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A Synoptic Account of the Meliaceae of Thailand

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ABSTRACT. As part of a taxonomic revision towards a treatment of the family Meliaceae for the Flora of Thailand, a preliminary account is provided with keys to the genera, species, subspecies and varieties, full synonymy, notes on geographical and ecological distributions, vernacular names and uses. The account comprises 18 genera, 84 species, 3 subspecies and 4 varieties.

KEY WORDS: Meliaceae, Thailand, Flora of Thailand, new records, keys, comb. nov.

INTRODUCTION

Past studies in Thai Meliaceae were made by Dr. W.G. Craib (1915), concerning Meliaceae at Koh Chang, Trat Province. Dr. C.M. Pannell revised world Aglaia with 32 species in Thailand (1992) and, in 1995, Dr. D.J. Mabberley and co-authors revised Meliaceae of Malesia in Flora Malesiana.

The objectives to revise Meliaceae in Thailand consist of 5 major targets.

1. to identify all Thai Meliaceae

2. to learn about the habitats and ecology of Meliaceae

3. to emphasize the interrelationship among the typical vegetation types and species of Meliaceae

4. complete a revision of Thai Flora for Flora of Thailand

5. to introduce the important basic data for Thai plant resources -

Botanical surveys in the field cover every region of the country, following by herbarium specimens identification. All data will be revised and the manuscript prepared for Flora of Thailand.

MELIACEAE

Dioecious, monoecious or bisexual trees or shrubs (rarely herbs); bark usually bitter and astringent. *Leaves* 1-pinnate to 2(–3)-bipinnate, unifoliolate or simple, spiral (rarely decussate) usually with entire leaflets. *Flowers*, if unisexual, often with rudiments of opposite sex, in spikes to thyrses, axillary to supra-axillary, rarely cauliflorus; calyx (2–)3–5(–7); corolla 3–7(–14) in 1(–2) whorls. *Stamens* usually on top of staminal tube, with 3–19(–30) anthers in 1(–2) whorls. *Disc* usually around the ovary base. Ovary superior, (1–)2–6(–20) with as many locules, usually axile placentation. *Fruits* a capsule, berry or drupe; seeds winged and then attached to woody columella, or with corky outer layers or with fleshy sarcotesta or aril.

The family comprises 50–52 genera with about 650 species are widely distributed majority in the tropics and subtropics. Eighteen genera, 84 species, 3 subspecies and 4 varieties in Thailand.

KEY TO THE GENERA

(based on flowering specimens)

1. Flower buds ovoid, obovoid or obconical, not exceeding 5 mm long
  2. Leaves paripinnate

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3. Staminal tube absent; androgynophore prominent	**15. Toona**
3. Staminal tube present	
4. Calyx 5, corolla 5. Bud scales present	**14. Swietenia**
4. Calyx 4, corolla 4. Bud scales absent	**18. Xylocarpus**
2. Leaves imparipinnate	
5. Disc distinct	
6. Disc disciform, ovary obovoid	**6. Cipadessa**
6. Disc annular, ovary ovoid or depressed	
7. Anthers with bifid apices	**8. Heynea**
7. Anthers without bifid apices	**17. Walsura**
5. Disc indistinct	
8. Inflorescences spikes, spikelets or catkins	
9. Inflorescences long spikes or with spikelets, axillary to supra-axillary	**2. Aphanamixis**
9. Inflorescences catkins on old branches or on stems	**9. Lansium**
8. Inflorescences compound thyrses	
10. Leaves and young parts with stellate and scaly indumentum	**1. Aglaia**
10. Leaves and young parts puberulous then glabrous	**12. Pseudoclausena**
1. Flower buds, short cylindric, tubular-cylindric, not less than 5 mm long	
11. Leaves paripinnate or imparipinnate	
12. Leaves all paripinnate, usually with juvenile leaflet hairy	**5. Chukrasia**
12. Leaves both paripinnate and imparipinnate	
13. Pistil glabrous. Leaves imparipinnate, rarely paripinnate	**3. Azadirachta**
13. Pistil hairy	
14. Pistil hairy throughout; juvenile leaflet of rachis wrinkled	**4. Chisocheton**
14. Pistil hairy up to a half of style; juvenile leaflet of rachis (if present) not wrinkled	**7. Dysoxylum**
11. Leaves imparipinnate, trifoliolate, (2–3)-imparipinnate or simple	
15. Shrub or undershrub	
16. Leaves simple	
17. Leaf margin serrate or undulate. Petals united into a long tube	**11. Munronia (M. humilis)**
17. Leaf margin entire. Petals free	**16. Turraea**
16. Leaves imparipinnate	**11. Munronia (M. pinnata)**
15. Tree	
18. Leaves 2(–3)-imparipinnate; leaflet margin serrate	**10. Melia**
18. Leaves trifoliolate; leaflet margin entire	**13. Sandoricum**

1. AGLAIA

Lour., Fl. Cochinch. 1: 173. 1790. nom. conserv. Pannell, Kew Bull., Add. Ser. 16: 1–379. 1992. Mabb. & Pannell, Fl. Males., ser. I, 12 (1): 194–314. 1995.

Trees or shrubs, with stellate hairs or peltate scales. Male and female flowers in separate inflorescences, rarely dioecious. *Trunk* often with buttresses. *Bark* smooth, or somewhat rough, usually with rows of lenticels, latex often present. *Leaves* spiral, usually imparipinnate, rarely simple; leaflets with indumentum, distichous, subopposite or alternate, usually asymmetrical sides. *Inflorescence* a compound thyrse, axillary or supra-axillary, rarely ramiflorus or cauliflorus and often on an apical shoot. *Flowers* unisexual with well developed rudiments of the opposite sex, bracts and bracteoles usually caducous. *Male inflorescence* with many branches, while the female inflorescences with single to few branches, usually larger than the male one. *Calyx* 1/4–2/3 the length of corolla, cup-shaped with shallowly or deeply 3–5(–6)-lobed, imbricate. *Corolla* imbricate or quincuncial, globose or obovoid in outline, petals 3–5(–6) free or united at base, free from the staminal tube. *Staminal tube* globose or obovoid, without appendages, crenate or shallowly lobed margin; anthers 5–10, in a single whorl, dehiscing by two longitudinal slits, inserted on the inner surface of the tubes; anthers in female flowers similar but sterile. *Disc* absent. *Ovary* superior, depressed-globose or ovoid with dense stellate hairs; 1–3(–5)-locular, each locule with 1–2 ovules, where carpels more than 1, placentation axile; style short constricted between the ovary and style or absent; stigma ovoid, more or less cylindrical or depressed-globose, entire at the apex or with 2–3(–4) small lobes; ovary in male sterile. Infructescence often several or on a shoot with few to many fruits. *Fruits* subglobose, obovoid or ellipsoid, indehiscent or a loculicidal capsule, with 1–3(–5) locules, each with one seed. *Seed* usually with aril or sarcotesta nearly or completely enclosed the seed.

KEY TO THE SPECIES

1. Corolla 3-lobed
  2. Leaflets densely covered with reddish brown stellate scales on lower surfaces **24. A. rubiginosa**
  2. Leaflets glabrous to sparsely hairy on both surfaces
    3. Apical leaflets oblong or broadly elliptic
      4. Apical leaflets oblong and usually reduced to a small hollow pocket **4. A. cucullata**
      4. Apical leaflets broadly elliptic **8. A. erythrosperma**
    3. Apical leaflets obovate or oblanceolate
      5. Apical leaflets up to 13 by 4.5 cm **17. A. macrocarpa**
      5. Apical leaflets not less than 25 by 7.5 cm **29. A. spectabilis**
1. Corolla 5-lobed
  6. Leaves simple **28. A. simplicifolia**
  6. Leaves usually imparipinnate
    7. Leaflets 1–3 pairs
      8. Leaflets apex acuminate or caudate, pedicels up to 1 mm long, capsule usually more than 1.5 cm long
        9. Secondary nerves usually less than 10
          10. Pedicels to 0.5 mm long **19. A. odoratissima**
          10. Pedicels ca 1 mm long **6. A. elaeagnoidea**
        9. Secondary nerves usually more than 10 **13. A. korthalsii**
      8. Leaflets apex acute to short acuminate, pedicels 1–2 mm or slightly longer, capsule less than 1.5 cm long **18. A. odorata**
    7. Leaflets more than 3 pairs, some leaves in the same species with less than 3 pairs
      11. Leaflets more or less with stellate hairs
        12. Secondary nerves usually more than 20 pairs, up to 45, rarely less; leaves long up to 135–150 cm
          13. Infructescences 20–40 cm long or longer, capsule less than 4 cm in diam.
            14. Capsule 1.5–2 cm in diam., covered with densely reddish brown stellate or peltate scales **9. A. eximia**
            14. Capsule 3–4 cm in diam., covered with densely brown stellate hairs **12. A. grandis**
          13. Infructescences up to 20 cm long, capsule up to 6 cm or more in diam. **21. A. pachyphylla**
        12. Secondary nerves usually less than 20 pairs, rarely more
          15. Leaves rather small, usually less than 30 cm long (in Thailand)
            16. Secondary nerves usually up to 10 pairs **20. A. oligophylla**
            16. Secondary nerves usually more than 10 pairs
              17. Capsule rather small, up to 1 cm in diam. **22. A. palembanica**
              17. Capsule more than 1 cm in diam.
                18. Capsule with pale brown to yellow peltate scales and numerous warts **5. A. edulis**
                18. Capsule with reddish brown scales **7. A. elliptica**
          15. Leaves rather large, up to 60–130 cm
            19. Leaflets usually more than 6 pairs, up to 12 pairs or more **10. A. exstipulata**
            19. Leaflets usually up to 6 pairs or more in some leaves but not more than 9 pairs
              20. Leaflets with sparsely stellate hairs on lower surfaces
                21. Leaflets dark green above, silver to brownish green on lower surfaces when dry **26. A. sexipetala**
                21. Leaflets pale green to yellowish green whendry **16. A. leucophylla**
              20. Leaflets with densely stellate hairs on lower surfaces
                22. Hairs pale yellow brown **31. A. teysmaniana**
                22. Hairs dark brown to reddish brown
                  23. Fruits with white to yellowish scales **11. A. forbesii**
                  23. Fruits with yellowish brown to orange or reddish brown stellate hairs
                    24. Leaves pale green when dry **30. A. tenuicaulis**
                    24. Leaves dark green to brownish green when dry
                      25. Leaflet apex acuminate or caudate, acumen long, usually more than 1.5 cm long **32. A. tomentosa**
                      25. Leaflet shortly caudate, usually less than 1.5 cm long **25. A. rufinervis**
      11. Leaflets usually with peltate scales on lower surfaces, not stellate hairs
        26. Leaflets with sparsely to densely white or greyish brown peltate scales on lower surfaces
          27. Leaflets up to 7 pairs, with densely white peltate scales on lower surfaces **1. A. argentea**
          27. Leaflets 7–10 pairs, with sparsely greyish brown peltate scales on lower surfaces **14. A. lawii**
        26. Leaflets with yellow brown to reddish brown peltate scales on lower surfaces
          28. Lower leaves surfaces with numerous uniformly distributed peltate scales **2. A. chittagonga**
          28. Lower leaves surfaces not as above
            29. Secondary nerves usually less than 10, rarely more; leaflets blackish or blackish green when dry **15. A. leptantha**
            29. Secondary nerves usually more than 10, rarely less; leaflets blackish brown, reddish to yellowish brown or brownish green when dry
              30. Leaflets usually 2–5 pairs **23. A. perviridis**
              30. Leaflets usually more than 5 pairs, ovate, oblong or lanceolate
                31. Leaflets with yellowish brown scales on lower surfaces, paler or greyish green when dry **3. A. crassinervia**
                31. Leaflets with dark brown to golden brown scales on lower surfaces, usually paler at margin **27. A. silvestris**

1. Aglaia argentea Blume, Bijdr. Fl. Ned. Ind.: 170. 1825; Miq., Fl. Ned. Ind., Suppl. 1: 543. 1861; King, J. Asiat. Soc. Bengal 64(2): 70. 1895; Ridl., Fl. Malay Penins. 1: 405. 1922; Backer. & Bakh.f., Fl. Java 2: 129. 1965; Pannell, Tree Fl. Malaya 4: 211. 1989; Pannell, Kew Bull., Add. Ser. 16: 125, f. 27. 1992; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 237. 1995.— *A. hypoleuca* Miq., Fl. Ned. Ind., Suppl. 1: 197. 1861.— *A. argentea* Blume var. *angustata* Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 55. 1868.— *A. argentea* Blume var. *borneensis* Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 55. 1868.— *A. argentea* Blume var. *superba* Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 55. 1868.— *A. argentea* Blume var. *hypoleuca* (Miq.) Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 55. 1868.— *A. argentea* Blume var. *curtisii* King, J. Asiat. Soc. Bengal 64(2): 71. 1895.— *A. discolor* Merr., Univ. Calif. Publ. Bot. 15: 130. 1929.

Thailand.— NORTHERN: Lampang; PENINSULAR: Ranong, Surat Thani, Phangnga, Phatthalung, Trang, Songkhla.

Distribution.— Malaysia, Indonesia (type), Philippines.

Ecology.— Tropical evergreen rain forest, often near sea or by streams; altitude (20–)50–200(–750) m. Flowering: August–December; fruiting: March–April (August).

Vernacular.— Sang khriat khlong (สังเครียดคลอง), sang kha ma (สังขะมา) (Peninsular).

2. Aglaia chittagonga Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 44. 1868; Pannell, Kew Bull., Add. Ser. 16: 140. 1992.— *Amoora chittagonga* (Miq.) Hiern in Hook.f., Fl. Brit. India 1: 559. 1875.

Thailand.— NORTHERN: Chiang Mai, Phrae; NORTH-EASTERN: Phetchabun; SOUTH-WESTERN: Prachuap Khiri Khan; SOUTH-EASTEN: Chachoengsao, Chanthaburi; PENINSULAR: Ranong, Surat Thani, Krabi, Trang, Pattani, Yala, Narathiwat.

Distribution.— Bangladesh (type), Myanmar.

Ecology.— From lowland to hill evergreen forest, near streams, limestone bedrock; altitude 25–1,600 m (most commonly 200–1,000 m). Flowering: February–December (most commonly March–July); fruiting: February–December (most commonly May–September).

Vernacular.— Khang khao nu (ค้างคาวหนู) (Southeastern); ta suea (ตาเสือ) (Northeastern); sang ka tong (สังกะโต้ง) (Southwestern); tang kiat (ตังเกียด) (Peninsular).

3. Aglaia crassinervia Kurz ex Hiern in Hook.f., Fl. Brit. India 1: 556. 1875; Pannell, Tree Fl. Malaya 4: 229. 1989; Pannell, Kew Bull., Add. Ser. 16: 213. 1992; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 267. 1995.— *A. cinerea* King, J. Asiat. Soc. Bengal 64(2): 66. 1895; Ridl., Fl. Malay Penins. 1: 404. 1922.— *Chisocheton sumatranus* Baker f., J. Bot. Lond. 62 Suppl.: 18. 1924.— *Aglaia pyricarpa* Baker f., op. cit.: 20. 1924.

Thailand.— NORTHERN: Chiang Mai; SOUTH-EASTERN: Chanthaburi; PENINSULAR: Surat Thani, Phangnga, Krabi, Nakhon Si Thammarat, Phatthalung, Pattani, Yala.

Distribution.— Myanmar (type), Peninsular Malaysia, Indonesia, Philippines.

Ecology.— Tropical evergreen rain forest, on sandstone bedrock; altitude 50–800 m (most commonly 80–400 m). Flowering: June–July; fruiting: February–August (most commonly May–August).

Vernacular.— Sang khriat (สังเครียด), sang ka tong (สังกะโต้ง) (Peninsular).

4. Aglaia cucullata (Roxb.) Pellegr. in Lecomte, Fl. Indo-Chine 1: 771. 1911; Pannell, Tree Fl. Malaya 4: 214. 1989; Pannell, Kew Bull., Add. Ser. 16: 58, f. 3. 1992; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 213. 1995.— *Amoora cucullata* Roxb., Pl. Coromandel 3: 54, t. 258. 1820; Hiern in Hook.f., Fl. Brit. India 1: 560. 1875; Pierre, Fl. Forest Cochinch. Fasc. 22: t. 344. 1896; King, J. Asiat. Soc. Bengal 64(2): 55. 1895; Ridl., Fl. Malay Penins. 1: 399. 1922; Backer & Bakh.f., Fl. Java 2: 126. 1965.— *Aglaia tripetala* Merr., J. Straits Branch Roy. Asiat. Soc. 76: 88. 1917.

Thailand.— CENTRAL: Bangkok; PENINSULAR: Ranong, Nakhon Si Thammarat, Trang.

Distribution.— Bangladesh, India (type), Vietnam, Malaysia, Singapore, Indonesia, Philippines.

Ecology.— In back mangrove forest to lowland evergreen forest; altitude 0–50 m. Flowering: February–December (most commonly November–December); fruiting: February–April.

Vernacular.— Niang nok hook (เหนียงนกฮูก) (Peninsular).

5. Aglaia edulis (Roxb.) Wall., Calc. Gard. Rep.: 26. 1840; Hiern in Hook.f., Fl. Brit. India 1: 556. 1875; Pannell, Kew Bull., Add. Ser. 16: 229. 1992; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 272. 1995.— *Milnea edulis* Roxb., Hort. Bengal: 18. 1814, nom. nud.; Roxb., Fl. Ind., (Carey & Wallich. ed.) 2: 430. 1824.— *Nyalelia racemosa* Dennst. in Schlüssel, Hort. Malab.: 14, 23, 30. 1818; Hiern in Hook.f., Fl. Brit. India 1: 554. 1875.— *Aglaia sulingi* Blume, Bijdr. Fl. Ned. Ind.: 170. 1825; Backer & Bakh.f., Fl. Java 2: 128. 1965.— *A. latifolia* Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 42. 1868; Backer & Bakh.f., Fl. Java 2: 129. 1965.— *A. khasianus* Hiern in Hook.f., Fl. Brit. India 1: 554. 1875.— *A. pirifera* Hance, J. Bot. 6: 331. 1877.— *Milnea cambodiana* Pierre, Fl. Forest Cochinch. Fasc. 21: t. 334. 1895.— *Aglaia acida* Koord. & Valeton in Meded. Lands Plantentuin 16: 143. 1896; Backer & Bakh.f., Fl. Java 2: 128. 1965.

Thailand.— NORTH-EASTERN: Sakon Nakhon; SOUTH-WESTERN: Kanchanaburi; EASTERN: Nakhon Ratchasima; CENTRAL: Saraburi, Nakhon Nayok; SOUTH-EASTERN: Prachin Buri, Chon Buri, Chanthaburi, Trat; PENINSULAR: Ranong, Surat Thani, Krabi, Nakhon Si Thammarat, Phatthalung, Trang, Satun, Songkhla, Yala.

Distribution.— India (type), Bhutan, China, Myanmar, Vietnam, Cambodia, Malaysia, Indonesia, Philippines, Samoa.

Ecology.— In evergreen or mixed deciduous forest, near streams, on granite or limestone bedrock; altitude 30–480. Flowering: February–October (commonly April–September); fruiting: January–December (commonly April–June).

Vernacular.— Khi phueng (ขี้ผึ้ง) (Eastern); sang khriat sai (สังเครียดสาย), sang khriat ai kong (สังเครียดอ้ายก้อง), khang khao (ค้างคาว) (Peninsular).

Uses.— Aril edible.

6. Aglaia elaeagnoidea (A.Juss.) Benth., Fl. Austral. 1: 383. 1863; Backer & Bakh.f., Fl. Java 2: 128. 1965; Mabb. in Fl. Nouvelle Calédonie & Dépend. 15: 75. 1988; Pannell, Kew Bull., Add. Ser. 16: 140. 1992: Mabb. & Pannell, Fl. Males., ser. I, 12(1): 243. 1995.— *Nemedra elaeagnoidea* A.Juss., Bull. Sci. Nat. Géol. 23: 239. 1830.— *Aglaia odoratissima* sensu Benth. in Hook., London J. Bot. 2: 213. 1843.— *A. roxburghiana* (Wight & Arn.) Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 41. 1868; Hiern in Hook.f., Fl. Brit. India 1: 555. 1875; Kurz, J. Asiat. Soc. Bengal 44(2): 147. 1875.— *Milnia roxburghiana* Wight & Arn., Prodr. Fl. Ind. Orient.:119. 1834.

Thailand.— NORTH-EASTERN: Loei, Nakhon Phanom; EASTERN: Nakhon Ratchasima, Ubon Ratchathani; SOUTH-WESTERN: Kanchanaburi, Phetchaburi, Prachuap Khiri Khan; CENTRAL: Saraburi, Nakhon Nayok; SOUTH-EASTERN: Prachin Buri, Chon Buri, Trat; PENINSULAR: Ranong, Nakhon Si Thammarat, Trang, Satun, Yala.

Distribution.— Sri Lanka, India, Vietnam, Cambodia, Malaysia, Indonesia, Philippines, Taiwan, Australia (type).

Ecology.— In evergreen forest, near streams, on limestone or granite bedrock; altitude 30–800 m (most commonly 50–400 m). Flowering: January–November (commonly September–November); fruiting: December–July (commonly March–July).

Vernacular.— Daeng khao (แดงขาว), kraduk khiat (กระดูกเขียด), ta maeo (ตาแมว) (Southeastern); sang khriat dam (สังเครียดดำ) (Peninsular); nam phueng (น้ำผึ้ง), chang khru (จังครู) (Eastern).

7. Aglaia elliptica Blume, Bijdr. Fl. Ned. Ind.: 171. 1825; Backer & Bakh.f., Fl. Java 2: 126. 1965; Pannell, Tree Fl. Malaya 4: 214. 1989; Pannell, Kew Bull., Add. Ser. 16: 275. 1992; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 288. 1995.— *A. ovata* Teijsm. & Binn., Natuurk. Tijdschr. Ned. Indië 27: 43. 1864.— *A. apoana* Merr. in Philipp. Govt. Lab. Bur. Bull. 35: 30. 1906.— *A. pauciflora* Merr. in Philipp. Govt. Lab. Bur. Bull. 35: 31. 1906.— *A. lagunensis* Merr. in Philipp. J. Sci. Bot. 9: 537. 1915.— *A. marginata* Craib, Bull. Misc. Inform. Kew 1926: 343. 1926.

Thailand.— NORTHERN: Nan; SOUTH-WESTERN:

Kanchanaburi; PENINSULAR: Chumphon, Ranong, Surat Thani, Phangnga, Krabi, Nakhon Si Thammarat, Trang.

Distribution.— Myanmar, Malaysia, Indonesia (type), Philippines.

Ecology.— In tropical evergreen forest to dry evergreen forest, near streams, on limestone or granite or sandstone bedrock; altitude 30–1,400 m (commonly 50–800 m). Flowering: February–November (commonly April–July); fruiting: January–December (commonly March–July).

Vernacular.— Sang khriat (สังเครียด), sang khong (สังโค้ง), sang khriat cho (สังเครียดช่อ) (Peninsular).

8. Aglaia erythrosperma Pannell, Kew Bull., Add. Ser. 16: 76. 1992; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 219. 1995.

Thailand.— PENINSULAR: Chumphon, Ranong, Nakhon Si Thammarat, Songkhla.

Distribution.— Malaysia (type), Indonesia.

Ecology.— In tropical evergreen forest or in mixed deciduous forest, along ridges, on granite or sandstone bedrock; altitude 20–1,000 m (commonly 200–500 m). Flowering: February–March; fruiting: March–May.

9. Aglaia eximia Miq., Fl. Ned. Ind. Suppl. 1: 197, 506. 1861; Pannell, Tree Fl. Malaya 4: 215. 1989; Pannell, Kew Bull., Add. Ser. 16: 121. 1992; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 236. 1995.— *A. argentea* Blume var. *eximina* (Miq.) Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 55. 1868; King, J. Asiat. Soc. Bengal 64(2): 70. 1895; Ridl., Fl. Malay Penins. 1: 405. 1922.— *A. argentea* Blume var. *hypoleuca* (Miq.) Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 55. 1868.— *A. argentea* Blume var. *curtisii* King, J. Asiat. Soc. Bengal 64(2): 71. 1895.

Thailand.— SOUTH-WESTERN: Kanchanaburi, Prachuap Khiri Khan; PENINSULAR: Chumphon, Ranong, Surat Thani, Phangnga, Krabi, Nakhon Si Thammarat, Phatthalung, Trang, Satun, Songkhla.

Distribution.— Vietnam, Malaysia, Indonesia (type), Philippines.

Ecology.— Common in evergreen forest near streams, on limestone or granite bedrock, also in mixed deciduous forest; altitude 30–900 m (commonly 100–250 m). Flowering: March–October (most commonly July–October); fruiting: January–December (commonly July–November).

Vernacular.— Sang krot (สังกรด), sang khriat (สังเครียด), sang khriat ko (สังเครียดโก), langsat hin (ลางสาดหิน) (Peninsular).

10. Aglaia exstipulata (Griff.) Theob. in Mason, Burma, ed. 3(2): 583. 1883; Balak., J. Bombay Nat. Hist. Soc. 67: 57. 1970; Pannell, Tree Fl. Malaya 4: 215. 1989; Pannell, Kew Bull., Add. Ser. 16: 320. 1992; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 303. 1995.— *Euphoria exstipulata* Griff., Notul Pl. As. 4: 547. 1854; Ridl., Fl. Malay Penins. 1: 409. 1922.— *Aglaia longifolia* Teijsm. & Binn., Natuurk. Tijdschr. Ned.-Indië 27: 2. 1864.— *A. minutiflora* Bedd. var. *griffithii* Hiern in Hook.f., Fl. Brit. India 1: 557. 1875.— *A. griffithii* (Hiern) Kurz, J. Asiat. Soc. Bengal 44(2): 146. 1875.

Thailand.— SOUTH-WESTERN: Phetchaburi; SOUTH-EASTERN: Chon Buri; PENINSULAR: Chumphon, Ranong, Surat Thani, Phangnga, Krabi, Phatthalung, Trang, Satun, Songkhla, Yala.

Distribution.— Myanmar (type), Vietnam, Malaysia, Singapore, Indonesia, Brunei.

Ecology.— Tropical evergreen forest, on limestone or granite bedrock; altitude 50–600 m (commonly 150–300 m). Flowering: February–October (most commonly July–October); fruiting: March–December (commonly June–July).

Vernacular.— Sang khriat (สังเครียด), huat ngo (หวดเงาะ) (Peninsular).

Uses.— White aril edible.

11. Aglaia forbesii King, J. Asiat. Soc. Bengal 64(2): 68. 1895; Ridl., Fl. Malay Penins. 1: 406. 1922; Pannell, Tree Fl. Malaya 4: 215. 1989; Pannell, Kew Bull., Add. Ser. 16: 207. 1992; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 265. 1995.— *A. humilis* King, J. Asiat. Soc. Bengal 64(2): 69. 1895; Ridl., Fl. Malay Penins. 1: 407. 1992; Pannell, Tree Fl. Malaya 4: 218. 1989.

Thailand.— SOUTH-WESTERN: Kanchanaburi; PENINSULAR: Ranong, Nakhon Si Thammarat, Phatthalung, Pattani.

Distribution.— Myanmar, Malaysia (type), Indonesia.

Ecology.— Beside streams in evergreen forest, on sandstone bedrock; altitude 100–600 m. Flowering: March–December (commonly March–April); fruiting: May–November (commonly May–August).

Vernacular.— Hom (หอม) (Peninsular).

Uses.— Yellow to pink aril edible.

12. Aglaia grandis Korth. ex Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 56. 1868; Pannell, Tree Fl. Malaya 4: 217. 1989; Pannell, Kew Bull., Add. Ser. 16: 111. 1992; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 232. 1995.— *A. lanuginosa* King, J. Asiat. Soc. Bengal 64(2): 71. 1895; Ridl., Fl. Malay. Penins. 1: 407. 1922.— *Merostela grandis* (Korth. ex Miq.) Pierre, Fl. Forest Cochinch. Fasc. 21: t. 331. 1895.— *M. grandifolia* Pierre, Fl. Forest Cochinch. Fasc. 22: t. 342. 1896.— *Aglaia merostela* Pellegr. in Lecomte, Fl. Indo-Chine 1: 761. 1911.— *A. perfulva* Elmer in Leafl. Philipp. Bot. 9: 3302. 1937.

Thailand.— NORTH-EASTERN: Nong Khai; EASTERN: Si Sa Ket; SOUTH-WESTERN: Phetchaburi; SOUTH-EASTERN: Sa Kaeo, Chon Buri, Chanthaburi, Trat; PENINSULAR: Surat Thani, Nakhon Si Thammarat, Yala, Narathiwat.

Distribution.— Vietnam, Malaysia, Borneo (type), Philippines.

Ecology.— In moist evergreen or mixed deciduous forest with bamboo, near streams, on sandstone bedrock; altitude 10–1,000 m (commonly 200–400 m). Flowering: January–September (commonly June–September); fruiting: January–March.

Vernacular.— Khang khao yai (ค้างคาวใหญ่) (Southeastern).

Uses.— Aril edible.

13. Aglaia korthalsii Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 42. 1868; Corner, Wayside Trees Mal. 1: 457. 1940; Pannell, Tree Fl. Malaya 4: 228. 1989; Pannell, Kew Bull., Add. Ser. 16: 167. 1992; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 251. 1995.— *Hearnia aquatica* Pierre, Fl. Forest Cochinch. Fasc. 21: t. 333b. 1895.

Thailand.— SOUTH-WESTERN: Prachuap Khiri Khan; PENINSULAR: Ranong, Surat Thani, Phangnga, Narathiwat.

Distribution.— India, Bhutan, Myanmar, Vietnam, Malaysia, Indonesia (type), Philippines.

Ecology.— In swamp forest to tropical evergreen forest, limestone or sandstone bedrock; altitude 0–5 m (one record up to 700 m). Flowering: January–October (commonly January–April); fruiting: January–March.

Vernacular.— Ke ya (กียะ) (Peninsular).

Uses.— Aril edible.

14. Aglaia lawii (Wight) C.J. Saldanha ex Ramamoorthy in C.J. Saldanha & Nicolson, Fl. Hassan Dist.: 392. pl. 76. 1976; Pannell, Kew Bull., Add. Ser. 16: 97. 1992; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 228. 1995.— *Nimmonia lawii* Wight, Calcutta J. Nat. Hist. 7: 13. 1847.— *Amoora lawii* (Wight) Bedd., Fl. Sylv. S. India: t. 133. 1871; Hiern in Hook.f., Fl. Brit. India 1 561. 1875.— *Aglaia andamanica* Hiern in Hook.f., Fl. Brit. India 1: 555. 1875.— *Lansium pedicellatum* Hiern in Hook.f., Fl. Brit. India 1: 558. 1875.— *Amoora canarana* (Turcz) Hiern in Hook.f., Fl., Brit. India 1: 560. 1875.— *Amoora maingayi* Hiern in Hook.f., Fl. Brit. India 1: 562. 1875; Ridl., Fl. Malay Penins. 1: 400. 1922.— *Amoora dysoxyloides* Kurz, J. Asiat. Soc. Bengal 44(2): 200. 1876.— *Aglaia tetrapetala* Pierre, Fl. Forest Cochinch. Fasc. 22: t. 337A. 1897.

Thailand.— NORTHERN: Chiang Mai, Lampang, Phrae, Phitsanulok; NORTH-EASTERN: Phetchabun, Nong Khai; EASTERN: Nakhon Ratchasima; SOUTH-WESTERN: Uthai Thani, Kanchanaburi, Phetchaburi, Prachuap Khiri Khan; CENTRAL: Saraburi; SOUTH-EASTERN: Prachin Buri, Chon Buri, Chanthaburi, Trat; PENINSULAR: Chumphon, Surat Thani, Phangnga, Phuket, Krabi, Nakhon Si Thammarat, Phatthalung, Trang, Satun, Songkhla, Yala, Narathiwat.

Distribution.— India (type), Bhutan, China, Myanmar, Laos, Vietnam, Malaysia, Indonesia, Philippines, Taiwan.

Ecology.— Evergreen to mixed deciduous forest, near streams, on granite or sandstone or limestone bedrock; altitude 30–1,500 m (commonly 250–700 m). Flowering: March–December (com-

monly March–August); fruiting: May–July.

Vernacular.— Ta suea (ตาเสือ) (Northern); khang khao (ค้างคาว) (Eastern); mak kong (หมากกอง) (Central); sak ka ma (สักกะมา), sang ka tong (สังกะโต้ง) (Southwestern); mai hom (ไม้หอม), sang khriat (สังเครียด) (Peninsular).

Uses.— Aril edible.

15. Aglaia leptantha Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 51. 1868; Pannell, Kew Bull., Add. Ser. 16: 201. 1992; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 261. 1995.— *A. glabriflora* Hiern in Hook.f., Fl. Brit. India 1: 555. 1875; Ridl., Fl. Malay Penins. 1: 404. 1922; Pannell, Tree Fl. Malaya 4: 217. 1989.

Thailand.— PENINSULAR: Surat Thani, Nakhon Si Thammarat, Trang, Songkhla.

Distribution.— Cambodia, Malaysia, Singapore, Indonesia (type), Philippines.

Ecology.— In evergreen forest, on sandstone or limestone or granite bedrock; altitude 500–1,100 m. Flowering: August–October; fruiting: October –April.

Vernacular.— Sang khriat lueat (สังเครียดเลือด), sang ka tong (สังกะโต้ง) (Peninsular).

Uses.— Aril edible.

1**6. Aglaia leucophylla** King, J. Asiat. Soc. Bengal, 64(2): 66. 1895; Ridl., Fl. Malay Penins. 1: 403. 1922; Pannell, Tree Fl. Malaya 4: 218. 1989; Pannell, Kew Bull., Add. Ser. 16: 266. 1992; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 271. 1995.— *A. kunstleri* King, J. Asiat. Soc. Bengal 64(2): 69. 1895.— *A. heteroclita* King, J. Asiat. Soc. Bengal 64(2): 78. 1895; Ridl., Fl. Malay Penins. 1: 410. 1922.

Thailand.— SOUTH-EASTERN: Chachoengsao; PENINSULAR: Ranong, Phangnga, Nakhon Si Thammarat, Songkhla, Narathiwat.

Distribution.— Malaysia (type), Brunei, Indonesia, Philippines.

Ecology.— In evergreen forest, near streams, on limestone bedrock; altitude 100–300 m. Flowering: June–December (commonly June–September); fruiting: November–May.

Vernacular.— Ma khuang (มะข่วง) (Southeastern); sang ka tong (สังกะโต้ง) (Peninsular).

Uses.— Aril edible.

