

***Limadendron*: a new genus of Leguminosae (Papilionoideae, Brongniartieae) from South America**

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Abstract A new genus *Limadendron* (Leguminosae, Papilionoideae, Brongniartieae) from northern South America is described and illustrated. The new genus is segregated from *Poecilanthe* based on a previous phylogenetic analysis. *Limadendron* is sister to *Cyclolobium* and differs from it mainly by its woody dehiscent legumes contrasting with the winged samaroid fruits of the latter. Two new combinations, *Limadendron amazonicum* (Ducke) Meireles & A. M. G. Azevedo and *Limadendron hostmannii* (Benth.) Meireles & A. M. G. Azevedo, are proposed. A distribution map and an identification key for the species are also provided.

Keywords Amazonia · Brongniartieae · Fabaceae · Neotropics · *Poecilanthe*

Introduction

A recent phylogeny based on molecular and morphological data did not support the papilionoid legume genus *Poecilanthe* Benth. as monophyletic, but resolves the Amazonian species *Poecilanthe amazonica* (Ducke) and *P. hostmannii* (Benth.) Amshoff as a separate clade from

the remaining members of the genus (Meireles et al. in press; Fig. 1). These two species have long been recognized as distinct from the other *Poecilanthe* (Geesink 1981; Klitgaard 1995; Ross and Crisp 2005) because of their unifoliolate leaves and racemose inflorescences. The *Poecilanthe amazonica* + *P. hostmannii* clade also differs from other *Poecilanthe* species by having biauriculate wing petals, bossed keel petals, stamens always diadelphous with subequal anthers (only slightly dimorphic), overgrown seeds with a papery testa and post-chalazal branches that do not reach the hilum, cataphylls on the epicotyl, an inflexed hypocotyl-root axis, and pollen grains with sexine microreticulate in the mesocolpus and perforations in the apocolpus (Meireles and Tozzi 2008; Souza et al. 2014).

The phylogeny also strongly supports the *P. amazonica* + *P. hostmannii* clade as sister to *Cyclolobium* Benth. (Meireles et al. in press; Fig. 1). In fact, both species were originally described in *Cyclolobium* (Ducke 1922; Benth 1860) due to unifoliolate leaves, axillary or cauliflorous racemes, turbinate-campanulate calyces, purplish petals and a diadelphous androecium. Later, Ducke (1932) and Amshoff (1939) each transferred a species into *Poecilanthe* Benth because of the dehiscent pod, which contrasts with the samaroid fruit of *Cyclolobium*. Combining the two *Poecilanthe* species into *Cyclolobium* would render a problematic circumscription of the latter, especially because of the two distinct fruit morphologies. As far as we know, no legume genus encompasses species with both a classical dehiscent woody legume and a samara. Moreover, the *P. amazonica* + *P. hostmannii* clade is strictly Amazonian and is thus restricted to rain forests (Meireles and Tozzi 2007), whereas *Cyclolobium* typically grows in drier savanna woodlands in central and southern South America. The molecular phylogeny resolves the two groups separate

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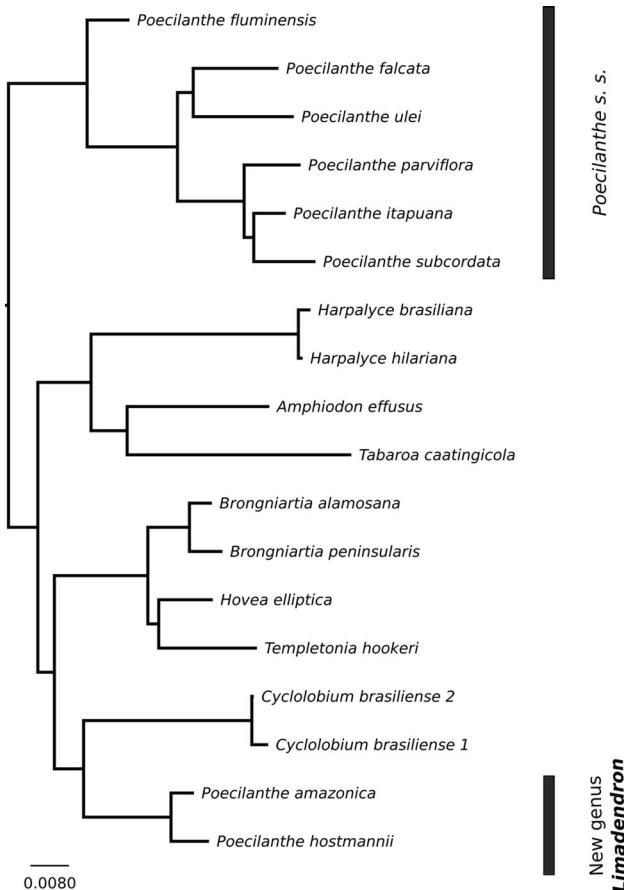


Fig. 1 Phylogeny of Brongniartieae showing the *P. amazonica* and *P. hostmannii* as closer to *Cyclobium* than to *Poecilanthe* sensu stricto (redrawn from Meireles et al. in press)

by relatively long branches, further supporting their evolutionary distinctiveness.

