

## Family 188. DIPTEROCARPACEAE

### Revision:

Ashton, PS. 1982. Dipterocarpaceae. Flora Malesiana series 1, 9: 237-552.

Foxworthy, FW. 1911. Philippine Dipterocarpaceae. Philippine Journal of Science 6 (section C) Botany: 231-285, plate 34-44.

Foxworthy, FW. 1919. Philippine Dipterocarpaceae. Philippine Journal of Science 13: 163-199, plate 1, 2.

Foxworthy, FW. 1938. Philippine Dipterocarpaceae. Philippine Journal of Science 67: 241-333, plate 1-9.

### 1. Anisoptera Korthals

**Anisoptera aurea** Foxw. PJS 67 (1938) 271; --Ashton, Fl. Males. ser. 1, 9 (1982) 334. --Type: *Anisoptera curtisii* Foxw., PJS 6 c (1911) Bot. 255, pl. 41; --Merr., EPFP 3 (1923) 92; *non* Dyer ex King (1893); --Type:

LUZON: Isabel, Quezon, Laguna, Camarines Norte, POLILLO. Mixed dipterocarp forest, especially on ridges to 200m.

**Anisoptera costata** Korth., Kruidk. (1941) 67, t. 6, Fig. 1-9; --Ashton, Fl. Males. ser. 1, 9 (1982) 330, Fig. 27A-A4. --Type:

*Anisoptera mindanensis* Foxw., PJS 13 c (1918) Bot. 181; --EPFP 3 (1923) 92. --Type:

Burma, Thailand, Cambodia, S Vietnam, Peninsular Malaysia, Sumatra, W Java, Borneo (SE Kalimantan, Sabah, Brunei, NE Sarawak), Philippines.

MINDANAO (Zamboanga, one record). Primary lowland forest.

**Anisoptera thurifera** (Blanco) Blume, Ann. Mus. Bot. Lugd.-Bat. 2 (1852) 42; --EPFP 3 (1923) 92; --Ashton, Fl. Males. ser. 1, 9 (1982) 333, Fig. 27B-B4, 31. --Type:

*Anisoptera brunnea* Foxw., PJS 6 c (1911) Bot. 254; --EPFP 3 (1923) 92. --Type: FB 11292 Klemme (NY\*, US\*, iso). Luzon: Cagayan prov., Apr 1908.

#### ssp. *thurifera*

Philippines, Sulawesi, Moluccas (Morotai, Halmahera, Bačan, Obi, Aru Is.) and New Guinea.

BABUYAN ISLS (CALAYAN), LUZON (widespread in most provinces), MINDORO, TICAQ, MASBATE, SIBUYAN, PANAY, NEGROS. Dominant in evergreen and semi-evergreen primary forests below 750m; also occurring in some types of secondary forests.

Balanocarpus Beddome = Hopea

### 2. Dipterocarpus CF Gaertner

**Dipterocarpus caudatus** Foxw., PJS 13 c (1918) Bot. 177; --Merr., EPFP 3 (1923) 89; --Ashton, Fl. Males. ser. 1, 9 (1982) 305. --Type:

#### ssp. *caudatus*

LUZON: Camarines, Albay, PALAWAN (St Paul Bay National Park), MINDANAO.

Primary lowland forests. Local in everwet zone.

**Dipterocarpus eurhynchus** Miq., Sum. (1862) 485; --Ashton, Fl. Males. ser. 1, 9 (1982) 324.

*Dipterocarpus basilanicus* Foxw., PJS 13 c (1918) Bot. 179; --Merr., EPFP 3 (1923) 88. --Type:

Peninsular Malaysia (E coast), Sumatra (E Aceh, Langsa), Singkep, Banka, Borneo (W Borneo, Sarawak, Brunei) and SW Philippines.

BASILAN. Local, on undulating land in lowland primary dipterocarp forest. Rare.

**Dipterocarpus gracilis** Blume, Bijdr. (1825) 224; --Merr., EPFP 3 (1923) 89; --Ashton, Fl. Males. ser. 1, 9 (1982) 301.

*Dipterocarpus vernicifluus* (Blanco) Blanco, Fl. Filip. ed. 2 (1845) 314; --Merr., EPFP 3 (1923) 91. --Type: Andaman Isls, Chittagong, Burma, SE & Peninsular Thailand, Sumatra, Peninsular Malaysia, W Java, Borneo (Sampit and Rejang Valley eastward), Philippines.