17. Aglaia macrocarpa (Miq.) Pannell, Kew Bull., Add. Ser. 16: 65. 1992; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 215. 1995.— *Epicharis macrocarpa* Miq., Fl. Ned. Ind., Suppl. 196, 505, 1861.— *Aglaia pycnocarpa* Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 45. 1868.— *Amoora rubescens* Hiern in Hook.f., Fl. Brit. India 1: 561. 1875; Ridl. Fl. Malay Penins. 1: 399. 1922.— *A. trichanthera* Koord. & Valeton, Bijdr. Boomsoort. Java 3: 123. 1896.— *Aglaia trimera* Ridl. in Kew Bull. 368. 1930.— *A. triplex* Ridl. in Bull. Misc. Inform. Kew 1938: 215. 1938.— *A. rubescens* (Hiern) Pannell, Malaysian Forester 45: 455. 1982; Pannell, Tree Fl. Malaya 4: 223. 1989. Fig. 1.

Thailand.— NORTHERN: Chiang Rai (cultivated); SOUTH-WESTERN: Kanchanaburi; PENINSULAR: Surat Thani, Krabi, Phatthalung, Pattani.

Distribution.— Vietnam, Malaysia, Singapore, Indonesia (type).

Ecology.— In tropical evergreen to mixed deciduous forest, on limestone bedrock; altitude 50–1,000 m (commonly 50–200 m). Flowering: February–August (commonly February–May); fruiting: April–May.

Vernacular.— Cha sadao (ช้าสะเดา) (Northern); thiam dong (เทียมดง) (Peninsular).

18. Aglaia odorata Lour., Fl. Cochinch. 1: 173. 1790; Hiern in Hook.f., Fl. Brit. India 1: 554. 1875; King, J. Asiat. Soc. Bengal 64(2): 62. 1895; Corner, Wayside Trees Mal. 1:456: 174. 1940; Backer & Bakh.f., Fl. Java 2: 128. 1965; C.Y. Wu, Fl. Yunnan. 1: 239. 1977; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 383. 1995.— *A. sinensis* Pierre, Fl. Forest Cochinch. Fasc. 21: t. 334. 1895.— *A. chaudocensis* Pierre, Fl. Forest Cochinch. Fasc. 22: t. 339B. 1896.— *A. repouensis* Pierre, Fl. Forest Cochinch. Fasc. 22: t. 340B. 1896.— *A. duperreana* Pierre, Fl. Forest Cochinch. Fasc. 22: t. 341B. 1896.— *A. odorata* Lour. var. *chaudocensis* (Pierre) Pellegr. in Lecomte, Fl. Indo-Chine 1: 757. 1911.— *A. oblanceolata* Craib, Bull. Misc. Inform. Kew 1926: 324. 1926.

Figure 1. *Aglaia macrocarpa* (Miq.) Pannell: A. part of infructescence, A-1 another leaf shape (*N. Wirawan 334*); B. part of inflorescence, B-1 longitudinal section of flower, B-2 ovary & cross section of ovary (*C. Niyomdham 861*).

Thailand.— NORTHERN: Chiang Mai, Tak, Kamphaeng Phet; NORTH-EASTERN: Sakhon Nakhon; EASTERN: Chaiyaphum, Buri Ram, Ubon Ratchathani; SOUTH-WESTERN: Kanchanaburi, Ratchaburi, Phetchaburi, Prachuap Khiri Khan; CENTRAL: Sing Buri, Saraburi, Nakhon Nayok, Bangkok; SOUTH-EASTERN: Sa Kaeo, Prachin Buri, Chon Buri, Rayong, Chanthaburi, Trat; PENINSULAR: Chumphon, Ranong, Surat Thani, Phangnga, Krabi, Nakhon Si Thammarat, Phatthalung, Trang, Songkhla, Narathiwat.

Distribution.— India, China (type), Cambodia, Vietnam, Malaysia, Indonesia.

Ecology.— Tropical evergreen to dry evergreen forest, on sandy soil to limestone bedrock; altitude 30–1,100 m (most commonly 80–500 m). Flowering all year round (commonly February–September); fruiting: February–May.

Vernacular.— Kai thian (ไก่เทียน) (Central); ka sum nok (กาสุมนก) (Southwestern); hom klai (หอมไกล) (Peninsular).

Uses.— Cultivated for its ornamental value; dried flowers used for scenting in tea.

19. Aglaia odoratissima Blume, Bidjr. Fl. Ned. Ind.: 171. 1825; King, J. Asiat. Soc. Bengal 64(2): 67. 1895; Ridl., Fl. Malay Penins. 1: 404. 1922; Corner, Wayside Tree Mal. 1: 457. 1940; Backer et Bakh.f., Fl. Java 2: 128. 1965; Pannell, Tree Fl. Malaya 4: 221. 1989; Pannell, Kew Bull., Add. Ser. 16: 237. 1992; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 276. 1995.— *A. diepenhorstii* Miq., Fl. Ned. Ind., Suppl. 1: 507. 1861.— *A. paniculata* Kurz, Prelim. Rep. Forest Pegu: 34. 1875.— *A. odoratissima* Blume var. *parvifolia* Koord. & Valeton, Bijdr. Boomsoort. Java 3: 150. 1896.— *A. odoratissima* Blume var. *forbesii* Baker f., J. Bot. Lond. 62. 19: 1924.— *A. cuspidella* Ridl., Bull. Misc. Inform. Kew 1930: 367. 1930.— *A. fraseri* Ridl., Bull. Misc. Inform. Kew 1930: 368. 1930.

Thailand.— NORTHERN: Chiang Rai, Lampang; NORTH-EASTERN: Loei; EASTERN: Chaiyaphum, Nakhon Ratchasima; SOUTH-WESTERN: Phetchaburi, Prachuap Khiri Khan; SOUTH-EASTERN: Sa Kaeo, Chon Buri; PENINSULAR: Chumphon, Ranong, Surat Thani, Nakhon Si Thammarat, Trang, Songkhla, Yala, Narathiwat.

Distribution.— Myanmar, Malaysia, Indonesia (type), Philippines.

Ecology.— Evergreen to mixed deciduous forest, near streams, on granite bedrock; altitude 50–1,200 m (commonly 200–600 m). Flowering all year round (most commonly February–August); fruiting: January–June.

Vernacular.— Ma ti (มะตี) (Northern); nuan paeng (นวลแป้ง), khi hen (ขี้เห็น), sang khriat (สังเครียด), sang khriat lueat (สังเครียดเลือด) (Peninsular).

Uses.— Aril edible, timber can be used for furniture.

20. Aglaia oligophylla Miq., Fl. Ned. Ind., Suppl. 1: 507. 1861; Pannell, Tree Fl. Malaya 4: 222. 1989; Pannell, Kew Bull., Add. Ser. 16: 302. 1992; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 297. 1995.— *A. oligantha* C.DC. in A.DC., Monogr. Phan. 1: 603. 1878.— *A. pedicellata* C.DC. in A.DC., Monogr. Phan. 1: 607. 1878.— *A. glaucescens* King, J. Asiat. Soc. Bengal 64(2): 64. 1895.— *A. fusca* King, J. Asiat. Soc. Bengal 64(2): 62. 1895; Pannell, Tree Fl. Malaya 4: 215. 1989.— *A. euphorioides* Pierre, Fl. Forest Cochinch. Fasc. 22: t. 338B. 1896.— *A. quocensis* Pierre, Fl. Forest Cochinch. Fasc. 22: t. 337B. 1896.

Thailand.— NORTH-EASTERN: Nakhon Phanom; EASTERN: Nakhon Ratchasima; SOUTH-WESTERN: Prachuap Khiri Khan; CENTRAL: Nakhon Nayok; SOUTH-EASTERN: Chachoengsao, Chanthaburi, Trat; PENINSULAR: Chumphon, Surat Thani, Phangnga, Phuket, Krabi, Nakhon Si Thammarat, Satun, Songkhla, Narathiwat.

Distribution.— Myanmar, Malaysia, Indonesia (type), Philippines.

Ecology.— Near streams in evergreen forest, on limestone or granite bedrock; altitude 0–800 m (commonly 50–200 m). Flowering: February–November (most commonly March–June); fruiting: February–December (commonly April–August).

Vernacular.— Ta maeo pa (ตาแมวป่า).

Uses.— Aril edible.

21. Aglaia pachyphylla Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 57. 1868; C.DC. in A.DC.,

Monogr. Phan. 1: 617. 1878; Pannell, Kew Bull., Add. Ser. 16: 117. 1992; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 234. 1995.— *A. barbatula* Koord. & Valeton, Bijdr. Boomsoort. Java 3: 167. 1896; Backer & Bakh.f., Fl. Java 2: 126. 1965; Pannell, Tree Fl. Malaya 4: 213. 1989.

Thailand.— NORTHERN: Chiang Mai; SOUTH-WESTERN: Kanchanaburi; CENTRAL: Lop Buri; PENINSULAR: Ranong, Phatthalung, Narathiwat.

Distribution.— Malaysia, Brunei, Indonesia (type), Philippines.

Ecology.— In evergreen forest, mixed deciduous forest, also in swamp forest, on limestone or sandstone bedrock; altitude 50–700 m. Flowering: May–July; fruiting: February–March.

Vernacular.— Ta suea (ตาเสือ) (Southwestern); chom phu samet (ชมพู่เสม็ด) (Peninsular).

22. Aglaia palembanica Miq., Fl. Ned. Ind., Suppl. 1: 197, 507. 1861; Hiern in Hook.f., Fl. Brit. India 1: 557. 1875; King, J. Asiat. Soc. Bengal 64(2): 72. 1895; Ridl., Fl. Malay Penins. 1: 409. 1922; Corner, in Gard. Bull. Singapore, Suppl. 1: 131. 1978; Pannell, Tree Fl. Malaya 4: 223. 1989; Pannell, Kew Bull., Add. Ser. 16: 323. 1992; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 304. 1995.— *A. sipannas* Miq., Fl. Ned. Ind., Suppl. 1: 197, 506. 1861.— *A. pamattonis* Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 53. 1868.— *A. palembanica* Miq. var. *longifolia* Craib, Fl. Siam Enum. 1: 258. 1926. Fig. 2.

Thailand.— NORTHERN: Chiang Mai; EASTERN: Nakhon Ratchasima; PENINSULAR: Chumphon, Ranong, Phangnga, Krabi, Nakhon Si Thammarat, Trang, Satun.

Distribution.— Malaysia, Indonesia (type), Philippines.

Ecology.— In tropical evergreen forest, near streams, on granite bedrock; altitude 50–200 m. Flowering: February–November (most commonly February–July); fruiting: January–March.

Vernacular.— Khoei lai (เขยหลาย) (Northern); sang khriat (สังเครียด) (Peninsular).

23. Aglaia perviridis Hiern in Hook.f., Fl. Brit. India 1: 556. 1875; C.DC. in A.DC., Monogr. Phan. 1: 610. 1878; C.Y. Wu, Fl. Yunnan. 1: 239. 1977; Pannell, Kew Bull., Add. Ser. 16: 198. 1992; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 260. 1995.— *A. kingiana* Ridl., J. Straits Branch Roy. Asiat. Soc. 82: 175. 1920; Ridl., Fl. Malay Penins. 1: 404. 1922.— *A. canarensis* Gamble, Bull. Misc. Inform. Kew 1915: 347. 1915.

Thailand.— NORTHERN: Chiang Mai, Chiang Rai, Phitsanulok; SOUTH-WESTERN: Kanchanaburi, Phetchaburi; PENINSULAR: Krabi, Surat Thani.

Distribution.— India (type), Bangladesh, Bhutan, China, Malaysia.

Ecology.— In mixed deciduous to evergreen forest, on limestone bedrock; altitude 180–1,350 m (commonly 400–900 m). Flowering: April–October (most commonly April–July); fruiting: November–August (most commonly March–July).

24. Aglaia rubiginosa (Hiern) Pannell, Malaysian Forester 45: 455. 1982; Pannell, Tree Fl. Malaya 4: 225. 1989; Pannell, Kew Bull., Add. Ser. 16: 92. 1992; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 225. 1995.— *Amoora rubiginosa* Hiern in Hook.f., Fl. Brit. India 1: 561. 1875; King, J. Asiat. Soc. Bengal 64(2): 54. 1895; Ridl., Fl. Malay Penins. 1: 398. 1992; Corner, Gard. Bull. Singapore, Suppl. 1: 131, 198. 1978.— *Aglaia ignea* Valeton ex K.Heyne, Nutt. Pl. Ned.-Indië, ed. 1, 3: 59. 1917. Fig. 3.

Thailand.— CENTRAL: Nakhon Nayok; SOUTH-EASTERN: Trat; PENINSULAR: Surat Thani, Nakhon Si Thammarat, Phatthalung, Narathiwat.

Distribution.— Singapore, Malaysia (type).

Ecology.— Lowland to peat swamp forest; altitude 0–400 m. Flowering: March–July; fruiting: December–May.

Vernacular.— Ta suea (ตาเสือ) (Central); chom phu samet (ชมพู่เสม็ด), samui kaeng (สมุยแกง) (Peninsular).

25. Aglaia rufinervis (Blume) Bentv., Acta Bot. Neerl. 11: 19. 1962; Backer & Bakh.f., Fl. Java 2: 127. 1965; Pannell, Kew Bull., Add. Ser. 16: 317, f.96. 1992; Mabb. & Pannell, Fl. Males., ser. I,

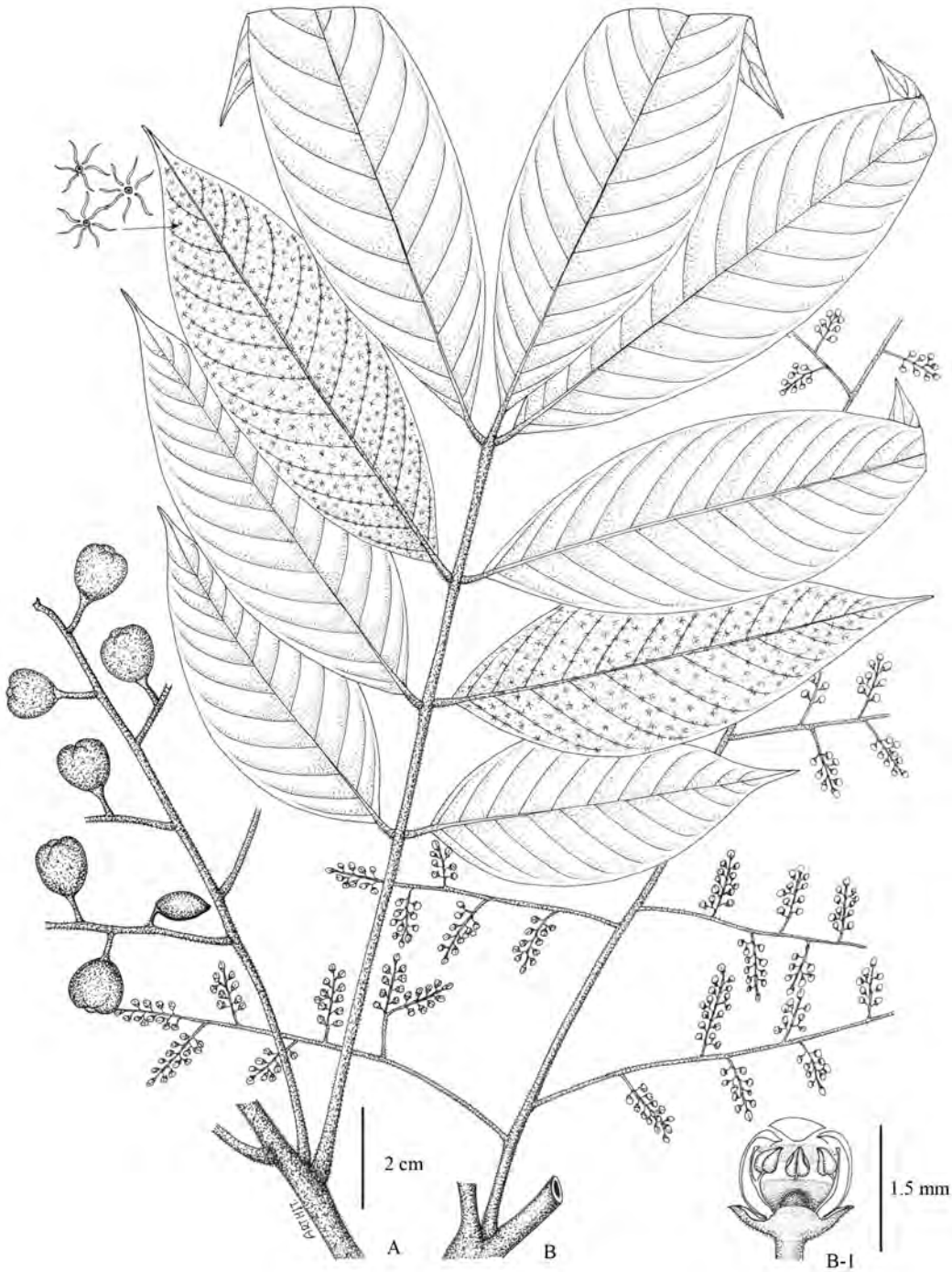

Figure 2. *Aglaia palembanica* Miq.: A. part of infructescence (*S. Thawon 579*); B. inflorescences, B-1 longitudinal section of flower (*B. Sangkachand 696*).

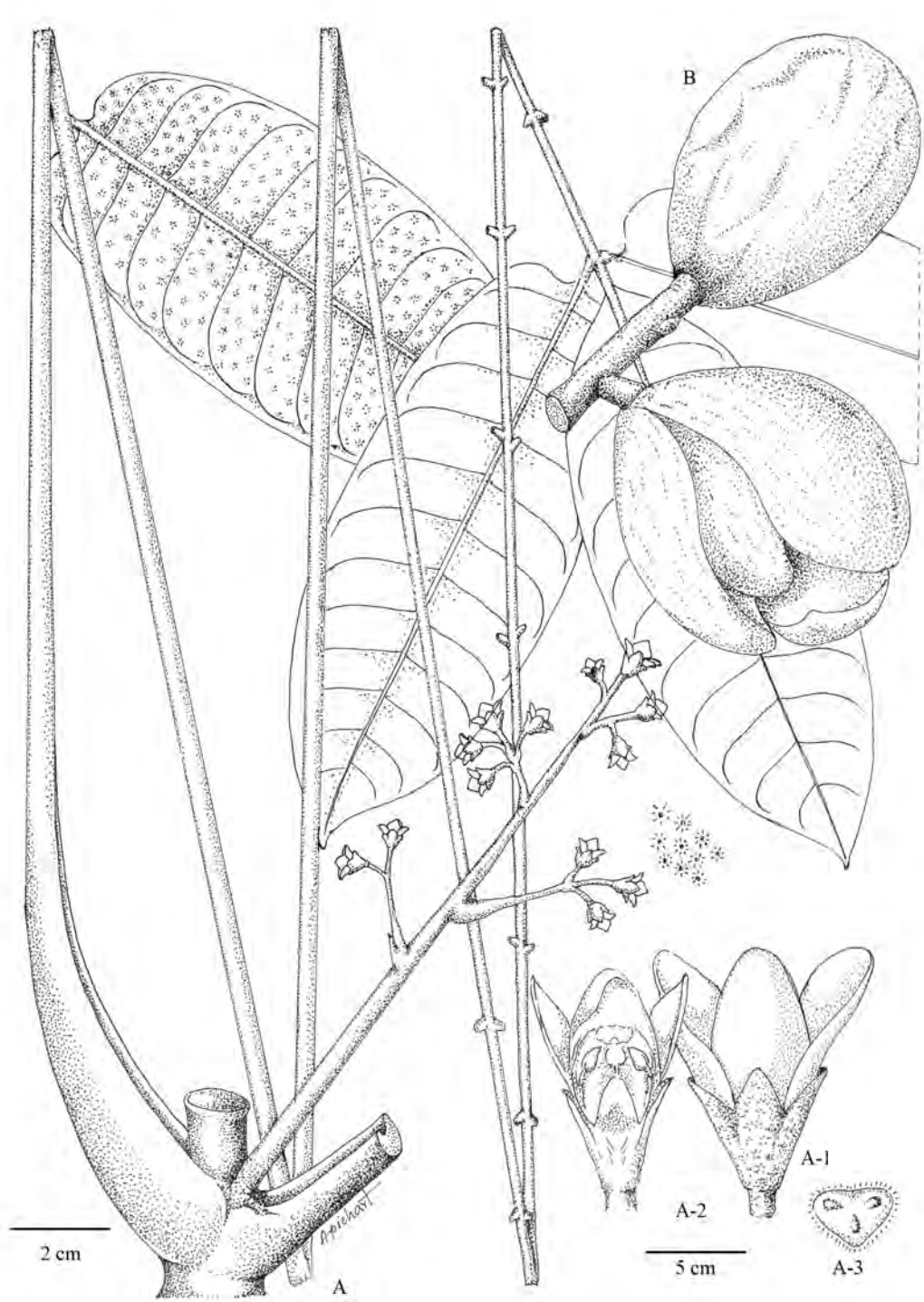

Figure 3. *Aglaia rubiginosa* (Hiern) Pannell: A. twig with inflorescences, A-1 flower, A-2 longitudinal section of flower, A-3 cross section of ovary (*A. Premrasami 32*); B. part of infructescence (*C. Niyomdham 802*).

12(1): 302. 1995.— *Trichilia rufinervis* Blume, Bijdr. Fl. Ned. Ind.: 164. 1825.— *Aglaia trichostemon* C.DC. in A.DC., Monogr. Phan. 1: 608. 1878; Ridley, Fl. Malay Penins. 1: 407. 1922; Pannell, Tree Fl. Malaya 4: 227. 1989. Fig. 4.

Thailand.— PENINSULAR: Phangnga, Trang.

Distribution.— Singapore, Malaysia (type), New Guinea.

Ecology.— In evergreen forest, usually near streams, on granite bedrock; altitude 30–80 m. Flowering: July–October; fruiting: January–March.

26. Aglaia sexipetala Griff., Not. Pl. Asiat. 4: 505. 1854.— *A. aspera* Teijsm. & Binn., Natuurk. Tijdschr. Ned.-Indie 27: 42. 1864; Backer & Bakh.f., Fl. Java 2: 127. 1965; Pannell, Tree Fl. Malaya 4: 211. 1989; Pannell, Kew Bull., Add. Ser. 16: 217. 1992; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 268. 1995.— *A. acuminatissima* Teijsm. & Binn., Natuurk. Tijdschr. Ned.-Indië 27: 42. 1864.— *A. polyphylla* Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 56. 1868.— *A. calelanensis* Elmer, Leafl. Philipp. Bot. 9: 3283. 1937.

Thailand.— NORTHERN: Phitsanulok; PENINSULAR: Chumphon.

Distribution.— Malaysia, Indonesia (type), Philippines, New Guinea.

Ecology.— In evergreen forest; altitude 100–400 m. Flowering: January–March; fruiting: October–December.

Uses.— Aril edible.

27. Aglaia silvestris (M.Roem.) Merr., Interpr. Herb. Amboin.: 210. 1917; Pannell, Kew Bull., Add. Ser. 16: 193. 1992; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 259. 1995.— *Lansium silvestre* Roem., Fam. Nat. Syn. Monogr. 1: 99. 1846.— *Aglaia ganggo* Miq., Fl. Ned. Ind., Suppl. 1: 506. 1861; King, J. Asiat. Soc. Bengal 64(2): 65. 1895; Backer & Bakh.f., Fl. Java 2: 129. 1965; Pannell, Tree Fl. Malaya 4: 216. 1989.— *A. pyramidata* Hance, J. Bot. (N.S.) 6: 331. 1877.— *Amoora manni* King ex Brandis, Indian Trees: 142. 1906.— *Aglaia baillonii* (Pierre) Pellegr. in Lecomte, Fl. Indo-Chine 1: 774. 1911.— *A. acuminata* Merr., Phillipp. J. Sci., Bot. 9: 531. 1915.— *A. micropora* Merr., Univ. Calif. Publ. Bot. 15: 129. 1929.

Thailand.— NORTHERN: Chiang Mai, Chiang Rai, Tak; EASTERN: Chaiyaphum; SOUTH-WESTERN: Kanchanaburi, Phetchaburi; SOUTH-EASTERN: Chanthaburi, Trat; PENINSULAR: Chumphon, Ranong.

Distribution.— Laos, Cambodia, Vietnam, Malaysia, Indonesia, Philippines (type), New Guinea.

Ecology.— In evergreen to mixed deciduous forest, usually near streams, on sandstone or limestone bedrock; altitude 50–1,300 m (most commonly 100–400 m). Flowering all year round (most commonly July–December); fruiting: December–August (commonly March–July).

Vernacular.— Chan cha mot (จันทน์ชะมด) (General); sang khriat kho ngong (สังเครียดคอโง้ง) (Southeastern).

Uses.— Aril edible; wood fragrant.

28. Aglaia simplicifolia (Bedd.) Harms in Engl. & Prantl, Nat. Pflanzenfam. 3, 4: 300. 1896; Pannell, Kew Bull., Add. Ser. 16: 306. 1992; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 298. 1995.— *Beddomea simplicifolia* Bedd., Fl. Sylv. S. India 1: t. 135. 1871.— *B. simplicifolia* Bedd. var. *parviflora* Bedd., Fl. Sylv. S. India 1: 135. 1871.— *B. simplicifolia* Bedd. var. *racemosa* Bedd., Fl. Sylv. S. India 1: 135. 1871.— *B. racemosa* Ridl., J. Fed. Malay States Mus. 4: 10. 1909.— *Aglaia meliosmoides* Craib, Bull. Misc. Inform. Kew 1913: 68. 1913; Pannell, Tree Fl. Malaya 4: 219. 1989.— *A. gagnepainiana* Pellegr., Bull. Soc. Bot. France 93: 320. 1946.

Thailand.— NORTHERN: Lampang, Phrae, Uttaradit; NORTH-EASTERN: Loei; PENINSULAR: Surat Thani, Trang.

Distribution.— India (type), Laos, Malaysia, Indonesia, N. Borneo, Philippines.

Ecology.— In evergreen forest; on granite or limestone or sandstone bedrock; altitude 20–500 m. Flowering: February–April; fruiting: April –August.

Vernacular.— Hom klai (หอมไกล), pra yong (ประยงค์), kra duk ling (กระดูกลิง), hom khoi (หอมค่อย) (Northern); di ngu (ดีงู) (Peninsular).

Uses.— Aril used as herb.

Figure 4. *Aglaia rufinervis* (Blume) Bentv.: A. twig with inflorescences, A-1 longitudinal section of flower, A-2 stellate hairs; B. part of infructescence (*Th. Wongprasert 082-22*).

29. Aglaia spectabilis (Miq.) Jain & Bennet, Indian J. Forest 9(3): 271. 1987; Pannell, Kew Bull., Add. Ser. 16: 79. 1992; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 221. 1995.— *Amoora spectabilis* Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 37. 1868; Hiern in Hook.f., Fl. Brit. India 1: 561. 1875.— *A. gigantean* Pierre in Laness., Pl. Util. Col. Franc.: 311. 1886; Fl. Forest Cochinch. Fasc. 22: t. 343A. 1896.— *A. ridleyi* King, J. Asiat. Soc. Bengal 64(2): 56. 1895; Ridl., Fl. Malay Penins. 1: 398. 1922.— *A. wallichii* King, J. Asiat. Soc. Bengal 64(2): 56. 1895.— *Aglaia gigantea* (Pierre) Pellegr. in Lecomte, Fl. Indo-Chine 1: 769. 1911.— *A. ridleyi* (King) Pannell, Malaysian Forester 45: 455. 1982; Pannell, Tree Fl. Malaya 4: 223. 1989.— *Amoora stellatosquamosa* C.Y.Wu, Fl. Yunnan. 1: 233. 1977.

Thailand.— NORTHERN: Chiang Mai, Nan; NORTH-EASTERN: Nakhon Phanom; EASTERN: Nakhon Ratchasima; SOUTH-EASTERN: Chon Buri; PENINSULAR: Ranong, Phangnga, Nakhon Si Thammarat, Phatthalung, Satun.

Distribution.— India (type), Sikkim, China, Myanmar, Laos, Cambodia, Vietnam, Malaysia, Indonesia, Philippines, Australia.

Ecology.— In evergreen forest usually near streams, on sandstone bedrock; altitude 130–1,600 m (commonly 100–600 m). Flowering: June–November; fruiting: December–October (commonly March–June).

Vernacular.— Mu do (มูโด), ta suea (ตาเสือ) (Peninsular).

30. Aglaia tenuicaulis Hiern in Hook.f., Fl. Brit. India 1: 556. 1875; King, J. Asiat. Soc. Bengal 64(2): 76. 1895; Ridl., Fl. Malay Penins. 1: 408. 1922; Pannell, Tree Fl. Malaya 4: 226. 1989; Pannell, Kew Bull., Add. Ser. 16: 313. 1992; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 301. 1995.— *A. acuminatissima* Teijsm. & Binn. var. *kambangana* Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 48. 1868.

Thailand.— NORTHERN: Chiang Mai; PENINSULAR: Ranong, Surat Thani, Phangnga, Phatthalung.

Distribution.— Malaysia (type), Singapore, Indonesia, Philippines.

Ecology.— In evergreen forest, usually near streams, on granite or limestone bedrock; altitude 30–700 m (most commonly 30–120 m). Flowering: March–August; fruiting: August–February.

31. Aglaia teysmanniana (Miq.) Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 48. 1868; Pannell, Tree Fl. Malaya 4: 226. 1989; Pannell, Kew Bull., Add. Ser. 16: 108. 1992; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 231. 1995.— *Amoora teysmanniana* Miq., Fl. Ned. Ind., Suppl. 1: 196. 503. 1861.— *Aglaia heptandra* Koord. & Valeton, Bijdr. Boomsoort. Java 3: 132. 1896; Backer & Bakh.f., Fl. Java 2: 126. 1965.— *Amoora stellata* C.Y.Wu, Fl. Yunnan. 1: 234. 1977.

Thailand.— NORTHERN: Chiang Mai; NORTH-EASTERN: Loei; SOUTH-WESTERN: Kanchanaburi; SOUTH-EASTERN: Trat; PENINSULAR: Chumphon, Ranong, Surat Thani, Trang.

Distribution.— China, Vietnam, Malaysia, Indonesia (type), Philippines.

Ecology.— In evergreen to mixed deciduous forest, usually near streams, on granite or sandstone or limestone bedrock; altitude 10–1,200 m (commonly 80–400 m). Flowering: February–June; fruiting: April–January (commonly April–August).

Vernacular.— Sang khriat yai (สังเครียดใหญ่) (Southeastern); mot sang rong hai (มดสังร้องไห้) (Peninsular).

Uses.— Aril edible.

32. Aglaia tomentosa Teijsm. & Binn., Natuurk. Tijdschr. Ned-Indië 27: 43. 1864; Pannell, Tree Fl. Malaya 4: 226. 1989; Pannell, Kew Bull., Add. Ser. 16: 331. 1992; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 306. 1995.— *A. minutiflora* Bedd., Icon. Pl. Ind. Or. 1: 44, t. 193. 1874; Hiern in Hook.f., Fl. Brit. India 1: 557. 1875.— *A. minutiflora* Bedd. var. *travancorica* Hiern in Hook.f., Fl. Brit. India 1: 557. 1875.— *A. cordata* Hiern in Hook.f., Fl. Brit. India 1: 557. 1875; King, J. Asiat. Soc. Bengal 64(2): 73. 1895; Ridl., Fl. Malay Penins. 1: 409. 1922; Pannell, Tree Fl. Malaya 4: 214. 1989.— *Milnea harmandiana* Pierre, Fl. Forest Cochinch. Fasc. 21: t. 333. 1895.— *Aglaia palembanica* Miq. var. longifolia Craib, Fl. Siam. Enum. 1: 258. 1926.

Thailand.— NORTHERN: Kamphaeng Phet; SOUTH-WESTERN: Kanchanaburi, Prachuap Khiri Khan; PENINSULAR: Chumphon, Ranong, Surat Thani, Phangnga, Phuket, Nakhon Si Thammarat,

Phatthalung, Trang, Satun, Pattani.

Distribution.— India, Laos, Vietnam, Malaysia, Singapore, Indonesia, Philippines, Australia.

Ecology.— In evergreen or mixed deciduous forest, near streams, on granite or limestone or sandstone bedrock; altitude 0–1,050 m (commonly 100–500 m). Flowering: February–November (commonly June–September); fruiting: April–December (commonly December–May).

Vernacular.— Sang khriat (สังเครียด), nuai fai (หน่วยฝ้าย), huat ngo (หวดเงาะ) (Peninsular).

Uses.— Aril edible.

2. APHANAMIXIS

Blume, Bijdr. Fl. Ned. Ind.: 165. 1825; T.D.Penn., Blumea 22: 485. 1975; Mabb., Blumea 31: 136. 1985; Mabb. Fl. Males., ser. I, 12(1): 187. 1995.

Trees, indumentum of simple or sometimes basally bifid and stellate hairs. *Leaves* imparipinnate, leaflets opposite. *Inflorescence* axillary to supra-axillary; male flowers in panicles, female and hermaphrodite in long spikes (in Thailand) or racemes, rarely panicles. *Male flowers* distinctly smaller than female. *Calyx* deeply 5-lobed, lobes imbricate. *Petals* 3, imbricate, united basally with staminal tube. *Staminal tube* globose to deeply cyathiform; anthers 3–6, glabrous, inserted within tube. *Disc* absent. *Ovary* 3–4 locular, each locule with (1–)2 collateral to superposed ovules; style stout; stylehead conical to truncate, 3-angled or with impressions of anthers. *Drupe* 2–3(–4) valved, loculicidal, locule 1–2 seeded. *Seeds* arillate; cotyledons plano-convex, collateral united; radicle small, superior, included.

KEY TO THE SPECIES

1. Leaflets chartaceous. Stamens always 3 **2. A. sumatrana**
1. Leaflets coriaceous or subcoriaceous. Stamens always 6 **1. A. polystachya**

1. Aphanamixis polystachya (Wall.) R.Parker in Ind. For. 57: 486. 1931; Pellegr. in Lecomte, Fl. Indo-Chine, Suppl. 1: 714. 1948; C.Y. Wu, Fl. Yunnan. 1: 230. 1977; Mabb., Blumea 31: 137. 1985; Pannell, Tree Fl. Malaya 4: 230. 1989; Mabb. Fl. Males., ser. I, 12(1): 188. 1995.— *Aglaia polystachya* Wall. in Roxb. Fl. Ind. 2: 429. 1824.— *Amoora polystachya* (Wall.) Wight et Arn. ex Steud. Nomencl. ed. 2, 1: 78. 1840; Craib, Fl. Siam. Enum. 1: 260. 1926.— *A. rohituka* (Roxb.) Wight et Arn. in Wight, Cat.: 24. 1833; Hiern in Hook.f., Fl. Brit. India 1: 559. 1875; Kurz, Forest Fl. Burma 1: 220. 1877; King, J. Asiat. Soc. Bengal 64(2): 53. 1895; Brandis, Indian Trees: 141. 1906.— *Aphanamixis grandifolia* Blume, Bijdr. Fl. Ned. Ind.: 165. 1825; Backer & Bakh.f., Fl. Java 3: 654. 1968.— *Aglaia aphanamixis* Pellegr. in Lecomte, Fl. Indo-Chine 1: 767. 1911.— *Dysoxylum cuneatum* Hiern in Hook.f., Fl. Brit. India 1; 549. 1875.— *Aphanamixis cochinchinensis* Pierre, Fl. Forest Cochinch. Fasc. 5: t. 343 B. 1897.— *Dysoxylum cauliflorum* auct. non Hiern: Ridl., Fl. Malay Penins. 1: 396. 1992.— *Aphanamixis sinensis* P.H.How & Chen, Acta Phytotax. Sin. 4: 29, t. 3. 1955.

