

XYLOPIA DECORTICANS (ANNONACEAE), A NEW CAULIFLOUS SPECIES FROM BRAZIL

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ABSTRACT. *Xylopia decorticans*, a new species described from moist lowland forest localities in Espírito Santo, Brazil, is remarkable among Annonaceae for the reddish brown exfoliating bark of its twigs and its cauliflory. It is related to a group of Neotropical *Xylopia* species characterized by relatively broad and flat petals, and most closely resembles another southeastern Brazilian species, *X. lanceolata* R. E. Fries, which in contrast has smooth twigs, axillary inflorescences, shorter petals, and shorter leaves with ascending secondary veins.

RESUMO. *Xylopia decorticans*, uma nova espécie descrita nas localidades de floresta úmida de baixada do Espírito Santo, Brasil, destaca-se entre as Annonaceae pela casca dos ramos marrom avermelhada esfoliante e cauliflora. A espécie é relacionada à um grupo neotropical de espécies de *Xylopia* com pétalas largas e planas e se assemelha à outra espécie do sudeste brasileiro, *X. lanceolata* R. E. Fries, porém essa tem ramos lisos, inflorescências axilares, pétalas menores e folhas menores com nervuras secundárias ascendentes.

Approximately 150 species of *Xylopia* are distributed across both the New World and Old World tropics, a broad distribution unique in the family Annonaceae. All species of this genus are trees or shrubs, the Neotropical species often with a distinctive pyramidal habit and downswept branches. The flowers, which have pointed petals, are usually borne in axillary inflorescences and are only rarely borne on the trunk. *Xylopia* is one of the few genera of Annonaceae with dehiscent fruits: the individual monocarps of the aggregate fruits open to display seeds with either fleshy seed coats or arils against a brightly colored fruit interior.

In the Neotropics there are about 60 species of *Xylopia*, these most recently enumerated by Fries (1959). Within the Neotropical group Fries distinguished several species characterized by relatively short broad buds and petals, these occurring either in the coastal forests of eastern and southeastern Brazil (*X. laevigata* (Mart.) R. E. Fries, *X. lanceolata* R. E. Fries, *X. langsdorfiana* A.St.-Hil. & Tul., and *X. ochrantha* Mart.) or in the upper Amazon River basin (*X. cuspidata* Diels, *X. longicuspis* R. E. Fries, *X. peruviana* R. E. Fries, *X. platypetala* R. E. Fries, and *X. poeppigii* R. E. Fries). Since Fries's 1959 monograph *Xylopia involucrata* Dias & Kinoshita has been described from eastern coastal Brazil, but it differs from those species mentioned above because of its larger broad leathery leaves and copious brown indumentum of the leaves and twigs (Dias & Kinoshita 1998).

Recent collecting in the state of Espírito Santo in southeastern Brazil has revealed a species of the broad-petaled group remarkable among Annonaceae for the reddish brown flaking bark of its twigs. It is furthermore distinctive in its cauliflorous habit, with short-pedicelled flowers arising from tubercles that develop on the

trunk and leafless branches, a relatively uncommon characteristic within the genus but a condition found in several species of this group of xylopias.

Xylopia decorticans D. M. Johnson & Lobão, sp. nov.—TYPE: BRAZIL. Espírito Santo: Mpio. Santa Teresa, Nova Lombardia, Reserva Biológica Augusto Ruschi, trilha da Tronqueira, 8 Oct 2002, R. R. Vervloet, E. Bausen & W. Pizziolo 1172 (holotype: MBML!; isotypes: RB!). Fig. 1.

Species petalis latis planis et foliis elongato-lanceolatis longioribus minimum 12 cm longis Xylopie lanceolatae similis, sed ramunculis decorticantibus cortice rufa et inflorescentiis in trunco vel ramis post lapsum foliorum portatis differens.