LUZON: Zambales, Bataan (Mt Mariveles, Lamao River), Bulacan (Sibul Forest, Sitio Binalangoan), Rizal (Bosoboso; Antipolo), Quezon (Umiray), POLILLO, MINDORO, MARINDUQUE, PALAWAN (Pagdanan Range, Ibangley Brookside Hill; Quezon, Barangay Tuangan;), NEGROS: Negros Occidental, MINDANAO: Zamboanga del Norte (Duhinid), Cotabato, Davao, Surigao. Often gregarious in seasonal semi-evergreen dipterocarp forest on red soils; becoming scattered, rare, and confined to fertile red soils in everwet areas, below 800m.

**Dipterocarpus grandiflorus** (Blanco) Blanco, Fl. Filip. ed. 2 (1845) 314; --Merr., EPFP 3 (1923) 89; --Ashton, Fl. Males. ser. 1, 9 (1982) 317, Fig. 17B. --Type:

Andaman Isls, Mergui, Peninsular Thailand, Peninsular Malaysia, Singapore, NE Sumatra and adjacent islands (Simalur, Musala, Riau Archipelago, Banka, Billiton), Karimata, Borneo (SW to Sabah) and the Philippines, particularly in the more seasonal western parts.

LUZON (widespread in most provinces), MINDORO, PALAWAN, SIBUYAN, BILIRAN, SAMAR, PANAY, NEGROS, MINDANAO: Misamis, Agusan. Often common and dominant in semi-evergreen lowland and medium altitude dipterocarp forests, on small islands and on coastal hills in less seasonal part.

**Dipterocarpus hasseltii** Blume, Fl. Jav. (1828-29) 22, t. 6; --Merr., EPFP 3 (1923) 89; --Ashton, Fl. Males. ser. 1, 9 (1982) 306, Fig. 23, 24. --Type from Java.

*Dipterocarpus trinervis* Blume, Cat. Gew. Buitenz. (1823) 78; --Merr., EPFP 3 (1923) 91.

Peninsular Thailand; Malesia: around periodically dry borders of the everwet zone of the Sunda Shelf: C and N Peninsular Malaysia, Sumatra, W Java, Bali, S and E Borneo to SE Sabah.

Widespread in the Philippines. LUZON: Isabela, Nueva Ecija, Laguna, PALAWAN, NEGROS, BILIRAN, LEYTE, MINDANAO: Zamboanga, BASILAN. Primary forests at low and medium altitudes, ascending to 900m.

**Dipterocarpus kerrii** King, J. As. Soc. Beng. 62<sup>2</sup> (1893) 93; --Ashton, Fl. Males. ser. 1, 9 (1982) 305. --Type from Peninsular Malaysia (Malacca).

*Dipterocarpus cuneatus* Foxw., PJS 13 c (1918) Bot. 178; --Merr., EPFP 3 (1923) 89. --Type: FB 21469

*Dipterocarpus obconicus* Foxw., PJS 13 c (1918) Bot. 178; --Merr., EPFP 3 (1923) 90. --Type: Elmer 13498

Andaman Isls, Burma, Peninsular Thailand and Malaysia, Sumatra, Borneo (Sabah: Sandakan area) and the Philippines.

LUZON: Laguna, Quezon, Camarines, Albay, Sorsogon, MINDANAO: Agusan del Norte. On lateritic soils in seasonally dry lowland primary dipterocarp forests, usually below 400m. Frequently gregarious.

**Dipterocarpus kunstleri** King., J. As. Soc. Beng. 62, 2 (1893) 96; --Ashton, Fl. Males. ser. 1, 9 (1982) 309, Fig. 17D.

*Dipterocarpus speciosus* Brandis, J. Linn. Soc. Bot. 31 (1895) 38; --Merr., EPFP 3 (1923) 90.

Peninsular Malesia (excluding seasonal areas), N, W and SE Sumatra, Simalur, Marsala, Banka), Borneo (SE Borneo, Sabah, Brunei, Sarawak) and Philippines.

LUZON: Cagayan, Isabela, Quezon, Camarines, Albay, POLILLO, NEGROS, SAMAR, BASILAN. Primary lowland forests, on undulating or flat land, especially near streams.

