

BURSERACEAE

by

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Trees; the inner bark always provided with resiniferous ducts. Leaves alternate, imparipinnate or 1—3-foliolate. Stipules wanting. Inflorescence consisting of raceme-like panicles. Flowers hermaphrodite or polygamodioecious, actinomorphic. Sepals 3—5, free or connate. Petals 3—5, free, deciduous. Stamens usually obdiplostemonous; filaments free and inserted either below the disk or on its margin; anthers introrse with longitudinal dehiscence. Disk intrastaminal or rarely extrastaminal. Ovary superior, 2—5-locular. Ovules 1—2 in each locule, epitropous, pendulous. Fruit a drupe with free or more or less connate, always 1-seeded pyrenes. Seeds without endosperm. Embryo straight and curved.

About 600 species in 20 genera in the tropics.

Bursera Jacquin ex Linnaeus, Spec. Plant. ed. 2. 471. 1762 nom. cons. 4150

Trees, completely deciduous during the dry season; bark smooth or rough, the older bark peeling off in thin papery sheets. Leaves alternate and usually crowded at the end of the branches, imparipinnate or 1—3-foliolate; leaflets opposite, membranaceous to coriaceous, petiolulate to sessile, the margin entire or toothed. Inflorescence consisting of axillary, raceme-like panicles usually appearing just before or simultaneous with the new leaves. Flowers small, 3—5-merous, usually functionally unisexual. Sepals 3—5, connate at least at the base. Petals 3—5, whitish to yellow, spreading and recurved. Stamens 6—10; filaments subulate, free, inserted at the base of the disk; anthers oblong, dorsifixed, smaller and abortive in pistillate flowers. Ovary ovoid, 2—3-locular, 2—3-lobed, sessile, small and abortive in staminate flowers; style short; stigma capitate, 2—3-lobed. Ovules 2 in each locule. Fruit drupaceous, subglobular to ellipsoid or obovoid, 2—3-angled, resinous, exocarp and mesocarp coriaceous, dehiscing at maturity by 2—3 valves; pyrenes usually one.

Perhaps about 100 species in tropical and subtropical America.

Key to the species:

1. Leaf-rhachis winged..... *B. tomentosa*
Leaf-rhachis not winged..... 2

2. Leaves 5—7-foliolate; leaflets long-acuminate, membranaceous to slightly coriaceous, petiolules 5—30 mm long; bark reddish-brown. *B. simaruba*
 Leaves 1—5-foliolate, leaflets abruptly acuminate, coriaceous, petiolules 5—8 mm long; bark greyish or reddish-grey. *B. bonairensis*

***Bursera tomentosa* (Jacq.) Triana & Planch.**

TRIANA & PLANCHON, Ann. Sci. Nat. Bot. Sér. 5. 14: 304. 1872; BOLDINGH, Fl. Ned. W. Ind. Eil. 235. 1913; Fl. D.W. Ind. Isl. 2: 48. 1914; ARNOLDO, Zakflora 26. 1954; Zakflora 98. 1964; — *Elaphrium tomentosum* JACQUIN, Enum. Syst. Plant. Carib. 19. 1760; — *Terebinthus tomentosa* (JACQUIN) W. F. WIGHT, in ROSE, Contr. U.S. Nat. Herb. 10: 122. 1906.

Large tree, up to 10 m high, completely deciduous; trunk up to 80 cm in diam., bark reddish- to pale-brown, smooth; branches large and often crooked, glabrate; branchlets yellowish tomentose. Leaves imparipinnate, petiolate, crowded at the end of the branches or short-shoots; leaflets 5—9 (—11), elliptic, ovate-elliptic or lanceolate-elliptic, 2.5—6.5 × 1.5—2.5 cm, tomentose and rather pale beneath, less pubescent above, margin crenate, lateral leaflets rounded to acute at the apex, obtuse and inequilateral at the base, sessile or short-petiolulate, the middle pairs usually largest, terminal leaflets acute at apex and base; rachis with elliptic to oblanceolate wings between the leaflets; petiole canaliculate, tomentose, up to 4 cm long, not winged or in the upper part only. Inflorescence tomentose, the functionally male panicles 1 cm long, the females 2—6.5 cm in fruit. Bracts ovate, acuminate, 1.3—1.5 cm long. Bracteoles less than 0.5 mm. Flowers 4-merous; pedicels distinctly tomentose, 3—6 mm long. Staminate flowers with 4 sepals, connate at the base, ovate, c. 1 mm long, tomentose; petals 4, ovate, pubescent, 1.5 mm long and less than 1 mm wide, slightly thickened and incurved at the apex; stamens 8; filaments less than 1 mm long, those opposite the sepals longer; disk 8-lobed. Female flowers with 4 sepals, acute, 2—3 mm long, persistent in fruit; petals as in the male flowers; staminodia 8, smaller than the petals; ovary ovoid, 3-locular, c. 2.5 mm high; style short, stigma 2-lobed. Fruits obovoid, glabrous, copper-red when mature and drying brown, about 7 mm long and 5—7 mm in diam., dehiscing by 2 valves; pyrenes 1, 1-seeded, bony, ovoid-lenticular, whitish. Seeds black.