Thailand.— NORTHERN: Mae Hong Son, Chiang Mai, Chiang Rai, Nan, Lamphun, Lampang, Phrae, Kamphaeng Phet; NORTH-EASTERN: Loei, Nong Khai, Phetchabun, Sakon Nakhon; EASTERN: Chaiyaphum, Nakhon Ratchasima; SOUTH-WESTERN: Uthai Thani, Kanchanaburi, Prachuap Khiri Khan; CENTRAL: Bangkok, Nakhon Nayok; SOUTH-EASTERN: Chon Buri, Chanthaburi; PENINSULAR: Chumphon, Ranong, Phangnga, Nakhon Si Thammarat, Phatthalung, Trang, Satun, Songkhla, Pattani, Narathiwat.

Distribution.— Sri Lanka, India (type), Bhutan, China, Laos, Vietnam, Malaysia, Singapore, Indonesia, Philippines.

Ecology.— Tropical evergreen to swamp forest, mixed deciduous forest near streams, on limestone or granite bedrock; altitude 10–1,360 m (commonly 100–800 m); Flowering: April–October (commonly April–August); fruiting: August–February (commonly August–March).

Vernacular.— Khamin dong (ขมิ้นดง), mahang kan (มะฮังก่าน), lao hang (เลาหาง), ma-a (มะอ้า) (Northern); ta suea (ตาเสือ) (Central); ta pu (ตาปู่) (Southeastern); tum dong (ตุ้มดง), sang khriat ko hok (สังเครียดคอโฮก) (Peninsular).

2. Aphanamixis sumatrana (Miq.) Ridl., Fl. Malay Penins. 1: 400. 1922; Mabb., Blumea 31: 139. 1985; Pannell, Tree Fl. Malaya 4: 231. 1989; Mabb. Fl. Males., ser. I, 12(1): 194. 1995.— *Amoora sumatrana* Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 35. 1868. Fig. 5.

Thailand.— PENINSULAR: Narathiwat (*K. Larsen et al. 43146*).

Distribution.— Malaysia (type), Philippines.

Ecology.— Tropical evergreen rain forest.

3. AZADIRACHTA

A.Juss., Bull. Sci. Nat. Géol. 23: 236. 1830; Jacobs, Gard. Bull. Singapore 18: 71. 1961; Penn., Blumea 22: 464, f.3. 1975; Mabb., Fl. Males., ser. I, 12(1): 337. 1995.

Trees, all parts bitter. Buds thinly encrusted with resin. *Leaves* imparipinnate, rarely paripinnate, pubescent or glabrous, usually with 2 pairs of glands at base of petiole. *Inflorescence* panicle. *Flowers* bisexual or polygamous, oblong or salverform in outline. *Calyx* 5-lobed to proximal half, the lobes imbricate. *Petals* 5, free, imbricate. *Staminal tube* cylindrical, slightly expanded at the top, margin (8–)10 lobed; lobes obtuse, truncate, emarginate or bifid; anthers (8–)10, glabrous, inserted at base and opposite lobes. *Disc* annular, united with base of ovary. *Ovary* ovoid, glabrous, 3 locular, each locule with 2 ovules; style tubular with bell-shaped stigma with 3 lobes. *Drupe* 1(–2) seeded; endocarp thin, cartilaginous. *Seed* ovoid or slightly ellipsoid, distally pointed; testa thin, membranous with small adaxial sarcotesta.

KEY TO THE SPECIES AND VARIETIES

(based on flowering specimens)

1. Leaflets with serrate margin
   2. Apical leaflet prominent, lateral leaflets strongly asymmetrically curved at base to one side. Staminal tube glabrous inside; filaments all glabrous. Stigma with 3 erect narrow pointed lobes **2. A. indica** var. **indica**
   2. Apical leaflet usually reduced, lateral leaflets only slightly oblique at base on one side. Staminal tube hairy on upper half inside; filaments hairy on upper half. Stigma slightly lobed **3. A. indica** var. **siamensis**
1. Leaflets with entire margins. Staminal tube glabrous on both sides. Stigma bell-shaped **1. A. excelsa**

KEY TO THE SPECIES AND VARIETIES

(based on fruiting specimens)

1. Leaflets with serrate margins. Drupes up to 2.2 by 1.5 cm
   2. Apical leaflet prominent, lateral leaflets strongly asymmetrically curved at base to one side. Drupes dark yellow when ripe **2a. A. indica** var. **indica**
   2. Apical leaflet usually reduced, lateral leaflets only slightly oblique at base on one side. Drupes yellow or glossy green when ripe **2b. A. indica** var. **siamensis**
1. Leaflets with entire margina. Drupes not less than 2.5 by 2 cm, seed ca. 2.5 by 1.5–1.8 cm **1. A. excels**a

1. Azadirachta excelsa (Jack) Jacobs, Gard. Bull. Singapore 18: 75. 1961; Wong, Mal. For. Rec. 28 cum. tab.: 81. 1976; Mabb., Tree Fl. Malaya 4. f. 4.: 233 1989; Mabb., Fl. Males., ser. I, 12(1): 337. 1995.— *Melia excelsa* Jack, Malayan. Misc. 11: 12. 1820; Corner, Gard. Bull. Straits. Settl. 10: 263, t. 1, 2 1939.— *Trichilia excelsa* (Jack) Spreng., Syst. Veg. 4(2): 252. 1827.— *Azedarach excelsa* (Jack) Kuntze, Rev. Gen. Pl. 1: 110. 1891.— *Azadirachta integrifoliola* Merr., Philipp. J. Sci., Bot. 4: 272. 1909.

Thailand.— SOUTH-WESTERN: Kanchanaburi; SOUTH-EASTERN: Chon Buri; PENINSULAR: Ranong, Surat Thani, Krabi, Trang, Songkhla.

Distribution.— Malaysia (type), Indonesia, Brunei, Philippines.

Ecology.— In evergreen forest; altitude (5–) 20–100(–250) m.

Vernacular.— Sadao thiam (สะเดาเทียม), sadao chang (สะเดาช้าง), thiam (เทียม) (Peninsular).

2. Azadirachta indica A.Juss., Mém. Mus. Nat. 19: 221. 1832; C.DC. in A.DC., Monogr. Phan. 1: 459. 1878; Backer & Bakh.f., Fl. Java 2: 120. 1965; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 341.

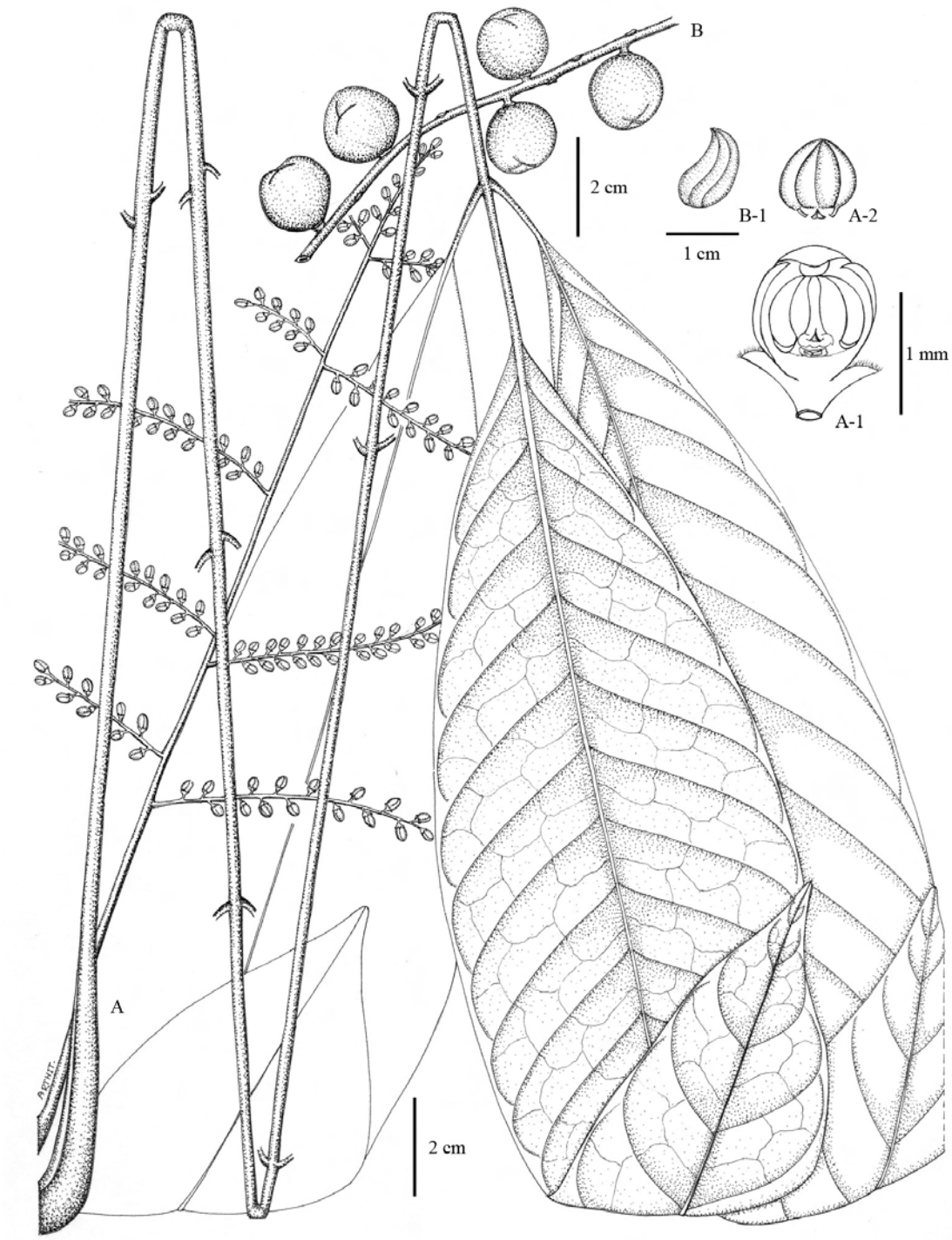

Figure 5. *Aphanamixis sumatrana* (Mig.) Ridl.: A. twig with male inflorescences, A-1 male flower, A-2 stamens (*K. Larsen 43146*); B. part of infructescence, B-1 seed with aril.

1995 (excl. var. *siamensis* Valeton).— *Melia azadirachta* L., Sp. Pl.: 385. 1753; Hiern in Hook.f., Fl. Brit. India 1: 544. 1875; Ridl., Fl. Malay Penin. 1: 384. 1922.— *M. indica* (A.Juss.) Brandis, For. Fl. NW & C India: 67. 1874; Corner, Wayside Trees Mal. 1: 466. 1940.

2a. var. **indica**

Thailand.— (All cultivated) NORTHERN: Chiang Mai, Phrae; SOUTH-WESTERN: Kanchanaburi, Ratchaburi, Prachuap Khiri Khan; EASTERN: Buri Ram; SOUTH-EASTERN: Chon Buri, Rayong; PENINSULAR: Satun, Songkhla.

Distribution.— Saudi Arabia, Pakistan, Sri Lanka, India (type), Myanmar, Malaysia, Singapore, Philippines, Australia.

Ecology.— Cultivated by roadside and in forest plantation; altitude 50–300(–800) m.

Vernacular.— Sadao india (สะเดาอินเดีย), khwinin (ควินิน) (General).

2b. var. **siamensis** Valeton in Hochr., Pl. Bogor. Exs.: 66. 1904; Valeton, Cat. Bogor. Nov.: 21. 1905.

Thailand.— NORTHERN: Chiang Mai, Phrae; NORTH-EASTERN: Kalasin, Khon Kaen; EASTERN: Buri Ram, Ubon Ratchathani; SOUTH-WESTERN: Kanchanaburi, Ratchaburi, Prachuap Khiri Khan; CENTRAL: Chai Nat, Lop Buri; SOUTH-EASTERN: Prachin Buri, Chon Buri, Rayong, Chanthaburi.

Distribution.— Indonesia (type, cultivated in Bogor Botanical Gardens).

Ecology.— In mixed deciduous and dry deciduous dipterocarp forests; altitude 50–300 (–800) m.

Vernacular.— Sadao (สะเดา) (General); saliam (สะเลียม) (Northern).

4. CHISOCHETON

Blume, Bijdr.: 168. 1825; Mabb., Bull. Brit. Mus. (Nat. Hist.) Bot. 6: 301. 1979; Mabb., Fl. Males., ser. I, 12(1): 136. 1995.

Evergreen trees, dioecious (some polygamous), with glandular hairs. *Leaves* imparipinnate rarely paripinnate, leaflets usually opposite. *Inflorescence* paniculate, to thyrsoid or with long peduncle and congested racemose, axillary to supra-axillary, ramiflorous. *Flowers* unisexual, rarely hermaphrodite. *Calyx* cupuliform, 3–6-lobed. *Petals* (3–)4–6(–14) valvate, in one whorl, free; tube cylindrical, expanded with entire to crenate margin. *Staminal tube* cylindrical, sometimes expanded or contracted at the mouth, margin entire. *Stamens* (3–)4–10(–30), usually inserted within the tube alternating with the lobes. *Disc* usually absent. *Ovary* (in female flower) 2–8 locular, each locule with 1(–2) ovule, style slender, stigma capitate. *Drupe* 2–5-valved, loculicidal capsule, each valve with 1(–2) seeded; pericarp usually leathery or almost completely lignified. *Seeds* arillate or sarcotestal; aril reddish orange.

KEY TO THE SPECIES AND SUBSPECIES

(based on flowering specimens)

1. Pistil with distinct gynophore
  2. Inflorescence rope-like, markedly pendulous
    3. Inflorescence more than 4 m long. Leaves paripinnate — **8. C. penduliflorus**
    3. Inflorescence up to 1 m long. Leaves imparipinnate — **4. C. dysoxylifolius**
  2. Inflorescence stick-like, erect or suberect
    4. Base of leaflets cordate or truncate — **2. C. ceramicus**
    4. Base of leaflets cuneate, oblique or obtuse
      5. Stamens 5
        6. Ovary 2-locular. Corolla-lobes sparsely hairy inside — **9a C. pentandrus** subsp. **pentandrus**
        6. Ovary 3(–4)-locular. Corolla-lobes glabrous inside — **3. C. cumingianus** subsp. **balansae**
      5. Stamens 10 — **1. C. amabilis**
1. Pistil with indistinct gynophore
  7. Ovary 3–(4) or 5 locular
    8. Ovary 3–(4) locular; stamens 5
      9. Leaflets opposite — **6. C. macrophylla** subsp. **fulvescens**
      9. Leaflets alternate — **5. C. grandiflorus**
    8. Ovary 5-locular; stamens 6 — **10. C. tomentosa**

7. Ovary 2-locular
10. Stamens 5, leaves paripinnate; inflorescence axillary, exceeding 50 cm long **7. C. patens**
10. Stamens 6, leaves imparipinnate; inflorescence on twigs, up to 5 cm long **9b C. pentandrus** subsp. **paucijugus**

1. Chisocheton amabilis (Miq.) C.DC. in A.DC., Monogr. Phan. 1: 537. 1878; Merr., J. Straits Branch Roy. Asiat. Soc., spec. no.: 319. 1921; Corner, Gard. Bull. Singapore, Suppl. 1: 198. 1978; Mabb., Bull. Brit. Mus. (Nat. Hist.) Bot. 6.4: 344. 1979; Mabb., Tree Fl. Malaya 4: 234. 1989; Mabb., Fl. Males., ser. I, 12(1): 163. 1995.— *Schizochiton amabile* Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 26, 27. 1968.— *Chisocheton illustris* Ridl., Bull. Misc. Inform. Kew 1930: 366. 1930.— *C. hackenbergii* Harms, Notizbl. Bot. Gart. Berlin Dahlem 15: 476. 1941.— *C. brachyanthus* (non Merr.) Anderson, Gard. Bull. Singapore 20: 115. 1963. Fig. 6.

Thailand.— SOUTH-EASTERN: Chachoengsao, Trat; PENINSULAR: Chumphon, Songkhla, Narathiwat.

Distribution.— Malaysia, Indonesia (type), Brunei.

Ecology.— Evergreen forest near streams or in peat swamp forest; altitude 0–100(–300) m.

Vernacular.— Ta suea daeng (ตาเสือแดง) (Southeastern).

2. Chisocheton ceramicus (Miq.) C.DC. in A.DC., Monogr. Phan. 1: 553. 1878; Mabb., Bull. Brit. Mus. (Nat. Hist.) Bot. 6: 361. 1979; Mabb., Tree Fl. Malaya 4: 234. 1989; P.H. Hô, Fl. Vietnam ed. 3, 2(1): 493. 1992; Mabb., Fl. Males., ser. I, 12(1): 179. 1995.— *Schizochiton ceramicum* Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 27, 29. 1868.— *S. spectabile* Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 27, 29. 1868.— *Chisocheton spectabilis* (Miq.) C.DC. in A.DC., Monogr. Phan. 1: 539. 1878.— *C. macrothyrsus* King, J. Asiat. Soc. Bengal 64(2): 33. 1895; Ridl., Fl. Malay Penins. 1: 389. 1922.— *C. sandoricocarpus* Koord. & Valeton, Bijdr. Boomsoort. Java 3: 111. 1896; Backer & Bakh.f., Fl. Java 2: 124. 1965.— *C. globosus* Pierre, Fl. Forest Cochinch. Fasc. 5: t. 347A. 1897; Pellegr. in Lecomte, Fl. Indo-Chine 1: 740. 1911.

Thailand.— PENINSULAR: Phatthalung, Yala, Narathiwat.

Distribution.— Malaysia, Indonesia (type).

Ecology.— Evergreen forest; altitude 50–500(–645) m.

Vernacular.— Yom yai (ยมใหญ่), kra thon rok (กระท้อนรอก) (Peninsular).

3. Chisocheton cumingianus (C.DC.) Harms subsp. **balansae** (C.DC.) Mabb., Taxon 26: 528. 1977; Mabb., Bull. Brit. Mus. (Nat. Hist.) Bot. 6. 4.: 347. 1979; P.H. Hô, Fl. Vietnam in ed. 3, 2(1): 492. 1992.— *C. balansae* C.DC., Bull. Herb. Boissier 2: 578. 1894; Pellegr. in Lecomte, Fl. Indo-Chine 1: 737. 1911; Lecomte, Atlas Bois Indoch.: 134. 1925.— *C. paniculatus* Hiern in Hook.f., Fl. Brit. India 1: 552. 1875; Brandis, Indian Trees: 139, 703. 1906; Pellegr. in Lecomte, Fl. Indo-Chine 1: 736. 1911.— *Schizochiton paniculatum* (Hiern) Kurz, J. Asiat. Soc. Bengal 44(2): 145. 1875; Kurz, Forest Fl. Brit. Burma: 216. 1877.— *Chisocheton coriaceus* Pierre, Fl. Forest Cochinch. Fasc. 5: t. 346 A. 1897.— *C. thorelii* Pierre, Fl. Forest Cochinch. Fasc. 5: sub t. 347. 1897.— *C. cochinchinensis* Pierre, Fl. Forest Cochinch. Fasc. 5: t. 356 B. 1897.— *C. harmandianus* Pierre, Fl. Forest Cochinch. Fasc. 5: t. 347 1897.— *C. chinensis* Merr., Philipp. J. Sci. c. 21: 497. 1922.— *C. siamensis* Craib, Bull. Misc. Inform. Kew 1926: 342. 1926; Craib, Fl. Siam. Enum. 1: 253. 1926; Pellegr. in Lecomte, Fl. Indo-Chine, Suppl. 1: 692. 1946.

Thailand.— NORTHERN: Chiang Mai, Nan, Tak; SOUTH-WESTERN: Phetchaburi; SOUTH-EASTERN: Chanthaburi.

Distribution.— India, China (type), Myanmar, Indochina, Philippines.

Ecology.— In evergreen or deciduous dipterocarp forest, along streams on limestone bedrock.

Vernacular.— Yom makok (ยมมะกอก).

4. Chisocheton dysoxylifolius (Kurz) Hiern in Hook.f., Fl. Brit. India 1: 551. 1875; C.DC. in A.DC., Monogr. Phan. 1: 537. 1878; Prain, Bengal Pl. 1: 315. 1903; Brandis, Indian Trees: 139, 703. 1906; Mabb., Bull. Brit. Mus. (Nat. Hist.), Bot. 6. 4: 346. 1979

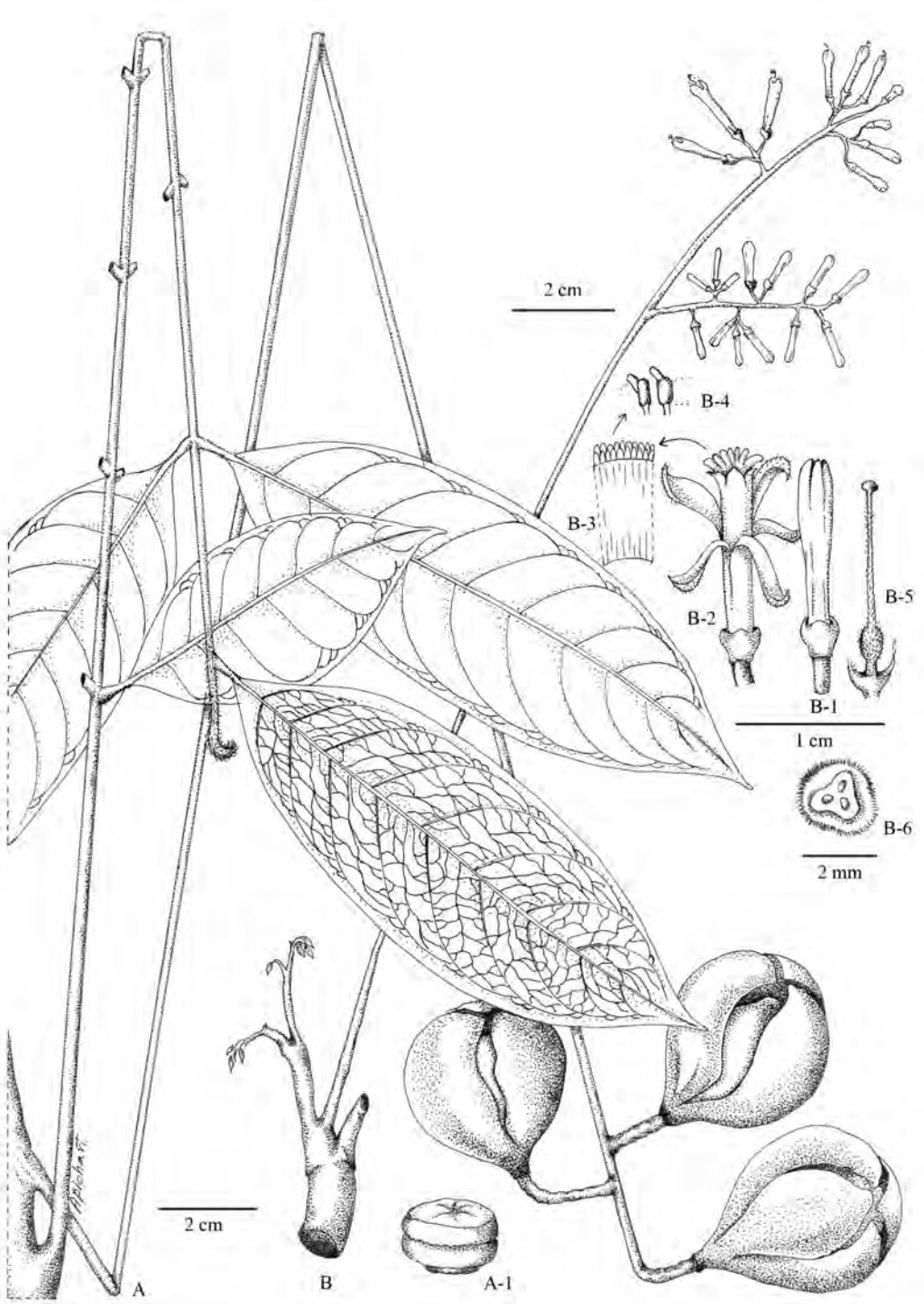

Figure 6. *Chisocheton amabilis* (Miq.) C.DC.: A. twig with infructescence, A-1 seed (*C. Niyomdham 5286*); B. inflorescences, B-1 flower bud, B-2 mature flower, B-3 stamen attachment, B-4 stamens, B-5 pistil, B-6 cross section of ovary (*Th. Wongprasert 013-03*).

Thailand.— NORTHERN: Chiang Mai; EASTERN: Nakhon Ratchasima; SOUTH-WESTERN: Kanchanaburi.

Distribution.— Myanmar (type).

Ecology.— Evergreen or mixed deciduous forest, near streams.

Vernacular.— Ta suea (ตาเสือ) (Northern).

5. Chisocheton grandiflorus (Kurz) Hiern in Hook.f., Fl. Brit. India 1: 552. 1875; C.DC. in A.DC., Monogr. Phan. 1: 534. 1878; Brandis, Indian Trees: 139. 1906; Mabb., Bull. Brit. Mus. (Nat. Hist.) Bot. 6.4: 358. 1979.— *Schizochiton grandiflorum* Kurz, J. Asiat. Soc. Bengal 41(2): 296. 1872; Kurz, Forest Fl. Brit. Burma 1: 216. 1877.

Thailand.— NORTHERN: Chiang Rai; CENTRAL: Nakhon Nayok.

Distribution.— Myanmar (type)

Ecology.— Evergreen forest, on limestone bedrock; altitude 500–800 m.

Vernacular.— Ta suea khon (ตาเสือคอน) (Northern).

6. Chisocheton macrophyllus King subsp. **fulvescens** Mabb., Bull. Brit. Mus. (Nat. Hist.) Bot. 6: 346. 1979; Mabb., Fl. Males., ser. I, 12(1): 178. 1995.

Thailand.— SOUTH-WESTERN: Phetchaburi, Prachuap Khiri Khan; PENINSULAR: Nakhon Si Thammarat, Trang, Yala, Narathiwat.

Distribution.— Malaysia (type).

Ecology.— Evergreen forest; altitude 80–100 m.

Vernacular.— Ta suea (ตาเสือ), sai (สาย), ma-a (มะอ้า) (Peninsular).

7. Chisocheton patens Blume, Bijdr.: 169. 1825; C.DC. in A.DC. Monogr. Phan. 1: 529. 1878; King, J. Asiat. Soc. Bengal 64(2): 34. 1895; Mabb., Bull. Brit. Mus. (Nat. Hist.), Bot. 6.: 350. 1979; Mabb., Tree Fl. Malaya 4: 235. 1989; Mabb., Fl. Males., ser. I, 12(1): 167. 1995.— *C. divergens* Blume, Bijdr.: 169. 1825; King, J. Asiat. Soc. Bengal 64(2): 35. 1895; Brandis, Indian Trees: 139. 1906; Ridl., Fl. Malay Penins. 1: 390. 1922; Backer & Bakh.f., Fl. Java 2: 124. 1965; T.D.Penn., Blumea 22: 496. 1975.— *C. fragrans* Hiern in Hook.f., Fl. Brit. India 1: 551. 1875.— *C. glomeratus* Hiern in Hook.f., Fl. Brit. India 1: 551. 1875; Ridl., Fl. Malay Penins. 1: 389. 1922.— *C. holocalyx* Hiern in Hook.f., Fl. Brit. India 1: 551. 1875.

Thailand.— NORTHERN: Chiang Mai; SOUTH-WESTERN: Phetchaburi, Prachuap Khiri Khan; SOUTH-EASTERN: Chachoengsao, Chanthaburi, Trat; PENINSULAR: Surat Thani, Phangnga, Phuket, Krabi, Nakhon Si Thammarat, Trang, Songkhla, Narathiwat.

Distribution.— Myanmar, Malaysia, Singapore, Brunei, Indonesia (type), Philippines.

Ecology.— Evergreen forest and peat swamp forest; altitude 0–350(–530) m.

Vernacular.— Sang khriat (สังเครียด), khamin (ขมิ้น), ku bi (กูบิ), sang khriat langsat (สังเครียดลางสาด), ta suea (ตาเสือ) (Southeastern) (Peninsular).

8. Chisocheton penduliflorus Planch. ex Hiern in Hook.f., Fl. Brit. India 1: 550. 1875; C.DC. in A.DC., Monogr. Phan. 1: 536. 1878; Curtis, J. Straits Branch Roy. Asiat. Soc. 25: 22. 1894; King, J. Asiat. Soc. Bengal 64(2): 38. 1895; Ridl., Fl. Malay Penins. 1: 388. 1922; Mabb., Bull. Brit. Mus. (Nat. Hist.), Bot. 6: 326. 1979; Mabb., Tree Fl. Malaya 4: 237. 1989; Mabb., Fl. Males., ser. I, 12(1): 145. 1995.— *Chisocheton kunstleri* King, J. Asiat. Soc. Bengal 64(2): 27. 1895.

Thailand.— PENINSULAR: Phatthalung, Trang, Narathiwat.

Distribution.— Malaysia (type).

Ecology.— Evergreen forest, near streams; altitude 50–100(–300) m.

Vernacular.— Ma mui chang (หมามุ่ยช้าง), yom man (ยมมัน) (Peninsular).

9 Chisocheton pentandrus (Blanco) Merr., Philipp. Govt. Lab. Bur. Bull. 27: 210. 1905; Mabb. Bull. Brit. Mus. (Nat. Hist.), Bot. 6: 363. 1979; Mabb., Tree Fl. Malaya 4: 237. 1989; Mabb., Fl. Males., ser. I, 12(1): 180. 1995.— *Trichilia pentandra* Blanco, Fl. Filip.: 355. 1837.— *Chisocheton microcarpus* Koord. & Valeton, Bijdr. Boomsoort.

Java 3: 115. 1896; Backer et Bakh.f., Fl. Java 2: 125. 1965.— *Dasycoleum philippinum* Turcz., Bull. Soc. Imp. Naturalistes Moscou 31: 415. 1858.— *Chisocheton philippinus* (Turcz.) Harms, in Engl. & Prantl., Nat. Pflanzenfam. 3, 4: 296. 1896.— *C. parvifoliolus* Merr., Philipp. J. Sci., Bot. 13: 297. 1918.

9a. subsp. **pentandrus**

Thailand.— PENINSULAR: Phatthalung, Songkhla.

Distribution.— Malaysia, Indonesia, Philippines (type).

Ecology.— Fresh water swamp forest; altitude 0–100 m.

Vernacular.— Yom yot (ยมยอด) (Peninsular).

9b. subsp. **paucijugus** (Miq.) Mabb., Bull. Brit. Mus. (Nat. Hist.), Bot. 6: 366. 1979; Mabb., Fl. Males., ser. I, 12(1): 182. 1995.— *Schizochiton paucijugum* Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 27, 30. 1868.— *Dasycoleum beccarianum* Baill., Adansonia 2: 263. 1874.— *Chisocheton spicatus* Hiern in Hook.f. Fl. Brit. India 1: 550. 1875; King. J. Asiat. Soc. Bengal 64(2): 26. 1895; Ridl., Fl. Malay Penins. 1: 387. 1922.— *C. paucijugus* (Miq.) B.D. Jackson, Ind. Kew. 1: 517. 1893.

Thailand.— PENINSULAR: Trang, Satun.

Distribution.— Indonesia (type), Philippines

Ecology.— Evergreen forest on granite bedrock or in swamp area; altitude 0–250 m.

Vernacular.— Yom yot (ยมยอด) (Peninsular)

10. Chisocheton tomentosus (Roxb.) Mabb., Bull. Brit. Mus. (Nat. Hist.), Bot. 6: 323. 1979; Mabb., Tree Fl. Malaya 4: 238. 1989; Mabb., Fl. Males., ser. I, 12(1): 143. 1995.— *Melia tomentosa* Roxb., Fl. Ind., (Carey & Wallich. ed.) 1: 394. 1832; Hiern in Hook.f., Fl. Brit. India 1: 543. 1875; C.DC. in A.DC., Monogr. Phan. 1: 458. 1878; Curtis, J. Straits. Branch Roy. Asiat. Soc. 25: 21. 1894.— *Azedarach tomentosa* (Roxb.) Kuntze, Revis. Gen. Pl. 1: 110. 1891.— *Chisocheton princeps* Hemsl. in Hook.f., Fl. Brit. India 1: t. 1884. 1889; Ridl., Fl. Malay Penins. 1: 388. 1922; Whitmore, Trop. Rain For. Far East: t. 2. 7. 1975.— *C. rubiginosus* King, J. Asiat. Soc. Bengal 64(2): 29. 1895; Ridl., Fl. Malay Penins. 1: 389. 1922.— *C. rugosus* Pierre, Fl. Forest Cochinch. Fasc. 5: t. 347. 1897

Thailand.— PENINSULAR: Nakhon Si Thammarat, Narathiwat.

Distribution.— Malaysia (type).

Ecology.— Evergreen forest; altitude 500–700 m.

Vernacular.— Klong (กล้อง) (Peninsular).

5. CHUKRASIA

A.Juss., Bull. Sci. Nat. Géol. 23: 239. 1830; et. Mém. Mus. Natl. Hist. Nat. 19: 251. t. 29. 1832; Harms. in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 19b1: 65. 1940; T.D.Penn. & Styles, Blumea 22: 519. 1975; Mabb., Fl. Males., ser. I, 12(1): 354. 1995.

Trees with simple hairs. *Leaves* paripinnate. *Inflorescence* panicle with many units of thyrses, axillary near branch ends. *Calyx* (4–)5-lobed. *Petal* (4–)5, free, tubular in outline in bud, contorted. *Staminal tube* cylindrical, margin crenulate rarely entire; anthers inserted at margin. *Disc* obscure to narrowly cushion-shaped. *Ovary* flask-shaped (3–)5 locular, each locular with numerous ovules; style capitate with 3–5 stigmatic ridges. *Capsule* ellipsoid, woody, opening by 3–5 valves from the apex, the valves splitting into an outer and inner bifid layer; columella with 3–5 sharply angled ridges, extending to apex of capsule; seed scars conspicuous. *Seeds* many, winged.

1. Chukrasia tabularis A.Juss. Bull. Sci. Nat. Géol. 23: 241. 1830; Pierre, Fl. Forest Cochinch. Fasc. 5: t. 357 C. 1897; Brandis, Indian Trees: 144. 1906; Pellegr. in Lecomte Fl. Indo-Chine 1: 780. 1911; T.D.Penn. & Styles, Blumea 22: 522. 1975; C. Y. Wu, Fl. Yunnan. 1: 211. 1977; Mabb., Tree Fl. Malaya 4: 256. 1989; Mabb., Fl. Males., ser. I, 12(1): 354. 1995.— *Chickrassia tabularis* (A.Juss.) Wight & Arn., Prodr. Fl. Ind. Orient.:123. 1834; Hiern in Hook.f., Fl. Brit. India 1: 568. 1875; Kurz, Forest Fl. Brit. Burma 1: 227. 1877; Ridl., Fl. Malay Penins. 1: 415. 1922.