Tree or treelet 2–11 m tall, with a DBH of 5–11 cm; bark longitudinally furrowed. Twigs with reddish brown flaking bark (Fig. 1A, B), initially sparsely appressed golden-pubescent, soon glabrate, the hairs 0.2–0.3 mm long, lenticellate. Lamina of larger leaves 9–24 cm long, 2–4.8 cm wide, concolorous, chartaceous to subcoriaceous with a thickened yellow margin, lanceolate to oblong-lanceolate or rarely ovate, cuneate to broadly cuneate at the base, acute to attenuate at the apex, occasionally acuminate or rounded, glabrous above, sparsely pubescent at the base and along the midrib but otherwise glabrous below; midrib impressed to slightly impressed above, raised below; secondary veins 15–25 per side, at midpoint of leaf diverging at 70–100° from the midrib, brochidodromous, intersecondaries occasionally strong; secondary and higher-order veins raised on both surfaces, the higher-order veins forming a conspicuous reticulum. Petiole 3–8 mm long, 1–2 mm thick, shallowly canaliculate adaxially, sparsely appressed golden-pubescent to glabrate. Inflorescences of 1–5 flowers, arising from tubercles on the trunk or on leafless branches; pedicels 4.7–10 mm long, densely appressed-pubescent; bract solitary, clasping the pedicel, 1.5–2 mm long, 2.2–4 mm wide, ovate, obtuse or occasionally bilobed, appressed-pubescent. Buds broadly lanceolate, obtuse. Sepals green *in vivo*, free to short-connate at the base, reflexed at anthesis (Fig. 1D), 1.8–4 mm long, 3.3–5 mm wide, crescent-shaped, rounded at the apex, appressed-pubescent. Petals red to pale pink *in vivo*, fleshy; outer petals 16–22 mm long, 5–8 mm wide at base, 3.5–6 mm wide at midpoint, lanceolate, acute at apex, keeled externally, concavity extending nearly to apex internally (keeled for 1–2 mm at tip), appressed-pubescent inside but with a glabrous patch at base (Fig. 1E), golden appressed-pubescent externally; inner petals 8–18 mm long, 3.3–6 mm wide at base, 1.7–2.0 mm wide at midpoint, lanceolate, keeled externally, keeled from midpoint to apex internally, proximally giving way to a groove that widens into the basal concavity, densely pubescent on both surfaces except at the base. Stamens ca. 120, 1–1.3 mm long, narrowly oblong; anthers septate at anthesis, with 6–8 locules; apex of connective 0.1–0.2 mm long, flattened, overhanging anther thecae, minutely papillate; outermost stamens staminodial (Fig. 1H), 1.0–1.3 mm long, clavate to quadrate; staminal cone 2.1–2.4 mm in diameter, 0.3–0.8 mm high. Carpels ca. 17, 5–6 mm long; ovaries 1.1–1.5 mm long, oblong, densely pubescent; stigmas coherent into a conelike mass, each stigma 4.0–4.2 mm long, linear, pubescent and minutely verrucose; ovules ca. 2 in a single row. Torus ca. 3 mm in diameter, glabrous. Fruit of 8–13 monocarps borne on a pedicel 10–15 mm long, 1.7 mm thick at midpoint, with the bark reddish brown and flaking off much as on the twigs; torus of fruit 4–5 mm in diameter, 2–3 mm high; monocarps pink to red *in vivo*, dehiscent at maturity (Fig. 1L), 1.7–2.2 cm long, 0.5–1.0 cm wide, 0.2–0.5 cm thick, oblong-falcate, compressed laterally, sparsely pubescent, contracted into a stipe 3–7 mm long; apex rounded, apiculate. Seeds 2–4, oblique to perpendicular to long axis of monocarp, ca. 10 mm long, ca. 6 mm in diameter, ellipsoid, arillate.