The combination of the morphological characters cited above and the phylogenetic position of *P. amazonica* plus *P. hostmannii* require that they can be placed into a new genus. The genus *Limadendron* is herein described to accommodate the two new combinations: *Limadendron amazonicum* and *L. hostmannii*.

Taxonomic treatment

Limadendron Meireles & A. M. G. Azevedo, gen. nov.

Arbores parvae vel mediocres, foliis alternis unifoliolatis vel raro imparipinnatis. Racemi axillares vel laterales vel cauliflori. Flores papilionacei, calyce 5-fido laciniis summis alte connatis, petalis carinae umbonatis et biauriculatis, staminibus diadelphis vexilaris libero, antheris subaequalibus. Legumen dehiscens valvis ligneis,

seminibus irregularibus testa papyracea, radicula embryo inflexa.

Type: *Limadendron amazonicum* (Ducke) Meireles & A. M. G. Azevedo (Fig. 2).

Trees; resting buds 1–5 per subtending leaf, inconspicuous, stipules minute, caducous. Leaves alternate, pulvinate, unifoliolate or very rarely multifoliolate with 3–7 clearly opposite leaflets; stipels minute, caducous or absent. Leaflet pulvini usually as long as the leaf pulvinus, secondary venation brochidodromous. Inflorescences solitary racemes, cauliflorous or axillary, pendant. Flowers bilaterally symmetrical, pedicellate; bracteoles 2, opposite, inserted at the base of the calyx. Calyx turbinate-campanulate, sepals 5, basally fused, subgibbosus and apically toothed, the upper 2 teeth connate almost to their apices, the inner face of the tube glabrous; hypanthium turbinate. Corolla papilionaceous, petals 5, glabrous, unguiculate; standard petal wider than long; wing petals longer than the keel, inner face of the blades bearing a turgid “callosity” on the proximal upper quarter, the base biauriculate, the lower auricle smaller, outer face sculptured; keel petals slightly adherent along part of their lower margin, the blades bossed on the proximal upper quarter, base auriculate on the upper margin. Androecium with 10 stamens, diadelphous, the vexillary stamen free; filaments apically free and curved upward; anthers subequal (ratio 2:1 between the two types), the shorter anthers dorsifixed, alternating with the longer basifixes ones, both anther types ellipsoid. Ovary long-stipitate, glabrous to pilose along the margins. Legume dehiscent with woody valves. Seeds overgrown, parallel to the fruit length, testa thin, embryo with cataphylls on the epicotyl, the hypocotyl-root axis inflexed.

Comments: *Limadendron* comprises two small- to medium-sized tree species, and occurs mainly in the Amazonian forests of Brazil, Colombia, French Guiana, Guyana, Surinam, and Venezuela. *Limadendron* belongs to the Papilionoideae, more specifically to the Brongniartieae tribe of the Genistoid sensu lato clade (Meireles et al. in press). The unifoliolate leaves of *Limadendron* are shared with its sister genus *Cyclobium* and are common in the Australian members of the tribe Brongniartieae. We observed, however, that multifoliolate leaves may occasionally occur at the apex of the trees of both *L. amazonicum* and *L. hostmannii*. In these pinnate leaves, the leaflets are clearly opposite, whereas leaflets in *Poecilanthe* sensu stricto are alternate.

Etymology: The new genus *Limadendron* is named in honor of Dr. Haroldo Cavancante de Lima, in recognition of his great contribution to legume taxonomy in South America.

