

FLORA DA RESERVA DUCKE, AMAZONAS, BRASIL: RHABDODENDRACEAE

Ghilleen T. Prance¹

Rhabdodendraceae Prance, Bull. Jard. Bot. Brux. 38: 141-142. 1968.

Rutaceae tribus Rhabdodendron Huber, Bol. Mus. Emilio Goeldi 5: 425. 1909.

Rutaceae subfam. Rhabdodendroideae Engl., in Engler & Prantl, Nat. Pflanzenfam. ed. 2. 19a: 213-357. 1931.

Prance, G. T. 1972. Rhabdodendraceae. Fl. Neotrop. Monograph 11: 1-21.

Shrubs or small **trees**. **Leaves** entire, alternate, gland-dotted, coriaceous, with small peltate hairs on the undersurface; stipules small, subulate or obscure.

Inflorescence of supra-axillary racemose panicles or racemes; bracts and bracteoles small and reduced to scales. **Flowers** hermaphrodite; receptacle broad, slightly concave; calyx very short, the lobes 5 or indistinct; petals 5, caducous, sepaloid, oblong or oblong-elliptic, the apex rounded or minutely apiculate, minutely punctate, aestivation imbricate; disk absent; stamens numerous (about 45), the filaments short, flattened, persisting after the anthers fall, and then recurved; anthers linear, erect, basifixed, caducous, 4-locular, dehiscing longitudinally; ovary sessile, globose, glabrous, unilocular, inserted at the base of the concave receptacle; ovule 1, basally attached, campylotropous; style arising from the base of the ovary to one side of it, fairly thick, elongated; stigmatic surface on the outermost side ascending from the base or the middle.

Fruit a small drupe, globose, terminating a short stipe in the cup-shaped receptacle; exocarp thin, crustaceous when dry; endocarp

slightly woody. Seed 1, reniform-globose, exalbuminous, with a thin testa; cotyledons thickly fleshy, conferruminant; radicle small and bent inward towards the hilum.

A monogeneric family with the single genus *Rhabdodendron* with only three species, two of which occur in the Reserva Ducke. The genus has been placed in the families Chrysobalanaceae, Phytolaccaceae and Rutaceae by various previous authors. It was placed in the Chrysobalanaceae solely on the basis of the gynobasic style. Although it has many superficial characters in common with Rutaceae such as the large gland dotted leaves it also has many differences and is best regarded as a separate family. Recent molecular data show that it is closer to Phytolaccaceae than Rutaceae. The secondary phloem in the wood of two species is also an important shared character with Rutaceae. The gynobasic style, the linear anthers and the gland dotted leaves make the genus easily recognizable.

Rhabdodendron

Rhabdodendron Gilg & Pilger, Verh. Bot. Ver. Prov. Brandenburg 47: 152. 1905.

Key to the species of *Rhabdodendron* of Reserve Ducke

1. Tree to 15 m tall; leaves coriaceous; primary leaf veins not forming a marginal vein; leaves distinctly petiolate 1. *R. amazonicum*
1. Shrub to 3 m tall with numerous trunks; leaves chartaceous; primary leaf veins strongly anastomosing to form a marginal vein; leaves subsessile 2. *R. macrophyllum*

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¹Royal Botanic Gardens, Kew Richmond, Surrey, TW9 3AB, Great Britain.

1.1 *Rhabdodendron amazonicum* (Spruce ex Benth.) Huber, Bol. Mus. Emílio Goeldi 5: 427. 1909; Sandwith, Jour. Arnold Arb. 24: 223. 1943; Prance, Bull. Jard. Bot. Brux. 38: 142. 1968.

Lecostemon amazonicum Spruce ex Benth., Jour. Bot. Kew Misc. 5: 295. 1853; Hooker f., Mart. Fl. bras. 14(2): 54. 1867.

Tree to 15 m x 20 cm diameter, usually smaller. Bark pale grey, with shallow longitudinal fissures 1-2 mm deep, outer bark 1 mm thick, inner bark 1 mm thick, wood pale yellowish-brown, the young branches with scattered peltate hairs, with a thin hard bark, the wood with anomalous secondary phloem. **Leaves** oblanceolate, oblong to oblong-obovate, gradually narrowing from above middle to base, coriaceous, 20-39×3-10 cm, the apex acute, acuminate or mucronate, most frequently with acumen 2-9 mm long, gradually narrowed to a cuneate base, glabrous above, with few scattered peltate hairs beneath, not rugose on surfaces; midrib plane to prominulous above, prominent beneath; primary veins 30-45 pairs, plane to prominulous above, prominulous beneath, anastomosing but not forming a conspicuous marginal nerve; petioles 1.5-3.5 cm long, with scattered peltate hairs, not winged, terete. Stipules absent. **Inflorescences** of axillary and sometimes terminal panicles or occasionally reduced to racemes, 9-17 cm long, sparsely peltate pubescent becoming glabrous with age. Bracts and bracteoles ovate to lanceolate, persistent, 1-2 mm long, chartaceous; pedicels 6-15 mm long, glabrescent, frequently recurved, often with 2 lanceolate bracteoles. Calyx-tube turbinate-campanulate, 2-4 mm long, the exterior glabrescent, the lobes small but distinct and apparent in young flowers only. Petals 5, oblong, 7-8 mm long, sepaloïd, minutely punctate. Stamens *c.* 45, the filaments short and flattened, persisting after flowering and then recurved; anthers linear, *c.* 7 mm long, basifixed, caducous. Ovary globose, glabrous. Style arising from base of ovary to one side of it, elongate, the stigmatic surface long and

linear. **Fruit** subglobose, 6-10 mm diameter; exocarp glabrous, smooth but wrinkled when dry; mesocarp very thin, fleshy; endocarp thin, bony, fragile, with median line of fracture, glabrous within.