**Dipterocarpus philippinensis** Foxw., PJS 13 c (1918) Bot. 179; --Merr., EPFP 3 (1923) 90; --Ashton, Fl. Males. ser. 1, 9 (1982) 301, Fig. 22. --Type:  
LUZON: Abra, Nueva Vizcaya, Bataan. Primary mixed dipterocarp forest in seasonal areas. Rare. Rojo (1999) follows Smit., Tomps. & Cheek, Kew Bull. 48 (1993) 399 in regarding this Philippine endemic species as synonymous to *D. alatus* Roxb. ex G Don.

**Dipterocarpus validus** Blume, Ann. Mus. Bot. Lugd.-Bat. 2 (1852) 36; ; --Ashton, Fl. Males. ser. 1, 9 (1982) 301, Fig. 22. --Type:

Dipterocarpus affinis Brandis, J. Linn. Soc. Bot. 31 (1895) 31; --Merr., EPFP 3 (1923) 88.  
Dipterocarpus lasiopodus Perkins, Frag. Fl. Philip, (1904) 22; --Merr., EPFP 3 (1923) 90.  
Dipterocarpus warburgii Brandis, J. Linn. Soc. Bot. 31 (1895) 32; --Merr., EPFP 3 (1923) 91.  
Borneo (Tenom in N, and in E coast of Sabah SE-wards to River Barito) and Philippines.  
LUZON: Cagayan, Isabela, Aurora, Nueva Ecija, Quezon, Camarines, MINDORO, CEBU, LEYTE, SAMAR, MINDANAO: Zamboanga, Davao, Agusan del Norte, Surigao. Common and frequently gregarious both in primary and secondary forests, low altitudes up to 300m. There is some evidence of hybridization with *D. kunstleri* in the Philippines.

#### **Dubious species:**

**Dipterocarpus orbicularis** Foxw., PJS 13 c (1918) Bot. 180; --Merr., EPFP 3 (1923) 90; --Ashton, Fl. Males. ser. 1, 9 (1982) 326.

(EPFP): Borneo. LUZON: Camarines Norte. Lowland mixed dipterocarp forest. Resembles *D. grandiflorus* Blanco in fruit and *D. gracilis* Blume in the indumentum.

#### **Additional ined. new species at PNH**

Dipterocarpus 'kulot' Gutierrez

### **3. Hopea Roxburgh**

#### **Philippine Revision:**

Gutierrez, HG. 1968. Acta Manillana 4A:

**Hopea acuminata** Merr., Govt. Lab. Publ. (Philipp.) 29 (1905) 30; --EPFP 3 (1923) 93; --Gutierrez, Act. Manil. 4A (1968) 47, Fig. 9, pl. 5; --Ashton, Fl. Males. ser. 1, 9 (1982) 420, Fig. 64a. --Type:

BABUYAN ISLS (CALAYAN), LUZON (widespread in most provinces), MINDORO, SAMAR, LEYTE, MINDANAO: Zamboanga, Misamis, Cotabato, Davao. Common in semi-evergreen and evergreen forests, 100 (300-800m) altitudes.

**Hopea basilanica** Foxw., PJS 6 c (1911) Bot. 260; --Merr., EPFP 3 (1923) 93; --Gutierrez, Act. Manil. 4A (1968) 53, Fig. 10, pl. 6; --Ashton, Fl. Males. ser. 1, 9 (1982) 425. --Type:

MINDANAO, BASILAN, SIBUTU. Primary lowland forests on undulating hills below 70m.

**Hopea brachyptera** (Foxw.) Slooten, Reinwardtia 3 (1956) 317; --Ashton, Fl. Males. ser. 1, 9 (1923) 101. --Type:

MINDANAO: Zamboanga. Primary lowland forests. Rare.

**Hopea cagayanensis** (Foxw.) Slooten, Reinwardtia 3 (1956) 318; --Ashton, Fl. Males. ser. 1, 9 (1982) 431; --Balanocarpus cagayanensis Foxw., PJS 13 c (1918) Bot. 194, t. 2; PJS 67 (1938) 285, pl. 3; --Merr., EPFP 3 (1923) 101. --Type:

LUZON: Apayao, Cagayan. Primary lowland semi-evergreen forests.

**Hopea foxworthyi** Elmer, LPB 4 (1912) 1469; --Gutierrez, Act. Manil. 4A (1968) 32, Fig. 6, pl. 2; --

Ashton, Fl. Males. ser. 1, 9 (1982) 397; --Merr., EPFP 3 (1923) 94, as synonym of *H. pierrei*.  
--Type:

**SIBUYAN.** Locally common on red sticky volcanic soil along ridges at 600-700m, in seasonal semi-evergreen forest. Collections cited by Foxworthy and Merrill from islands other than Sibuyan belong to *H. malibato*.