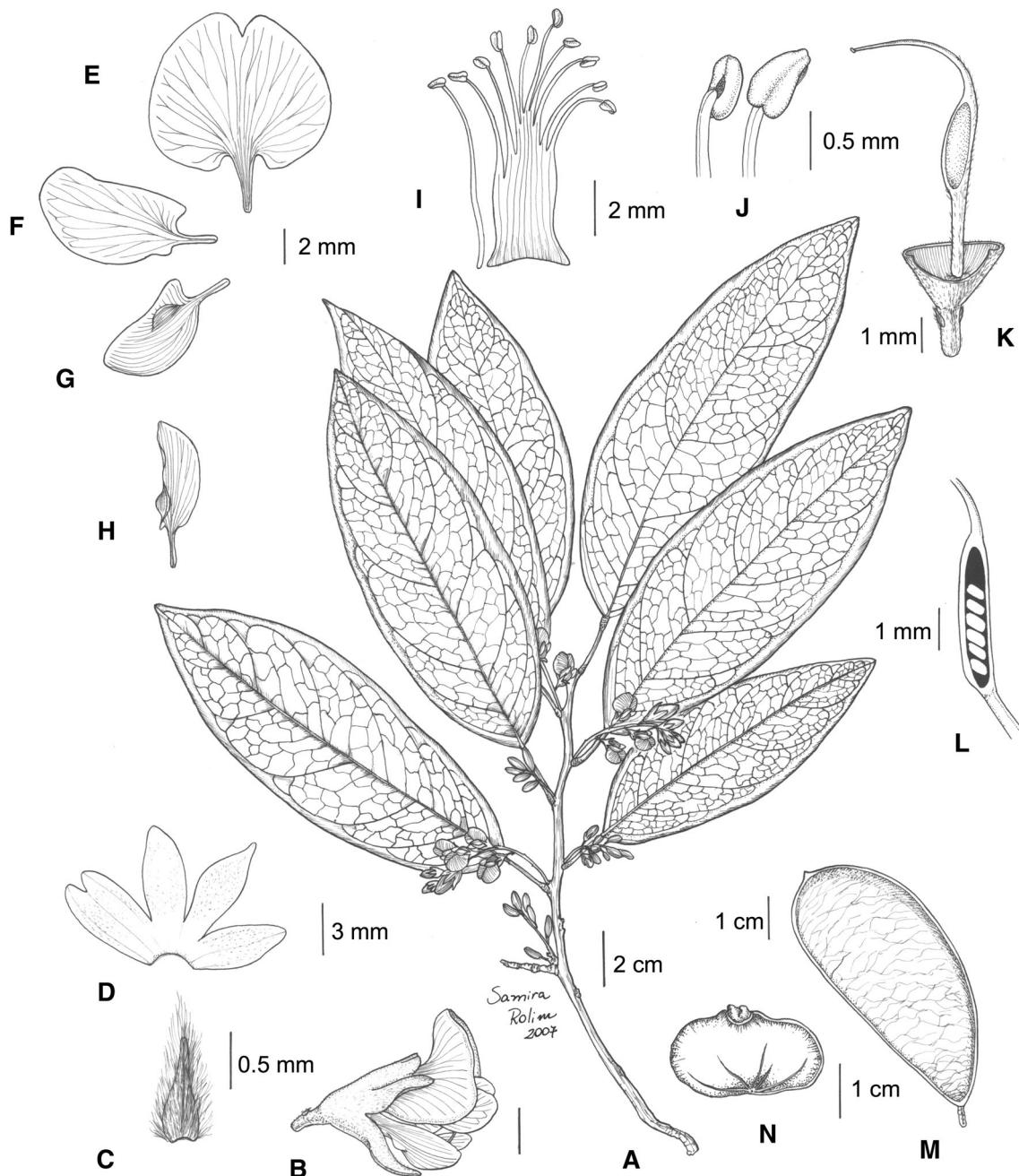


Fig. 2 *Limadendron amazonicum*. **a** Flowering branch; **b** flower; **c** bracteole; **d** calyx opened out (inner face); **e** standard petal; **f** biauriculate wing petal; **g** keel petal with boss; **h** keel in lateral view; **i** stamens; **j** two anther types; **k** gynoecium; **l** ovary in longitudinal section; **m** fruit; **n** seed

Key to *Limadendron* species

1. Petiole mostly canaliculate, leaflet surface with strongly reticulate venation; fruits obovate or D-shaped, less than 8 cm long, outer face dull and weakly veined.....
L. amazonicum.

1. Petiole mostly terete, leaflet surface with a weakly reticulate venation; fruits oblong to oblanceolate, over

10 cm long, outer face shiny and strongly veined.....
L. hostmannii.

Limadendron amazonicum (Ducke) Meireles & A. M. G. Azevedo, comb. nov. (Fig. 2).

Type: BRAZIL: Amazonas: “Barcellos, ad rivulum silvestrem”, 3 July 1905, A. Ducke 7188 (Lectotype RB!, designated by Meireles and Tozzi 2007). *Cyclolobium amazonicum* Ducke, Arch. Jard. Bot, Rio de Janeiro 3: 146.

1922. *Poecilanthe amazonica* (Ducke) Ducke, Bull. Mus. Hist. Nat. (Paris), ser. 2, 4: 734. 1932.