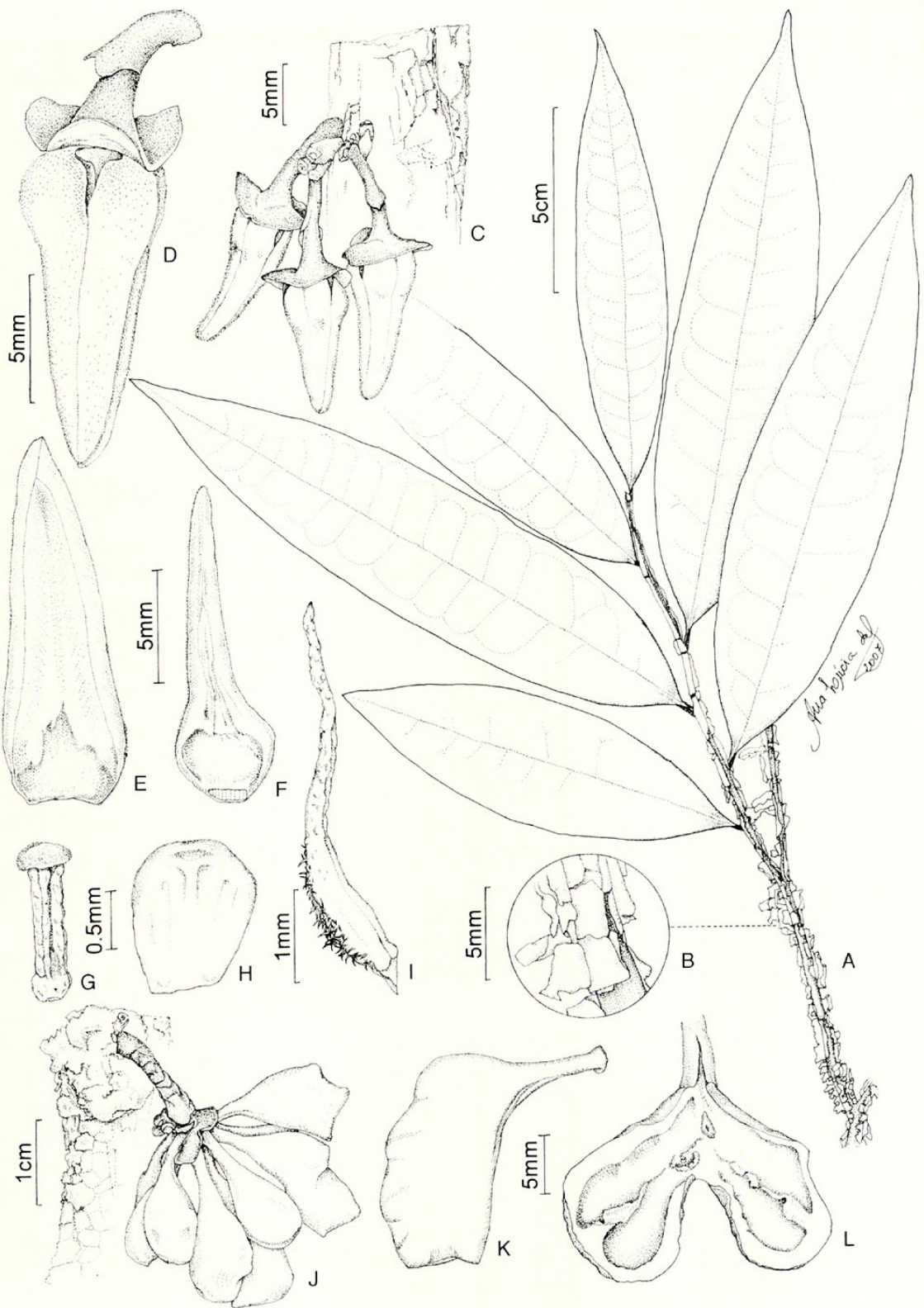


FIG. 1. *Xylopia decorticans*. A. Habit. B. Close-up of twig, showing exfoliating bark. C. Cauline inflorescence. D. Individual flower. E. Outer petal, inner surface. F. Inner petal, inner surface. G. Stamen. H. Staminode. I. Carpel. J. Fruit. K. Individual monocarp, longitudinal view. L. Open monocarp. (Based on: A, B, J, Lobão 1283, RB; C, Vervloet et al. 1640, MBML; D–I, Boone 1016, MBML; K, Demuner et al. 15, MBML; L, Demuner & Bausen 537, MBML.)

Phenology. Collected with flowers from January to March and from August to November, and with fruits from January to May and August to October.

Distribution. Known only from Santa Maria de Jetibá and Santa Teresa municipalities in Espírito Santo, Brazil (the majority of collections from two Conservation Units, Santa Lúcia Biological Station and Augusto Ruschi Biological Reserve, in Mountain Atlantic Forest); frequent; 600–850 m.