KEY TO THE VARIETIES

(based on flowering specimens)

1. Leaflets glabrous on both sides — **1. C. tabularis** var. **tabularis**
1. Leaflets glabrous above, hairy on the lower side — **2. C. tabularis** var. **velutina**

a. var. **tabularis**

Thailand.— NORTHERN: Chang Mai, Chiang Rai, Nan, Phrae, Tak; NORTH-EASTERN: Loei; SOUTH-WESTERN: Kanchanaburi; CENTRAL: Lop Buri; SOUTH-EASTERN: Chanthaburi; PENINSULAR: Surat Thani, Nakhhon Si Thammarat, Trang, Songkhla.

Distribution.— Sri Lanka, India, Bangladesh, Indochina, Malaysia.

Ecology.— Limestone bedrock in evergreen, deciduous or mixed deciduous forest; altitude 60–1,680 m (most commonly 200–700 m).

Vernacular.— Yom hin (ยมหิน), sadao chang (สะเดาช้าง), sadao hin (สะเดาหิน) (Northern, Central); fak dap (ฝักดาบ) (Southeastern).

b. var. **velutina** (M.Roem.) Pellegr. in Lecomte, Fl. Indo-Chine 7: 781. 1911.— *Chickrassia velutina* M.Roem. Fam. Nat. Syn. Monogr. 1: 135. 1846; Kurz, Forest Fl. Burma 1: 227. 1877.— *Chukrasia velutina* (M.Roem.) C.DC. in A.DC., Monogr. Phan. 1: 727. 1878, incl. var. *macrocarpa* C.DC.; Pierre, Fl. Forest Cochinch. Fasc. 5, t. 357: 1897, incl. var. *dongnaiensis* Pierre & var. *microcarpa* Pierre; Brandis, Indian Trees: 145. 1906; Alston in Trim., Handb. Fl. Ceylon 6: 46. 1931; Worth., Ceylon Trees: t. 125. 1959.

Thailand.— NORTHERN: Lampang; NORTH-EASTERN: Loei; EASTERN: Chaiyaphum, Nakhon Ratchasima; CENTRAL: Saraburi; PENINSULAR: Surat Thani.

Distribution.— Sri Lanka, India, Laos, Vietnam.

Ecology.— Limestone bedrock, in evergreen or mixed deciduous forest.

Vernacular.— Sadao chang (สะเดาช้าง), kadao chang (กะเดาช้าง), yom hin (ยมหิน) (Northeastern).

6. CIPADESSA

Blume, Bijdr.: 162. 1825; Harms in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 19b1: 93. 1940; T.D.Penn., Blumea 22: 479. 1975; Mabb., Tree Fl. Malaya 4: 239. 1989; Mabb, Fl. Males., ser. I, 12(1): 57. 1995.— *Mallea* A.Juss., Bull. Soc. Sci Nat. Géol. 23: 236. 1830.

Shrubs to small trees, young parts pubescent. *Leaves* imparipinnate, leaflets opposite. *Inflorescence* polygamous, axillary, near twig ends, panicle with thyrsoid units. *Calyx* 5, in apical half. *Corolla* 5 (–6), free, valvate. Stamens 10, acute, pubescent. *Disc* disciform. *Ovary* obovoid, 5(–6)-lobes. *Capsule* globular or obovoid, with 5(–6) pyrenes or lobes, each with 1(–2) seed. *Seeds* obovoid, without aril; testa thin; embryo embedded in endosperm.

Cipadessa baccifera (Roth.) Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 6. 1868; C.DC. in A.DC. Monogr. Phan. 1: 426. 1878; Craib, Fl. Siam. Enum. 1: 251. 1926; Elmer in Leafl. Philipp. Bot. 9: 3348. 1937; Pellegr. in Lecomte Fl. Indo-Chine, Suppl. 1: 722. 1946; How & Chen, Acta Phytotax. Sin. 4: 34. 1955; Backer & Bakh.f., Fl. Java 2: 118. 1965; T.D.Penn., Blumea 22: 479. 1975; Mabb., Tree Fl. Malaya 4: 239. 1989; Mabb., Fl. Males., ser. I, 12(1): 59. 1995; Hô, Fl. Vietnam ed. 3, 2(1): 484. 1992.— *Melia baccifera* Roth, Nov. Sp. Pl. Ind. Or.: 215. 1821.— *Cipadessa fruticosa* Blume, Bijdr.: 162. 1825; Hiern in Hook.f., Fl. Brit. India 1: 545. 1875; Brandis, Indian Trees: 137. 1906; Pellegr. in Lecomte Fl. Indo-Chine 1: 782. 1911.— *C. sinensis* (Rehder et E.H.Wilson) Hand.-Mazz., Vegetationsbilder 20(7): 9. 1930.— *C. cinerascens* (Pellegr.) Hand.-Mazz., Symb. Sin. 7: 632. 1933.

Thailand.— NORTHERN: Mae Hong Son, Chiang Mai, Chiang Rai, Nan, Lampang, Tak; NORTH-EASTERN: Loei, Nakhon Phanom; SOUTH-EASTERN: Chanthaburi.

Distribution.— India, Sri Lanka, China, Indonesia, Philippines (type).

Ecology.— On granite bedrock or limestone ridges in hill evergreen or mixed deciduous scrub, swampy often near streams; altitude (220–)700–1,500(–2,250) m.

7. DYSOXYLUM

Blume, Bijdr.: 172. 1825; Harms in Engl. & Prantl, Nat. Pflanzenfam., ed. 2: 19b1: 160. 1940; T.D.Penn., Blumea 22: 504. 1975; Mabb. in Fl. Nouvelle Calédonie & Dépend. 15: 23. 1988; Mabb., Tree Fl. Malaya 4, f. 6: 239. 1989; Mabb., Fl. Males., ser. I, 12(1): 61. 1995.

Shrubs or trees, polygamo-dioecious, pubescent to glabrous. *Leaves* spiral, paripinnate or imparipinnate; leaflets alternate, subopposite or opposite, except the top one. *Inflorescence* a thyrse compound, racemose or spicate; axillary near terminal, ramiflorous or cauliflorous. *Calyx* 4, free or united near base, spiral. *Petals* 4(–6), free or adnate to base of staminal tube, valvate. *Staminal tube* cylindrical or slightly long urceolate, margin dentate or emarginate. *Stamens* 8(–10), within throat of tube. *Disc* free, cotyliform or cyathiform. *Ovary* 4-locular, each locule with 2 ovules. *Drupe* ovoid or obovoid, 1–4 lobes, dehiscent (almost). *Seeds* with fleshy aril or sarcotesta.

KEY TO THE SPECIES

(based on flowering and leaf specimens)

1. Leaves imparipinnate
  2. Leaflets distinctly alternate
    3. Inflorescence erect, spiciform or non-branched
      4. Spike erect, up to 10 cm long **9. D. flavescens**
      4. Spike or thyrse, usually 20–30 cm long **6. D. cyrtobotryum**
    3. Inflorescence pendulous, branched or paniculate
      5. Ovary 8-locular. Disc cupuliform, as long as ovary **2. D. alliaceum**
      5. Ovary 4-locular. Disc broadly campanulate, a half of ovary **12. D. macrocarpum**
  2. Leaflets opposite or subopposite (except the terminal one)
    6. Leaflets strictly opposite
      7. Leaflets glabrous. Staminal tube with glandular hairs inside **4. D. arborescens**
      7. Leaflets pubescent along midrib and secondary nerves. Staminal tube glabrous inside **11. D. lenticellatum**
    6. Leaflets subopposite
      8. Petiolule of apical leaflet exceeding 2 cm long. Leaflets obovate to obovate oblong. Inflorescence axillary **15. D. rubrocostatum**
      8. Petiolule of apical leaflet ca. 0.5 cm long. Leaflets oblanceolate to ovate. Inflorescence cauliflorus or ramiflorus **7. D. densiflorum**

1. Leaves paripinnate
  9. Leaflets densely hairy or sparsely pubescent beneath; margin serrate or serrulate
    10. Leaflets, sparsely pubescent beneath **13. D. mollissimum**
    10. Leaflets, densely hairy beneath; margin entire
      11. Leaflets 4–10 per side, densely tomentose and soft hairy beneath; venation scalariform, prominent beneath **10. D. grande**
      11. Leaflets strictly 2(–3) per side only, with dense glandular dots beneath; venation scalariform, faintly visible **14. D. papillosum**
  9. Leaflets entirely glabrous on both sides
    12. Petals glabrous on both sides or only on the inner side
      13. Inflorescence cauliflorous or ramiflorous. Petals glabrous on both sides **5. D. cauliflorum**
      13. Inflorescence axillary. Petals glabrous only on the inner side **8. D. excelsum**
    12. Petals pubescent on both sides
      14. Petals up to 1 cm long, yellowish. Staminal tube pubescent on the outer part, margin crenulate **1. D. acutangulum**
      14. Petals exceeding 1.5 cm long, white. Staminal tube glabrous on both sides, margin 8-dentate **3. D. angustifolium**

1. Dysoxylum acutangulum Miq., Fl. Ned. Ind., Suppl. 1: 196, 503. 1861; King, J. Asiat. Soc. Bengal 64(2): 41. 1895; Ridl., Fl. Malay Penins. 1: 393. 1922; Mabb., Fl. Males., ser. I, 12(1): 129. 1995.— *Alliaria acutangula* (Miq.) Kuntze, Revis. Gen. Pl. 1: 109. 1891.— *Dysoxylum schultzii* C.DC. in A.DC., Monogr. Phan. 1: 502. 1878.— *D. foveolatum* Radlk., Sitzungsber. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. München 9: 598. 1879. Fig. 7.

Thailand.— PENINSULAR: Chumphon, Satun.

Distribution.— Malaysia, Indonesia (type), Philippines, Australia.

Ecology.— Evergreen forest; altitude 100–700 m.

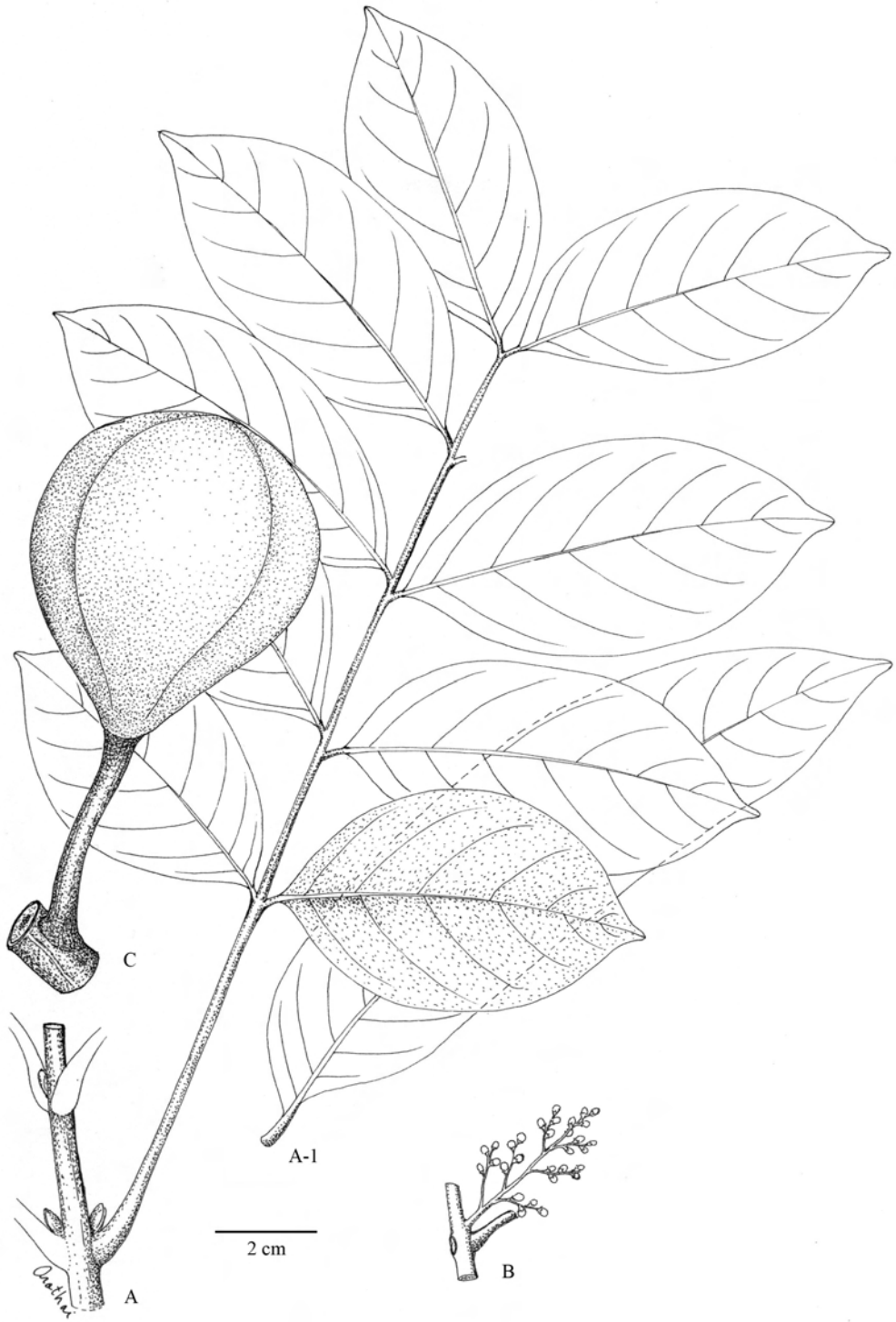

Figure 7. *Dysoxylum acutangulum* Miq.: A. twig, A-1 another leaf shape; B. inflorescence (*A.F.G. Kerr 19434*); C. drupe (*M. Shah 400*).

Vernacular.— Ta suea (ตาเสือ).

2. Dysoxylum alliaceum (Blume) Blume, Bijdr.: 172. 1825; Miq., Fl. Ned. Ind., Suppl. 1,2: 536. 1859; Backer & Bakh.f., Fl. Java 2: 123. 1965; Mabb., Tree Fl. Malaya 4: 240. 1989; Mabb., Fl. Males., ser. I, 12(1): 106. 1995.— *D. costulatum* (Miq.) Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 21. 1868; Ridl., Fl. Malay Penins. 1: 394. 1922.— *D. brevipes* Hiern in Hook.f., Fl. Brit. India 1: 546. 1875.— *Amoora oligosperma* Pierre, Fl. Forest Cochinch.: t. 345 A. 1897.— *Dysoxylum pulchrum* Ridl., J. Straits Branch Roy. Asiat. Soc. 75: 17. 1917; Ridl., Fl. Malay Penins. 1: 395. 1922.

Thailand.— SOUTH-WESTERN: Kanchanaburi; SOUTH-EASTERN: Chon Buri, Chanthaburi; PENINSULAR: Ranong, Surat Thani, Trang, Narathiwat.

Distribution.— Myanmar, Vietnam, Malaysia, Indonesia, Philippines, Australia.

Ecology.— Tropical evergeen to dry or hill evergreen forest, usually near streams; altitude (200–)700–1,100(–1,700) m.

Vernacular.— Ta suea khao (ตาเสือขาว) (Peninsular).

3. Dysoxylum angustifolium King, J. Asiat. Soc. Bengal 64(2): 39. 1895; Ridl., Fl. Malay Penins. 1: 392. 1922; Corner, Wayside Trees Mal. 1: 461. t. 153. 1940; Mabb., Tree Fl. Malaya 4: 242. 1989; Mabb., Fl. Males., ser. I, 12(1): 112. 1995. Fig. 8.

Thailand.— NORTHERN: Chiang Mai; PENINSULAR: Trang.

Distribution.— Vietnam, Malaysia (type), Singapore.

Ecology.— On limestone or granite bedrock in evergreen forest; altitude 350–650 m.

Vernacular.— Ta suea daeng (ตาเสือแดง) (Peninsular).

4. Dysoxylum arborescens (Blume) Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 24. 1868; King, J. Asiat. Soc. Bengal 64(2): 38. 1895; Brandis, Indian Trees: 138. 1906; Ridl., Fl. Malay Penins. 1: 391. 1922; Backer & Bakh.f., Fl. Java 2: 123. 1965; Mabb., Tree Fl. Malaya 4: 242. 1989; Mabb., Fl. Males., ser. I, 12(1): 103. 1995.— *D. maingayi* Hiern in Hook.f., Fl. Brit. India 1: 547. 1875.

Thailand.— NORTHERN: Chiang Mai; CENTRAL: Nakhon Nayok; PENINSULAR: Nakhon Si Thammarat, Phatthalung, Trang.

Distribution.— Malaysia (type), Indonesia, Philippines, Taiwan, New Guinea, Australia.

Ecology.— On granite or limestone bedrock, near streams in evergreen forest.

Vernacular.— Ta suea khon (ตาเสือขน).

5. Dysoxylum cauliflorum Hiern in Hook.f., Fl. Brit. India 1: 549. 1875; Ridl., Fl. Malay Penins. 1: 396, t. 40. 1922; Corner, Wayside Trees Mal. 1: 462, t. 153. 1940: Mabb., Tree Fl. Malaya 4: 242. 1989; Mabb., Fl. Males., ser. I, 12(1): 86. 1995.— *D. cuneatum* Hiern in Hook.f., Fl. Brit. India 1: 549. 1875.

Thailand.— SOUTH-EASTERN: Chon Buri, Chanthaburi; PENINSULAR: Phangnga, Krabi, Narathiwat.

Distribution.— Cambodia, Vietnam, Malaysia (type), Indonesia, Philippines.

Ecology.— Evergreen forest, near streams.

Vernacular.— Ta suea taptim (ตาเสือทับทิม) (Southeastern).

6. Dysoxylum cyrtobotryum Miq., Fl. Ned. Ind., Suppl. 1: 196, 504. 1861; Mabb., Tree Fl. Malaya 4: 243. 1989; Mabb., Fl. Males., ser. I, 12(1): 123. 1995.— *D. venulosum* King, J. Asiat. Soc. Bengal 64(2): 42. 1895; Ridl., Fl. Malay Penins. 1: 397. 1922.— *D. alternatum* Ridl., Fl. Malay Penins. 1: 397. 1922.

Thailand.— NORTHERN: Chiang Mai, Chiang Rai, Kamphaeng Phet; NORTH-EASTERN: Phetchabun, Loei, Nakhon Phanom; EASTERN: Chaiyaphum, Nakhon Ratchasima; SOUTH-WESTERN: Kanchanaburi, Phetchaburi, Prachuap Khiri Khan; CENTRAL: Lop Buri, Saraburi, Nakhon Nayok; SOUTH-EASTERN: Prachin Buri, Chon Buri, Chanthaburi; PENINSULAR: Ranong, Surat Thani, Phangnga, Nakhon Si Thammarat, Trang, Songkhla, Yala, Narathiwat.

Distribution.— Nicobar Islands, Laos, Cambodia, Vietnam, Malaysia, Indonesia (type), Philippines.

Figure 8. *Dysoxylum angustifolium* King: A. twig with infructescences (*M. F. Newman et al. 1068*); B. another leaf shape.

Ecology.— On limestone or granite bedrock, in evergreen forest near streams; altitude (150–) 200–800(–1,320) m.

Vernacular.— Khang khao elit (ค้างคาวอีลิต) (Southeastern); ma duk (มะดูก), mak duk (หมากดูก) (Northern); ta suea (ตาเสือ) (Northeastern).

7. Dysoxylum densiflorum (Blume) Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 9. 1868; King, J. Asiat. Soc. Bengal 64(2): 46. 1895; Ridl., Fl. Malay Penins. 1: 396. 1922; Backer & Bakh.f., Fl. Java 2: 122. 1965; Mabb., Tree Fl. Malaya 4: 243. 1989; Mabb., Fl. Males., ser. I, 12(1): 81. 1995.— *D. griffithii* Hiern in Hook.f., Fl. Brit. India 1: 549. 1875.

Thailand.— NORTHERN: Chiang Mai; SOUTH-WESTERN: Kanchanaburi; PENINSULAR: Surat Thani, Phangnga, Nakhon Si Thammarat, Trang, Narathiwat.

Distribution.— Myanmar, China, Malaysia, Indonesia (type).

Ecology.— Dry or moist evergreen forest, near streams or on ridges; altitude (80–)100–700(–1,000) m.

Vernacular.— Hang kan (ฮังก่าน) (Northern); sang khriat langsat (สังเครียดลางสาด), ko oak (กอโอก) (Peninsular).

8. Dysoxylum excelsum Blume, Bijdr.: 176. 1825; Backer & Bakh.f., Fl. Java 2: 124. 1965; Mabb., Tree Fl. Malaya 4: 244. 1989; Mabb., Fl. Males., ser. I, 12(1): 109. 1995.— *D. procerum* Hiern in Hook.f., Fl. Brit. India 1: 547. 1875; Brandis, Indian Trees: 138. 1906; Pellegr. in Lecomte, Fl. Indo-Chine 1: 744, t. 81, f. 6–11. 1911; Craib. Fl. Siam. Enum. 1: 252. 1926.— *D. turbinatum* King, J. Asiat., Soc. Bengal 64(2): 43. 1895; Ridl., Fl. Malay Penins. 1: 394. 1922.

Thailand.— NORTHERN: Chiang Mai; EASTERN: Chaiyaphum; CENTRAL: Nakhon Nayok; SOUTH-EASTERN: Chon Buri, Chanthaburi, Trat; PENINSULAR: Ranong, Surat Thani, Phangnga, Nakhon Si Thammarat, Phatthalung, Trang, Satun, Narathiwat.

Distribution.— Sri Lanka, Nepal, India, China, Myanmar, Laos, Cambodia, Vietnam, Malaysia, Indonesia (type), Philippines.

Ecology.— Evergreen forest, near streams; altitude (10–)100–700(–900) m.

Vernacular.— Ta suea (ตาเสือ) (Northern); sang khriat (สังเครียด) (Peninsular).

9. Dysoxylum flavescens Hiern in Hook.f., Fl. Brit. India 1: 549. 1875; Ridl., Fl. Malay Penins. 1: 396. 1922; Mabb., Tree Fl. Malaya 4: 244. 1989; Mabb., Fl. Males., ser. I, 12(1): 128. 1995.— *D. griffithii* Hiern in Hook.f., Fl. Brit. India 1: 549. 1875; King, J. Asiat. Soc. Bengal 64(2): 46. 1895.

Thailand.— EASTERN: Nakhon Ratchasima: PENINSULAR: Nakhon Si Thammarat, Phatthalung, Satun.

Distribution.— Malaysia (type).

Ecology.— Evergreen forest; altitude (20–) 100–700 m.

Vernacular.— Cha langsat pa (ช้าลางสาดป่า) (Peninsular).

10. Dysoxylum grande Hiern in Hook.f., Fl. Brit. India 1: 547. 1875; Brandis, Indian Trees: 138. 1906; Mabb., Tree Fl. Malaya 4: 244. 1989 and Flora Malesiana.— *Chisocheton grandiflorus* (non Kurz) Hiern in Hook.f., Fl. Brit. India 1: 522. 1875; Brandis, Indian Trees: 139. 1906.— *C. costatus* Hiern in Hook.f., Fl. Brit. India 1: 522. 1875; Brandis, Indian Trees: 139. 1906.— *Dysoxylum interruptum* King, J. Asiat. Soc. Bengal 64(2): 40. 1895; Ridl., Fl. Malay Penins. 1: 392. 1922.

Thailand.— NORTHERN: Chiang Mai, Chiang Rai, Tak; NORTH-EASTERN: Phetchabun, Loei; EASTERN: Chaiyaphum; SOUTH-WESTERN: Uthai Thani; PENINSULAR: Ranong, Phangnga, Phuket, Nakhon Si Thammarat, Trang.

Distribution.— India (type), Myanmar, China, Cambodia, Laos, Vietnam, Malaysia, Indonesia.

Ecology.— Lowland to hill evergreen forest, savannah forest, on limestone bedrock; altitude (50–)100–800(–1,000) m.

Vernacular.— Tabu (ตาปู่) (Northeastern); ta suea (ตาเสือ) (Southwestern); ta khwai (ตาควาย) (Peninsular).

11. Dysoxylum lenticellatum Wu, in Fl. Yunnan., 1: 251. 1977.

Thailand.— NORTHERN: Chiang Mai (uncommon).

Distribution.— China (type).

Ecology.— Hill evergreen forest, near streams; altitude 1,050 m.

Vernacular.— Ta suea pom (ตาเสือปม) (Northern).

12. Dysoxylum macrocarpum Blume, Bijdr., 175. 1825; Backer & Bakh.f., Fl. Java 2: 123. 1965; Mabb., Tree Fl. Malaya 4: 244. 1989; Mabb., Fl. Males., ser. I, 12(1): 116. 1995.

Thailand.— SOUTH-WESTERN: Kanchanaburi; PENINSULAR: Ranong, Satun, Songkhla, Narathiwat.

Distribution.— Vietnam, Malaysia, Indonesia (Type), Philippines.

Ecology.— Evergreen forest; altitude 500–750 m.

Vernacular.— Ta suea khao (ตาเสือขาว) (Peninsular).

13. Dysoxylum mollissimum Blume, Bijdr.: 175. 1825; G. Don, Gen. Syst. 1: 683. 1831; Backer & Bakh.f., Fl. Java 2: 123. 1965: Mabb., Tree Fl. Malaya 4: 245. 1989; Mabb., Blumea 38: 309. 1994; Mabb., Fl. Males., ser. I, 12(1): 90. 1995.— *D. hamiltonii* Hiern in Hook.f., Fl. Brit. India 1: 548. 1875.— *D. teysmannii* C.DC. in A.DC., Monogr. Phan. 1: 510. 1878.— *D. hainanense* Merr., Lingnan Sci. J. 6: 280. 1930. Fig. 9.

Thailand.— SOUTH-EASTERN: Chon Buri. (uncommon).

Distribution.— India, Myanmar, China, Malaysia, Indonesia, Philippines, Australia.

Ecology.— Evergreen forest.

Vernacular.— Ta suea khop chak (ตาเสือขอบจัก).

14. Dysoxylum papillosum King, J. Asiat. Soc. Bengal 64(2): 50. 1895; Ridl., Fl. Malay Penins. 1: 397. 1922; Mabb., Tree Fl. Malaya 4: 245. 1989; Mabb., Fl. Males., ser. I, 12(1): 116. 1995.

Thailand.— PENINSULAR: Narathiwat.

Distribution.— Malaysia (type).

Ecology.— Evergreen forest; altitude 300–500 m.

Vernacular.— Suea si hu (เสือสี่หู) (Peninsular).

15. Dysoxylum rubrocostatum Pierre, Fl. Forest Cochinch., Fasc. Pl. 348; Pellegr. in Lecomte, Fl. Indo-Chine 1: 747. 1911. Fig. 10.

Thailand.— EASTERN: Si Sa Ket.

Distribution.— Cambodia (type).

8. HEYNEA

Roxb. in Sims, Curtis, Bot. Mag. 41: t. 1738. 1815; Harms in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 19b1: 117. 1940; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 41. 1995.— *Ailantopsis* Gagnep., Not. Syst. 11: 163. 1944.— *Picroderma* Gagnep., Not. Syst. 11: 165. 1944.— *Trichilia* auct. non L.: Bentv., Acta Bot. Neerl. 11: 12. 1962; T.D.Penn., Blumea 22: 467. 1975.

Small shrubs or trees, polygamo-dioecious, pubescent to glabrous. *Leaves* spiral, imparipinnate; leaflets opposite, except the top one, lower surface papillate, glandular. *Inflorescence* a thyrse compound with long peduncles. *Calyx* 4(–5)-lobed, lobes free, imbricate. *Petals* 4(–5)-lobed, free, imbricate. *Androecium* with cylindrical staminal tube to 1/3 length. *Stamens* (6–)10, with bifid apices. *Disc* annular. *Ovary* 2–3-locular, each locule with 2-ovules; stigma (2–)3-lobed. *Capsule* ovoid or ellipsoid, red to dark red. *Seeds* 1–(2) black, arillate.

Heynea trijuga Roxb. in Sims, Curtis, Bot. Mag. 41: t. 1738. 1815; Hiern in Hook.f., Fl. Brit. India 1: 565. 1875; Pierre, Fl. Forest. Cochinch. 5: t. 355 a. 1897; Brandis, Indian Trees: 134, f. 64. 1906; Ridl., Fl. Malay Penins. 1: 413. 1922; Craib, Fl. Siam. Enum. 1: 264. 1931; Corner, Wayside Trees Mal. 1: 462. 1940; Mabb., Fl. Males., ser. I, 12(1): 41. 1995.— *Walsura trijuga* (Sims) Kurz, J. Asiat. Soc. Bengal 44(2): 148. 1875; Kurz, Forest Fl. Brit. Burma 1: 225. 1877.— *Heynea connaroides* (Wight et Arn.) Voigt, Hort. Suburb. Calc.: 136. 1845.— *Walsura intermedia* Craib, Bull. Misc.

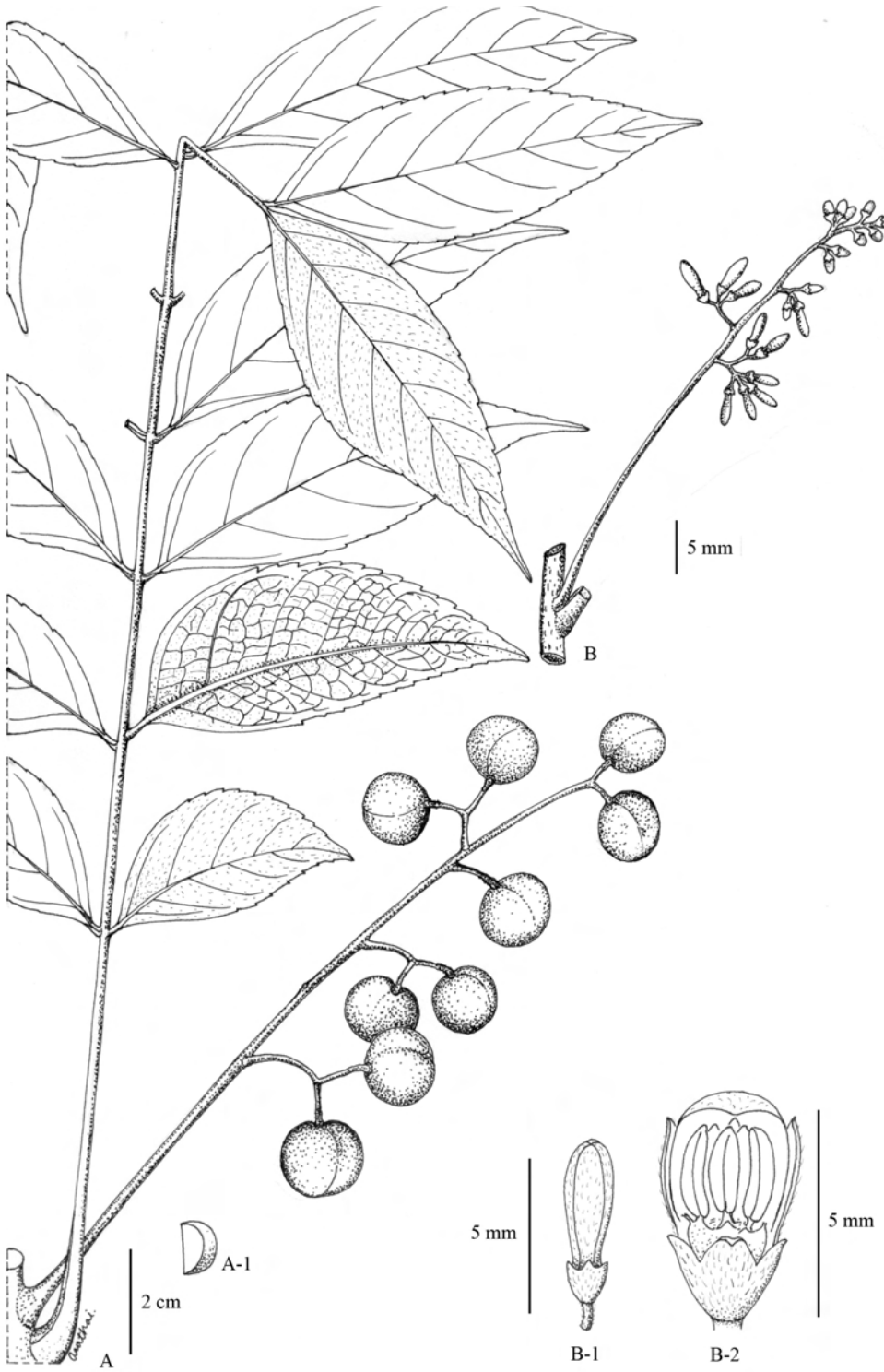

Figure 9. *Dysoxylum mollissimum* Blume A. twig with infructescence (*B. Everett-KEP. 104905 B.*), A-1 seed; B. inflorescence, B-1 flower bud (*D.J. Collins 1534*), B-2 longitudinal section of flower.

Figure 10. *Dysoxylum rubrocostatum* Pierre: A. twig with inflorescences, A-1 another leaf shape; B. flower bud, B-1 ovary, B-2 longitudinal section of flower.

Inform. Kew 1926: 345. 1926.— *W. pallida* Craib, Bull. Misc. Inform. Kew 1926: 345. 1926.— *Trichilia connaroides* (Wight et Arn.) Bentv., Acta Bot. Neerl. 11: 13. 1962; Mabb., Tree Fl. Malaya 4: 251. 1989; Hô, Fl. Vietnam ed. 3, 2(1): 488. 1992.

Thailand.— NORTHERN: Mae Hong Son, Chiang Mai, Chiang Rai, Nan, Lampang, Uttaradit, Tak, Sukhothai, Phitsanulok; NORTH-EASTERN: Phetchabun, Loei, Nong Khai, Sakon Nakhon, Mukdahan, Kalasin, Maha Sarakham; SOUTH-WESTERN: Uthai Thani, Kanchanaburi; PENINSULAR: Chumphon, Ranong, Surat Thani, Nakhon Si Thammarat, Pattani, Yala.

Distribution.— India, Myanmar, Laos, Vietnam, Cambodia, Malaysia, Indonesia (type?).

Ecology.— In evergreen to hill evergreen forest, scrub forest, oak-pine forest, mixed deciduous or dipterocarp forest; altitude (70–)200–1,000 (–1,600) m.

Vernacular.— Chok khon (โจ๊กขน) (Northern); ta pla ton (ตาปลาต้น), nang yai (นางใย), fan noi (แฟนน้อย), chang chuet (จางจืด) (Northeastern).

9. LANSIUM

Corrêa, Annuaire Mus. Nat. Hist. Nat. Paris10: 157. 1807; T.D.Penn., Blumea 22: 483. 1975; Mabb., Tree Fl. Malaya 4: 246. 1989; Mabb., Fl. Males., ser. I, 12(1): 314. 1995.