Tree or treelet to 10 m, terminal branches fissuring or sometimes papery; stipule narrowly triangular, 1.5–3 mm long, glabrescent, caducous. Leaves 1–foliolate, very rarely 3–foliolate; petioles 0.5–3.2 cm long, canaliculate, rarely terete; pulvinule 3–10 mm long. Leaflets ovate to narrowly or broadly elliptic, occasionally oblong, (6.7)–9.5–25 (–34) × (3.2)–4.5–9.5(–12.7) cm, base rounded to obtuse, apex acute to shortly acuminate, glabrous; tertiary venation almost as prominent as the secondaries rendering a fine reticulation over the leaflet surface. Racemes 1.8–4(–5.3) cm long, sparsely to moderately pilose to tomentose; peduncles 0.4–1.3 cm long; rachis 1.4–3(–4) cm long; bract ovate, 1.8–2.2 × 1 mm, apex acute, outer face tomentose, sub-persistent; floral bud ellipsoid to obovoid, 5–6.5 mm long. Flower 10–15 mm long; pedicel 2.2–3.2 mm long; bracteoles narrowly triangular, 1.4–2 × 0.7–1 mm, outer face tomentose, sub-persistent. Calyx 6.5–10 mm long, sparsely to densely rusty tomentose; tube 2–4.5 mm long; teeth ovate-oblong, 4.5–7 mm long except the upper two that are 1–1.5 mm long, apex acute but the lowest one acuminate; hypanthium 0.6–1.2 mm long. Corolla deep-purple; standard transversely elliptic to depressed ovate, claw 2.5–3.5 mm long, blade 8–10.5 × 11–14 mm, base auriculate, apex emarginate; wing petals widely elliptic to widely elliptic-obovate, claw 2.2–3 mm long, blade 7.6–9.3 × 4.2–5.8 mm, apex rounded; keel petals ovate, subfalcate, claw 1.8–3.2 mm long, blade 6.8–7.2 × 3.3–3.6 mm, apically obtuse to rounded. Androecium 7.5–10.5 mm long, filaments free for 2.6–5.5 mm; basifixated anthers 0.7–0.9 mm long, dorsifixated anthers 0.5–0.8 mm long. Gynoecium 8.8–12 mm long, stipe 2–3.3 mm long, pilose to glabrescent; ovary 3–4.3 mm long, pilose basally and along the upper margin, becoming more sparse along the lower margin; style 3.5–4.5 mm long, glabrous; stigma capitate, sometimes slightly laterally compressed; ovules 6. Fruit obovate or somewhat D-shaped, 5–7.8 × 2–3; base acute, apex obtuse to rounded, shortly apiculate; stipe 6–12 mm; compressed laterally, the margin plane; outer face dull, weakly veined; funiculus anvil-shaped, subterete, 3–5 mm long. Seeds 1–2 per fruit, either transversally oblong or D-shaped, 11–18 × 12–27 × 4–5 mm.

Distribution: Inhabiting Brazilian and Venezuelan Amazonian forests (Fig. 3), especially in sandy soil along black water, seasonally flooded forests, “igapó” and in shrubby riparian vegetation.

Phenology: Flowers recorded as early as March and as late as August, with most specimens flowering between May and July. Fruits found year-round, but especially frequent between October and March.

Comments: *Limadendron amazonicum* can be distinguished from *L. hostmannii* by the obovate or D-shaped

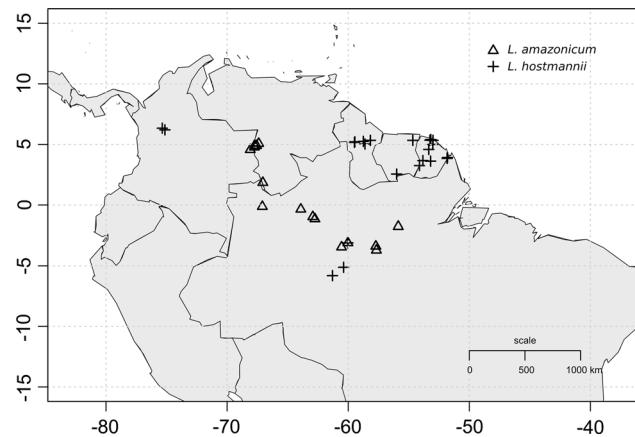


Fig. 3 Distribution of *L. amazonicum* (triangles) and *L. hostmannii* (crosses)

shorter fruit (up to 7.8 cm long) that bears 1–2 seeds. Despite some overlap, the inflorescence in *L. amazonicum* is usually shorter, 1.8–4(–5.3) cm long, than it is in *L. hostmannii*, 4.2–8 cm long. In sterile material, *L. amazonicum* can be distinguished by its mostly canaliculate petiole and prominent tertiary venation, rendering a highly reticulate leaflet surface.