ADDITIONAL SPECIMENS EXAMINED. **Brazil.** ESPÍRITO SANTO: Mpio. Santa Maria de Jetibá: Rio das Pedras, propriedade de Emílio Feich, 23 Mar 2007 (fl, fr), *Fontana et al.* 3150 (MBML, RB). Mpio. Santa Teresa: morro da estação repetidora de TV, 13 Jan 1986 (fl), *Boone* 1016 (MBML, MO, RB); mata do Museu de Biologia Mello-Leitão, 5 Jan 2000 (fr), *Demuner & Bausen* 456 (MBML, RB); Mata Fria, terreno de Clério Loss (lado esquerdo), 13 Jan 2000 (fl, fr), *Demuner & Bausen* 537 (MBML); Estação Biológica de Santa Lúcia, trilha do Sagüi, na A3P16, 22 Sep 1999 (fr), *Demuner et al.* 15 (MBML, RB); Mata Fria, terreno de Clério Loss, 28 Oct 1998 (fl), *Kollmann et al.* 842 (MBML, RB); Aparecidinha, Terreno de Luiz Bringham, 9 Nov 1998 (fl), *Kollmann et al.* 896 (SPF); Estação Biológica de Santa Lúcia, trilha para o túmulo do Augusto Ruschi, 9 Aug 2005 (fl, fr), *Lobão* 1283 (RB); Mata Fria, 19 May 1999 (fr), *Lopes et al.* 740 (MBML, RB); Estação Biológica de Santa Lúcia, 19°58'S, 40°32'W, 16 Feb 1999 (yg fr), *Maas et al.* 8834 (MBML, OWU, U); Estação Biológica de Santa Lúcia, margem direita do Rio Timbuí, 12 Feb 1999 (fr), *Mello-Silva* 1557 (SPF); estrada para João Neiva, limite norte da Estação Biológica de Nova Lombardia, Sítio do Sr. Waldir, 13 Feb 1999 (fl), *Mello-Silva* 1571 (K, SPF); Estação Biológica de Santa Lúcia, 18 Jan 1995 (fl), *Thomaz* 787 (MBML, RB, SPF); Estação Biológica Santa Lúcia, 22 Sep 1993 (fl), *Thomaz* 812 (MBML, RB); Nova Lombardia, Reserva Biológica Augusto Ruschi, estrada João Neiva, final da reserva, proximo a represa Tracomal, 30 Apr 2002 (fr), *Vervloet et al.* 220 (MBML, RB); Nova Lombardia, Reserva Biológica Augusto Ruschi, 9 Oct 2002 (fr), *Vervloet et al.* 1188 (MBML); Nova Lombardia, Reserva Biológica Augusto Ruschi, estrada para João Neiva, parte inicial, 8 Jan 2003 (fl), *Vervloet et al.* 1640 (MBML).

Xylopia decorticans is named for the exfoliating bark of the twigs. In the key of Fries (1930), it would be identified as *X. lanceolata* because of its flat broad petals and elongate-lanceolate leaves with the blade exceeding 12 cm in length. The outer petals of the new species, however, are 16–22 mm long, as opposed to 12–15 mm in *X. lanceolata*, and the leaves reach an even greater length (maximum of 24 cm vs. 18 cm). *Xylopia lanceolata* is described as having the bark of the twigs reddish and cracked (“vetustioribus cortice rufo rimuloso obtectis”) but not peeling and flaking, as in *X. decorticans*. *Xylopia lanceolata* differs further from the new species in having the secondary veins of the leaves more ascending than perpendicular, and in having the flowers borne in leaf axils rather than on the trunk.

Cauliflory is relatively rare among Neotropical species of *Xylopia*, but occurs in the widespread *X. benthamii* R. E. Fries, in *X. longicuspis* and close relative *X. cuspidata*, and occasionally in *X. ochrantha*. *Xylopia benthamii* further resembles the new species in occasionally having a pink or salmon-colored hue to its flowers, an uncommon petal color in a genus where the flowers are usually white or cream colored, with at most a purple blotch on the inner surface of the petals toward the base. *Xylopia benthamii* has much smaller leaves (blade 9–12 cm long), and its twigs are slender and distinctly pilose, with no trace of exfoliating bark. In members of the *X. cuspidata/longicuspis* group the flowers are larger than those of *X. decorticans*, and the pale yellow petals are covered with a silvery or gray indumentum. The leaves of *X. ochrantha* are considerably smaller than those of *X. decorticans*, and the smooth twigs are persistently ferruginous-pubescent.

While the eastern Brazilian Mountain Atlantic Forest in which *X. decorticans* occurs is a threatened ecosystem, the species does occur in large populations within two legally protected conservation areas, and we judge that it best be placed in the

LR (lower risk) category of the IUCN Red List (<http://www.iucn.org/themes/ssc/redlist.htm>). Other Annonaceae of restricted distribution also occur at the two sites, namely *Annona acutiflora* Mart., *Guatteria pogonopus* Mart., *Guatteria sellowiana* Schltdl., and an undescribed species of *Unonopsis*.

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