Shrubs or trees, with narrow buttress, polygamo -dioecious young parts pubescent. *Leaves* spiral, imparipinnate; leaflets subopposite to alternate, the terminal one usually largest, petiolules pulvinate at base. *Inflorescence* spikes, racemes or with basally branching panicles with spicate branches, borne on old twigs or bole. *Flowers* unisexual (if dioecious) and bisexual, the latter larger than male ones. *Calyx* 5, imbricate. *Petals* 5, quincuncial, united with staminal tube about 1/3 to a half. *Staminal tube* globose or cyathiform, margin undulate. *Stamens* (8–)10 in one whorl, inserted inside the throat of tube, not exceeding the marginal tube. *Disc* absent. *Ovary* ovoid, 3(–5)-locular, each locule with (1–)2 ovules. *Berry* or drupe ovoid or obovoid, with soft pericarp. *Seed* with thick and fleshy aril.

Lansium domesticum Corrêa, Annuaire Mus. Nat. Hist. Nat. Paris 10: 157. 1807; A.Juss., Mém. Mus. Natl. Hist. Nat. Paris 19: 233. 1832; Blanco, Fl. Filip. ed. 2: 228. 1845; Hiern in Hook.f., Fl. Brit. India 1: 558. 1875; Brandis, Indian Trees; 144. 1906; Ridl., Fl. Malay Penins. 1: 411. 1922; Craib, Fl. Siam. Enum. 1: 259. 1926; P. H. Hô & Duong, Fl. Vietnam: 248. 1960; Backer & Bakh.f., Fl. Java 2: 125. 1965; Mabb., Blumea 31: 141. 1985; Corner, Wayside Trees Mal. ed. 3: 501. 1988; Mabb., Tree Fl. Malaya 4: 246. 1989; Fl. Males., ser. I, 12(1): 315. 1995.— *Aglaia domestica* (Corrêa) Pellegr. in Lecomte Fl. Indo-Chine 1: 766. 1911.— *Amoora racemosa* Ridl., J. Fed. Malay States Mus. 10: 88. 1920; Craib, Fl. Siam. Enum. 1: 261. 1926.

Thailand.— SOUTH-EASTERN: Chanthaburi; PENINSULAR: Chumphon, Ranong, Surat Thani, Phangnga, Phuket, Krabi, Nakhon Si Thammarat, Phatthalung, Trang, Satun, Songkhla, Pattani, Yala, Narathiwat.

Distribution.— Malaysia (type).

Ecology.— Under cultivation throughout the peninsular and southeastern of the country.

Vernacular.— Lang sat (ลางสาด), long gong (ลองกอง), langsat pa (ลางสาดป่า) (Peninsular).

10. MELIA

Melia L., Sp. Pl. 1: 384. 1753; Harms in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 19 b1: 99. 1940; T.D.Penn., Blumea 22: 463. 1975; Mabb., Gard. Bull. Sing. 37: 463. 1984; Mabb., Fl. Males., ser. I, 12(1): 329. 1995.— *Azedarach* Mill., Gard. Dict., Abr. ed. 4: 170. 1754.

Trees, polygamo-dioecious, young parts with simple and stellate hairs. *Leaves* spiral, 2(–3) imparipinnate, subbranches opposite; leaflets opposite, except the top one. *Inflorescence* a thyrse compound, axillary near terminal twigs. *Calyx* 5 (–6), united near base. *Petals* 5(–6), free, imbricated. *Staminal tube* narrowly cylindrical, slightly expanded at mouth, with 10(–12) longitudinal ribs, margin with 10–12 serrate lobes. *Stamens* 10(–12), inserted at margin and alternate with lobes. *Disk*. undulate and enclosed base of ovary. *Ovary* (4–)8-locular, each locule with 2 ovules. *Drupe* globose, indehiscent. *Seed* 1–(2), with fleshy aril.

Melia azedarach L., Sp. Pl.: 384. 1753; Burm.f., Fl. Ind.: 101. 1767; A.Juss., Mêm. Mus. Natl. Hist. Nat. Paris 19: 219. 1832; Hiern in Hook.f., Fl. Brit. India 1: 544. 1875; Pierre, Fl. Forest Cochinch. 5: t. 356B. 1897; Pellegr. in Lecomte, Fl. Indo-Chine 1: 727. 1911; Ridl., Fl. Malay Penins. 1: 384. 1922; Corner, Wayside Trees Mal. 1: 464. 1940, 2: t. 137. 1940; Backer et Bakh.f., Fl. Java 2: 120. 1965; T.D.Penn., Blumea 22: 461. 1975; Mabb., Gard. Bull. Sing. 37: 55. 1984; Mabb., Fl. Males., ser. I, 12(1): 330. 1995.— *M. sempervirens* (L.) Sw., Prodr. Veg. Ind. Occ.: 67. 1788; Backer & Bakh.f., Fl. Java 2: 120. 1965.— *M. dubia* Cav., Diss. 7, Septima Diss. Bot.: 364. 1789; Hiern in Hook.f., Fl. Brit. India 1: 545. 1875; Backer & Bakh.f., Fl. Java 2: 120. 1965.— *M. composita* Willd., Sp. Pl. 2: 559. 1799; Pierre, Fl. Forest Cochinch. 5: t. 356 A. 1897; Ridl., Fl. Malay Penins. 1: 384. 1922.— *M. birmanica* Kurz, J. Asiat. Soc. Bengal 43, 2: 183. 1874.— *M. toosendan* Sieber & Zucc. in Abh. Akad. München 4,2: 159. 1843.

Thailand.— Cultivated throughout the country.

Distribution.— North America, Africa, India (type), Malaysia, Indochina, Philippines, Australia, Fiji

Ecology.— Cultivatated as an ornamental plant (shrubby tree), or a fast-growing tree in forest plantation throughout the country.

Vernacular.— Lian (เลี่ยน) (General).

11. MUNRONIA

Wight, Ic. 1,5: [1]. 1838; Harms in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 19b1: 91. 1940; T.D.Penn., Blumea 22: 452. 1975. Mabb., Fl. Males., ser. I, 12(1): 30. 1995.— *Philastrea* Pierre, Bull. Mens. Soc. Linn. Paris 1: 475. 1885.

Shrublets or undershrubs, sometimes suckering with apparently short-lived shoots. All parts with simple and stellate hairs. *Leaves* simple, imparipinnate, often crenate to serrate; leaflets opposite, except the top one. *Inflorescence* solitary or thyrses, axillary. *Flowers* hermaphrodite, pseudopedicellate. *Calyx* 5, united near base, somewhat foliaceous. *Petals* 5, united and adnate with staminal tube ca. 2/3 to the base. *Staminal tube* narrowly cylindrical or slightly obconical, the margin with 10 entire or bilobed appendages or, rarely, with 10 reflexed filiform appendages recurved some distance below margin. *Stamens* 10, inserted on tube rim, alternating with appendages, connective often produced apically forming a filiform appendage; anthers sparsely pubescent. *Disc* indistinct. *Ovary* 5-locular, each locule with 2 ovules. *Capsule* obconical, with conspicuous 5 longitudinal valves. *Seeds* 2 in each valve, plano-convex.

KEY TO THE SPECIES

(based on flowering specimens)

1. Leaves simple, margin serrate to undulate. Flowers with erect corolla lobes; disk absent	**1. M. humilis**
1. Leaves imparipinnate, leaflet margin entire. Flowers with reflexed corolla lobes; disc present	**2. M. pinnata**

KEY TO THE SPECIES

(based on fruiting specimens)

1. Leaves simple, margin serrate to undulate. Capsules with hirsute hairs	**1. M. humilis**
1. Leaves imparipinnate, leaflet margin entire. Capsules with stellate hairs	**2. M. pinnata**

1. Munronia humilis (Blanco) Harms, Ber. Deutsch. Bot. Ges. 35: 80. 1917; Pellegr. in Lecomte, Fl. Indo-Chine, Suppl. 1: 688. 1946; Mabb., Fl. Males., ser. I, 12(1): 32, 1995.— *Plagianthus humilis* Blanco, Fl. Filip.: 526. 1837.— *Turraea humilis* (Blanco) Merr., Philipp. Govt. Lab. Bur. Bull. 27: 30. 1905; Craib, Fl. Siam. Enum.1: 248. 1926; Backer & Bakh.f., Fl. Java 2: 119. 1965.— *T. pumila* Benn., Pl. Jav. Rar.: 183. 1840; C.DC. in A.DC., Monogr. Phan. 1: 440. 1878.

Thailand.— NORTHERN: Mae Hong Son, Chiang Mai, Lamphun, Lampang, Tak; NORTH-EASTERN: Loei; EASTERN: Chaiyaphum; SOUTH-WESTERN: Kanchanaburi, Ratchaburi; CENTRAL: Lop Buri, Saraburi.

Distribution.— Myanmar, Philippines (type).

Ecology.— On limestone bedrock, near streams, in evergreen or mixed deciduous forest; altitude (20–)100–500 m.

Vernacular.— Muk tia (มูกเตี้ย) (Central).

2. Munronia pinnata (Wall.) Theob. in Mason, Burma., ed. 4, 2: 581. 1883; Harms, Ber. Deutsch. Bot. Ges. 35: 78. 1917; Whitmore, Enum. Fl. Pl. Nepal 2: 85. 1979; B. C. Stone, Malayan Nat. J. 37: 189. 1984; Mabb., Tree Fl. Malaya 4: 202. 1989; Mabb., Fl. Males., ser. I, 12(1): 30. 1995.— *Turraea pinnata* Wall., Pl. Asiat. Rar. 2: 21. 1830.— *Munronia wallichii* Wight, 3.1: 147. 1840; Hiern in Hook.f., Fl. Brit. India 1: 543. 1875.— *M. javanica* Benn., Pl. Jav. Rar.: 176. 1840; C.DC. in A.DC., Monogr. Phan. 1: 448. 1878; Backer & Bakh.f., Fl. Java 2: 119. 1965.

Thailand.— NORTH-EASTERN: Loei; SOUTH-WESTERN: Kanchanaburi, Ratchaburi, Prachuap Khiri Khan.

Distribution.— Sri Lanka, India (type), Malaysia, Indonesia.

Ecology.— In dry evergreen forest; altitude 200–600 m.

Vernacular.— Kradueng piak (กระดึงเพียก), saribat (สาริบาท) (Southwestern).

12. PSEUDOCLAUSENA

T.P.Clark, Blumea 38: 291. 1994; Fl. Males., ser. I, 12(1): 55. 1995.

Trees, polygamo-dioecious to hermaphrodite, pubescent to glabrous. *Leaves* spiral, imparipinnate, leaflets opposite except the top one. *Inflorescence* thyrse compounds; axillary near terminal. *Calyx* 5, united ca. 2/3 to the base. *Petals* 5, free, imbricate, *Staminal tube* cotyliform to short cylindrical, margin smooth or minutely apiculate. *Stamens* 10, protrude above the tube rim. *Disc* indistinct. *Ovary* 4(–5)-locular, each locule with 1 ovule. *Drupe* ovoid, indehiscent. *Seed* ellipsoid, without aril.

Pseudoclausena chrysogyne (Miq.) T.P.Clark, Blumea 38: 291, f. 20, 21: 1994; Fl. Males., ser. I, 12(1): 55. 1995.— *Clausena chrysogyne* Miq., Fl. Ned. Ind., Suppl. 1: 502. 1861.— *Walsura chrysogyne* (Miq.) Bakh.f., Blumea 16: 359. 1968.— *W. multijuga* King, J. Asiat. Soc. Bengal 64(2): 83. 1895; Ridley, Fl. Malay Penins. 1: 412. 1922. Fig. 11.

Thailand.— NORTHERN: Chiang Mai.

Distribution.— Indochina, Malaysia, Indonesia (type), Philippines.

Ecology.— Evergreen forest; altitude 500–1,400(–1,650) m.

Vernacular.— Yom luk lip (ยมลูกลีบ), yom hep (ยมเห็บ) (Northern).

13. SANDORICUM

Cav., Diss. 7, Septima Diss. Bot.: 359. 1789; Harms in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 19 b1: 170. 1940; T.D.Penn., Blumea 22: 507. 1975; Mabb., Blumea 31: 146. 1985; Mabb., Fl. Males., ser. I, 12(1): 344. 1995.

Trees, polygamous, subglabrous to fulvous tomentose. *Leaves* spiral, leaflets trifoliolate. *Inflorescence* a thyrse compound, axillary. *Calyx* 4–5, united on lower half. *Petals* (4)–5, free, imbricate. *Staminal tube* cylindrical or slightly urceolate, margin dentate. *Stamens* (8–)10, within throat of tube. *Disc* cotyliform, free, margin coarsely toothed. *Ovary* (4–)5-locular, each locule with 2 ovules. *Drupe* ovoid or obovoid, indehiscent. *Seeds* kidney-shaped, enclosed with soft and fibrous mesocarp.

KEY TO THE SPECIES

(based on flowering specimens)

1. Leaflets obovate, glabrous on both sides. Thyrses up to 6 cm long. Petals glabrous on both sides. Stigma exserted above the tube rim **1. S. beccarianum**
1. Leaflets ovate; pubescent especially on lower surface. Thyrses exceeding 10 cm long. Petals pubescent on outer parts. Stigma about the same level of the tube rim **2. S. koetjape**

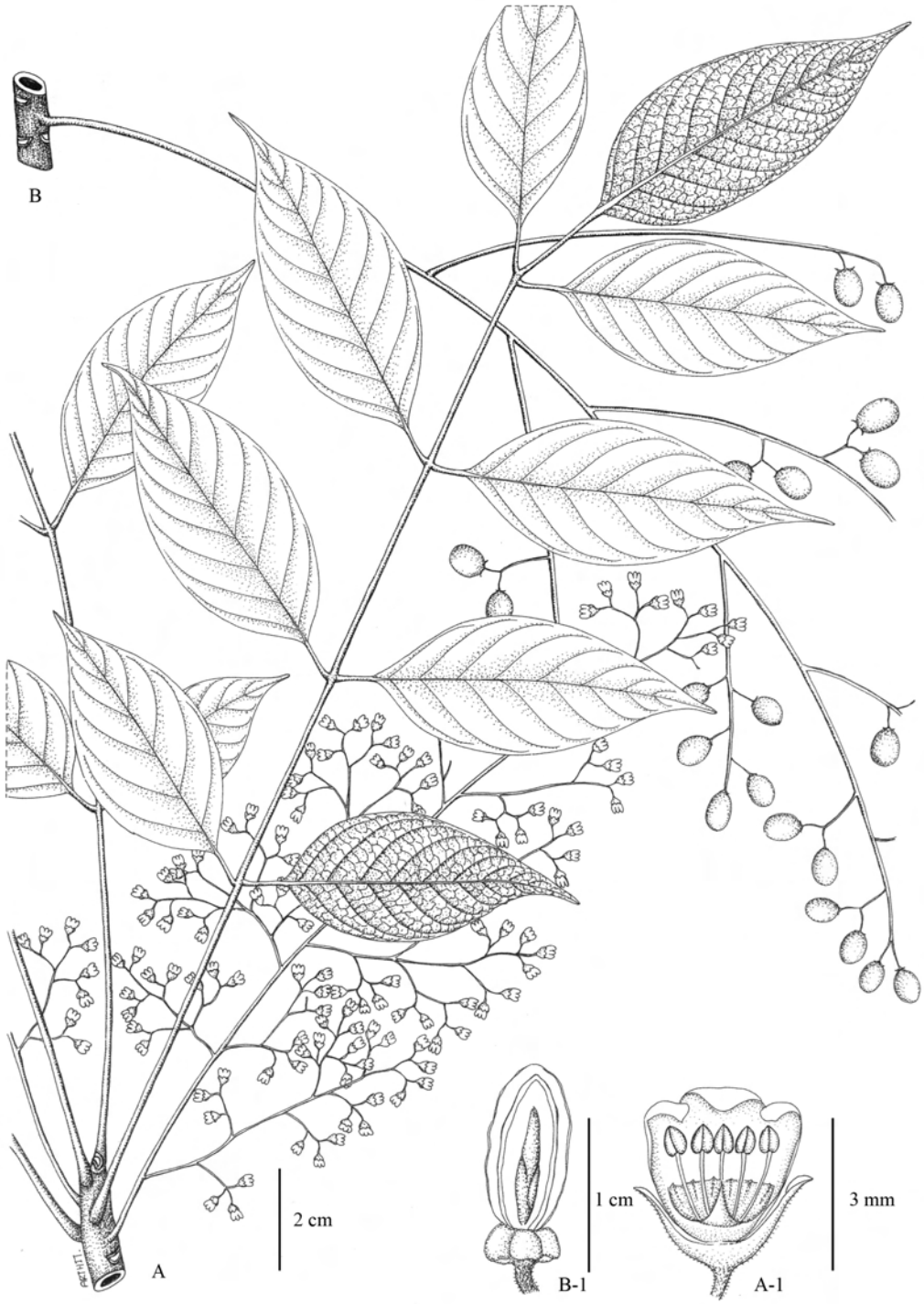

Figure. 11 *Pseudoclauseana chrysogyne* (Miq.) T.P. Clark: A. twig with inflorescences, A-1 longitudinal section of flower (*Th. Wongprasert 083-25*); B. infructescence, B-1 longitudinal section of fruit (*W. Nanakorn 4106*).

KEY TO THE SPECIES

(based on fruiting specimens)

1. Leaflets obovate, glabrous on both sides. Drupes obovoid, more or less curved to one side **1. S. beccarianum**
1. Leaflets ovate; pubescent especially on lower surfaces. Drupes globose or compressed-subglobose **2. S. koetjape**

1. Sandoricum beccarianum Baill., Adansonia 11: 264. 1874; Mabb., Blumea 31: 151. 1985; Mabb., Tree Fl. Malaya 4: 249. 1989; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 353. 1995.— *S. emarginatum* Hiern in Hook.f., Fl. Brit. India 1: 264. 1875; Ridl., Fl. Malay Penins. 1: 385. 1922; Burkill, Dict. Econ. Prod. Malay Penins.: 1946. 1935; Corner, Gard. Bull. Singapore, Suppl. 1: 77, 86, 89. 1978.

Thailand.— PENINSULAR: Narathiwat.

Distribution.— Malaysia, Indonesia (type), Singapore.

Ecology.— In peat swamp forest; altitude 0–10 m.

Vernacular.— Sathon nok (สะท้อนนก), sathon phru (สะท้อนพรุ), sato burong (สะโตบุรง) (Peninsular).

2. Sandoricum koetjape (Burm.f.) Merr., Philipp. J. Sc., Bot. 7: 237. 1912; Fl. Manila: 274. 1912; Corner, Wayside Trees Mal. 1: 446. 1940; Backer & Bakh.f., Fl. Java 2: 121. 1965; Mabb., Tree Fl. Malaya 4: 249, f. 8B. 1989; Mabb., Fl. Males., ser. I, 12(1): 345. 1995.— *Melia koetjape* Burm.f., Fl. Ind. 101. 1768.— *S. indicum* Cav., Diss.: 359, t 202, 203. 1789; Hiern in Hook.f., Fl. Brit. India 1: 553. 1875; Kurz, Forest Fl. Brit. Burma 1: 217. 1877; Pierre, Fl. Forest Cochinch. 5: t. 353A. 1897; Brandis, Indian Trees: 137. 1906; Ridley, Fl. Malay Penins. 1: 385. 1922; Craib, Fl. Siam. Enum. 1: 353. 1926.— *S. nervosum* Blume, Bijdr.: 163. 1825; Ridley, Fl. Malay Penins. 1: 385. 1922; Craib, Fl. Siam. Enum. 1: 254. 1926.— *S. maingayi* Hiern in Hook.f., Fl. Brit. India 1: 554. 1875; Ridley, Fl. Malay Penins. 1: 385. 1922

Thailand.— NORTHERN: Chiang Mai, Chiang Rai, Lampang; EASTERN: Nakhon Ratchasima; SOUTH-WESTERN: Kanchanaburi, Uthai Thani, Ratchaburi; CENTRAL: Saraburi, Bangkok; SOUTH-EASTERN: Chachoengsao, Chanthaburi, Trat; PENINSULAR: Ranong, Surat Thani, Trang, Songkhla.

Distribution.— Sri Lanka, India, Myanmar, Laos, Cambodia, Vietnam, Malaysia, Indonesia, Philippines, Brunei.

Ecology.— In evergreen forest, near streams; altitude 50–600(–800) m.Several cultivars are cultivated in the lowland orchards.

Vernacular.— Kra thon (กระท้อน) (General); ma tong (มะต้อง) (Northern).

14. SWIETENIA

Jacq., Enum. Syst. Plan 4: 1760; P. Hua & Mabb., in Fl. China 11: 116. 2008.

Evergreen trees. *Leaves* paripinnate, spiral; leaflets opposite to subopposite, glabrous. *Inflorescence* axillary or subterminal thyrses. *Flowers* small, (4–)5 merous; *Staminal tube* cup-shaped, apically (8–)10-lobed. *Stamens* (8–)10, inserted within the tube throat and alternate with the lobe of staminal tube. *Disc* annular. *Ovary* ovoid, with (4–)5(–6)-locular, each locule with 9–16 pendulous ovules; style cylindrical, stigma disc iform with (4–)5 lobes. *Capsule* woody, oblong, 5-locular. *Seeds* 9–16 per locule, winged, hanging by wing-end from distal part of columella, endosperm more or less fleshy; cotyledon thin; radicle short.

KEY TO THE SPECIES

1. Capsule exceeding 10 by 6 cm; seed (wing included) exceeding 7.5 cm long. Calyx lobes sparsely pubescent outside **1. S. macrophylla**
1. Capsule up to 10 by 5.5 cm; seed (wing included) upto 5 cm long. Calyx lobes glabrous outside **2. S. mahogani**

1. Swietenia macrophylla King in Hook. Icon. Pl. 16: t. 1550. 1886; Corner, Wayside Trees Mal. 1: 468. 1940; Backer & Bakh.f., Fl. Java 2:118. 1965; Flora Malesiana

Thailand.— In cultivation for shade in the country.

Distribution.— Central America, Honduras (type).

Ecology.— Cultivated as avenue trees or wayside trees; altitude up to 100 m.

Vernacular.— Mahokkani bai yai (มะฮอกกานีใบใหญ่) (Central).

2. Swietonia mahagoni (L.) Jacq. Enum. Syst. Pl. Carib.: 20.1760; Corner, Wayside Trees Mal. 1: 463. 1940; Backer & Bakh.f., Fl. Java 2:118. 1965.

Thailand.— In cultivation for shade in the country.

Distribution.— Tropical America, Australia, Caribbean islands (type).

Ecology.— Cultivated as avenue trees or roadside trees; altitude up to 100 m.

Vernacular.— Mahokkani bai lek (มะฮอกกานีใบเล็ก) (Central).

15. TOONA

(Endl.) M.Roem., Fam. Nat. Syn. Monogr. 1: 131, 139. 1846; Pellegr. in Lecomte, Fl. Indo-Chine 1: 792. 1911; Harms in Engl. & Prantl, Nat. Pflanzenfam. 3, 4: 269. 1896. T.D.Penn. & Styles, Blumea 22: 512. 1975; Edmonds, Fl. Males., ser. I, 12(1): 358. 1995.— *Cedrela* L., sect. *Toona* Endl., Gen. Pl. 2: 1055. 1840

Trees, monoecious, rarely polygamo-dioecious, pubescent to glabrous. *Leaves* spiral, paripinnate, rarely imparipinnate, leaflets opposite to subopposite. *Inflorescence* a thyrse compound, axillary near the twig end. *Calyx* 5, free or united near base. *Petals* 5, free, imbricate. *Staminal tube* absent but androgynophore prominent, hairy or glabrous. *Stamens* 5, free, arising from the androgynophore. *Disc* absent. *Ovary* 5-locular, each locule with 6–10 ovules, vestigial in male flowers. *Capsules* ellipsoid, pendulous and woody, dehiscent. *Columella* 5- angled, softly woody. *Seeds* winged.

KEY TO THE SPECIES

(based on flowering specimens)

1. Leaflets entire. Ovary hairy. Petals ciliate. Fresh bark of stems pleasantly aromatic
   2. Leaflets glabrous. Styles glabrous **1. T. ciliata**
   2. Leaflets pilose along midrib on both surfaces. Styles pilose **3. T. sureni**
1. Leaflets serrate or serrulate. Ovary glabrous. Petals not ciliate. Fresh bark of stems pungent **2. T. sinensis**

KEY TO THE SPECIES

(based on fruiting specimens)

1. Leaflets serrate or serrulate. Capsule smooth; seed with one wing. Fresh bark of stems pungent **2. T. sinensis**
1. Leaflets entire. Ovary hairy. Capsule with verrucose lenticels; seed with two wings. Fresh bark of stems pleasantly aromatic
   2. Leaflets glabrous **1. T. ciliata**
   2. Leaflets pilose along midrib on both surfaces **3. T. sureni**

1. Toona ciliata M.Roem., Fam. Nat. Syn. Monogr. 1: 139. 1846; Kitam. in H. Kihara, Fauna & Fl. Nepal Himalaya. 1: 170. 1955; C.Y. Wu, Fl. Yunnan. 1: 207. 1977; Edmonds, Fl. Males., ser. I, 12(1): 366. 1995.— *Cedrela toona* Roxb. ex Rottler & Willd., Neue Schr. Naturf. Freunde Berlin 4: 198. 1803; Hiern in Hook.f., Fl. Brit. India 1: 568. 1875; Kurz, Forest Fl. Brit. Burma 1: 228. 1877; Brandis, Indian Trees: 249. 1910; Craib, Fl. Siam. Enum. 1: 267 1926.— *Toona microcarpa* C.DC. in A.DC., Monogr. Phan. 1: 745. 1878; Brandis, Indian Trees: 145. 1906.

Thailand.— NORTHERN: Chiang Mai, Chiang Rai, Tak, Sukhothai, Phitsanulok; NORTH-EASTERN: Phetchabun; EASTERN: Chaiyaphum, Nakhon Ratchasima; SOUTH-WESTERN: Uthai thani,

Kanchanaburi; CENTRAL: Nakhon Nayok; SOUTH-EASTERN: Chanthaburi; PENINSULAR: Ranong, Nakhon Si Thammarat, Trang, Satun.

Distribution.— Africa, Pakistan, India, Nepal, Bangladesh, China, Myanmar, Laos, Vietnam, Cambodia, Malaysia (type), Australia.

Ecology.— In evergreen or mixed deciduous forest, near streams, on limestone or granite bedrock; altitude (30–)100–800(–1,300) m.

Vernacular.— Yom hom (ยมหอม) (General); siat om (เสียดอ้อม) (Northern); sadao pa (สะเดาป่า) (Southeastern).

2. Toona sinensis (A.Juss.) M.Roem., Fam. Nat. Syn. Monogr. 1: 139. 1846; Backer & Bakh.f., Fl. Java 2: 117 1965; C.Y. Wu, Fl. Yunnan. 1: 210. 1977; Mabb., Tree Fl. Malaya. 4: 256. 1989. Edmonds, Fl. Malesiana.— *Cedrela sinensis* A.Juss., Bull. Sci. Nat. Geol. 23: 241. 1830.— *C. serrata* Royle, 111. Bot. Him.: 144, t. 25. 1839; Kurz, Forest Fl. Brit. Burma 1: 229. 1877; Brandis, Indian Trees: 145. 1906.

Thailand.— PENINSULAR: Krabi.

Distribution.— India, Nepal, Sri Lanka, China (type), Myanmar, Malaysia, Indonesia.

Ecology.— In evergreen forest; altitude 700–800 m.

3. Toona sureni (Blume) Merr., Interpr. Rumph. Herb. Amb.: 305. 1917; Backer & Bakh.f., Fl. Java 2: 117 1965; Mabb., Tree Fl. Malaya 4: 258. 1989; Edmonds, Fl. Males., ser. I, 12(1): 363. 1995.— *Cedrela febrifuga* Blume, Verh. Batav. Gen. 9: 135. 1823; Brandis, Indian Trees: 146. 1906; Ridley, Fl. Malay Penins. 1: 415. 1922.— *Toona febrifuga* (Blume) M.Roem., Synops. Monogr. 1: 139. 1846; Pellegr. in Lecomte, Fl. Indo-Chine 1: 793. 1911.

Thailand.— NORTHERN: Chiang Mai; NORTH-EASTERN: Phetchabun; PENINSULAR: Trang.

Distribution.— India, Nepal, Bhutan, China, Myanmar, Laos, Vietnam, Cambodia, Malaysia, Indonesia (type), Philippines.

Ecology.— In evergreen forest, near streams; altitude 80–550 m.

Vernacular.— Su rian (สุเหรียน) (Peninsular).

16. TURRAEA

L., Mant. Altera: 150. 1771 ; Harms in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 19b1: 85, t. 20. 1940; T.D.Penn., Blumea 22: 455. f. 3. 1975; Mabb. & Cheek, Taxon 41: 541. 1992; Mabb., Fl. Males., ser. I, 12(1): 24. 1995.

Shrubs, hermaphrodite, pubescent. *Leaves* simple, spirally or alternate. *Inflorescence* fasciculate cymose or solitary; ramiflorus or axillary. *Flowers* bisexual. *Calyx* (4–)5, united at lower half. *Petals* 5, free, imbricate or contorted. *Staminal tube* cylindrical, complete or filaments at least 2/3 united, fringed and reflexed, as many as and opposite the anthers. *Stamens* 10. *Disc* absent. *Ovary* ovate, (3–)5(–10)-locular, each locule with 2 ovules. *Capsule* ovoid or obovoid, 3–5 valved, each with 1(–2) seed.

Turraea pubescens Hellen, Kongl. Vetensk. Acad. Nya Handl. 9: 308, t. 10 f. 3. 1788; Pellegr. in Lecomte, Fl. Indo-Chine 1: 735, t. 80, f. 5–12. 1911; Backer & Bakh.f., Fl. Java 2: 191. 1965; T.D.Penn., Blumea 22: 456, f. 3b. 1975; Mabb., Fl. Males., ser. I, 12(1): 25. 1995.— *T. villosa* Benn., Fl. Jav. Rar.: 182. 1840; Hiern in Hook.f., Fl. Brit. India 1: 542. 1875; Brandis, Indian Trees: 134. 1906.

Thailand.— NORTHERN: Chiang Mai, Lampang, Phrae, Nakhon Sawan; NORTH-EASTERN: Nong Khai, Khon Kaen; EASTERN: Si Sa Ket; SOUTH-EASTERN: Chanthaburi.

Distribution.— India, China (type), Indonesia, Philippines, Australia.

Ecology.— In evergreen or moist mixed deciduous forest, preferred near streams; altitude (50–)100–300 m.

Vernacular.— Muk tia (มูกเตี้ย) (Northeastern).

17. WALSURA

Roxb., Fl. Ind., (Carey & Wallich. ed.) 2: 386. 1832; C.DC. in A.DC., Monogr. Plan. 1: 633. 1878; Harms in Engl. & Prantl, Nat. Pflanzenfam. 3, 4: 302. 1896; T.D.Penn., Blumea 22: 472. 1975; Clark, Blumea 38(2): 257. 1994; Fl. Males., ser. I, 12(1): 45. 1995.

Trees, polygamo-monoecious, young parts

with simple and stellate hairs. *Leaves* imparipinnate with opposite leaflets, 1–3 jugate. *Inflorescence* axillary, thyrse compound. Flowers hermaphrodite or unisexual, ovoid to obconical. *Calyx* 5, divided up to 2/3 to the base. *Petals* 5, free, valvate to imbricate, hairy outer part. *Staminal tube* cup–shaped, lower than the stamens (anthers). *Stamens* 10, filaments united at half or near base. *Disc* annular, glabrous or pubescent. *Ovary* ovoid or flat, densely hairy or glabrous, 2-locular, each locule with 2 ovules, *Drupe* ovoid or ellipsoid, indehiscent. *Seeds* with transparent fleshy aril.

KEY TO THE SPECIES

(based on flowering specimens)

1. Ovary depressed, flattened; Style and stigma glabrous
   2. Ovary glabrous; stigma flat top. Staminal tube divided to about 1/2 of the length. Stamens with short and long intervally. Leaflets 5–7(–9) **4. W. villosa**
   2. Ovary hirsute; Stigma curved up top. Staminal tube divided to about 1/3 of the length. Stamens at same level. Leaflets 3–5(–7) **1. W. pinnata**
1. Ovary curved up or conical shape; style and stigma hairy or glabrous
   3. Disc with smooth margin. Ovary curved up; style hairy; stigma smooth and flat top, pubescent. Leaflets white–dotted on lower surface **2. W. robusta**
   3. Disc with undulate margin. Ovary conical; style glabrous; stigma slightly 6- angled, glabrous. Leaflets without white dots on lower surface **3. W. trichostemon**

KEY TO THE SPECIES

(based on fruiting specimens)
(All species in Thailand with indehiscent fruit (some are wrinkled), and 1-seeded)

1. Drupes ellipsoid, twice as long as the width, velutinous or tomentose; aril white or yellowish. Seeds conical. Leaflets not geniculate with the rachis **4. W. villosa**
1. Drupes globose, hairy or pubescent
   2. Leaflets with white dots on lower surface. Pericarp puberulous **2. W. robusta**
   2. Leaflets without white dots
      3. Pericarp glabrous or nearly glabrous, usually wrinkled when dry. Leaflets much geniculate **3. W. trichostemon**
      3. Pericarp densely hirsute or tomentose, not wrinkled when dry. Leaflets not geniculate **1. W. pinnata**

1. Walsura pinnata Hassk., Retzia 1: 147. 1855; Miq., Fl. Ned. Ind., Suppl. 1, 2: 542. 1859; Backer & Bakh.f., Fl. Java 2: 129. 1965; Mabb., Tree Fl. Malaya 4: t. 9 B, 254. 1989; Clark, Fl. Males., ser. I, 12(1): 48. 1995.— *W. hypoleuca* Kurz, J. Asiat. Soc. Bengal 42, 2: 296. 1872; Hiern in Hook.f., Fl. Brit. India 1: 564. 1875; Kurz, Forest Fl. Brit. Burma 1: 224. 1877.— *W. neurodes* Hiern in Hook.f., Fl. Brit. India 1: 564. 1875; Ridl., Fl. Malay Penins. 1: 412. 1922.— *Heynea cochinchinensis* Baillon, Adansonia 11: 265. 1879.— *Walsura elata* Pierre, Fl. Forest Cochinch. Fasc. 21: pl. 355. 1897.— *Napeodendron altissimum* Ridl., J. Roy. As. Soc. Str. Br. 82: 179. 1920; Ridl., Fl. Malay Penin. 1: 505. 1922.— *Walsura angulata* Craib, Bull. Misc. Inform. Kew 1926: 344. 1926; Craib, Fl. Siam. Enum. 1: 261. 1926.

Thailand.— NORTHERN: Chiang Mai; NORTH-EASTERN: Nakhon Phanom; EASTERN: Nakhon Ratchasima; CENTRAL: Saraburi; SOUTH-EASTERN: Chon Buri, Chanthaburi; PENINSULAR: Ranong, Phangnga.