Additional specimens examined

Brazil: Amazonas: Alto Rio Negro, 16 Aug 1996, P. A. Rodriguez et al. 8387 (INPA, NY); Alto Rio Negro, Ilha do Gavião, 1967, R. E. Shultes 24581 (INPA), 17 Apr 1967, W. Rodrigues & L. Coelho 8390 (INPA); Anavilhasanas, 29 Feb 1976, P. Lisboa 755 (INPA); Aximin, Rio Abacaxis, 1 July 1983, J. L. Zarucchi et al. 2918 (INPA, MG, NY, RB); Terra Preta, 5 July 1983, J. L. Zarucchi et al. 2961 (INPA, MG, NY, RB), 6 July 1983, J. L. Zarucchi et al. 2968 (F, INPA, NY, RB); Barcelos, Rio Negro, 3 July 1905, A. Ducke 7188 (RB), 7 Oct 1987, P. J. M. Maas et al. 6610 (F, INPA, MG, NY, RB, U); Estrada Manaus—Porto Velho, Igapé Tupaninha, 8 July 1972, M. Silva et al. 231 (INPA); Estrada Manaus—Porto Velho, 13 July 1972, M. F. Silva et al. 671 (INPA); Estrada Torquato Tapajós km 182, 2 Apr 1975, A. Loureiro et al. s.n. (INPA); Igapó Açu, 23 Nov 1973, E. Lleras et al. p19638 (INPA, NY, S, U); Igapó Tupana, 22 Mar 1974, D. G. Campbell et al. P20822 (INPA, MG, NY, S, U), 23 Mar 1974, D. G. Campbell et al. P20875 (INPA, MG, NY, S); Igapé Acajatuba, 20 Apr 1986, G. T. Prance et al. 30008 (NY, US); Itaubal, Rio Acará, 26 Oct 1952, R. L. Fróes 2979 (IAN); Manaus, Cachoeira baixa do Tarumã, 19 June 1956, F. Melo & D. Coelho s.n. (INPA), 19 June 1957, Francisco & D. Coelho s.n. (IAN), 7 June 1955, Luiz s.n. (MG), 7 June 1955, W. Rodrigues s.n. (INPA); Manaus,

Estrada para Itacoatiara km 201, 16 Dec 1966, G. T. Prance et al. 3681 (INPA, MG, NY, S, U); Manaus, Igarapé da Cachoeira, 20 May 1882, Schwacke 354 (RB); Manaus, Igarapé do Franco, 2 Jan 1956, J. Chagas & D. Coelho s.n. (INPA); Manaus, Rio Cuieiras, July 1984, L. Sonkin 161 (RB), vii.1984, L. Sonkin 164 (RB), 5 Aug 1981, S. A. Mori & C. Gracie 21918 (NY); Manaus, Igarapé do Matrinchão, 19 Sep 1956, Luiz & Francisco s.n. (IAN); Manaus, Ilha do Cumaru, 9 May 1973, A. Loureiro et al. s.n. (MBM, INPA); Manaus, Paracuúba, 9 May 1961, W. Rodrigues & L. Coelho 2560 (IAN, INPA, UB); Manaus, Praia Grande, 16 July 1981, W. Mantovani & D. M. S. Rocha 12748 (UEC); 26 July 1980, W. W. Benson & W. H. Stubbline 11400 (UEC); Manaus, Rio Cuieiras, 3 July 1975, A. B. Anderson 157 (INPA), 18 Dec 1961, W. Rodrigues 3969 (INPA, NY); Manaus, Rio Tarumã, Cachoeira do Passarinho, 10 June 1933, A. Ducke s.n. (RB 24320, U, S); Manaus, Rio Tarumã, 11 May 1941, A. Ducke 706 (IAN, MG, NY), 23 June 1976, O. P. Monteiro 1212 (INPA), 14 Aug 1949, R. L. Fróes 25025 (IAN, SP, U); Manaus, Rio Tarumãzinho, 7 July 1976, G. T. Prance & E. Lleras 23737 (AAU, GH, INPA, MG, NY, U), 9 Jan 1977, J. Adis s.n. (INPA); 17 Feb 1977, L. Coelho 609 (INPA), 8 May 1981, M. Warbes 20 (INPA); Maués, 25 May 1957, E. Oliveira 57 (IAN); 30 Nov 1946, J. M. Pires 46 (IAN), 30 Nov 1946, J. M. Pires 93 (ALCB, IAN, NY), 25 May 1957, R. L. Fróes 31184 (IAN); Rio Apuahu, 25 July 1929, A. Ducke s.n. (NY, RB 23375, S, U), 25 Mar 1941, A. Ducke s.n. (IAN, MG, NY); Rio Aracá, 5 Nov 1952, R. L. Fróes & G. Addison 29295 (IAN); Rio Ariaú, Paraná do Sumauma, 1 Mar 1976, M. Silva et al. 1898 (INPA); Rio Canumã, 25 Oct 1957, R. L. Fróes 33637 (IAN); Rio Castanho, entre o Castanho e o Araçá, 13 July 1972, M. Silva et al. 671 (INPA, RB, UEC); Rio Guamã, May 1977, O. P. Monteiro et al. 1407 (INPA); Rio Jauaperi, 6 Feb 1974, L. Coêlho s.n. (INPA); Rio Negro, 2 July 1979, L. A. Maia et al. 302 (INPA, MG), 6 May 1973, M. F. Silva et al. 1290 (INPA); Rio Preto, 30 May 1964, W. Rodrigues & D. Coelho 5863 (INPA, US); Rio Ueiuxi, 22 Oct 1971, G. T. Prance et al. 15543 (INPA, MG, NY); Rio Univini, 22 Apr 1974, J. M. Pires et al. 14110 (IAN, INPA, MG, NY); São Francisco, Rio Urubu, 6 Oct 1949, R. L. Fróes 25509 (IAN, SP); São Gabriel da Cachoeira, 03 a 04 km Rio abaixo (SE) da cidade, 26 Nov 1987, M. L. Kawasaki 297 (GH, INPA, NY); Serra de Jacumim, 2 July 1979, L. Alencar 302 (NY). Pará: Oriximiná, Porto Trombetas, Ilha do Descanso, 24 May 2002, S. M. de Faria et al. 2428 (RB). VENEZUELA: Amazonas: Autana, entre Sta Teresita e Pto Sipapo, 18 Aug 1997, A. Castellanos 5459 (VEN); Autana, Río Autana, 26 Feb 2000, A. Castillo 7106 (VEN); Autana, Río Sipapo, Caño Gato, 18 Aug 1997, A. Castillo 5432 (VEN); Autana, Río Sipapo, entre Caño Veneno e Pendare., 19 Feb 2001, A. Castellanos 8037