**Hopea malibato** Foxw., LPB 6 (1913) 1953; --EPFP 3 (1923) 93; --Gutierrez, Act. Manil. 4A (1968) 39, Fig. 7, pl. 3; --Ashton, Fl. Males. ser. 1, 9 (1982) 403, Fig. 67, 68. --Type:

*Hopea dalingdingan* Gutierrez, Kalikasan 5 (1976) 92, Fig. 1. --Type:

*Hopea woodiana* Gutierrez, Act. Manil. 4-A, 2 (1968) 42, Fig. 8, pl. 4. --Type:

**LUZON:** Quezon, **NEGROS, MINDANAO:** Agusan del Norte. Primary evergreen dipterocarp forests in aseasonal areas. Ascending up to 600m.

**Hopea mindanensis** Foxw., PJS 6 c (1911) Bot. 261; --Merr., EPFP 3 (1923) 93; --Gutierrez, Act. Manil. 4A (1968) 63, Fig. 12, pl. 8; --Ashton, Fl. Males. ser. 1, 9 (1982) 435. --Type:

**MINDANAO:** Zamboanga. Primary lowland evergreen forests. Frequent.

**Hopea philippinensis** Dyer, J. Bot. 16 (1878) 100; --Merr., EPFP 3 (1923) 94; --Gutierrez, Act. Manil. 4A (1968) 65, Fig. 13, pl. 9; --Ashton, Fl. Males. ser. 1, 9 (1982) 434, Fig. 74 A-A4. --Type:

**LUZON:** Laguna, Quezon, Camarines, Albay, **SAMAR, BILIRAN, LEYTE, PANAY, NEGROS, SAMAR, MINDANAO:** Zamboanga, Lanao, Agusan. Primary evergreen forests on hills in aseasonal areas, ascending to 500m, often common.

**Hopea plagata** (Blanco) Vidal, Sinopsis Atlas (1883) t. 15A; Rev. Pl. Vasc. Filip. (1886) 62; --Merr., EPFP 3 (1923) 94; --Gutierrez, Act. Manil. 4A (1968) 55, Fig. 11, pl. 7; --Ashton, Fl. Males. ser. 1, 9 (1982) 423, Fig. 72A-A4.

**NE Borneo and the Philippines.**

**LUZON:** Cagayan, Nueva Vizcaya, Nueva Ecija, Pangasinan, Bulacan, Bataan, Rizal, Laguna, Quezon, Camarines, Sorsogon, **MINDORO, TABLAS, BOHOL, MINDANAO, BASILAN, TAWI-TAWI.** Common in semi-evergreen seasonal forests at low and medium altitudes, often dominant.

**Hopea quisumbingiana** Gutierrez, Act. Manil. 4-A, 2 (1968) 31, Fig. 5, pl. 1; --Ashton, Fl. Males. ser. 1, 9 (1982) 398. --Type: BS 1623 Ramos (GH, iso). Samar, Apr 1914.

**SAMAR.** Low altitude everwet primary forest. Known only from the type collection.

**Hopea rudiformis** Ashton, Gard. Bull. Sing. 31 (1978) 30; Fl. Males. ser. 1, 9 (1982) 409; --Soejarto, et al., Prelim. Checklist Fl. Pl. Palawan (1995). --Type:

**Borneo (SE and W), SW Philippines.**

**PALAWAN** (Narra, Marihuera, Narra-Aboabo Road, Soejarto et al. 6587, A, F, PNH).

**Hopea samarensis** Gutierrez, Kalikasan 4 (1975) 236, Fig. 1; --Ashton, Fl. Males. ser. 1, 9 (1982) 427. --Type:

**SAMAR.** Mixed dipterocarp forests in moist lowland valleys.

#### **Additional ined. new species at PNH**

*Hopea reynosoi* Gutierrez, ined. --Voucher: PNH 125470 Reynoso & de la Cruz (PNH\*)

**SAMAR:** Eastern Samar prov. (Balangiga, Sta. Rosa).

*Hopea santosii* Gutierrez, ined. --Voucher: PNH 125468 Reynoso & de la Cruz (PNH\*)

**SAMAR:** Eastern Samar prov. (Balangiga, Sta. Rosa).

## Isoptera Scheffer =Shorea

### 4. Parashorea Kurz

**Parashorea malaanonan** (Blanco) Merr., Spec. Blancoanae (1918) 271; --Merr., EPFP 3 (1923) 100; --Ashton, Fl. Males. ser. 1, 9 (1982) 383, Fig. 54, 57, 58.