Distribution.— China, Myanmar, Cambodia, Vietnam, Malaysia, Indonesia (type), Philippines.

Ecology.— In evergreen or mixed deciduous forest, preferred near streams; altitude 70–500 m.

Vernacular.— Kaeo lao (แก้วลาว) (Southeastern).

2. Walsura robusta Roxb., Fl. Ind., ed. Carey, 2: 386. 1832; Hiern in Hook.f., Fl. Brit. India 1: 565. 1875; Kurz, Forest Fl. Brit. Burma 1: 223. 1877; Brandis, Indian Trees: 137. 1906; Lecomte in Fl. Indo-Chine: 785. 1911; Schmidt, Fl. Koh Chang: 405. 1916, Craib, Fl. Siam. Enum.: 262. 1926; Clark, Blumea 38(2): 259. 1994; Fl. Males., ser. I, 12(1): 47. 1995.

Thailand.— NORTHERN: Chiang Mai, Lampang, Uttaradit, Phitsanulok, Nakhon Sawan; NORTH-EASTERN: Loei, Udon Thani, Nong Khai, Nakhon Phanom, Khon Kaen; EASTERN: Nakhon Ratchasima; SOUTH-WESTERN: Uthai Thani, Ratchaburi, Prachuap Khiri Khan; CENTRAL: Saraburi, Nakhon Nayok; SOUTH-EASTERN: Prachin Buri, Chon Buri, Chanthaburi, Trat; PENINSULAR: Chumphon, Ranong, Surat Thani, Krabi, Nakhon Si Thammarat, Trang, Satun.

Distribution.— India, Bangladesh, China, Myanmar (type), Laos, Vietnam, Malaysia.

Ecology.— In evergreen or mixed deciduous forest, on granite bedrock, preferred near streams; altitude (30–)100–400(–800) m.

Vernacular.— Khi ai (ขี้อ้าย) (Northern); daeng dong (แดงดง) (Northeastern).

3. Walsura trichostemon Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 60. 1868. Clark, Blumea 38(2): 267. 1994.

Thailand.— NORTHERN: Chiang Mai, Chiang Rai, Lampang, Phrae, Uttaradit, Tak, Phichit; NORTH-EASTERN: Phetchabun, Loei, Sakon Nakhon, Nakhon Phanom, Khon Kaen; EASTERN: Chaiyaphum, Nakhon Ratchasima, Surin, Si Sa Ket, Ubon Ratchathani; SOUTH-WESTERN: Uthai Thani; CENTRAL: Saraburi, Nakhon Nayok; SOUTH-EASTERN: Prachin Buri; PENINSULAR: Ranong, Krabi, Nakhon Si Thammarat, Trang, Yala, Narathiwat.

Distribution.— Myanmar (type).

Ecology.— On granite, sandstone or limestone bedrock, in mixed deciduous or evergreen forest; altitude (40–)100–500(–840) m.

Vernacular.— Kat lin (กัดลิ้น), lam yai pa (ลำไยป่า) (Northern).

4. Walsura villosa Wall. ex Hiern, in Hook.f., Fl. Brit. India 1: 564. 1875.

Thailand.— NORTHERN: Chiang Mai, Chiang Rai; NORTH-EASTERN: Nakhon Phanom; EASTERN: Nakhon Ratchasima, Ubon Ratchathani; SOUTH-WESTERN: Uthai Thani, Prachuap Khiri Khan; CENTRAL: Saraburi, Nakhon Nayok; SOUTH-EASTERN: Chon Buri, Chanthaburi, Trat; PENINSULAR: Phatthalung, Trang, Narathiwat.

Distribution.— China, Myanmar (type), Laos, Vietnam, Cambodia, Malaysia, Indonesia, Philippines.

Ecology.— From dry evergreen or deciduous forest to lower montane forest, on granite or limestone bedrock, usually near streams; altitude (5–)100–600(–2,500) m.

Vernacular.— Khi ai dong (ขี้อ้ายดง) (Northern).

18. XYLOCARPUS

Koenig, Naturforscher 20: 2. 1784; Harms in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 19b1: 81. 1940; T.D.Penn. & Styles, Blumea 22: 525. 1975; Mabb., Malaysian Forester 45: 448. 1982; Mabb. & Pannell, Fl. Males., ser. I, 12(1): 371. 1995

Trees, dioecious or polygamo-dioecious, pubescent to glabrous. *Leaves* spiral, paripinnate, leaflets opposite. *Inflorescence* a compound thyrse, axillary, near twig ends. *Calyx* 4, valvate. *Petals* 4, free, ovoid in bud. *Staminal tube* ovoid, with dentate-liked lobes at margin. *Stamens* inserted within the staminal tube, with 8 free anthers, at same level with the tube. *Disc* cushion-shaped, beneath or surrounding and united with ovary. *Ovary* 4(–5)-locular, each locule with 3–4 ovules. *Capsule* large, globose shape, tardily dehiscent. *Seeds* irregularly pyramid-liked shape, without aril.

KEY TO THE SPECIES

(based on flowering specimens)

1. Leaflets ovate, broadly obtuse to cordate at base. Inflorescence 10–18 cm long, pedicels not swollen near calyx. Staminal tube margin entire. Trees on rocky coasts and sand **3. X. rumphii**
1. Leaflets elliptic, elliptic-oblong, obovate or obovate-oblong. Staminal tube margin serrate or undulate. Trees of mangrove swamps
2. Leaflets elliptic or elliptic-oblong, chartaceous. Inflorescence 5–15 cm long; petals glabrous. Trees with peg-like pneumatophores **2. X. moluccensis**
2. Leaflets obovate or obovate-oblong, coriaceous or sub-coriaceous. Inflorescence 5–10 cm long; petals with glandular hairs on outer part. Trees with winding root buttresses **1. X. granatum**

KEY TO THE SPECIES

(based on fruiting specimens)

1. Fruits globose, 7–14 cm diam.; pericarp woody, 5 mm thick or more
  2. Fruits 10–14 cm diam., slightly 4- longitudinally lobed **1. X. granatum**
  2. Fruits 7–7.5 cm diam., conspicuously 4- longitudinally lobed, dehiscing into 4- parts when dry **3. X. rumphii**
1. Fruits obovoid, 7–10 cm diam.; pericarp ca. 4 mm thick, slightly 4- longitudinally lobed **2. X. moluccensis**

1. Xylocarpus granatum Koenig, Naturforscher 20: 2. 1784; Backer & Bakh.f., Fl. Java 2: 118. 1965; Mabb., Malaysian Forester 45: 450. 1982; Mabb., Tree Fl. Malaya 4: 260,f. 12B. 1989; Mabb., Fl. Males., ser. I, 12(1): 378. 1995.— *Carapa granatum* (Koenig) Alston in Trim., Handb. Fl. Ceylon 6: 45. 1931; Corner, Wayside Trees Mal. 1: 458. 1940.— *C. moluccensis* auct. non Lam.: DC., Prodr. 1: 626. 1824, p.p.; Hiern in Hook.f., Fl. Brit. India 1: 567. 1875, p.p.; Ridl., Fl. Malay Penins. 1: 414. 1922.— *C. obovata* Blume, Bijdr.: 179. 1825; Ridl., Fl. Malay Penins. 1: 414. 1922.— *Xylocarpus obovatus* (Blume) A.Juss., Mém. Mus. Natl. Hist. Nat. Paris 19: 244. 1832.

Thailand.— SOUTH-WESTERN: Prachuap Khiri Khan; CENTRAL: Samut Prakan, Samut Songkhram, Samut Sakhon; SOUTH-EASTERN: Chon Buri, Rayong, Chanthaburi, Trat; PENINSULAR: Chumphon, Ranong, Surat Thani, Phangnga, Krabi, Trang, Satun, Songkhla.

Distribution.— East Africa (type), Madagascar, India, China, Myanmar, Indochina, Malaysia, Singapore, Indonesia, Brunei, Philippines, Japan, Australia.

Ecology.— Scattered in mangrove swamps, bordering the banks of tidal streams.

Vernacular.— Tabun khao (ตะบูนขาว) (General).

2. Xylocarpus moluccensis (Lam.) M.Roem., Fam. Nat. Syn. Monogr. 1: 124. 1846; Craib, Fl. Siam. Enum. 1: 265. 1926; Backer & Bakh.f., Fl. Java 2: 118. 1965; Mabb., Malaysian Forester 45: 450. 1982; Mabb., Fl. Males., ser. I, 12(1): 376. 1995.— *Carapa moluccensis* Lam., Encycl. Méth. 1: 621. 1785.— *Xylocarpus mekongensis* Pierre, Fl. Forest Cochinch. 5: t. 359 B. 1897.

Thailand.— CENTRAL: Samut Prakan; SOUTH-EASTERN: Chanthaburi, Trat; PENINSULAR: Chumphon, Ranong, Phangnga, Trang, Satun.

Distribution.— Somalia, India, Myanmar, Laos, Cambodia, Vietnam, Malaysia (type), Indonesia, Philippines, Australia.

Ecology.— Scattered in mangrove swamps, bordering the banks of tidal streams.

Vernacular.— Tabun dam (ตะบูนดำ) (General); taban (ตะบัน) (Peninsular).

3. Xylocarpus rumphii (Kostel.) Mabb., Malaysian Forester 45: 450. 1982; Mabb., Tree Fl. Malaya 4: 260, f. 12 A. 1989; Mabb., Fl. Males., ser. I, 12(1): 375. 1995.— *Carapa rumphii* Kostel., Allg. Med. Pharm. Fl. 5: 1988. 1836.— *C. moluccensis* auct. non Lam.: DC., Prodr. 1: 626. 1824, p.p.; Hiern in Hook.f., Fl. Brit. India 1: 567. 1875, p.p.— *Aglaia zollingeri* C.DC., Bull. Herb. Boissier 2: 579. 1894; Backer & Bakh.f., Fl. Java 2: 127. 1965.

Thailand.— SOUTH-EASTERN: Chon Buri, Rayong, Trat; PENINSULAR: Ranong, Phangnga, Krabi, Satun.

Distribution.— East Africa, Madagascar, India (type), Laos, Cambodia, Vietnam, Malaysia, Philippines Australia, Fiji, Tonga.

Ecology.— Sporadic along the rocky seashore (rock strand) adjoining sandy beach.

Vernacular.— Taban (ตะบัน) (General).

MELIACEAE

CODE GENERA & SPECIES NUMBERS

1. AGLAIA Lour.

1.1 *A. argentea* Blume

1.2 *A. chittagonga* Miq.

1.3 *A. crassinervia* Kurz ex Hiern

1.4 *A. cucullata* (Roxb.) Pellegr.

1.5 *A. edulis* (Roxb.) Wall.

1.6 *A. elaeagnoidea* (A.Juss.) Benth.

1.7 *A. elliptica* Blume

1.8 *A. erythrosperma* Pannell

1.9 *A. eximia* Miq.

1.10 *A. exstipulata* (Griff.) Theob.

1.11 *A. forbesii* King

1.12 *A. grandis* Korth. ex Miq.

1.13 *A. korthalsii* Miq.

1.14 *A. lawii* (Wight.) Sald. ex Raman

1.15 *A. leptantha* Miq.

1.16 *A. leucophylla* King

1.17 *A. macrocarpa* (Miq.) Pannell

1.18 *A. odorata* Lour.

1.19 *A. odoratissima* Blume

1.20 *A. oligophylla* Miq.

1.21 *A. pachyphylla* Miq.

1.22 *A. palembanica* Miq.

1.23 *A. perviridis* Miq.

1.24 *A. rubiginosa* (Hiern) Pannell

1.25 *A. rufinervis* (Blume) Bentv.

1.26 *A. sexipetala* Griff.

1.27 *A. silvestris* (Roemer) Merr.

1.28 *A. simplicifolia* (Bedd.) Harms

1.29 *A. spectabilis* (Miq.) Jain & Bennet

1.30 *A. tenuicaulis* Hiern

1.31 *A. teysmanniana* (Miq.) Miq.

1.32 *A. tomentosa* Teijsm. & Binn.

2. APHANAMIXIS Blume

2.1 *A. polystachya* (Wall.) R. Parker

2.2 *A. sumatrana* (Miq.) Ridl.

3. AZADIRACHTA A. Juss.

3.1 *A. excelsa* (Jack) Jacobs

3.2.1 *A. indica* A. Juss. var. *indica*

3.2.2 *A. indica* A. Juss. var. *siamensis* Valeton

4. CHISOCHETON Blume

4.1 *C. amabilis* (Miq.) C.DC.

4.2 *C. ceramicus* (Miq.) C.DC.

4.3 *C. cumingianus* (C.DC.) Harm subsp. *balansae* (C.DC.) Mabb.

4.4 *C. dysoxylifolius* (Kurz) Hiern

4.5 *C. grandiflorus* (Kurz) Hiern

4.6 *C. macrophyllus* King subsp. *fulvescens* Mabb.

4.7 *C. patens* Blume

4.8 *C. penduliflorus* Planch. ex Hiern

4.9.1 *C. pentandrus* (Blanco) Merr.

4.9.2 *C. pentandrus* (Blanco) Merr. subsp. *paucijugus* (Miq.) Mabb.

4.10 *C. tomentosus* (Roxb.) Mabb.

5. CHUKRASIA A. Juss.

5.1.1 *C. tabularis* A. Juss. var. *tabularis*

5.1.2 *C. tabularis* A. Juss. var. *velutina* (M.Roem.) Pellegr.

6. CIPADESSA Blume

6.1 *C. baccifera* (Roth.) Miq.

7. DYSOXYLUM Blume

7.1 *D. acutangulum* Miq.

7.2 *D. alliaceum* (Blume) Blume

7.3 *D. angustifolia* King

7.4 *D. arborescens* (Blume) Miq.

7.5 *D. cauliflorum* Hiern

7.6 *D. cyrtobotryum* Miq.

7.7 *D. densiflorum* (Blume) Miq.

7.8 *D. excelsum* Blume

7.9 *D. flavescens* Hiern

7.10 *D. grande* Hiern

7.11 *D. lenticellatum* Wu

7.12 *D. macrocarpum* Blume

7.13 *D. mollissimum* Blume

7.14 *D. papillosum* King

7.15 *D. rubrocostatum* Pierre

8. HEYNEA Roxb. ex Sims

8.1 *H. trijuga* Roxb. ex Sims

9. LANSIUM Corrêa

9.1 *L. domesticum* Corrêa

10. MELIA L.

10.1 *M. azedarach* L.

11. MUNRONIA Wight

11.1 *M. humilis* (Blanco) Harms.

11.2 *M. pinnata* (Wall.) Theob.

12. PSEUDOCLAUSENA T.P.Clark

12.1 *P. chrysogyne* (Miq.) T.P.Clark

13. SANDORICUM Cav.

13.1 *S. beccarianum* Baill.

13.2 *S. koetjape* (Burm.f.) Merr.

14. SWIETENIA Jacq.

14.1 *S. macrophylla* King

14.2 *S. mahagoni* (L.) Jacq.

15. TOONA (Endl.) M.Roem.

15.1 *T. ciliata* M.Roem.

15.2 *T. sinensis* (A. Juss.) M.Roem.

15.3 *T. sureni* (Blume) Merr.

16. TURRAEA L.

16.1 *T. pubescens* Hellen

17. WALSURA Roxb.

17.1 *W. pinnata* Hassk.

17.2 *W. robusta* Roxb.

17.3 *W. trichostemon* Miq.

17.4 *W. villosa* Wall. ex Hiern

18. XYLOCARPUS Koenig

18.1 *X. granatum* Koenig

18.2 *X. moluccensis* (Lam.) M.Roem.

18.3 *X. rumphii* (Kostel.) Mabb.

INDEX TO COLLECTORS' NUMBERS

310: 15.1 (BKF); *322*: 13.2 (BKF); *343*: 1.5 (BKF); *373*: 17.3 (BKF); *377*: 17.3 (BKF); *407*: 1.10 (BKF); *434*: 1.6 (BKF); *490*: 7.7 (BKF); *494*: 4.6 (BKF); *500*: 2.1 (BKF); *s.n.* (BKF 51471): 18.1 (BKF).

Bunpheng D. *66*: 5.1 (BKF); *110*: 1.6 (BKF); *176*: 2.2 (BKF); *185*: 1.27 (BKF); *229*: 5.1 (BKF); *409*: 17.4 (BKF); *471*: 17.3 (BKF); *529*: 16.1 (BKF); *534*: 17.2 (BKF); *810*: 7.10 (BKF); *853*: 17.2 (BKF); *1055*: 2.1 (BKF); *1076*: 1.18 (BKF); *1086*: 16.1 (BKF); *1140*: 15.1 (BKF).

Bunyavejchewin S. *s.n.*: 7.10 (BKF).

Chai-a-nan Ch. *187*: 1.14 (BKF); *255*: 1.10 (BKF); *404*: 1.19 (BKF).

Chamchumroon V. *9-99*: 2.1 (BKF); *450*: 7.2 (BKF); *463*: 1.5 (BKF); *844*: 1.5 (BKF); *878*: 1.32 (BKF); *887*: 1.32 (BKF); *1348*: 1.20 (BKF); *1561*: 1.23 (BKF); *s.n.* (BKF. 147502): 7.10 (BKF); *s.n.* (BKF. 147505): 1.16 (BKF).

Champian H. *538*: 16.1 (BKF, K).

Chantanamuk A. *386*: 3.1.2 (BK); *487*: 17.2 (BK); *s.n.* (BK 33832) (BK).

Chantaranothai P. *1671*: 17.2 (KKU); *1785*: 17.3 (KKU); *6513*: 1.18 (KKU); *6514*: 5.1 (KKU); *6516*: 8.1 (KKU); *6705*: 3.2.1 (KKU); *7448*: 5.1 (KKU); *8993*: 5.1 (KKU).

Chantharaprasong Ch. *95*: 1.19 (BK); *277*: 16.1 (BK); *303*: 17.2 (BK); *413*: 1.6 (BK); *418*: 2.2 (BK); *647*: 1.6 (BK).

Charoenmayu P. *419*: 17.3 (BKF).

Charoenphol Ch. *532*: 4.3 (BKF); *3568*: 1.9 (AAU); *4025*: 4.8 (AAU).

Chayamarit K. *135*: 18.2 (BKF); *237*: 1.20 (BKF); *942*: 1.27 (BKF); *2588*: 1.30 (BKF); *2733*: 4.1 (BKF); *2755*: 1.2 (BKF); *2835*: 1.27 (BKF); *2920*: 1.6 (BKF); *2935*: 13.2 (BKF).

Chermsiriwathana Ch. *132*: 18.2 (BK); *905*: 11.2 (BK); *2006*: 1.6 (BK).

Chieowanich B. *6*: 5.2 (BK).

Chim kam S. *2*: 10.1 (BKF).

Chirathanakon K. *s.n.*: 3.1 (BKF).

Chitpong P. *394*: 17.3 (BK); *571*: 17.2 (BK); *803*: 5.1 (BK).

Chongko S. *129*: 4.4 (BKF).

Collin D. J. *121*: 18.2 (K); *130*: 13.2 (BM, K); *157*: 7.8 (C, K); *335*: 18.3 (BM, K); *386*: 17.1 (BM, C, K); *388*: 1.5 (BM, C, K); *402*: 1.12 (BM, C, K); *420*: 10.1 (BM, C, K); *421*: 18.1 (BM, K); *478*: 7.2 (K); *614*: 1.6 (C, K); *615*: 1.5 (C, K); *640*: 10.1 (C, K); *661*: 18.3 (C, K); *767*: 1.6 (C, K); *791*: 1.5 (BK, C, K); *802*: 1.6 (BK, C, K); *811*: 1.5 (C, K); *814*: 2.1 (BK, K); *834*: 1.6 (K); *873*: 10.1 (BK,K); *878*: 10.1 (BK); *929*: 11.1 (BK); *956*: 1.5 (BK, C, K); *974*: 1.6 (AAU, BK, C, K); *993*: 1.5 (BK, C, K); *1012*: 1.18 (BK, K); *1132*: 1.6 (BK, BM, C, K); *1135*: 2.1 (K); *1259*: 3.2.1 (BK, BKF, C); *1343*: 1.5 (C, K); *1419*: 1.18 (K); *1434*: 7.13 (K); *1575*: 1.18 (BK, C, K); *1689*: 1.7 (BK, C, K); *1812*: 1.6 (BK, BM, C, K); *1850*: 18.3 (BK, BM, K); *1937*: 2.1 (BK, K); *1938*: 7.8 (BK, BM, C, K); *1991*: 1.18 (BK, BM, K); *2378*: 1.9 (C, K); *s.n.*: 4.8 (K).

Congdon G. *303*: 18.2 (AAU); *423*: 4.7 (AAU); *970*: 18.3 (AAU); *1248*: 18.1 (AAU).

Conniff H. *s.n.*: 1.14 (K).

Dengler *s.n.* (BKF 97299): 1.27 (BK, BKF); *s.n.* (BKF 97300): 1.27 (BK, BKF).

Esser H.J. *98-90*: 1.5 (BKF).

Fukuoka N. et al. *T-34515*: 7.9 (BKF, KYO), *T-34910*: 18.2 (BKF, KYO); *T-35700*: 18.1 (BKF, KYO); *T-35810*: 18.1 (BKF, KYO); *T-35811*: 18.1 (BKF, KYO); *T-35813*: 18.1 (BKF, KYO); *T-63752*: 8.1 (BKF, KYO); *T-83678*: 5.1 (BKF, KYO).

Garcia L. E. *433*: 17.3 (BKF).

Gardner S. et al. *ST-0136*: 1.24 (BKF); *ST-0158*: 5.1 (BKF); *0167*: 13.2 (BKF); *0209*: 1.22 (BKF); *0243*: 1.29 (BKF); *0279*: 1.18 (BKF); *0395*: 18.1 (BKF); *0473*: 18.1 (BKF); *0576*: 1.14 (BKF); *0588*: 1.18 (BKF); *0616*: 15.1 (BKF); *0623*: 13.2 (BKF); *0659*: 1.20 (BKF); *0689*: 1.32 (BKF); *0798*: 1.9 (BKF); *0819*: 1.32 (BKF); *0828*: 1.10 (BKF); *0837*: 1.14 (BKF); *0899*: 1.4 (BKF); *0929*: 1.1 (BKF); *0935*: 7.6 (BKF); *1036*: 1.14 (BKF); *1048*: 1.1 (BKF); *1050*: 1.13 (BKF); *1086*: 1.14 (BKF); *1088*: 7.7 (BKF); *1091*: 1.14 (BKF); *1092*: 1.23 (BKF); *1104*: 1.9 (BKF); *1114*: 1.14 (BKF); *1126*: 1.3 (BKF); *1160*: 1.9 (BKF); *1161*: 1.29 (BKF); *1162*: 1.5 (BKF); *1166*: 1.3 (BKF); *1167*: 4.9.1 (BKF); *1168*: 1.18 (BKF); *1173*: 1.14 (BKF); *1174*: 7.4 (BKF); *1182*: 4.2 (BKF); *1223*: 1.14 (BKF); *1271*: 4.8 (BKF);

1404: 7.8 (BKF); *1420*: 1.16 (BKF); *1425*: 1.29 (BKF); *1428*: 1.31 (BKF); *1429*: 9.1 (BKF); *1437*: 8.1 (BKF); *1451*: 2.1 (BKF); *1515*: 1.22 (BKF); *1547*: 7.9 (BKF); *1562*: 15.1 (BKF); *1592*: 3.2.1 (BKF); *1601*: 1.20 (BKF); *1635*: 1.30 (BKF); *1646*: 1.9 (BKF); *1647*: 1.21 (BKF); *1677*: 1.3 (BKF); *1702*: 1.10 (BKF); *1711*: 5.1 (BKF); *1747*: 1.22 (BKF); *1748*: 17.3 (BKF); *1920*: 1.18 (BKF); *1952*: 4.9.1 (BKF); *1960*: 1.14 (BKF); *1995*: 7.8 (BKF); *2056*: 1.18 (BKF); *2229*: 7.8 (BKF); *2242*: 5.1 (BKF); *2268*: 4.7 (BKF); *2284*: 1.10 (BKF); *2304*: 1.15 (BKF); *2335*: 7.9 (BKF); *2337*: 7.2 (BKF); *2345*: 4.7 (BKF); *2353*: 1.18 (BKF); *2358*: 7.6 (BKF); *2396*: 7.4 (BKF); *2406*: 15.1 (BKF); *2408*: 17.2 (BKF); *2414*: 7.7 (BKF); *2434*: 7.7 (BKF); *2464*: 7.7 (BKF); *2473*: 13.2 (BKF); *2529*: 3.2.1 (BKF); *2616*: 1.29 (BKF); *2637*: 17.3 (BKF); *2664*: 7.5 (BKF); *2715*: 1.14 (BKF); *2721*: 1.7 (BKF); *2810*: 1.19 (BKF); *2815*: 4.7 (BKF); *2846*: 7.2 (BKF).

Garrett H.B.G. *9*: 10.1 (BKF, BM, BK); *16*: 17.4 (BKF, BM, K); *379*: 6.1 (BKF, C, K); *878*: 7.6 (BKF, K); *1131*: 8.1 (K); *1182*: 8.1 (K); *1224*: 4.3 (C, K).

Geesink R. *4851*: 7.8 (AAU, BKF, C, K); *4873*: 1.32 (AAU, BKF, C); *5065*: 1.6 (AAU, BKF, C, K); *5068*: 2.1 (AAU, BKF, C, K); *5070*: 7.7 (AAU, BKF, C, K); *5075*: 1.5 (AAU, BKF, C, K); *5912*: 7.7 (AAU, BKF, C); *5193*: 1.32 (AAU, BKF, C, L); *5196*: 9.1 (AAU, BKF, C); *5201*: 1.20 (BKF, L); *5283*: 4.7 (AAU, BKF, C, K); *5314*: 18.1 (AAU, BKF, C); *5473*: 9.1 (AAU, BKF, C); *5519*: 11.1 (BKF, C, L); *5611*: 17.4 (AAU, BKF, C, L); *5663*: 4.3 (BKF, L); *5724*: 4.3 (AAU, BKF, C, L); *5895*: 7.11 (AAU, BKF, C, L); 6219: 7.4 (AAU, BKF, C, K, L); *6683*: 1.14 (AAU, BKF, C, K, L); *6692*: 7.6 (AAU, BKF, C, K, L); *6694*: 4.3 (AAU, BK, BKF, C, L); *6821*: 1.6 (C, K, L); *7124*: 7.6 (AAU, BKF, C, K, L); *7180*: 4.9.2 (AAU, C, K, L); *7190*: 1.7 (AAU, BKF, C, K, L); *7201*: 1.32 (AAU, BKF, C, L); *7340*: 1.20 (AAU, BKF, C, K, L); *7413*: 9.1 (BKF, L); *7565*: 1.27 (BKF, C, K, L); *7698*: 7.10 (AAU, C, K, L); *7842*: 17.2 (AAU, BKF, C, K, L); *8184*: 6.1 (BKF, C, K, L); *8206*: 7.6 (AAU, BKF, C, K, L); *8251*: 6.1 (BKF, C, K, L); *8356*: 17.1 (BKF, K, L).

Glamwaengwong C. *s.n.*: 8.1 (QBG); 1235: 8.1 (QBG).

Godefroy M. *668*: 2.1 (K).

Gongdon G. *1161*: 7.1 (AAU).

Gram K. *79*: 10.1 (C).

Greijmans M. *56-98*: 1.19 (BKF); *144-98*: 1.20 (BKF).

Guptavanija P. *16*: 18.3 (BK).

Hambhanon Ch. *195*: 9.1 (BKF); *209*: 9.1 (BKF); *373*: 1.6 (BKF).

Hamid T. *3754*: 13.2 (K); *3804*: 18.2 (K); *3868*: 1.19 (C, K).

Hansen B. et al. *11069*: 17.3 (BKF, C); *11157*: 8.1 (BKF, C); *11193*: 15.1 (BKF, C, K); *11980*: 1.9 (BKF, C); *12071*: 7.6 (BKF, C); *12084*: 1.19 (BKF, C); *12233*: 18.3 (BKF, C); *12316*: 18.1 (BKF, C); *12345*: 18.3 (BKF, C).

Hanuphakdee C. *120*: 3.2.2 (BKF).

Hardial S. *584*: 1.18 (BKF, K), *609*: 10.1 (BKK, K).

Harmand D. *420*: 17.4 (C).

Hartley T.G. *10512*: 1.27 (C).

Hennipman B. et al. *3901*: 1.19 (BKF, C, K).

Hosseus *171*: 10.1 (BKF).

Indrapong S. *55*: 1.11 (BKF); *108*: 11.2 (BKF, C, K); *150*: 1.18; 195: 7.6 (BKF); *220*: 1.9 (BKF).

Iwatsuki K. *T-27778*: 18.2 (BKF); *s.n.* (BKF 71501) (BKF); *s.n.* (BKF 71507) (BKF).

Kanhawaset C. *266*: 4.3 (BKF); *277*: 13.2 (BKF); *278*: 1.27 (BKF).

Kasem *303*: 17.2 (BKF).

Kerdthong K. *13*: 4.6 (BKF).

Kerr A.F.G. *542*: 8.2.2 (K); *591*: 8.1 (BM, K); *713*: 2.1 (K); *1023*: 17.3 (BM, K); *1034*: 10.1 (BM, K); *1451*: 2.1 (K); *1762*: 8.1 (BM, K); *1841*: 17.4 (BM, K); *2032*: 6.1 (BM); *2123*: 1.29 (BM, K); *2124*: 1.6 (BM, C, K); *2346*: 16.1 (BM, K); *2369*: 1.28 (BM, K); *2373*: 1.2 (BM, C, K); *2417*: 1.14 (BM, C, K); *2478*: 17.4 (BM, K); *2894*: 7.6 (BM, C); *2922*: 4.3 (BM, C, K); *3001*: 1.18 (BM, K); *3173*: 5.2 (BM, K); *3200*: 15.1 (BM, K); *3241*: 2.1 (K); *3247*: 11.1 (BM, K); *3524*: 2.1 (K); *3569*: 15.1 (BM, K); *3577*: 5.2 (BM, K); *3628*: 1.28 (C, K); *4014*:

3.2.2 (K); *4025*: 18.1 (K); *4041*: 7.8 (BM, C, K); *4285*: 18.1 (BM, K); *4285A*. 18.1 (BM, K); *4301*: 14.1 (BK, BM); *4644*: 11.1 (K); 4646: 11.1 (BK, BM, C, K); *4709*: 15.1 (BK, BM, K); *4771*: 2.1 (BK, K); *4799*: 5.2 (BK, BM, K); *4814*: 17.4 (BK, BM, K); *4959*: 8.1 (BM, K); *5109*: 7.6 (BK, BM); *5112*: 17.4 (BK, BM, K); *5135*: 4.3 (BK, BM); *5250*: 17.4 (BK, K); *5449*: 17.4 (BM, K); *5459*: 11.1 (BK, BM, K); *5469*: 17.4 (BK); *5478*: 6.1 (BK, BM, C, K); *5552*: 6.1 (BK, BM, C, K); *5629*: 7.6 (BM, C); *5637*: 3.2.1 (BK, C, K); *5654*: 3.2.2 (BK, K); *5731*: 17.2 (BK, K); *5813*: 8.1 (BM, K); *5972*: 10.1 (BK, BM, K); *6001*: 16.1 (BK, BM, C, K); *6001-A*: 16.1 (BK, BM, C, K); *6007*: 17.2 (BK, K); *6034*: 1.18 (BK, BM, K); *6085*: 8.1 (BK, BM, K); *6171*: 4.3 (BM, C, K); *6251*: 6.1 (BM, C); *6251A*: 6.1 (BK, BM, C, K); *6288*: 1.14 (BK, BM, C, K); *6439*: 1.14 (BM); *6457*: 7.5 (BK, BM, C, K); *6468*: 17.2 (BK, K); *6639*: 1.14 (BK, C, K); *6748*: 10.1 (BK, BM, C, K); *6754*: 1.4 (BK, BM, K); *6754A*: 1.4 (BK, BM, K); *6783*: 7.8 (BM, C, K); *6793*: 17.1 (BM, K); *6902*: 1.20 (BK, BM, K); *7032*: 1.18 (K); *7400*: 1.32 (BK, BM, K); *7533*: 9.1 (BK, BM, K); *7656*: 1.3 (BK, K); *7702*: 2.1 (BK, C, K); *7800*: 1.32 (C, K); *7809*: 1.7 (BM, C, K); *7845*: 17.1 (K); *7851*: 2.1 (BK, K); *7907*: 1.11 (C, K); *8209*: 1.18 (BM, C, K); *8389*: 17.4 (BK, BM, K); *8488*: 16.1 (BK, BM, C, K); *8520*: 17.2 (BK, C, K); *8552*: 17.2 (BK, C, K); *8594*: 17.2 (BK, C, K); *8604*: 1.28 (AAU, BK, BM, C, K, L); *8764*: 17.2 (BK, C, K); *8918*: 18.2 (BK, C, K); *9044*: 2.2 (BK, K); *9148*: 11.1 (BK, BM, K); *9177*: 1.27 (BK, BM, K); *9250*: 18.3 (BK, BM, K); *9250A*: 18.3 (BK, BM, K); *9560*: 7.6 (BM, C, K); *9566*: 2.1 (K); *9681*: 1.27 (BK, BM, C, K); *9682*: 7.6 (BM, C, K); *9683*: 1.6 (BK, BM, C, K); *9718*: 5.1 (BK, BM, K); *9801*: 17.4 (BM, K); *9810*: 17.3 (BK); *9818*: 2.1 (BK, C, K); *9866*: 17.1 (BK); *9872*: 1.6 (BM, C, K); *9880*: 1.5 (BK, C, K); *10002*: 10.1 (BK, BM, C, K); *10288*: 1.10 (K); *10341*: 10.1 (BK); *10447*: 17.2 (BK, C, K); *10457*: 1.14 (BK, BM, C); *10487*: 1.19 (BK, BM, C, K); *10557*: 10.1 (BK, BM, K); *10632*: 1.18 (BM, C, K); *10882*: 11.1 (BK, BM, K); *11192*: 7.8 (BM, K); *11202*: 1.12 (BK, BM, C, K); *11202A*: 1.12 (BK, BM, C, K); *11503*: 1.7 (BK, BM, K); *11529*: 1.17 (BK, C, K); *11573*: 2.1 (BK, C, K); *11638*: 15.1 (BM); *11639*: 15.1 (BK, C, K); *11648*: 17.2 (BK, C, K); *11743*: 1.19 (BK, BM, C, K); *11764*: 1.30 (BK, BM, C, K); *11832*: 7.6 (BM, C, K); *11950*: 1.20 (BK, BM, K); *12029*: 1.19 (BK, BM, C); *12032*: 1.19 (BK, BM, C); *12082*: 9.1 (BK); *12088*: 1.3 (BK, BM, C, K); *12110*: 1.17 (BK); *12138*: 13.2 (BM, K); *12191*: 7.9 (K); *12328*: 5.1 (BK, BM, K); 12452: 1.19 (BK, BM, C); 12457: 9.1 (BK, BM); *12606*: 17.2 (BK, C, K); *12701*: 1.5 (BK, C, K); *12766A*: 1.14 (BM, C, K); *12791*: 13.2 (BM, K); *12818*: 18.1 (BM, K); *12915*: 1.19 (BM, K); *12964*: 1.12 (BK, BM, C, K); *12983*: 17.2 (BK, C, K); *13251*: 1.15 (BK, BM, C, K); *13303*: 9.1 (BK, BM); *13304*: 1.1 (BK, BM, C); *13408*: 1.15 (C); *13986*: 13.2 (BM, K); *14181*: 18.3 (BK, BM, K); *14390*: 1.17 (BK); *14463*: 1.10 (BK, BM, C, K); *14478*: 7.8 (BM, K); *14482*: 1.32 (BK, BM, C, K); *14877*: 1.2 (BK, BM, C, K); *14999*: 7.2 (BM); *15049*: 2.1 (K); *15213*: 15.1 (BK, BM, C, K); *15282A*: 7.8 (BM, K); *15297*: 1.17 (BM, K); *15453*: 1.6 (BK, BM); *15476*: 1.15 (BK, BM, C, K); *15582*: 7.8 (BM, K); *15583*: 7.8 (K); *15659*: 8.1 (BK, BM, C, K); 15923: 1.19 (BK, BM, C, K); *16018*: 1.7 (BK); *16053*: 1.7 (BK, C, K); *16063*: 1.5 (BK, C, K); *16139*: 1.18 (BK, BM, C, K); *16400*: 1.4 (BK); *16666*: 8.1 (BK, BM, K); *16689*: 9.1 (BK, BM); *16802* 1.7 (BM, K); *16890*: 1.19 (BK, BM, C, K); *16913*: 1.19 (BK, BM, C, K); *17016*: 1.21 (BK, BM, C, K); *17055*: 17.2 (BK, C, K); *17121*: 1.32 (BK, BM, C, K); *17124A*: 1.19 (BM); *17126A*: 1.19 (BK, C); *17140*: 17.4 (AAU, C, K); *17198*: 7.8 (BM, C, K); *17209*: 1.19 (BK, BM, C, K); *17251*: 9.1 (BK, C); *17313*: 1.14 (BK, BM, C, K); *17534*: 7.8 (C, K); *17632*: 7.6 (BM); *17636*: 17.2 (BK, K); *17730*: 1.18 (BK, BM, K); *17780*: 1.18 (BK, BM, K); *17858*: 1.27 (BK, BM, C, K); *17860*: 1.10 (K); *17864*: 13.2 (BM, C, K); *17890*: 17.2 (BK, C, K); *17943*: 16.1 (BK, BM, K); *17974*: 17.1 (BM, K); *17975*: 5.1 (BK, BM); *17976*: 17.1 (C); *18062*: 15.1 (BK, BM, C, K); *18168*: 8.1 (BK, BM, K); *18212*: 1.9 (BK, BM, K); *18216*: 5.2 (BK, BM, K); *18219*: 1.31 (BK, BM, C, K); *18261*: 9.1 (BK, C); *18428*: 1.30 (BK); *18587*: 18.1 (BK, BM, K); *18590*: 18.1 (BK, BM, K); *18596*: 7.8 (BK, BM, K); *18622*: 1.3 (BK, BM, C, K); *18677*: 15.2 (BM, C, K); *18747*: 1.20 (BK, K); *18751*:

1.19 (BK, BM, C); *18760*: 1.10 (BK, BM, C, K); *18783*: 1.10 (BK); *18854*: 18.3 (BK, BM, K); *18911*: 1.2 (BK, BM, C, K); *18930*: 18.3 (BK, BM, C, K); *18931*: 1.2 (BK, BM, C, K); *18983*: 1.10 (BK, BM, K); *19209*: 7.8 (BK, BM, K); *19217*: 4.8 (BM, C, K); *19387*: 5.2 (BK, BM, K); *19434*: 7.1 (K); *19506*: 11.1 (BK, BM, C, K); *19631*: 5.2 (BK, BM, C, K); *19897*: 17.4 (BK, BM, K); *20048*: 17.3 (BM, K); *20179*: 15.1 (BM, C, K); *20243*: 17.3 (C, K); *20286*: 5.2 (BK, BM, K); *20296*: 17.2 (BK, K); *21480*: 8.1 (BM, C, K); *s.n.*: 18.2 (BK); *s.n.*: 18.2 (BK); *s.n.* 11.2 (K); *s.n.* (BKF 4525) 1.18 (BK).