(VEN); Atuana, Río Sipapo, cerca de Cerro Pelota, 21 Feb 2001, A. Castellanos et al. 8825 (VEN); Rio Orinoco, 30 July 1959, J. J. Wurdack & L. S. Adderley 43675 (NY, RB, U); San Carlos de Rio Negro, 25 Jan 1980, R. Liesner 8680 (VEN); San Fernando de Atabapo, Rio Orinoco, 26 Mar 1974, A. Gentry 10952 (NY, VEN). Rio Negro: Rio Baria, 22 July 1984, G. Davidse 27713 (F, NY).

Limadendron hostmannii (Benth.) Meireles & A. M. G. Azevedo, comb. nov. (Fig. 4).

Type: SURINAM: F. W. Hostmann 172 (Holotype K, photo NY!; Isotypes BM!; S!; P, photo US!). *Cyclobium hostmannii* Benth., J. Proc. Linn. Soc., Bot. 4, Suppl.: 52. 1860. *Poecilanthe hostmannii* (Benth.) Amshoff, Meded. Bot. Mus. Herb. Rijks Univ. Utrecht 52: 61. 1939.

Tree to 12 m; terminal branches fissured; stipules narrowly triangular to setaceous, 1.3–3.2 mm long, glabrescent, caducous. Leaves 1-foliate, rarely to 7 foliolate, petiole (1–)1.5–3(–3.6) cm long, terete, pulvinule 3.5–6 mm long. Leaflets elliptic to obovate, (10–)15–30(–35) × (3.5–)5.5–10(–14) cm, base acute to obtuse, apex acute to shortly acuminate, rarely narrowly obtuse, mucronate, glabrous but some hairs along the lower mid-vein; tertiary veins weakly prominent (the general aspect of the blade not finely reticulate). Racemes 4.2–8 cm long, tomentose, peduncle 0.5–1.2 cm long, rachis 3.5–7 cm long; bract ovate, 0.8–1.3 × 0.5–0.6 mm, apex obtuse to acute, outer surface tomentose, persistent; floral bud obovoid, 5–6 mm long. Flowers 8–11 mm long, pedicels ca. 1 mm long; bracteoles ovate to triangular, ca. 1 × 0.5 mm, outer surface tomentose, caducous. Calyces 5.5–7 mm long, sparsely to densely tomentose, tube 2–3 mm long; teeth elliptic-ovate, 3.5–4 mm long, apex acute, the lower one rarely acuminate, upper two ca. 1 mm separated; hypanthium ca. 1 mm long. Corolla deep-red, standard petal oblate to transversely elliptic, claw ca. 3 mm long, blade 6 × 8–9 mm, base auriculate, apex emarginate, wing petals wide elliptic-obovate, claw 2–3 mm long, blade 6–6.5 × 3 mm, apex obtuse to rounded, keel petals elliptic to elliptic-obovate, subfalcate, claw 2.5–3 mm long, blade 4.5–5 × 2.2–2.8 mm, apex obtuse. Androecium 7–9 mm long, filaments free for 1.6–2 mm; basifixated anthers 6–8 mm long, dorsifixed anthers 5–6 mm long. Gynoecium 8–9 mm long, stipe 2–2.3 mm long, glabrous, ovary 2.8–3 mm long, glabrous, style 3–4 mm long, stigma capitate, sometimes slightly laterally compressed, ovules 8–9. Legumes oblong to oblanceolate, 14–18 × 2–3 cm, apex acute or obtuse, base acute, stipe 1–1.5 cm long, outer face shiny and conspicuously veined. Seeds 3–5(–7) per fruit, ovate, widely elliptic or somewhat D-shaped, rarely transversally oblong, 15–22 × 12–21 × 4–8 mm.