Borneo (Brunei to Sabah, SE to Berau and Nunukan), Philippines.

LUZON: Nueva Ecija, Bulacan, Rizal, Laguna, Quezon, Camarines, Albay, Sorsogon, POLILLO, CATANDUANES, MASBATE, PANAY, NEGROS, CEBU, LEYTE, SAMAR, MINDANAO. Primary lowland forests, common.

#### **Doubtful species:**

**Parashorea warburgii** Brandis, J. Linn. Soc. Bot. 31 (1895) 105; --Merr., EPFP 3 (1923) 100; --Ashton, Fl. Males. ser. 1, 9 (1982) 387. --Type:

(EPFP): MINDANAO: Agusan del Norte, Davao. Primary lowland forests.

“Described from a collection of Warburg from Mindanao, consisting of a single fruit undistinguishable from *P. malaanonan*. FOXWORTHY associated the name with pubescent-leaved forms from the Philippines otherwise resembling *P. malaanonan* though these may represent *P. tomentella* of Borneo...” --Ashton, Fl. Males. ser. 1, 9 (1982) 387.

Pentacme A de Candolle =Shorea sect. Pentacme (DC) Ashton

### Shorea Roxburgh ex CF Gaertner

**Shorea almon** Foxw., PJS 67 (1938) 313; --Ashton, Fl. Males. ser. 1, 9 (1982) 507, Fig. 7.

*Shorea eximia* Merr., EPFP 3 (1923) 96, *non* (Miq.) Scheff., 1870.

NE Borneo (Sarawak, Sabah, NE Kalimantan), Philippines.

LUZON: Bataan, Quezon, Camarines, Albay, Sorsogon, NEGROS, SAMAR, MINDANAO: Zamboanga, Misamis, Lanao, Agusan, Surigao, BASILAN. Primary forest on undulating hills at low altitudes, on clay soil. According to Ashton (1982), particularly variable in Mindanao where the leaves are much smaller and the tomentum more sparse and scabrid in some trees.

**Shorea assamica** Dyer, Fl. Br. Ind. 1 (1874) 307; --Ashton, Gard. Bull. Sing. 31 (1978) 43; Fl. Males. ser. 1, 9 (1982) 491.

**ssp. koordersii** (Brandis) Sym., Gard. Bull. S.S. 9 (1938) 331; --Ashton, Fl. Males. ser. 1, 9 (1982) 491. --Type:

Sulawesi (widespread), Moluccas (Sula Isls, Bacan & Obi Is., ?Ambon), Philippines:

LUZON (*vide* Ashton, 1982), **but where?**, MINDANAO: Surigao del Norte and Sur.

**ssp. philippinensis** (Brandis) Sym., Gard. Bull. S.S. 9 (1938) 331; --Ashton, Fl. Males. ser. 1, 9 (1982) 492; --*Shorea philippinensis* Brandis, J. Linn. Soc. Bot. 31 (1895) 88; --Merr., EPFP 3

(1923) 98; --Foxw., PJS

SE Borneo and the Philippines. LUZON: Cagayan, Isabel, Bulacan, Laguna, Quezon, Camarines, TICA, LEYTE, MINDANAO: Lanao, Davao, Agusan del Norte, BASILAN. Primary semi-evergreen and evergreen lowland forests in seasonal and relatively non-seasonal regions.

**Shorea astylosa** Foxw., PJS 13 c (1918) Bot. 188, pl. 5; *ibid.* 67 (1938) 297; --EPFP 3 (1923) 96; --Ashton, Fl. Males. ser. 1, 9 (1982) 460. --Type:

LUZON: Quezon, Camarines, NEGROS, BILIRAN, SAMAR, MINDANAO: Zamboanga, Davao, Agusan. Local in primary lowland evergreen dipterocarp forests.

**Shorea contorta** Vidal, Sinopsis Atlas (1883) 15, t. 15E; Rev. Pl. Vasc. Filip. (1886) 88; --Merr., EPFP 3 (1923) 95; --Ashton, Fl. Males. ser. 1, 9 (1982) 467, Fig. 84. --Type:

*Pentacme contorta* (Vidal) Merr. & Rolfe, PJS 3 c (1908) Bot. 115; --Merr., EPFP 3 (1923) 95; --Foxw., PJS 67 (1938) 287.

