu Kradueng); SOUTH-EASTERN: Chanthaburi (Khao Soi Dao); PENINSULAR: Surat Thani (Ko Po); Nakhon Si Thammarat (Sao Pao), Songkhla (Bang Pien), Satun (Tarutao), Phuket (Khao Phra Thaeo).

D i s t r i b u t i o n.—India, Indo-China, Malay Peninsula and Malesia.

E c o l o g y.—In evergreen forests by streams; up to 400 m alt.

V e r n a c u l a r.—Ka-kho (กะโหลก), ko (โก), sang-kuan (ซังกวาน), sa-kuan (สะกวาน) (Malay-Pattani); takuu (ตะกู), tako (ตะโก), saentaalom (แสนด้าลอม) (Chiang Rai); prachao haa phra ong (พระเจ้าห้าพระองค์) (Chiang Mai).

18. CHOEROSPONDIAS

Burt & Hill, Ann. Bot. I: 254. 1937; Kew Bull. 1937: 407; Tardieu in Fl. C.L.V. 2: 137. 1962; Ohwi, Fl. Japan. 597. 1965.

Only one species in Thailand.

Choerospondias axillaris (Roxb.) Burt & Hill, l.c. 407; Tardieu in Fl. C.L.V. 2: 137. 1962; Airy Shaw & Forman, Kew Bull. 21: 1967.—*Spondias axillaris* Roxb., Hort. Beng.: 34. 1814; Fl. Ind. ed. Carey 2: 453. 1832; Hook.f. in Fl. Br. India 2: 42. 1876; Kanjilal, Fl. Assam 1: 341. 1931.—*Pourpartia fordii* Hemsl. in Hook. Icon. Pl. t.2557. 1898; Dunn & Tutcher, Kew Bull. Add. Ser. 10: 69. 1912.—*P. axillaris* (Roxb.) King & Prain, Ann. Roy. Bot. Gard. Calcutta 9: 20. 1901; Craib in Fl. Siam. En. 1: 356. 1926.

T h a i l a n d.—NORTHERN: Chiang Mai (Doi Inthanon, Doi Suthep, Pang Ton), Lampang (Chae Son); NORTH-EASTERN: Loei (Phu Luang); EASTERN: Nakhon Ratchasima (Khao Laem), Chaiyaphum (Thung Kamang).

D i s t r i b u t i o n.— Nepal (type), India, Indo-China, China, Japan.

E c o l o g y.— Evergreen forest, hill evergreen forest; 700–1200 m alt. Flowering December–February, fruiting March–May.

V e r n a c u l a r.— Makok nang (มะกอกหนัง) (Chaiyaphum); mamue (มะมือ) (Chiang Mai); manang (มะหนัง) (Tak); saa-lee-puu (สาละปู้) (Karen–Kamphaeng Phet); seesiat thet (สี่เสียดเทศ) (Nakhon Ratchasima).