Distribution: Amazonian forest in Brazil (Amapá and Amazonas), Colombia, Guyana, French Guiana, and

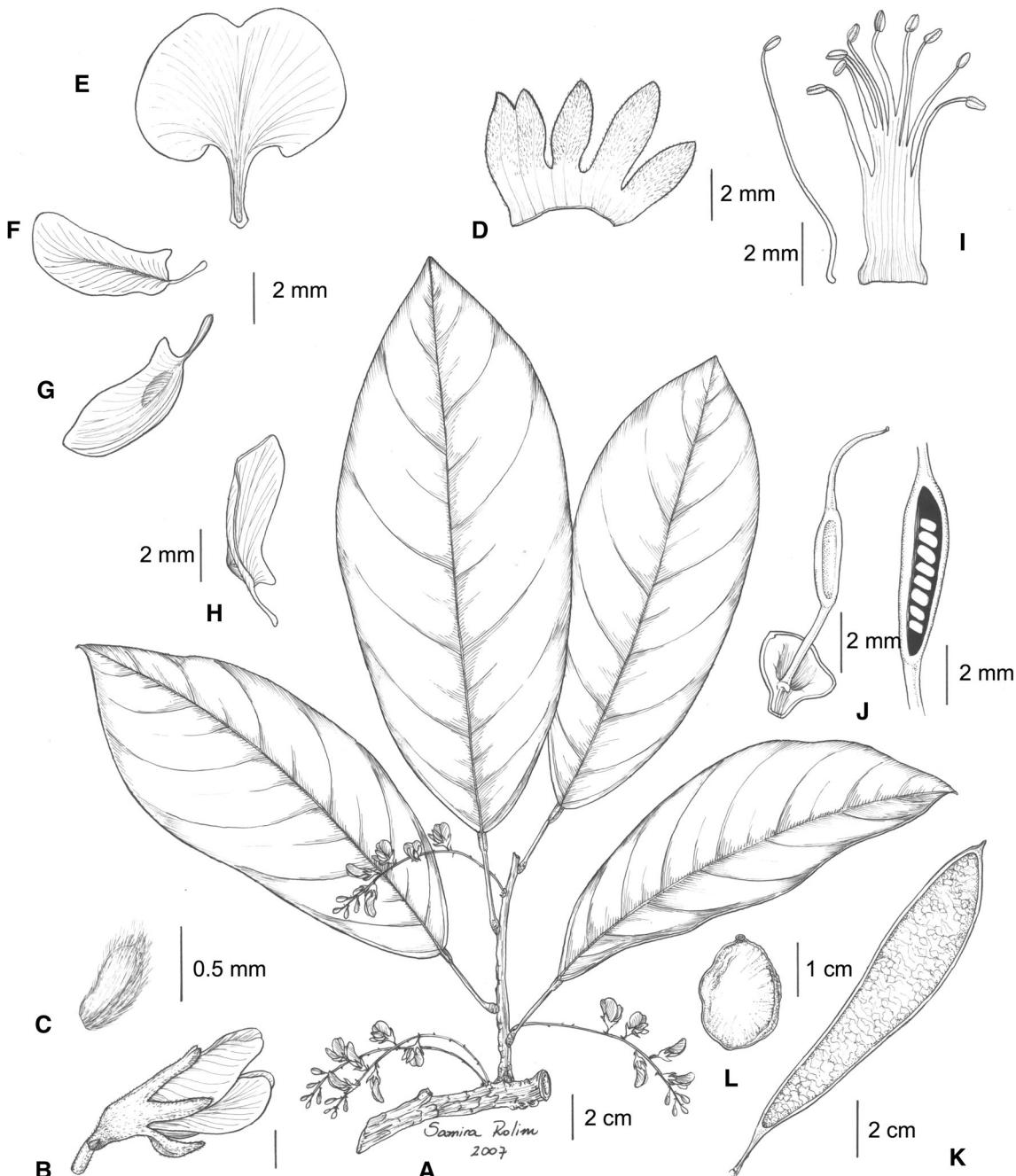


Fig. 4 *Limadendron hostmannii*. **a** Flowering branch; **b** flower; **c** bracteole; **d** calyx opened out (inner face); **e** standard petal; **f** wing petal; **g** keel petal with boss; **h** keel petal from a basal view; **i** stamens; **j** gynoecium, including longitudinal section; **k** fruit; **l** seed