*Pentacme mindanensis* Foxw., PJS 13 c (1918) Bot. 185; *ibid.* 67 (1938) 289; --Merr., EPFP 3 (1923) 95. --Type:

BABUYAN ISLS (CALAYAN), LUZON (in most provinces), POLILLO, MINDORO, SIBUYAN, MARINDUQUE, MASBATE, NEGROS, LEYTE, SAMAR, MINDANAO: Zamboanga, Lanao, Agusan, BASILAN. Common in primary lowland forests from semi-seasonal to everwet areas, in the former often semi-gregarious.

**Shorea falciferoides** Foxw., PJS 13 c (1918) Bot. 189; *ibid.* 67 (1938) 296; --Ashton, Fl. Males. ser. 1, 9 (1982) 458, Fig. 77. --Type:

**ssp. falciferoides**

*Shorea belangeran* (*non* Burcke) Vidal, Phan. Cuming. Philipp. (1885) 97; --Merr., EPFP 3 (1923) 98; --Ashton, Fl. Males. ser. 1, 9 (1982) 458. --Type:

*Shorea gisok* Foxw., PJS 67 (1938) 294, pl. 4; --Type:

LUZON: Pangasinan, Zambales, Bulacan, Quezon, Camarines, Albay, SAMAR, CEBU, SIBUYAN, LEYTE, MINDANAO: Zamboanga, Agusan, BASILAN. Mixed dipterocarp forests to 1000m, in moderately seasonal to everwet areas. According to Ashton (1982), specimens from the more seasonal NE Luzon (*S. falciferoides*) have more or less smaller leaves than other Philippine collections (formerly named *S. gisok*). The latter is more or less confined to ridgetops in the everwet areas.

**Shorea guiso** (Blanco) Blume, Ann. Mus. Bot. Lugd.-Bat. 2 (1852) 34; --Merr., EPFP 3 (1923) 97; --Foxw., PJS 67 (1938) 292; --Ashton, Fl. Males. ser. 1, 9 (1982) 447.

Peninsular and SE Thailand, S Vietnam, Peninsular Malaysia, Sumatra (Aceh, Tapanuli, Palembang), Borneo (mainly in E), Philippines.

LUZON (widespread in most provinces), MINDORO, MASBATE, PANAY, NEGROS, LEYTE, SAMAR, MINDANAO, BASILAN. Primary lowland forests on red soils, most common in slightly seasonal areas.

**Shorea hopeifolia** (Heim) Sym., Gard. Bull. S.S. 8 (1933) 150, pl. 46; --Ashton, Fl. Males. ser. 1, 9 (1982) 482.

*Shorea kalunti* Merr., PJS 26 (1925) 475; EPFP 4 (1925) 250; --Foxw., PJS 67 (1938) 307. --Type:

Sumatra, Peninsular Malaysia (seasonal areas excepted), Borneo, Philippines: MINDANAO: Zamboanga, Lanao, Davao. Primary forests on fertile clay rich soil on undulating terrain and hills below 600m altitudes.

**Shorea malibato** Foxw. *in* Elmer, LPB 6 (1913) 1955; --Merr., EPFP 3 (1923) 97; --Foxw., PJS 67 (1938) 298; --Ashton, Fl. Males. ser. 1, 9 (1982) 460. --Type:

LUZON: Quezon, Camarines, LEYTE, MINDANAO: Zamboanga, Agusan del Norte. Local in lowland primary forests in aseasonal areas, altitude c. 450m in Agusan del Norte.

**Shorea negrosensis** Foxw., PJS 6 c (1911) Bot. 274, t. 44; *ibid.*, 67 (1938) 315; --Merr., EPFP 3 (1923) 96; --Ashton, F

LUZON: Cagayan, Isabela, Aurora, Nueva Ecija, Laguna, Quezon, Camarines, Albay, Sorsogon, POLILLO, NEGROS, CEBU, LEYTE, BILIRAN, SAMAR, MINDANAO: Zamboanga, Lanao, Cotabato, Bukidnon, Davao, Surigao, Agusan, BASILAN. Primary evergreen and semi-evergreen lowland forests, common and often gregarious.