Kertsawang K. *292*: 17.2 (QBG); *391*: 18.3 (QBG); *436*: 3.2.1 (QBG).

Kevie H.M. *5*: 18.2 (C); *6*: 18.1 (C, K).

Kiah *24253*: 17.1 (BM, K): *24278*: 1.19 (BK, BM, C, K); *24317*: 7.5 (BM, K); *24325*: 1.10 (BK, K); *24367*: 1.32 (BK, BM, C, K); *24404*: 1.13 (BK, BM, K).

King R.M. *5455*: 17.3 (C, K); *5505*: 17.3 (C, K); *5534*: 2.1 (C, K).

Kloss C.B. *6701*: 13.2 (K); *6898*: 1.19 (K); *6979*: 1.30 (C, K); *s.n.*: 1.19 (C).

Kongjun W. *215*: 18.3 (BKF).

Konsan N. *1727*: 10.1 (KKU).

Konta F. *3871*: 3.2.2 (BKF); *3873*: 10.1 (BKF); *4007*: 8.1 (BKF); *4015*: 1.2 (BKF); *4179*: 1.29 (BKF); *4197*: 8.1 (BKF); *4398*: 17.1 (BKF); *4411*: 13.2 (BKF); *4429*: 3.2.2 (BKF); *4754*: 8.1 (BKF); *T-49075*: 2.1 (BKF).

Kosterman A. *775*: 1.9 (BK, C, K); *858*: 2.1 (K); *6116*: 1.8 (C); *6670*: 1.8 (C).

Koyama H. et al. *T-15389*: 12.1 (BKF); *T-15643*: 1.14 (AAU); *T-31915:* 7.6 (BKF); *T-31947*: 8.1 (BKF); *T-33004*: 3.2.2 (BKF); *T-33093*: 1.14 (BKF); *T-33703*: 1.14 (BKF); *T-33786*: 7.2 (BKF); *T-33845*: 7.2 (BKF); *T-39391*: 1.3 (BKF); *T-39491*: 8.1 (BKF); *T-39558*: 1.14 (BKF); *T-39931*: 6.1 (BKF, AAU); *T-40051*: 6.1 (BKF); *T-48647*: 6.1 (AAU); *T-48909*: 3.2.2 (BKF); *T-49033*: 2.1 (BKF); *T-50110*: 12.1 (BKF); *T-50115*: 12.1 (BKF).

Koyama T. *15278*: 3.2.2 (BKF); *15429*: 17.1 (BKF).

Kunaphat P. *s.n.* (BKF 654): 18.1 (BKF).

Lakshanakara M.C. *2*: 3.2.1 (BK); *106*: 1.19 (BK); *313*: 18.1 (K); *314A*: 18.1 (K); *561*: 17.2 (BK, K); *643*: 4.2 (BK, BM, K); *683*: 7.8 (K); 805: 1.7 (BK, BM, C); *928*: 8.1 (BK, BM, K); *997*: 17.3 (BK, BM, K); *1312*: 17.4 (BK, BM); *1313*: 17.4 (BK, K); *1343*: 16.1 (BK, BM, K); *s.n.* (BK 4413): 11.1 (BK).

Lambinon J. *78-83*: 17.2 (AAU).

Larsen K. et al. *898*: 1.23 (AAU, BKF, C); *923*: 8.1 (BKF); *1341*: 1.18 (C); *1549*: 18.1 (AAU, BKF); *2198*: 5.2 (AAU, BKF, C, K); *2623*: 4.3 (AAU, C); *2949*: 1.2 (AAU, BKF, C); *3113*: 1.6 (AAU, BKF, C, K); *3304*: 1.6 (AAU, BKF, C); *8010*: 18.1 (C); *8836*: 1.14 (C); *9392*: 7.6 (BKF, C); *10269*: 7.6 (C); *10279*: 17.1 (C); *30676*: 1.32 (BKF); *30755*: 1.32 (AAU, BKF, C, K); *30859*: 7.2 (AAU, BKF); *31131*: 1.7 (AAU, BKF, C, K); *31156*: 1.32 (AAU, BKF, C, K); *32047*: 7.5 (AAU); *32143*: 16.1 (AAU, BKF, K); *32251*: 1.5 (AAU, BKF, C, K); *32263*: 4.7 (BKF, C, K); *32493*: 18.3 (AAU, BKF, K); *32928*: 4.8 (AAU); *32958*: 7.14 (AAU, C, K); *33208*: 9.1 (AAU, BKF); *33241*: 1.9 (BKF); *33295*: 7.6 (AAU, BKF); *33371*: 1.1 (AAU, BKF, K); *33853*: 7.7 (AAU, BKF, C, K); *33858*: 7.6 (AAU, BKF, C); *33970*: 1.6 (BKF); *41217*: 2.1 (AAU, PSU); *41417*: 1.2 (AAU, K); *41424*: 17.1 (BKF); *41488*: 1.9 (AAU); *41524*: 1.9 (AAU); 42120: 1.16 (AAU, BKF, PSU); *42952*: 1.19 (AAU, BKF); *43081*: 1.6 (AAU, BKF); *43146*: 2.2 (AAU, PSU); *43350*: 1.2 (AAU); *43964*: 1.6 (AAU); *44901*: 7.4 (AAU); *45439*: 1.9 (AAU); *45696*: 7.6 (AAU); *45937*: 1.19 (AAU, BKF; *45961*: 7.2 (AAU); *47312*: 8.1 (AAU).

Luan *5*: 5.1 (BKF).

Malinee et al. *s.n.* (KKU 1660): 10.1 (KKU).

Marcan A. *280*: 14.1 (BM); *530*: 2.1 (K); *574*: 13.2 (K); *606*: 1.4 (BM, K); *608*: 13.2 (K); *635*: 17.4 (BM, K); *675*: 18.1 (BM); *854*: 18.2 (BM); *869*: 1.18 (BM); *993*: 1.4 (BM); *1145*: 3.2.1 (BK); *1163*: 10.1 (BM, K); *1367*: 1.18 (K); *1689*: 18.2 (BM); *1760*: 11.1 (BM, K); *2052*: 1.13 (C); *2143*: 3.2.1 (C, K); *2209*: 11.1 (BM, K); *2717*: 11.1 (BM, C, K).

Martin van de Bult *59*: 10.1 (BKF); *548*: 1.14 (BKF); *623*: 15.1 (BKF); *764*: 17.1 (BKF).

Matthapha S. *12*: 7.6 (KKU, QBG); *s.n.* (KKU

7449): 14.1 (KKU).

Maxwell J.F. *71-166*: 11.1 (BK); *71-197*: 3.2.1 (AAU, BK); *71-519*: 1.18 (BK); *72-12*: 18.3 (BK); *72-21*: 18.2 (AAU); *72-107*: 17.2 (BK, C); *72-315*: 7.2 (AAU); *72-401*: 1.18 (AAU, BK); *72-565*: 1.5 (AAU, BK); *72-570*: 1.18 (AAU, BK); *73-35*: 17.2 (BK); *73-238*: 7.6 (AAU); *73-276*: 1.14 (AAU, BK); *73-484*: 17.1 (AAU); *73-706*: 17.2 (BK); *73-781*: 2.1 (BK); *74-135*: 10.1 (AAU, BK); *74-157*: 13.2 (AAU); *74-265*: 17.2 (BK, BKF); *74-448*: 1.14 (AAU); *74-450*: 7.6 (AAU); *74-453*: 4.3 (AAU, BK); *74-474:* 16.1 (BK); *74-568*: 11.1 (BK); *74-614*: 7.6 (AAU); *74-743*: 1.14 (BK); *74-764*: 5.2 (BK); *74-818*: 16.1 (AAU, BK); *74-838*: 1.6 (AAU, BK); *74-1108*: 1.5 (AAU, BK); *75-28*: 17.1 (AAU); *75-40*: 1.5 (BK); *75-41*: 1.6 (BK); *75-45*: 17.2 (AAU, BK); *75-52*: 7.8 (AAU); *75-56*: 2.1 (AAU, BK); *75-73*: 13.2 (AAU); *75-89*: 16.1 (AAU, BK); *75-93*: 17.1 (AAU); *75-109*: 7.6 (AAU); *75-110*: 1.11 (BK); *75-176*: 17.1 (AAU); *75-189*: 1.5 (AAU, BK); *75-239*: 11.1 (BK); *75-388*: 5.1 (AAU, BK); *75-457:* 4.3 (BK); *75-504*: 1.6 (AAU, BK); *75-521*: 13.2 (AAU); *75-602*: 7.1 (AAU); *75-607*: 1.32 (BK); 7*5-654*: 17.2 (AAU, BK); *75-666*: 2.1 (AAU, BK); *75-770*: 2.1 (AAU, BK); *75-794*: 1.6 (AAU, BK); *75-912*: 18.1 (BK); *75-913*: 18.2 (AAU, BK); *75-965*: 1.5 (BK); *75-989*: 3.2.1 (AAU, BK); *76-12*: 1.14 (AAU, BK); *76-132*: 1.29 (AAU, BK); *76-143:* 7.5 (AAU); *76-175*: 1.29 (AAU, BK); *76-312*: 17.1 (AAU); *76-340:* 1.5 (AAU, BK); *76-341*: 1.14 (AAU); *76-445*: 7.8 (AAU); *76-487*: 1.5 (AAU, BK); *76-621*: 1.6 (BK); *76-651*: 1.6 (AAU); *76-708*: 16.1 (AAU, BK); *80-1005*: 10.1 (BKF); *84-145*: 1.32 (BKF, PSU); *84-337*: 1.32 (BKF); *84-485*: 1.16 (BKF); *84-496*: 7.7 (BK); *85-58*: 1.32 (BKF, PSU); *85-297*: 7.6 (AAU, BKF, PSU); *85-310*: 9.1 (AAU, BKF); *85-339*: 1.20 (AAU, BKF); *85-367*: 9.1 (AAU, BKF, PSU); *85-513*: 9.1 (AAU, BKF, PSU); *85-659*: 1.6 (AAU, BKF); *85-673*: 4.7 (AAU, BKF, PSU); *85-687*: 1.16 (AAU, BKF); *85-794*: 17.1 (PSU); *85-864:* 1.32 (AAU, BKF, PSU); *85-887*: 4.7 (BKF, PSU); *85-907*: 4.1 (AAU, BKF, PSU); *85-1115*: 1.19 (BKF); *86-14*: 7.4 (PSU); *86-175*: 8.1 (AAU, BKF, PSU); *86-207*: 1.14 (AAU, BKF); *86-730*: 1.9 (BKF); *86-739*: 7.4 (BKF, PSU); *86-753*: 1.10 (BKF); *86-845*: 1.18 (BKF); *87-188*: 2.1 (AAU, BKF, PSU); *87-439*: 7.3 (BKF, PSU); *87-447*: 2.1 (BKF, PSU); *87-458*: 1.14 (AAU, BKF); *87-541*: 7.10 (PSU); *87-545*: 9.1 (BKF); *87-567*: 2.1 (BKF, PSU); *87-571*: 7.4 (AAU, PSU); *87-576*: 4.9.2 (AAU, BKF, PSU); *87-892*: 5.1 (BKF); *87-893*: 11.1 (BKF); *87-1132*: 1.29 (BKF); *87-1517*: 7.6 (BKF); *87-1519*: 7.8 (BKF); *88-192*: 17.4 (AAU, BKF); *88-273*: 1.31 (BKF); *88-291*: 10.1 (BKF); *88-356*: 13.2 (BKF); *88-397*: 8.1 (BKF); *88-409*: 8.1 (BKF); *88-603*: 1.23 (AAU); *88-828*: 1.14 (BKF); *88-1005*: 10.1 (AAU); *88-1078*: 5.2 (AAU, BKF); *88-1386*: 1.31 (AAU, BKF); *89-77:* 4.3 (BKF); *89-85*: 17.1 (AAU, BKF); *89-116*: 7.6 (BKF); *89-194*: 10.1 (BKF); *89-205*: 1.10 (BKF); *89-216*: 17.1 (AAU, BKF); *89-245*: 8.1 (BKF); *89-304*: 2.1 (AAU, BKF); *89-413*: 15.1 (BKF); *89-418*: 17.1 (BKF); *89-547*: 5.2 (AAU, BKF); *89-574*: 7.6 (AAU, BKF); *89-604*: 15.1 (AAU, BKF); *89-612*: 1.14 (AAU, BKF); *89-681*: 13.2 (BKF); *90-729*: 8.1 (BKF); *90-1121*: 10.1 (AAU); *91-202*: 6.1 (AAU); *91-329*: 3.2.2 (AAU); *91-517*: 3.1 (AAU); *91-556*: 1.14 (AAU); *92-292*: 1.23 (AAU); *93-373*: 15.1 (BKF); *93-434*: 8.1 (BKF); *94-1232*: 7.6 (BKF); *95-122*: 13.2 (BKF); *95-133*: 10.1 (BKF); *95-156*: 15.1 (BKF); *95-257*: 8.1 (BKF); *95-419*: 6.1 (BKF); *95-597*: 2.1 (BKF); *95-813*: 8.1 (BKF); *95-1187*: 6.1 (BKF); *96-61*: 6.1 (BKF); *96-345*: 8.1 (BKF); *96-439*: 8.1 (BKF); *96-596*: 1.30 (BKF); *96-743*: 8.1 (BKF); *96-759*: 17.3 (BKF); *96-909*: 11.1 (BKF); *96-940*: 17.3 (BKF); *96-961*: 11.1 (BKF); *96-1152*: 1.10 (BKF); *96-1157*: 5.1 (BKF); *96-1354*: 11.1 (BKF); *96-1489*: 1.1 (BKF); *96-1502*: 8.1 (BKF); *97-131*: 10.1 (BKF); *97-834*: 1.14 (BKF); *97-860*: 10.1 (BKF); *97-874*: 5.1 (BKF); *97-923*: 2.1 (BKF); *97-1558*: 10.1 (BKF); *98-351*: 8.1 (BKF); *98-354*: 2.1 (BKF); *98-608*: 17.3 (BKF); *001-11*: 3.2.2 (BKF); *001-30*: 15.1 (BKF); *001-359*: 1.6 (BKF); *002-176*: 4.5 (BKF); *002-176A*: 13.2 (BKF); *002-379*: 7.6 (BKF).

Metachawalit P. et al. *s.n.* (KKU 1756): 3.2.1 (KKU).

Middleton D.J. et al. *191*: 1.6 (BKF); *232*: 1.20 (AAU, BKF); *421*: 7.6 (BKF); *348*: 4.7 (AAU, BKF, K); *351*: 4.6 (AAU, BKF, K); *352*: 1.32

(AAU, BKF, K); *374*: 1.32 (AAU, BKF); *424*: 5.1 (BKF); 43*0*: 1.32 (BKF); 4*3*6: 7.10 (BKF); *466*: 1.9 (BKF); *502*: 1.22 (BKF); *504*: 1.3 (BKF); 5*0*8: 1.22 (AAU, BKF, K); *878*: 1.12 (BKF); *898*: 1.19 (BKF); *912*: 5.1 (BKF); *939*: 1.14 (BKF); *1014*: 4.3 (AAU, BKF, K); *1032*: 1.19 (BKF); *1213*: 1.20 (BKF); *1329*: 2.1 (BKF); *1360*: 1.18 (BKF); *1371*: 1.31 (BKF); *1464*: 8.1 (BKF); *1470*: 1.31 (BKF); *1558*: 7.6 (BKF); *1565*: 1.6 (BKF); *1566*: 1.5 (BKF , K); *1585*: 1.6 (BKF); *1679*: 1.23 (BKF, HU, K); *1738*: 1.6 (BKF); *1787*: 8.1 (BKF, K); *1824*: 1.14 (BKF); *2002*: 2.1 (K); *2191*: 7.4 (BKF); *2244*: 1.2 (BKF); *2367*: 2.1 (BKF).

Murata G. et al. *T-15252*: 6.1 (AAU, BKF, C); *T-16503*: 7.6 (BKF); *T-17295*: 3.2.1 (BKF); *T-17434*: 1.6 (BKF); *T-17734*: 10.1 (AAU, BKF, C, K); *T-17745*: 10.1 (BKF); *T-37072*: 1.6 (AAU); *T-50961*: 2.1 (BKF); *T-51029*: 10.1 (BKF); *T-51167*: 8.1 (BKF); *51246*: 1.6 (BKF).

Nakkan D. *16*: 17.3 (BKF); *44*: 7.6 (BKF); 88: 13.2 (K); *177*: 7.8 (BKF); *186*: 5.1 (BKF); *226*: 3.2.1 (BKF); *360*: 1.27 (BKF); *363*: 1.27 (BKF).

Nalampoon A. *20*: 4.8 (BKF); *36*: 1.14 (BKF).

Nanakorn W. et al. *27*: 12.1 (BKF, QBG); *31*: 8.1 (QBG); *44*: 6.1 (QBG); *51*: 7.7 (QBG); *55*: 1.29 (QBG); *133*: 4.3 (QBG); *139*: 15.1 (QBG); *483*: 15.1 (QBG); *525*: 11.1 (BKF); *571*: 13.2 (QBG); *586*: 8.1 (QBG); *658*: 6.1 (QBG); *725*: 8.1 (QBG); *1285*: 1.29 (BKF); *1476*: 1.18 (QBG); *2559*: 1.2 (QBG); *2790*: 18.3 (QBG); *3072*: 8.1 (QBG); *3113*: 8.1 (QBG); *3319*: 8.1 (QBG); *3333*: 1.18 (QBG); *3532*: 2.1 (QBG); *3699*: 6.1 (QBG); *3815*: 8.1 (QBG); *4056*: 1.31 (QBG); *4106*: 12.1 (QBG); *5120*: 8.1 (QBG); *5433*: 6.1 (QBG); *5668*: 7.10 (QBG); *5677*: 1.9 (QBG); *6083*: 1.19 (QBG); *6293*: 7.6 (QBG); *6403*: 8.1 (BKF); *6636*: 6.1 (QBG); *6673*: 8.1 (BKF); *6769*: 6.1 (QBG); *6938*: 8.1 (QBG); *6973*: 6.1 (QBG); *7226*: 18.1 (QBG); *7378*: 12.1 (BKF); *8060*: 8.1 (QBG); *8066*: 8.1 (QBG); *8164*: 8.1 (QBG); *8951*: 4.3 (QBG); *9026*: 5.1 (QBG); *9452*: 8.1 (QBG); *9483*: 8.1 (QBG); *9950*: 7.10 (QBG); *10592*: 15.1 (QBG).

Newman M.F. *47*: 13.2 (AAU, BKF); *1027*: 7.6 (AAU, BKF); *1028*: 1.16 (BKF); *1068*: 7.3 (AAU, BKF); *1074*: 4.7 (AAU, BKF); *1077*: 1.32 (AAU, BKF, K).

Nielsen I.C. et al. *1551*: 1.26 (BKF); *1831*: 1.2 (BKF).

Nim-a-nong B. *6*: 1.19 (BKF); *13*: 1.5 (AAU, C, K); *1604*: 4.7 (BKF); *1616*: 7.7 (BKF, C, K).

Niyomdham C. *279*: 1.32 (C); *296*: 1.6 (AAU, BKF, C, K); *297*: 1.32 (AAU, C); *304*: 1.7 (AAU, BKF, C, K); *340*: 7.6 (AAU, BKF, C); *393*: 1.9 (BKF); 410: 1.13 (BKF); *566*: 1.24 (BKF); *782*: 13.1 (AAU, BKF); *788*: 4.7 (AAU, BKF); *802*: 1.24 (AAU, BKF, C, K); *814*: 4.3 (AAU, BKF, C, K); *842*: 13.1 (AAU, BKF, C, K); *861*: 1.17 (AAU, BKF); *881*: 13.1 (AAU, BKF, C, K); *1115*: 4.7 (BKF); *1165*: 1.13 (AAU, BKF, C, K); *1320*: 7.5 (BKF, C); *1954*: 18.3 (BKF); *1994*: 1.12 (BKF); *2016*: 4.7 (BKF); *2147*: 1.14 (BKF); *2165*: 1.17 (BKF); *2182*: 1.19 (BKF); *2357*: 1.18 (BKF); *2905*: 1.9 (AAU, BKF); *3010*: 1.18 (AAU, BKF); *3279*: 1.14 (BKF); *3328*: 4.2 (BKF); *4470*: 1.27 (BKF); *4703*: 7.5 (BKF); *4762*: 9.1 (BKF); *4957*: 8.1 (BKF); *5016*: 1.16 (BKF); *5017*: 4.1 (BKF); *5024*: 13.2 (AAU, BKF); *5096*: 17.3 (AAU, BKF); *5174*: 1.6 (BKF); *5197*: 1.20 (BKF); *5286*: 4.1 (BKF, K); *5328*: 4.2 (BKF); *5670**: 4.10 (BKF); *6162*: 4.2 (AAU, BKF); *6215*: 1.29 (BKF); *6310*: 1.29 (AAU, BKF); *6510*: 1.14 (AAU, BKF); *6563*: 9.1 (BKF).

Noe *255*: 17.4 (BK, K).

Noi *s.n.* (BK 4429): 10.1 (BK).

Norsangsri M. *1403*: 8.1 (QBG).

Parinya *124*: 3.2.1.

Pannell C.M. *95-657:* 1.14 (C.K.).

Patanapongpaiboon P. *s.n.* (BKF 82533): 18.1 (BKF); *s.n.* (BKF 82534): 18.1 (BKF); *s.n.* (BKF 82536): 18.1 (BKF); *s.n.* (BKF 119055): 18.1 (BKF).

Pato K. *s.n* (KKU 1649): 3.2.2 (KKU).

Pennington T.D. *7992*: 1.12 (BKF).

Pharmaceutical Sciences, Faculty of: Chulalongkorn University. *s.n.*: 7.9 (BKF).

Phengklai C. *72*: 1.28 (BKF, C, K); *74*: 1.28 (C); *154*: 8.1 (K); *257*: 1.14 (BKF, C, K); *426*: 2.1 (BKF); *463*: 2.1 (BKF, K); *489*: 7.6 (BKF, C, K); *1041*: 17.3 (BKF, K); *1269*: 2.1 (BKF, K); *1981*: 18.3 (BKF); *1983*: 1.18 (BKF); *3080*:

2.1 (BKF, PSU); *3104*: 15.1 (BKF, K); *3528*: 17.2 (BKF, PSU); *3812*: 18.1 (BKF); *3926*: 7.10 (BKF, PSU); *4014*: 11.2 (BKF); *6026*: 18.2 (AAU); *10801*: 10.1 (BKF); *10882*: 8.1 (BKF); *10889*: 1.2 (BKF); *10940*: 1.29 (BKF); *11185*: 1.18 (BKF); *11991*: 1.18 (BKF); *12248*: 8.1 (BKF); *12620*: 7.5 (BKF); *12657*: 7.5 (AAU, BKF); *12723*: 1.6 (BKF); *12811*: 1.18 (BKF); *13075*: 1.6 (BKF); *13076*: 1.6 (BKF); *13201*: 18.3 (BKF); *13263*: 18.3 (BKF); *13431*: 4.7 (BKF); *13450*: 1.31 (BKF); *13525*: 1.12 (BKF); *13774*: 18.2 (BKF); *13786*: 1.18 (BKF); *13922*: 18.3 (BKF); *14074*: 1.27 (BKF); *14409*: 18.1 (BKF); *14525*: 7.8 (BKF); *14633*: 4.1 (BKF); *14706*: 1.14 (BKF); *15166*: 1.18 (BKF); *15271*: 1.19 (BKF); *15348*: 1.6 (BKF); *15407*: 1.12 (BKF); *15408*: 1.19 (BKF); *15409*: 13.2 (BKF); *15507*: 18.1 (BKF); *15627*: 9.1 (BKF); *15716*: 13.2 (BKF).

Phengnaren S. *128*: 2.1 (BKF); *196*: 1.14 (BKF); *220*: 1.6 (BKF); *237*: 2.1 (BKF); 241: 17.2 (BKF); *332*: 1.28 (BKF); *375*: 17.2 (BKF); *494:* 17.2 (BKF); *512*: 1.5 (BKF); *516*: 17.1 (BKF); *552*: 17.2 (BKF); *560*: 17.1 (BKF, C); *565*: 1.6 (BKF); *575*: 5.1 (BKF); *597*: 10.1 (BKF); *600*: 17.1 (BKF); *s.n.* (BKF 29614): 16.1 (BKF).

Phengnaren Sh. *180*: 17.1 (BKF); *294*: 17.1 (BKF); *387*: 10.1 (BKF); *516*: 17.3 (K); *522*: 17.2 (K); *601*: 1.6 (BKF).

Phetsupha R. *s.n.* (BKF 113783): 9.1 (BKF).

Phonsena P. *4388*: 18.3 (BKF).

Phusomsaeng S. *8*: 7.6 (BKF, C, K); *27*: 1.19 (BKF, C, K); *35*: 4.6 (AAU, BKF, C, K); *44*: 2.1 (BKF, C, K); *59*: 4.8 (BKF, K); *79*: 17.2 (BKF); *81*: 7.4 (C, K); *91*: 1.5 (C); *102*: 1.1 (BKF, C, E, L, KTO, OXF, P); *110*: 7.6 (BKF, C); *160*: 1.31 (C, K); *161*: 1.5 (BKF, C, K); *167*: 15.1 (BKF); *169*: 7.7 (BKF, C); *170*: 4.7 (BKF, C, K); *175*: 7.7 (BKF, K); *178*: 1.5 (BKF, C, K); *179*: 1.5 (BKF); *194*: 1.10 (BKF); *229*: 1.5 (BKF, C, K); *234*: 7.2 (BKF, C, K); *248*: 4.8 (BKF); *267*: 4.8 (BKF); *310*: 2.1 (BKF, K); *324*: 4.8 (BKF); *329*: 4.6 (BKF); *348*: 1.5 (BKF, K); *376*: 9.1 (BKF); *418*: 7.12 (BKF, K); *420*: 4.2 (BKF, C, K); *426*: 5.1 (BKF, C, K); *450*: 1.32 (BKF); *523*: 1.7 (BKF, C, K); *1571*: 2.1 (BKF); *1586*: 7.4 (BKF, C, K); *1593*: 1.2 (BKF, C, K).

Pinnil S. *12*: 2.1 (BKF, K); *91*: 1.5 (BKF); *255*: 1.32 (BKF).

Piyakanchana T. *s.n.*: 10.1 (BK).

Pongamornkul W. *22*: 5.1 (QBG); *317*: 1.29 (QBG); *635*: 17.3 (QBG).

Pooma R. *100*: 17.3 (BKF); *112*: 4.4 (BKF); *163*: 3.2.1 (BKF); *186*: 8.1 (BKF); *345*: 8.1 (BKF); *356*: 7.6 (BKF); *357*: 1.2 (BKF); *387*: 1.18 (BKF); *435*: 1.29 (BKF); *483*: 5.1 (BKF); *749*: 6.1 (BKF); *831*: 10.1 (BKF); *949*: 1.6 (BKF); *1027*: 5.1 (BKF); *1119*: 10.1 (BKF); *1175*: 6.1 (BKF); *1195*: 1.27 (BKF); *1223*: 8.1 (BKF); *1392*: 1.21 (BKF); *1496*: 17.3 (BKF); *1517*: 7.6 (BKF); *1576*: 8.1 (BKF); *1632*: 17.3 (BKF); *1638*: 1.6 (BKF); *1654*: 17.3 (BKF); *1655*: 8.1 (BKF); *1667*: 1.18 (BKF); *1691*: 1.18 (BKF); *1743*: 1.22 (BKF); *2065*: 2.1 (BKF); *2418*: 10.1 (BKF); 2929: 1.18 (BKF); *3014*: 1.14 (BKF); *3763*: 1.31 (BKF); *3957*: 6.1 (AAU, BKF); *4294*: 8.1 (AAU, BKF); *4316*: 7.6 (BKF); *6590*: 1.19 (BKF).

Prakongsai L. *s.n.* (BKF 26750): 1.6 (BKF).

Praknuk S. *7*: 2.1 (BKF).

Prapat D. *4:* 1.5 (BKF); *40*: 1.30 (BKF, C, K); *43*: 1.30 (BKF, C, K); *62*: 2.1 (BKF); *118*: 1.14 (BKF); *135*: 1.32 (BKF, C, K); *499*: 1.14 (BKF); *514*: 1.6 (BKF); *816*: 1.6 (BKF); *941*: 1.14 (BKF); *964*: 1.5 (BKF).

Premrasami A. *32*: 1.24 (AAU, BKF); *67*: 2.1 (BKF); *94*: 8.1 (BKF); *305*: 17.2 (BKF).

Premrasami Th. *1*: 17.2 (BKF); *2*: 17.3 (BKF).

Promdej Ch. *10*: 15.1 (BKF); *23*: 18.1 (BKF, C, K); *268*: 18.1 (BKF).

Put P. *200*: 1.19 (BKF); *202*: 1.22 (BKF); *233*: 1.2 (BKF); *241*: 4.8 (BKF); *307*: 18.2 (BKF); *315*: 1.2 (BKF); *325*: 1.5 (BKF); *354*: 13.2 (BKF); *364*: 1.27 (BKF); *386*: 6.1 (C, K); *416*: 2.1 (BK); *524*: 7.6 (BM); *542*: 1.24 (BK, BM); *558*: 17.2 (BK, C, K); *577*: 2.1 (BK, K); *652*: 17.4 (BK, BM, K); *741*: 1.17 (BK, K); *970*: 1.18 (BK, C, K); *1146*: 1.18 (BK, BM, C); *1288*: 17.2 (BK, C, K); *1297A.*: 1.20 (BK, K); *1634*: 1.19 (BK, BM, C, K); *1708*: 18.1 (BK, BM, K); *1746*: 1.12 (BK, BM, C, K); *1895*: 1.14 (BK, BM, C, K); *1988*: 1.18 (BK, BM, K); *2039*: 1.5 (BK, C, K); *2232*: 3.2.2 (BK, C, K); *2382*: 1.14 (BK, BM, C, K); *2742*: 7.8 (C);

2812: 17.4 (BK, BM, K); *3066*: 5.2 (BK, BM, C, K); *3237*: 11.2 (BK, C, K); *3238A*: 1.6 (BK, BM, C, K); *3395*: 7.5 (BM); *3506*: 17.1 (BK, K); *3629*: 4.8 (C, K); *3840*: 15.3 (BK, BM, C, K); *3841*: 2.1 (K); *3865*: 1.14 (BM, C); *3945*: 11.1 (BK, BM, C, K); *4324*: 1.14 (BK, BM, C); *4519*: 6.1 (BM, C, K); *s.n.* (BKF 18143): 7.6 (BKF).