Type: Brazil, Para, Santarem, Spruce 377, fl (holotype K; isotypes LD MG OXF P).

This species is common in terra firme forests from the Manaus region eastwards to the Para-Maranhao border and northwards into the three Guianas. It does not occur in western Amazonia.

Flowering and fruiting mainly from May to December.

21.X.1994 (fr) Nascimento, J. R. & Silva, C. F. da 610 (INPA K MG); 2.VIII.1977 (fr) Ramos, J. F. 738 (INPA); 29.VI.1993 (fr) Ribeiro, J. E. L. S. et al. 920 (INPA K MG NY SP); 23.XI.1993 (st) Ribeiro, J. E. L. S. et al. 1165 (K); 25.V.1961 (fr) Rodrigues, W. & Lima, J. 2647 (INPA); 31.VIII.1964 (fr) Rodrigues, W. 5499 (INPA); 27.XII.1963 (fr) Rodrigues, W. & Coêlho, D. 5627 (INPA); 15.IX.1994 (fl) Vicentini, A. et al. 696 (INPA K MG MO NY RRB SPU); 15.XII.1995 (fr) Vicentini, A. & Pereira, E. da C. 1168 (GINPA K MG RU UB).

This species is a small to medium size single trunked tree. The pachycaul clusters of leaves and the pelucid dots on the leaves assist identification. The wood of this species has anomalous secondary thickening where successive bundles of xylem and phloem repeat the structure of the young stem and are separated by bands of conjunctive parenchyma.

The considerable leaf variation of this species has resulted in it being described several times. The six synonyms are given in Prance (1972).

1.2 *Rhabdodendron macrophyllum* (Spruce ex Benth.) Huber, Bol. Mus. Emílio Goeldi 5: 428. 1909; Prance, Bull. Jard. Bot. Brux. 38: 143. 1968.

Lecostemon macrophyllum Spruce ex Benth., J. Bot. Kew Misc. 5: 296. 1853; Hooker f., Mart. Fl. bras. 14(2): 55-56. 1867.

Shrub to 3 m tall with numerous thin trunks arising from below ground, the young branches glabrous, with a thin hard bark, the wood without secondary phloem. **Leaves**

oblanceolate, lanceolate or obovate-oblong, gradually narrowing from above middle to base, with much variation in size and shape within the same individual, chartaceous, (7-)9-32(-38)×(1.5-)2-7.5(-8.6) cm, the apex rounded, acute or minutely acuminate or mucronate, gradually narrowed to a cuneate base, glabrous above, with scattered peltate hairs beneath, not rugose on surfaces; midrib plane to prominulous above, prominent beneath; primary veins 25-40 pairs, prominulous on both surfaces, arcuate and anastomosing 1-6 mm from margin and forming a prominulous marginal nerve; petioles 2-6 mm long, glabrous, usually minutely winged and shallowly canaliculate. Stipules small, subulate. **Inflorescences** of axillary racemes 3-9 cm long, with sparse peltate pubescence. Bracts and bracteoles ovate, persistent, 0.5-1 mm long, membranous, glabrous; pedicels 5-12 mm long, glabrous and frequently with up to 3 small bracteoles. Calyx-tube turbinate-campanulate, c. 3 mm long, the lobes represented by 5 obscure teeth only, the exterior glabrous. Petals 5, oblong, 6-8 mm long, basifixed

caducous. Ovary globose, glabrous. Style arising from base of ovary to one side of it, elongate, the stigmatic surface long and linear. **Fruit** subglobose, 5-6 mm diameter; exocarp glabrous, smooth, but wrinkled when dry; mesocarp very thin, fleshy; endocarp thin, bony, fragile, with median line of fracture, glabrous within. Germination hypogeal, first leaves alternate, minute, 2-5 mm long, with a single long tap root.

Type: Brazil, Amazonas, Manaus, fl, *Spruce 1408*, Dec-Mar 1850-51, *s.n.* (in some sets) (holotype K; isotypes CGE F LD NY OXF P).

This species is a common shrub of white sand campinas in the immediate vicinity of Manaus and east to the Trombetas river only.

Flowering all year, but mainly from April to August, fruiting from August to November. 21.IX.1960 (fr) *Chagas, J. s.n. INPA5556* (INPA); 16.IV.1998 (st) *Prance, G T. et al. 30858* (K); 26.XI.1993 (fr) *Ribeiro, J. E. L. S. et al. 1196* (INPA K); 21.IV.1998 (fl) *Souza, M. A. D. de et al. 682* (INPA K).

It is a multitrunked shrub also with pelucid dots on the leaves. The wood of this species does not have anomalous secondary thickening.