Surinam (Fig. 3), especially along small rivers, “igarapés”, (but in areas that are not susceptible to seasonal flooding) and in “terra firme” forests (also non-flooded).

Phenology: Flowering mostly from February to June. Fruiting from May to October, although fruits were collected as late as January.

Vernacular name: nikkoehout (Surinam)

Comments: *Limadendron hostmannii* is distinguished from *L. amazonicum* by its larger (over 14 cm long) oblong

to oblanceolate fruits with 4–5(–7) seeds, and usually longer (4.2–8 cm) inflorescences. Some vegetative features such as the terete petiole and the rather indistinct tertiary veins, which form a weak reticulate pattern on the surface of the leaflet blade are also diagnostic.

Additional specimens examined: BRAZIL: Amapá: Rio Araguary, 30 Aug 1961, J. M. Pires et al. 50591 (B, IAN, MG, NY, RB, S, SP); 12 Sep 1961, J. M. Pires et al. 50874 (BM, IAN, MG, NY, U, UB); Oiapoque, 19 Oct 1950, R.

L. Fróes 26693 (IAN, SPF). Amazonas: Estrada Manaus—Itacoatiara, 11 Feb 1971, *W. Rodrigues* 9001 (INPA, MBM, MG), 5 June 1973, *W. Rodrigues* et al. 9076 (INPA); Manaus, 12 May 1978, *L. Coêlho* et al. 777 (INPA), 5 May 1981, *L. Coêlho* 1839 (HRB, INPA, NY); Manicoré, Rod. Transamazônica, a 275–300 km de Humaitá, 24 Apr 1985, *C. A. Cid Ferreira* 5829 (MG, N, RB); Novo Aripuanã, Rod. Transamazônica, a 300 km de Humaitá, 24 Apr 1985, *C. A. Cid Ferreira* 5741 (F, INPA, MBM, MG, NY, RB); Rio Javari, 8 Aug 1973, *E. Lleras* et al. p17236 (INPA, NY). COLOMBIA: Antioquia: San Rafael, Vereda Falditas, 6 June 1991, *R. Callejas & F. J. Roldán* 10166 (NY). FRENCH GUIANA: Bas Oyapock, 3 June 1970, *Oldeman* B 3354 (U, US), 26 June 1970, *Oldeman* B 3452 (NY, U); Cayenne, 13 Feb 1983, *M. F. Prévost* I422 (INPA, U); Crique Gabaret—Basin de Oyapock., 13 Apr 1988, *J. J. Granville* 10281 (NY, U), 14 Apr 1988, *J. J. Granville* 10317 (NY, U); Crique Carbet Mais., 6 July 1979, *J. J. Granville* 3055 (U); Montagne Longi, 9 Mar 1994, *B. Bordenave* 793 (U); Montagne de la Trinité, 24 Jan 1984, *J. J. Granville* 6257 (U), 2 Feb 1984, *J. J. Granville* et al. 6453 (INPA, NY, U), 7 July 1999, *O. Poncy* et al. 1206 (NY, U); Fleuve Approuaque, 14 Aug 1977, *C. Sastre* 5650 (NY, U); Rivière Grand Inini, bassin du Maroni., 8 July 1990, *D. Sabatier & M. F. Prévost* 3086 (NY), 3 Sep 1970, *J. J. Granville* B 3642 (NY); Saul, 1 Oct 1982, *S. A. Mori* et al. 15013 (NY), 11 Feb 1993, *S. A. Mori* et al. 22928 (NY). GUYANA: Mabura, 3 Mar 1991, *M. Polak & S. Roberts* 240 (NY, U); Mabura hill, 1 Feb 1989, *H. Steege* 581 (NY, U), 28 Mar 1994, *R. C. Ek* 1047 (NY), 5 Dec 1994, *R. C. Ek* et al. 1128 (NY, U); Potaro-Siparuni, 16 Apr 1988, *W. Hahn* et al. 4716 (NY), 19 July 1991, *K. Lance & A. Petersen* 35 (NY). SURINAM: 14 Mar 1949, *J. Lanjouw & J. C. Lindeman* 2688 (AAU, IAN, NY, U).

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