Costa Rica, Panama, Colombia, Venezuela, Aruba, Bonaire, and Curaçao.

Rather common tree in limestone and diabase areas.

Vernacular name: takamahak (Leeward Group).

ARUBA: Rooi Taki (Arnoldo 229, st. Dec.); slope of Hooiberg (Boldingh 6367, st. Dec.); calcareous soil near Oranjestad (Boldingh 6240, st. Dec. [L,U]).

BONAIRE: neighbourhood of Rincón (Boldingh 7110, st. Feb.); Soebi Blancoe (Arnoldo 526, fl. July); Seroe Montagne (Arnoldo 522, fl. & fr. July; Stoffers 877, st. Dec.); Angola (Stoffers 825, fl. & fr. Nov.; 822, fl. Nov.); Seroe Grita Kabai (Stoffers 854, fl. Dec.); Washington Plantation (Stoffers 670, fl. Nov.); Bolivia Plantation (Suringar s.n., fr. Feb. [L]).

CURAÇAO: Santa Barbara Plantation (Stoffers 410, fl. Nov.); Santa Catharina (Britton & Shafer 3146, st. March); calcareous hills near Fort Nassau (Boldingh 4695, fl. Oct.); Siberië (Arnoldo 1069, fl. June); Rooi Beroe (Arnoldo 1953, st. Feb.; Stoffers 212, fl. Oct.); Grote

Berg (Stoffers 335, fl. Oct.); Malpais (Stoffers 293, fl. Oct.); near Veeris (Suringar s.n., st. Jan. [L]); Savonet (Suringar s.n., st. Jan. [L]); Ronde Klip (Stoffers 1251, st. Dec.).

***Bursera simaruba* (L.) Sarg.**

SARGENT, Gard. & For. 3: 260. 1890; URBAN, Symb. Ant. 4: 324. 1905; BOLDINGH, Fl. D.W. Ind. Isl. 1: 103. 1909; JOHNSTON, Proc. Bost. Soc. Nat. Hist. 34(7): 226. 1909; BOLDINGH, Fl. Ned. W. Ind. Eil. 235. 1913; Fl. D.W. Ind. Isl. 2: 48. 1914; URBAN, Symb. Ant. 8: 329. 1920; FAWCETT & RENDLE, Fl. Jamaica 4(2): 205, fig. 68. 1920; WILLIAMS, Fl. Trinidad & Tobago 1: 153. 1929; LEON & ALAIN, Fl. Cuba 2: 407. 1951; ARNOLDO, Zakflora 25. 1954, quod nomen; Zakflora 98. 1964, quod nomen; GOODING *et al.*, Fl. Barbados 232, fig. 14. 1965; ADAMS, Flowering plants of Jamaica 392. 1972; FOURNET, Fl. Guadeloupe & Martinique 1074, fig. 521. 1978; — *Pistacia simaruba* LINNAEUS, Spec. Plant. 1026. 1753; — *Bursera gummifera* LINNAEUS, Spec. Plant. ed. 2. 471. 1762; GRISEBACH, Fl. Br. W. Ind. Isl. 173. 1859 [‘1864’]; QUESTEL, Fl. Isl. St. Bartholomew 132. 1941; — *Terebinthus simaruba* (L.) W. F. WIGHT in ROSE, Contr. U.S. Nat. Herb. 10: 122. 1906; — *Elaphrium simaruba* (L.) ROSE, North Am. Fl. 25: 246. 1911; BRITTON & MILLSAUGH, Bahama Fl. 212. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 461. 1924.

A large tree, up to 10 m tall, completely deciduous; trunk up to 80 cm in diam.; bark reddish-brown or copper-coloured, shiny, thin, peeling off in thin papery flakes and then exposing a smooth bright-green layer; branches large and often crooked; branchlets glabrous or rarely yellowish-woolly, becoming reddish-brown, covered with yellowish lenticels and conspicuously marked by large, elevated, cordate leaf-scars. Leaves imparipinnate or unifoliolate and then often on lateral short-shoots, petiolate; leaflets 3–7 (–9), long-acuminate at the apex, inequilateral at the base, membranaceous to slightly coriaceous, conspicuously lanate when young to nearly glabrate in age, green to dark-green and shiny above, paler beneath, the laterals opposite, broadly ovate to ovate-oblong, 3–8 × 1.5–5 cm, the terminals obovate and larger than the laterals; petiolules 5–30 mm long, pubescent to glabrous; petioles puberulent at the base and sparingly pubescent above or glabrous to yellowish-woolly in the lower portion, 7–11 cm long. Inflorescence consisting of terminal or lateral panicles, the functionally male ones up to 30 cm long and longer than the leaves, the functionally females up to 10 cm long and about as long as the leaves. Bracts ovate, acuminate, 1.5 mm long and 0.7 mm wide at the base. Bracteoles less than 0.5 mm long. Staminate flowers with shallowly 5-lobed calyx, the lobes less than 1 mm long; petals 3–5, ovate-elliptic, acute and incurved at the apex, 2–2.5 × 1 mm; stamens 6–10, about as long as the petals; filaments 1.5 mm long, widened near the base; anthers 1 mm long; disk 5-lobed; pistillode very small and surrounded by the disk. Female flowers with (3–) 5-lobed calyx, petals 3–5, ovate, acute and incurved at the apex, 2 × 1 mm; staminodia 6–10, about half as long as the petals; ovary ovoid, 3-locular, c. 2 mm high; style short; stigma 3-lobed. Fruits subglobose, pointed at both ends, 3-angled, reddish-brown when mature and drying dark-brownish, 8–13 × 7–9 mm, opening by 3 valves; pyrenes 1 or rarely 2, 3-angled, bony, lenticular-ovoid, pinkish to whitish, attached to the pedicel by a persistent whitish column of c. 2 mm length.