**Shorea ovata** Dyer ex Brandis, J. Linn. Soc. Bot. 31 (1895) 91; --Ashton, Fl. Males. ser. 1, 9 (1982) 545, Fig. 114. --Type:

*Shorea agsaboensis* WL Stearn, Brittonia 17 (1965) 36, Fig. 1-2; --Rojo, Pterocarpus 3 (1977) 70, fig; --Type:

Sumatra (W coast), Peninsular Malaysia, Borneo (Kapuas hinterland, Sarawak to SW Sabah, SE Borneo), Philippines.

MINDANAO: Misamis Oriental, Agusan del Norte (Tungao), Primary forests at medium elevations to c. 900m.

**Shorea palosapis** (Blanco) Merr., Sp. Blancoanae (1918) 271; EPFP 3 (1923) 98; --Ashton, Fl. Males. ser. 1, 9 (1982) 517.

*Shorea squamata* Benth. & Hook.f. [Gen. Pl. 1 (1862) 193] ex DC, Prodr. 16, 2 (1868) 632; --Foxw., PJS 67 (1938) 310. --Type:

LUZON: Ilocos Norte, Cagayan, Isabela, Nueva Ecija, Bulacan, Rizal, Laguna, Quezon, Camarines, Albay, Sorsogon, POLILLO, MINDORO, MARINDUQUE, LEYTE, SAMAR, MINDANAO: Zamboanga, Misamis, Bukidnon, Davao, Agusan, Surigao, BASILAN.

Primary lowland evergreen forests on fertile well-drained soil. In Mindanao ascending to 1000m. In some regions dominant.

**Shorea polita** Vidal, Sinopsis Atlas (1883) 15, t. 15D; --Merr., EPFP 3 (1923) 98; --Foxw., PJS 67 (1938) 304; --Ashton, Fl. Males. ser. 1, 9 (1982) 487, Fig. 92. --Type:

*Shorea mindanensis* Foxw., PJS 13 c (1918) Bot. 192; --Merr., EPFP 3 (1923) 97. --Type:

LUZON: Cagayan, Ilocos Sur, Pangasinan, Zambales, Rizal, Nueva Ecija, Quezon, MINDORO, MINDANAO: Zamboanga, Davao, BASILAN. Apparently scattered in primary semi-evergreen and evergreen lowland forests.

**Shorea polysperma** (Blanco) Merr., Govt. Lab. Publ. (Philipp.) 27 (1905) 22; --Merr., EPFP 3 (1923) 99; --Foxw., PJS 67 (1938) 309; --Ashton, Fl. Males. ser. 1, 9 (1982) 514, Fig. 7.

*Shorea teysmanniana* Foxw., PJS 6 c (1911) Bot. 279, *non* Dyer ex Brandis (1885); --Merr., EPFP 3 (1923) 99; --Type:

BABUYAN ISLS (CALAYAN), LUZON: Cagayan, Ilocos Norte, Pangasinan, Nueva Ecija, Bulacan, Zambales, Bataan, Laguna, Quezon, Camarines, Albay, Sorsogon, POLILLO, MINDORO, PANAY, NEGROS, CEBU, BILIRAN, LEYTE, SAMAR, MINDANAO: Zamboanga, Misamis, Lanao, Cotabato, Bukidnon, Davao, Agusan, Surigao, BASILAN. Often common in lowland and medium altitude primary forests, ascending to 1000m (exceptionally to 1200m).

**Shorea seminis** (Vriese) Slooten in Merr., Pl. Elm. Born. (1929) 204; --Ashton, Fl. Males. ser. 1, 9 (1982) 451.

*Isoptera borneensis* Scheff. ex Burck, Ann. Jard. Bot. Buitenz. 6 (1887) 222, t. 8; --Merr., EPFP 3 (1923) 101. --Type:

Borneo and the and S Philippines (*vide* Ashton, 1982). Merrill (1923) also cites Malay Peninsula and Banka.

MINDANAO: Zamboanga. Primary lowland forests.

**Shorea virescens** Parijs, Fedde Rep. 33 (1933) 244; --Rojo, Kalikasan 5 (1976) 99, Fig. 1; --Ashton, Fl. Males. ser. 1, 9 (1982) 492.

Borneo and the Philippines.

SAMAR, MINDANAO: Davao del Norte, Surigao del Sur. Flat and undulating terrains and low hills below 500m altitudes.