Puudjaa P. *207*: 1.14 (BKF); *267*: 1.9 (BKF); *325*: 4.2 (BKF); *444*: 8.1 (BKF); *466*: 4.9.1 (BKF); *469*: 1.9 (BKF); *485*: 1.31 (AAU, BKF); *853*: 1.2 (BKF); *1002*: 4.7 (BKF); *1248*: 7.8 (BKF); *1454*: 11.1 (BKF).

Rabil *137*: 1.19 (BK); *137A*: 1.18 (K); *179*: 9.1 (BK, C); *259*: 9.1 (BK); *275*: 2.1 (BK, K).

Rock J.F. *1749*: 8.1 (K); *1867*: 4.3 (K).

Rollet *s.n.* (BKF 71031): 18.1 (BKF); *s.n.* (BKF) 72603): 18.2 (BKF).

Roongsuriya *s.n.* (BKF 139712): 18.1 (BKF).

Saemyarm W. *98*: 2.1 (QBG).

Saifah E. *s.n.* 1.5 (BK).

Saman L. *65*: 18.1 (BKF).

Sa-nga *s.n.*: 3.2.2 (BKF).

Sangkachand B. *11*: 1.1 (BKF); *27*: 17.2 (BKF, K); *119*: 17.1 (BKF, K); *194*: 7.7 (BKF, C, K); *274*: 2.1 (BKF, C); *292*: 1.6 (BKF, C, K); *365*: 17.2 (BKF); *373*: 17.1 (BKF); *395*: 18.3 (BKF); *492*: 1.6 (BKF); *543*: 5.1 (BKF); *544*: 1.27 (C, BKF, K); *573*: 7.6 (BKF, C); *647*: 10.1 (BKF); *696*: 1.22 (BKF); *701*: 1.32 (BKF); *865*: 7.2 (C, K); *943*: 13.2 (BKF); *944*: 2.1 (BKF); *946*: 10.1 (BKF, K); *954*: 17.3 (BKF); *999*: 1.18 (BKF, K); *1017*: 4.2 (BKF, K); *1043*: 1.7 (C, K); *1159*: 7.10 (BKF); *1160*: 1.32 (BKF, C, K); *1229* :1.16 (C); *1256*: 1.16 (BKF, C, K); *1390*: 4.2 (BKF, C, K); *1484*: 7.8 (BKF, C, K); *1502* : 1.3 (AAU, BKF, C, K); *1542*: 17.3 (BKF); *1549*: 1.5 (BKF, C, K); *1564*: 15.3 (BKF, C, K); *1705*: 17.1 (BK); *1885*: 17.1 (BK); *3001*: 1.29 (BKF); *3083*: 10.1 (BKF, C, K); *3100*: 12.1 (BKF); *3122*: 2.1 (BKF); *3123*: 1.6 (BKF); *3165*: 13.2 (BKF); *3175*: 1.14 (BKF).

Sangkachand P. *188*: 15.3 (BK); *454*: 1-16 (BK); *578*: 1.26 (BK); *607*: 17.2 (BK); *632*: 1.11 (BK); *1025*: 5.2 (BKF); *1260*: 4.2 (BK); *1264*: 4.2 (BK); *1321*: 1.32 (BK); *1451*: 2.1 (BK); *1588*: 1.19 (BK); *1682*: 4.6 (BK); *1716*: 1.31 (BK); *1719*: 4.8 (BK); *1773*: 1.19 (BK); *1802*: 1.1 (BK); *1852*: 1.5 (BK); *1862*: 17.1 (BK); *1891*: 1.12 (BK); *1902*: 1.5 (BK); *1905*: 1.31 (BK); *2035*: 5.2 (BK); *2173*: 4.8 (BK); *2187*: 2.1 (BK).

Santisuk Th. *2*: 4.7 (BKF); *70*: 1.14 (BKF); *92*: 13.2 (BKF); *106*: 1.9 (BKF); *113*: 1.9 (BKF); *182*: 1.6 (BKF, C, K); *205*: 1.14 (BKF); *218*: 1.14 (BKF); *272*: 3.2.1 (BKF); *286*: 7.8 (BKF, C, K); *339*: 1.32 (BKF, PSU); *349*: 1.16 (BKF); *421*: 1.14 (BKF); *498*: 2.1 (BKF); *595*: 1.32 (AAU, BKF, K); *613*: 4.7 (BKF); *625*: 1.9 (BKF); *646*: 1.5 (AAU, BKF, C, K); *694*: 18.1 (BKF); *769*: 1.9 (BKF); *788*: 1.16 (BKF); *818*: 17.2 (BKF, PSU); *820*: 17.1 (BKF, PSU); *821*: 1.16 (BKF, PSU); *829*: 4.7 (BKF, PSU); *987*: 17.3 (BKF); *1091*: 1.14 (BKF); *1158*: 1.7 (BKF, PSU); *1186*: 1.32 (BKF); *1293*: 1.1 (BKF); *1433*: 8.1 (AAU); *3479*: 1.4 (BKF); *6667*: 8.1 (BKF); *6670*: 2.1 (BKF); *6688*: 7.6 (BKF); *6690*: 7.2 (BKF); *6888*: 7.6 (BKF); *6914*: 2.1 (BKF); *6940*: 4.3 (BKF); *6996*: 5.1 (BKF); *8611*: 6.1 (BKF); *s.n.* (BKF 36108): 18.2 (BKF); *s.n.* (BKF 85533): 15.1 (BKF); *s.n.* (BKF 85540): 15.3 (BKF); *s.n.* (BKF 85570): 5.1 (BKF); *s.n.* (BKF 88557): 5.1 (BKF); *s.n.* (BKF 99499): 1.28 (BKF); *s.n.* (BKF 99575): 7.6 (BKF); *s.n.* (BKF 96206): 8.1 (BKF); *s.n.* (BKF 100135): 1.27 (BKF); *s.n.* (BKF 100201): 17.1 (BKF); *s.n.* (BKF 100213): 18.3 (BKF); *s.n.* (BKF 114063): 1.6 (BKF); *s.n.* (125342): 2.1 (BKF).

Sawai KKU *12032*: 10.1 (KKU).

Schmidt J. *3*: 18.3 (C); *36*: 18.1 (C); *355*: 18.2 (C); *478*: 4.7 (C); *559*: 1.18 (C); *810*: 1.18 (C); *833*: 17.2 (C); *875*: 1.18 (C); *876*: 7.5 (C).

Serm *44*: 15.1 (QBG); 87: 8.1 (QBG).

Shimizu T. *T-14709*: 1.32 (AAU, BKF); *T-18770*: 8.1 (BKF); *T-19547*: 1.6 (AAU, BKF); *T-19823*: 7.2 (BKF); *T-22121*: 7.6 (BKF); *T-22173*: 10.1 (BKF); *T-23278*: 1.6 (BKF); *T-23581*: 7.5 (BKF); *T-26033*: 2.1 (BKF); *T-26476*: 1.7 (BKF, C); *T-26664*: 7.2 (BKF); *T-26719:* 7.2 (BKF); *T-27450*: 4.8 (BKF); *T-27455*: 4.8 (BKF); *T-28498*: 1.14 (BKF); *T-29046*: 1.20 (BKF); *T-29068*: 4.7 (BKF); *T-29197:* 18.1 (BKF); *T-29211*: 18.1 (BKF).

Shomburgk R. *s.n.*: 13.2 (K).

Sidisunthorn P. *498*: 1.5 (BKF); *537*: 7.12 (BKF); *1158*: 2.1 (BKF); *1175*: 1.1 (BKF); *1257*: 4.7 (BKF); *1280*: 1.22 (BKF); *1292*: 9.1 (BKF); *1456*: 1.22 (BKF).

Singha-kam K. *23*: 5.1 (BKF).

Singhasatit S. *387*: 15.1 (BKF); *427*: 8.1 (BKF).

Siriphum S. *1-19-11-97*: 4.3 (QBG).

Sirirugsa P. *515*: 9.1 (PSU); *909*: 4.10 (PSU); *1246*: 9.1 (PSU).

Sithipong Th. *56*: 1.14 (BKF).

Smitinand T. *183*: 4.6 (BKF); *327*: 15.1 (BKF); *394*: 4.4 (BKF); *469*: 1.2 (BKF); *508* 1.5 (BKF); *529*: 8.1 (BKF); *756*: 4.6 (BKF); *847*: 1.5 (BKF); *859*: 1.32 (BKF); *949*: 1.19 (BKF); *1161*: 1.12 (C); *1199*: 1.20 (BKF, C, K); *1578*: 11.1 (BKF); *2284*: 18.3 (BKF); *3159*: 15.1 (BKF); *3288*: 16.1 (AAU, BKF, K); *3316*: 1.10 (BKF); *3325*: 1.14 (BKF, C, K); *3328*: 1.2 (BKF); *4113*: 1.1 (BKF); *4708*: 1.2 (BKF); *4808*: 11.1 (BKF); *4820*: 5.1 (BKF); *5491*: 3.2.2 (BKF); *5591*: 1.8 (BKF); *6255*: 1.2 (BKF); *7019*: 6.1 (BKF); *7242*: 2.1 (BKF); *7506*: 1.6 (BKF, C, K); *7569*: 5.1 (BKF); *8094*: 17.3 (BKF); *8377*: 10.1 (K); *8537*: 1.18 (BKF); *8804*: 11.1 (BKF); *8831*: 1.20 (BKF); *8869*: 1.14 (BKF); *8927*: 9.1 (BKF); *10039*: 4.8 (BKF); *10056*: 1.14 (BKF); *10234*: 12.1 (BKF, BK); *10350*: 17.1 (BKF, C, K); *10516*: 1.14 (BKF); *10590*: 1.8 (BKF); *10651*: 1.18 (BKF); *10688*: 8.1 (BKF); *10803*: 1.28 (BKF, C, K); *10840*: 17.2 (BKF); *10868*: 17.2 (BKF); *10869*: 17.2 (BKF); *10991*: 1.12 (BKF); *11346*: 1.25 (BKF); *11552*: 15.1 (C, K); *11980*: 1.9 (C); *11991*: 9.1 (BKF); *12247*: 9.1 (BKF); *90-8*: 1.18 (BKF); *91-3*: 8.1 (BKF); *92-23*: 4.7 (BKF); *s.n.* (BKF 12831): 15.1 (BKF); *s.n.* (BKF 38071): 13.2 (BKF); s.n. (BKF 62305): 9.1 (BKF); *s.n.* (64944): 1.9 (BKF); *s.n.* (BKF 92736): 8.1 (BKF); *s.n.* (BKF 94766): 18.3 (BKF); *s.n.* (BKF 102383): 1.2 (BKF); *s.n.* (BKF 118613): 17.1 (BKF); s.n. (123241): 1.8 (BKF); *s.n.* (BKF 123263): 1.14 (BKF).

Soejarto D.D. *5885*: 13.2 (BKF); *5958*: 7.7 (BKF); *6026*: 1.6 (BKF).

Song-see *52*: 15.1 (PSU).

Songrat T. *6*: 1.18 (C).

Sono P. *14*: 10.1 (BKF).

Sookchaloem D. *s.n.*: 17.3 (BKF).

Sorensen Th. *334*: 15.1 (C, K); *536*: 18.1 (C); *557*: 3.2.1 (C); *1341*: 1.18 (C); *2179*: 16.1 (C, K); *2445*: 11.1 (C); *3008*: 2.1 (C); *3009*: 2.1 (K); *3016*: 2.1 (K); *3026*: 1.14 (C); *3252*: 11.1 (BKF, C); *3312*: 6.1 (C); *3392*: 17.4 (BKF, C); *3469*: 2.1 (C); *4886*: 2.1 (C); *5009*: 2.1 (C, K); *5372*: 17.3 (C); *5741*: 17.3 (C); *5830*: 17.3 (C); *6016*: 7.3 (C); *6966*: 10.1 (C); *7824*: 18.2 (C).

Srisanga P. *176*: 8.1 (QBG); *280*: 8.1 (QBG); *322*: 4.3 (QBG); *532*: 8.1 (QBG); *533*: 8.1 (QBG); *669*: 4.3 (QBG); *672*: 1.7 (QBG); *678*: 4.3 (QBG); *718*: 3.2.1 (QBG); *719*: 3.2.2 (QBG); *764*: 8.1 (QBG); *820*: 5.1 (QBG); *916*: 2.1 (QBG); *1283*: 4.3 (QBG); *1461*: 1.31 (QBG); *1973*: 8.1 (QBG); *2577*: 1.28 (QBG); *2744*: 8.1 (QBG); *2745*: 4.3 (QBG); *2748*: 7.7 (QBG); *2749*: 1.29 (QBG).

Suddee S. *2603*: 1.6 (QBG); *2604*: 17.1 (QBG); *2606*: 17.1 (QBG); *2669*: 2.1 (QBG).

Suksakorn S. *899*: 3.2.2 (K).

Suksathan P. *1590*: 3.2.2 (QBG); *2265*: 10.1 (QBG).

Suthison S. *168*: 1.18 (BK); *452*: 3.2.1 (BK); *483*: 17.2 (BK); *900*: 18.3 (BK); *1219*: 4.7 (BK); *1268*: 1.3 (BK); *1953*: 17.1 (BK); *2002*: 1.6 (BK); *2136*: 3.2.2 (BK); *2191*: 4.1 (BK); *2297*: 17.1 (BK); *2311*: 1.10 (BK); *2602*: 1.9 (BK); *3406*: 9.1 (BK); *5267*: 17.2 (BK).

Suvanakoses P. *143*: 1.19 (BKF); *167*: 7.12 (BKF); *205*: 1.32 (BKF); *293*: 7.2 (BKF); *295*: 7.2 (BKF); *374*: 2.1 (BKF); *407*: 1.15 (BKF); *425*: 5.1 (BKF); *530*: 1.19 (BKF); *561*: 1.8 (BKF); *633*: 1.27 (BKF); *636*: 1.5 (BKF); *681*: 1.14 (BKF); *684*: 1.7 (BKF); *703*: 1.19 (BKF); *704*: 4.7 (BKF); *793*: 9.1 (BKF); *870*: 1.2 (BKF); *1117*: 17.3 (BKF, K); *1369*: 17.3 (BKF); *1468*: 17.3 (BKF, K); *1482*: 3.2.2 (BKF); *1745*: 4.6 (BKF); *1788*: 1.19 (BKF); *1866*: 2.1 (BKF); *1875*: 17.3 (BKF, K); *1877*: 9.1 (BKF); *2129*: 1.28 (BKF); *2143*: 7.10 (BKF, C, K).

Suvanasudhi K. *82*: 7.6 (BKF); *100*: 6.1 (BKF); *184*: 7.6 (BKF); *247*: 10.1 (BKF); *378*: 5.1 (BKF); *538*: 5.1 (BKF); *811*: 1.21 (BK); *s.n.* (BKF 4126): 7.6 (BKF).

Tagawa M. *T-1936*: 6.1 (BKF, K).

Pierre L. *872*: 3.2.2 (K).

Teparak T. *4*: 13.2 (BK).

Thawon S. *25*: 7.2 (BKF); *26*: 7.2 (BKF); *52*: 9.1 (BKF); *291*: 1.6 (BKF); *301*: 1.9 (BKF); *305*: 17.1 (K); *418*: 1.3 (BKF); *432*: 1.13 (BKF); *434*: 1.32 (BKF); *506*: 1.9 (BKF); *579*: 1.22 (BKF); *604*: 1.19 (BKF); *626*: 1.11 (BKF); *771*: 1.4 (BKF); *776*: 1.32 (BKF); *780*: 1.32 (BKF); *985*: 7.9 (BKF); *s.n.* (BKF 18304): 1.32 (BKF).

Thonanon N. *15*: 1.2 (BKF).

Thongkam S. *2*: 1.28 (BKF).

Thongson P. *29*: 6.1 (QBG); *90*: 8.1 (BKF).

Thuntana P. *s.n.* (KKU. 1692): 3.2.1 (KKU).

Tiaviboon S. *s.n.* (BKF 99168): 2.1 (BKF); *s.n.*: 7.4 (BKF).

Tippayasri P. *984*: 1.10 (BKF).

Tubtimthong P. *s.n.*. (KKU 7451): 10.1 (KKU).

Ubonchonlakhet A. *215*: 18.3 (AAU).

Vacharapong *223*: 2.1 (BK); *338*: 17.3 (BK); *348*: 15.3 (BK).

Vacharee *27*: 3.2.1 (BK); *468*: 3.2.2 (BK).

Vanpruk *3*: 17.3 (BKF); *14*: 18.2 (BKF); *110*: 2.1 (BKF); *116*: 17.2 (K); *120*: 17.2 (K); *121*: 17.4 (K); *161*: 10.1 (K); *164*: 10.1 (BKF); *205*: 5.2 (BKF, K); *220*: 15.1 (BKF, K); *241*: 13.2 (BKF); *358*: 7.6 (BKF, K); *417*: 10.1 (BKF, K); *421*: 3.2.2 (BKF, C, K); *429*: 17.4 (BKF); *482*: 16.1 (BKF, K); *483*: 3.2.1 (K); *506*: 7.6 (C); *509*: 17.2 (K); *684*: 7.8 (C, K); *722*: 18.2 (BKF, K); *723*: 18.1 (BKF); *781*: 1.18 (BKF); *784*: 1.41 (BKF, K).

Vatanasuvakul C. *s.n.* (BKF 8561): 18.1 (BKF).

Veesommai U. *s.n.*: 17.3 (BKF).

Vidal J.E. *5266*: 8.1 (BKF); *6305*: 6.1 (BKF).

Vongdao L. *34*: 3.2.2 (BKF).

Vanakit S. *117*: 1.28 (BKF).

Wannarak A. *18*: 7.6 (C); *81*: 17.1 (K).

Watthana S. *100*: 4.3 (QBG); *213*: 2.1 (QBG).

Widmer M. *7*: 3.2.2 (BKF).

Willius D.S. *388*: 1.5 (C).

Winit *22*: 17.2 (K); *61*: 1.5 (BKF); *83*: 8.1 (BKF); *92*: 17.4 (BM, K); *128*: 17.4 (BM, K); *129*: 15.1 (BM, K); *130*: 1.18 (BM, K); *252*: 15.3 (BKF); *448*: 11.1 (K); *585*: 1.18 (BKF, K); *619*: 1.2 (BKF, C, K); *634*: 17.2 (K); *781*: 1.18 (K); *1136*: 4.3 (BKF, K); *1398*: 16.1 (BK, BKF, C, K); *1414*: 11.1 (BK, BKF, K); *1452*: 17.2 (BK, BKF); *1497*: 7.6 (BKF, C, K); *1612*: 1.28 (BK, BKF, C, K); *1676*: 1.14 (BK, BKF, C, K); *1699*: 1.28 (BK, C, K); *1836*: 17.2 (BK, BKF, K); *1838*: 1.28 (BK, BKF, C, K); *1891*: 17.2 (BK, BKF, K); *1915*: 17.2 (BK, BKF, K).

Wirawan N. *334*: 1.17 (C).

Wongprasert Th. *94-6-s.n.* (BKF 99503): 2.1 (BKF); *96-4-6*: 17.1 (BKF); *98-2-1*: 8.1 (BKF); *98-5-1*: 4.7 (BKF); *98-5-1a*: 8.1 (BKF); *98-5-2*: 8.1 (BKF); *98-5-s.n.*: 1.14 (BKF); *98-6-1*: 3.2.1 (BKF); *98-6-2*: 18.3 (BKF); *98-6-3*: 18.3 (BKF); *98-7-1*: 18.3 (BKF); *98-8-s.n.*: 3.2.2 (BKF); *99-4-5*: 18.3 (BKF); *99-4-8*: 18.3 (BKF); *99-7-116*: 1.27 (BKF); *99-7-118*: 4.6 (BKF); *01-3-03*: 4.1 (BKF); *01-4-05*: 1.14 (BKF); *01-7-22:* 2.1 (BKF); *03-6-16*: 17.3 (BKF); *03-8-01*: 1.27 (BKF); *03-10-27*: 8.1 (BKF); *04-1-10*: 2.1 (BKF); *04-1-40*: 7.8 (BKF); *04-3-17*: 7.3 (BKF); *04-5-7*: 8.1 (BKF); *04-6-13*: 1.14 (BKF); *04-6-18*: 1.19 (BKF); *04-6-77*: 2.1 (BKF); *04-6-108*: 1.12 (BKF); *06-4-23*: 1.22 (BKF); *06-12-1*: 5.1 (BKF); *07-1-1*: 1.31 (BKF); *07-1-2*: 13.2 (BKF); *07-2-2*: 3.2.2 (BKF); *07-2-3*: 5.1 (BKF); *07-2-4*: 9.1 (BKF); *07-2-5*: 13.2 (BKF); *07-2-7*: 18.2 (BKF); *07-2-8:* 18.1 (BKF); *07-2-9:* 17.2 (BKF); *07-2-10:* 9.1 (BKF); *07-2-12*: 1.24 (BKF); *07-2-14*: 15.1 (BKF); *07-3-1*: 3.2.2 (BKF); *07-3-4*: 10.1 (BKF); *07-3-7*: 3.1 (BKF); *07-3-8*: 10.1 (BKF); *07-3-14*: 5.1 (BKF); *07-3-16*: 8.1 (BKF); *07-3-18*: 1.5 (BKF); *07-3-20*: 1.17 (BKF); *07-3-21*: 1.21 (BKF); *07-1-1*: 1.16 (BKF); *07-4-1*: 14.1 (BKF); *07-4-2*: 1.22 (BKF); *07-4-3*: 7.5 (BKF); *07-4-4*: 7.10 (BKF); *07-4-5*: 1.22 (BKF); *07-5-1*: 9.1 (BKF); *07-5-2*: 11.1 (BKF); *07-5-4*: 18.1 (BKF); *07-5-5*: 18.2 (BKF); *07-5-6*: 1.22 (BKF); *07-6-1*: 5.1 (BKF); *07-6-2*: 11.1 (BKF); *07-6-4*: 1.27 (BKF); *07-6-5*: 6.1 (BKF); *07-6-16*: 8.1 (BKF); *07-6-20*: 5.1 (BKF); *07-6-21*: 8.1 (BKF); *07-6-23*: 5.1 (BKF); *07-6-24*: 17.2 (BKF); *07-6-25*: 8.1 (BKF); *07-6-40*: 15.1 (BKF); *07-6-64*: 6.1 (BKF); *07-6-66*: 6.1 (BKF); *07-6-68*: 2.1 (BKF); *07-6-71*: 17.3 (BKF); *07-6-72*: 4.3

(BKF); *07-6-75*: 15.1 (BKF); *07-6-78*: 4.7 (BKF); *07-6-79*: 1.16 (BKF); *07-6-80*: 7.7 (BKF); *07-6-85*: 1.27 (BKF); *07-7-2*: 2.1 (BKF); *07-7-3*: 2.1 (BKF); *07-7-5*: 15.1 (BKF); *07-7-6*: 2.1 (BKF); *07-7-7*: 7.6 (BKF); *07-7-8*: 2.1 (BKF); *07-7-9:* 2.1 (BKF); *07-7-10*: 2.1 (BKF); *07-7-14*: 15.1 (BKF); *07-7-15:* 17.3 (BKF); *07-7-17*: 1.19 (BKF); *07-7-18*: 2.1 (BKF); *07-7-19*: 2.1 (BKF); *07-7-20*: 2.1 (BKF); *07-7-23*: 17.2 (BKF); *07-7-25*: 7.6 (BKF); *07-7-26*: 1.19 (BKF); *07-7-27:* 1.6 (BKF); *07-7-28*: 10.1 (BKF); *07-7-29:* 2.1 (BKF); *07-7-30*: 2.1 (BKF); *07-7-33*: 8.1 (BKF); *07-7-34:* 13.2 (BKF); *07-7-38*: 5.1 (BKF); *07-7-39*: 5.1 (BKF); *07-7-43*: 5.1 (BKF); *07-7-44*: 2.1 (BKF); *07-7-45*: 14.1 (BKF); *07-8-8*: 5.1 (BKF); *07-8-10*: 1.6 (BKF); *07-8-13*: 2.1 (BKF); *07-8-14*: 2.1 (BKF); *07-8-16*: 1.8 (BKF); *07-8-17*: 1.27 (BKF); *07-8-18*: 1.32 (BKF); *07-8-25*: 1.31 (BKF); *07-8-26*: 1.32 (BKF); *07-8-31*: 1.17 (BKF); *07-8-32*: 1.9 (BKF); *07-8-37*: 1.32 (BKF); *07-8-41*: 2.1 (BKF); *07-8-46:* 1.1 (BKF); *07-8-54*: 18.1 (BKF); *07-8-60*: 1. 23 (BKF); *07-8-61*: 1.3 (BKF); *07-8-62*: 2.1 (BKF); *07-8-63*: 1.2 (BKF); *07-8-64*: 7.5 (BKF); *07-8-65:* 1.10 (BKF); *07-8-68:* 1.15 (BKF); *07-8-69*: 4.7 (BKF); *07-8-72*: 1.25 (BKF); *07-8-73*: 1.25 (BKF); *07-12-16*: 17.2 (BKF); *07-12-17*: 1.18 (BKF); *07-12-18*: 7.4 (BKF); *07-12-20*: 1.24 (BKF); *08-1-1*: 2.1 (BKF); *08-1-4*: 17.3 (BKF); *08-1-6*: 17.2 (BKF); *08-1-7*: 1.6 (BKF); *08-1-11*: 17.2 (BKF); *08-1-15*: 1.5 (BKF); *08-1-16*: 2.1 (BKF); *08-1-17*: 17.3 (BKF); *08-1-18*: 1.6 (BKF); *08-1-19*: 15.1 (BKF); *08-1-20*: 1.18 (BKF); *08-1-21*: 2.1 (BKF); *08-1-22*: 17.3 (BKF); *08-2-2*: 8.1 (BKF); *08-2-5*: 3.1 (BKF); *08-2-6*: 15.1 (BKF); *08-2-10*: 11.1 (BKF); *08-2-12*: 1.1 (BKF); *08-2-14:* 15.1 (BKF); *08-2-15*: 1.6 (BKF); *08-2-19:* 1.19 (BKF); *08-2-20*: 7.6 (BKF); *08-2-21*: 2.1 (BKF); *08-2-22*: 1.25 (BKF); *08-2-24*: 1.7 (BKF); *08-2-27*: 17.1 (BKF); *08-2-28*: 7.8 (BKF); *08-2-29*: 17.3 (BKF); *08-2-30*: 17.3 (BKF); *08-2-31*: 1.6 (BKF); *08-2-33*: 15.1 (BKF); *08-2-34*: 7.6 (BKF); *08-2-35*: 1.6 (BKF); *08-3-4*: 17.1 (BKF); *08-3-7*: 15.1 (BKF); *08-3-9*: 1.27 (BKF); *08-3-10*: 17.3 (BKF); *08-3-11*: 17.3 (BKF); *08-3-13*: 15.1 (BKF); *08-3-14*: 8.1 (BKF); *08-3-15*: 6.1 (BKF); *08-3-16*: 6.1 (BKF); *08-3-18*: 10.1 (BKF); *08-3-20*: 17.3 (BKF); *08-3-21*: 15.1 (BKF); *08-3-23*: 6.1 (BKF); *08-3-24*: 1.14 (BKF); *08-3-25*: 12.1 (BKF); *08-3-27*: 2.1 (BKF); *08-3-28*: 17.2 (BKF); *08-3-29*: 17.1 (BKF); *08-3-30*: 17.2 (BKF); *08-3-32*: 1.14 (BKF); *08-3-33*: 17.2 (BKF); *08-3-34*: 1.6 (BKF); *08-3-35*: 17.2 (BKF); *08-3-36*: 17.2 (BKF); *08-3-37*: 17.1 (BKF); *08-3-40*: 17.2 (BKF); *08-4-1*: 1.19 (BKF); *08-4-2*: 2.1 (BKF); *08-4-3*: 1.19 (BKF); *08-4-4*: 4.9 (BKF); *08-4-5:* 1.27 (BKF); *08-4-6*: 3.1 (BKF); *08-5-1*: 1.6 (BKF); *08-5-2:* 1.27 (BKF); *08-5-3*: 1.6 (BKF); *08-5-4*: 1.2 (BKF); *08-5-5*: 7.6 (BKF); *08-5-6*: 17.2 (BKF); *08-5-7*: 1.12 (BKF); *08-5-8*: 2.1 (BKF); *08-5-9*: 1.6 (BKF); *08-5-10*: 17.2 (BKF); *08-6-5*: 17.2 (BKF); *08-6-6:* 17.1 (BKF); *08-6-7*: 7.6 (BKF); *08-6-8*: 7.6 (BKF); *08-6-11*: 17.2 (BKF); *08-6-13*: 17.2 (BKF); *08-6-14*: 17.1 (BKF); *08-6-16*: 2.1 (BKF); *08-6-17*: 2.1 (BKF); *08-6-27:* 13.2 (BKF); *08-6-28*: 17.3 (BKF); *08-6-29*: 17.3 (BKF); *08-6-30*: 17.3 (BKF); *08-6-36*: 2.1 (BKF); *08-6-37*: 1.12 (BKF); *08-6-38*: 1.20 (BKF); *08-6-41*: 6.1 (BKF); *08-6-44*: 5.1 (BKF); *08-6-45*: 17.1 (BKF); *08-6-46*: 17.2 (BKF); *08-6-50*: 17.1 (BKF); *08-6-52*: 17.3 (BKF); *08-6-53*: 17.1 (BKF); *08-7-2*: 1.8 (BKF); *08-7-3*: 17.3 (BKF); *08-7-5*: 1.3 (BKF); *08-7-6*: 17.1 (BKF); *08-7-7*: 17.1 (BKF); *08-7-8*: 3.2.1 (BKF); *08-7-10*: 2.1 (BKF); *08-7-11*: 15.1 (BKF); *08-7-12*: 1.7 (BKF); *08-7-13*: 1.25 (BKF); *08-7-14*: 1.30 (BKF); *08-7-15*: 1.30 (BKF); *08-7-17*: 1.22 (BKF); *08-7-19*: 1.22 (BKF); *08-7-20*: 1.7 (BKF); *08-7-22*: 1.7 (BKF); *08-7-23*: 1.23 (BKF); *08-7-24*: 13.2 (BKF); *08-7-25*: 7.5 (BKF); *08-7-27*: 1.7 (BKF); *08-7-28*: 1.25 (BKF); *08-7-29*: 1.9 (BKF); *08-7-31*: 1.19 (BKF); *08-8-1*: 7.2 (BKF); *08-8-4:* 7.7 (BKF); *08-8-5*: 1.9 (BKF); *08-8-7*: 7.7 (BKF); *08-8-12*: 5.2 (BKF); *08-8-13*: 5.2 (BKF); *08-8-14*: 15.1 (BKF); *08-8-18*: 1.8 (BKF); *08-8-19*: 2.1 (BKF); *08-8-20*: 2.1 (BKF); *08-8-21*: 2.1 (BKF); *08-8-22*: 5.1 (BKF); *08-10-1*: 1.20 (BKF); *08-10-2*: 1.20 (BKF); *08-10-3*: 1.5 (BKF); *08-10-5*: 1.9 (BKF); *08-10-6*: 1.9 (BKF); *08-10-7*: 1.5 (BKF); *08-10-8*: 1.5 (BKF); *08-10-9*: 1.1 (BKF); *08-10-10*: 1.5 (BKF); *s.n.* (BKF 101775): 13.2 (BKF); *s.n.* (BKF 101780): 1.18 (BKF); *s.n.* (BKF 109119): 1.14 (BKF); *s.n.*

(BKF 109131): 1.27 (BKF); *s.n.* (BKF 109932): 1.12 (BKF); *s.n.* (BKF 109936): 1.14 (BKF); *s.n.* (BKF 110168): 1. 32 (BKF); *s.n.* (BKF 117668): 1.20 (BKF); *s.n.* (BKF 122090): 1.18 (BKF); *s.n.* (BKF 124436): 1.18 (BKF); *s.n.* (BKF 124505): 1.17 (BKF); *s.n.* (BKF 124652): 1.18 (BKF); *s.n.* (BKF 126755): 8.1 (BKF); *s.n.* (BKF 128512): 1.5 (BKF); *s.n.* (BKF 129966): 1. 31 (BKF); *s.n.*: 1.17 (BKF); *08-11-1*: 1.31 (BKF); *08-12-10*: 1.18 (BKF); *08-12-26*: 12.1 (BKF); *09-1-1*: 4.1 (BKF); *09-1-10*: 17.2 (BKF); *09-1-2*: 1.2 (BKF); *09-1-12*: 12.1 (BKF); *09-2-1*: 2.1 (BKF); *09-2-4*: 8.1 (BKF); *09-2-7:* 1.3 (BKF); *09-2-8:* 5.2 (BKF); *09-2-11*: 5.2 (BKF); *09-2-27:* 13.2 (BKF); *09-2-32*: 4.1 (BKF); *09-3-6*: 2.1 (BKF); *09-3-7*: 17.3 (BKF); *09-3-8:* 1.19 (BKF); *09-3-9:* 17.3 (BKF); *09-3-11*: 1.12 (BKF); *09-3-12*: 17.1 (BKF); *09-3-13*: 1.18 (BKF); *09-3-14*: 7.5 (BKF); *09-3-15*: 7.5 (BKF); *09-3-17*: 1.17 (BKF); *09-3-18*: 1.17 (BKF); *09-3-19*: 17.2 (BKF); *09-3-20*: 1.6 (BKF); *09-4-1*: 18.1 (BKF); *09-4-3*: 1.18 (BKF); *09-4-4*: 18.3 (BKF); *09-4-5*: 1.31 (BKF); *09-4-6*: 1.10 (BKF); *09-4-7*: 1.10 (BKF); *09-4-8*: 17.2 (BKF); *09-4-9*: 17.2 (BKF); *09-4-10*: 1.18 (BKF); *09-4-11*: 1.18 (BKF); *09-4-12*: 1.18 (BKF); *09-4-14*: 1.18 (BKF); *09-4-15*: 5.2 (BKF); *09-4-16*: 1.12 (BKF); *09-5-2*: 1.12 (BKF); *09-5-2*: 7.6 (BKF); *09-5-6*: 1.32 (BKF); *09-5-11*: 2.1 (BKF); *09-5-21*: 4.7 (BKF); *09-6-1*: 12.1 (BKF); *09-6-2*: 12.1 (BKF); *09-6-5*: 5.2 (BKF); *09-7-2*: 17.1 (BKF); *09-7-3*: 2.1 (BKF); *09-7-7*: 1.32 (BKF); *09-8-1*: 7.12 (BKF); *09-8-2*: 1.32 (BKF); *09-8-3*: 4.5 (BKF); *09-8-6*: 1.8 (BKF); *09-8-7*: 1.2 (BKF); *09-8-8:* 1.32 (BKF); *09-8-12:* 1.32 (BKF).

Worawoot *29*: 17.3 (BKF).

Yasothon Ch. *17*: 1.14 (BKF); *38*: 15.3 (BKF).

Yonebayashi C. *93054*: 5.1 (BKF).

Yongboonkerd A. *371*: 11.2 (BK).

Zimmermann R. *120*: 17.4 (BM, K); *155*: 1.18 (BM, K); *s.n.*: 3.2.2 (K).