From coastal north-eastern Mexico through southern Florida and Central America to Colombia and Venezuela; West Indies.

Common in limestone and diabase vegetations, also frequent in the islands of the Windward Group, especially in the drier parts.

Vernacular names: palu di sia corrá (Leeward Group)
gum tree, balsam tree, lime tree (Windward Group).

ARUBA: calcareous soil near San Nicolas (Boldingh 6492, st. Jan.); Rooi Taki (Arnoldo 239, st. Dec.).

BONAIRE: Bolivia Plantation (Stoffers 671, fl. & fr. Nov.; 672, fr. Nov.; Boldingh 7273, fr. Feb.); Lac (Stoffers 932, st. Dec.); Kibra Montagne (Arnoldo 524, fl. July); Montagne (Stoffers 896, fr. Dec.); along road from Kralendijk to Rincón (Stoffers 839, fl. Dec.).

CURAÇAO: Grote Berg (Stoffers 333, fl. & fr. Oct.); Santa Marta Baai (de Wilde 93a, fr. Ap. [L]); from Anthonie Berg to the northern seashore (Boldingh 5121, st. Nov.); road near Blein (Boldingh 4751, st. Oct.); roadside near Hato (Britton & Shafer 3103, st. March); hill near Rooi Behoenda (Boldingh 5526, fl. & fr.); calcareous hills near Fort Nassau (Boldingh 4690, st. Oct.); from Cas Chiquito to Veeris Berg (Boldingh 4715, st. Oct.).

SABA: Great Hill, 300 m (Stoffers 3197, fl. May); gut near Devilshand (Boldingh 2078, fr. July); The Bottom (Arnoldo 884, fl. Aug.).

ST. EUSTATIUS: near Tumble Down Dick Bay (Boldingh 146, fl. May); slope of The Quill near White Wall (Boldingh 1182, st. June); seashore near Saddle (Boldingh 1652, fl. & fr. July).

ST. MARTIN: Vineyard Hill, 40 m (Stoffers 4514, fr. Aug.); Marigot road (Boldingh 2819, st. Sept.); without loc. (Suringar s.n., fl., fr. May [L]).

***Bursera bonariensis* Bold.**

BOLDINGH, Fl. Ned. W. Ind. Eil. 235. 1913; Fl. D.W. Ind. Isl. 2: 48. 1914; ARNOLDO, Zakflora 25. 1954, quod nomen; Zakflora 97. 1964, quod nomen.

Tree, strongly resembling *Bursera simaruba* but differing from this species in: bark commonly greyish or reddish-grey; leaves 1–5-foliolate, coriaceous, distinctly veined beneath, inequilateral; the lateral leaflets ovate to broadly ovate or broadly oblong-ovate, 7–14 × 3–8 cm, abruptly acuminate at the apex, rounded to slightly cordate at the base, the terminal leaflets broadly ovate, roundish or rarely obovate and then the greatest width not closed to the top, abruptly acuminate; petiolules 3–8 mm long; petioles c. 10 cm long, sometimes yellowish woolly near the base and with scattered white hairs towards the top.

Aruba, Bonaire, and Curaçao.

Not common species, mainly in the limestone area.

Vernacular names: palu di sia blancu, palu di sia dushi, palu di sia machu (Leeward Group).

ARUBA: road near Ajó (Boldingh 6345, st. dec.); calcareous hills near Savaneta (Boldingh 6545, st. Jan).

BONAIRE: Montagne (Stoffers 874, fl. Jan.; 882, fr. Jan.); calcareous plateau of Bolivia (Boldingh 7273, fr. Feb.); slope of Macutacao (Boldingh 7126, fr. Jan.; Type!); Hobau (Stoffers 1015, fr. Dec.).

CURAÇAO: Scherpenheuvel (Arnoldo 1996, st. March).