Additional ined. new species at PNH

Shorea arsorianoii Gutierrez

## Vatica Linnaeus

**Vatica mangachapoi** Blanco, Fl. Filip. (1837) 401; --Merr., EPFP 3 (1923) 101; --Ashton, Fl. Males. ser. 1, 9 (1982) 364. --Type:

**ssp. mangachapoi**

Peninsular Thailand to N Peninsular Malaysia, Borneo (Sarawak, Brunei, E Sabah), Philippines.

CAMIGUIN DE BABUYANES, LUZON (widespread in most provinces), LEYTE, SAMAR, MINDANAO: Lanao, Davao. Primary lowland and medium altitude forests, ascending to 800m.

**ssp. obtusifolia** (Elmer) Ashton, Gard. Bull. Sing. 31 (1978) 23; Fl. Males. ser. 1, 9 (1982) 365; --*Vatica obtusifolia* Elmer, LPB 4 (1912) 1471; --Merr., EPFP 3 (1923) 102. --Type: Elmer 12963 Borneo (E Sabah) and SW Philippines.

PALAWAN. Primary lowland forests. According to Ashton, a species with much local variation especially in the Philippines. Forms approaching both *V. odorata* ssp. *mindanensis* and *V. pachyphylla* occur and suggest hybridization.

**Vatica maritima** Slooten, Bull. Bot. Gard. Buitenz. 3, 17 (1942) 245, Fig. 32; --Ashton, Fl. Males. ser. 1, 9 (1982) 359. --Type:

Borneo (NE Kalimantan; Brunei; W Sabah) and S Philippines.  
PALAWAN (Taytay, NE foot of Mt Capoas).

**Vatica odorata** (Griff.) Sym., J. Mal. Br. R. As. Soc. 19 (1941) 156; --Ashton, Gard. Bull. Sing. 22 (1967) 263; *ibid.* 31 (1978) 23; Fl. Males. ser. 1, 9 (1982) 360.

**ssp. mindanensis** (Foxw.) Ashton, Gard. Bull. Sing. 22 (1967) 263; --*Vatica mindanensis* Foxw. in Elmer, LPB 6 (1913) 1957; --Merr., EPFP 3 (1923) 102. --Type:

Borneo (Kapas hinterland; Sarawak to Crocker Range; Tawau), Philippines.  
LUZON: Sorsogon, LEYTE, MINDANAO: Zamboanga, Agusan. Primary lowland and medium altitude forests, ascending to 1100m.

**Vatica pachyphylla** Merr., PJS 13 c (1918) Bot. 311; --Merr., EPFP 3 (1923) 102; --Ashton, Fl. Males. ser. 1, 9 (1982) 363. --Type: FB 27102 Alhambra (PNH, holo, possibly lost; photo in Foxworthy, 1938). Luzon: Camarines Norte prov., Paracale.

LUZON: Cagayan; Quezon, Camarines Norte, POLILLO. Scattered in aseasonal, primary dipterocarp forests below 80m altitudes.

**Vatica rassak** (Korth.) Blume, Ann. Mus. Bot. Lugd.-Bat. (1852) 31, incl. var. *subcordata* Blume; --Ashton, Gard. Bull. Sing. 31(1978) 20; Fl. Males. ser. 1, 9 (1982) 353, Fig. 44.

Borneo (E of Rejang Valley & Sampit, commonest on E coast), SW Philippines, Sulawesi, Moluccas (Sula Is., Morotai, Halmahera, Bacan, Obi Is., Aru Is.), New Guinea, Sudest Is.

TAWI-TAWI.

**Vatica umbonata** (JD Hook.) Burck, Ann. Jard. Bot. Buitenz. 6 (1887) 232; --Ashton, Fl. Males. ser. 1, 9 (1982) 349, Fig. 41, 42A-A3.

**ssp. umbonata**

*Vatica blancoana* Elmer, LPB 4 (1912) 1473; --Merr., EPFP 3 (1923) 101. --Type:

Peninsular Malaysia, W and N Borneo, SW Philippines.

PALAWAN (Mt Pulgar), MINDANAO: Zamboanga, BASILAN. Primary lowland and



medium altitude forests.

**Incertae sedis**

**Vatica elliptica** Foxw., PJS 67 (1938) 329; --Ashton, Fl. Males. ser. 1, 9 (1982) 369. --Type: MINDANAO: Zamboanga, twice collected. Mature fruit not known.

Additional ined. new species at PNH

*Vatica rojoana* Gutierrez