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Chionanthus megistocarpus (Oleaceae), a new species from the Western Cordillera of Colombia

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Abstract

We describe a new species of *Chionanthus* (Oleaceae), from the Subandean forests of the Western Cordillera of Colombia. *C. megistocarpus* is similar to the Ecuadorian species *C. colonchensis*, but presents leaves with longer petioles [(12–)15–30(–35) mm], with obtuse leaf blades, without abaxial domatia, with longer inflorescences (10–20 cm long) and the largest fruits for this genus in the Neotropics (4.5–5 cm long).

Resumen

Se describe una especie nueva de *Chionanthus* (Oleaceae) de los bosques subandinos de la Cordillera Occidental de Colombia. *Chionanthus megistocarpus* es afín a la especie ecuatoriana *C. colonchensis*, pero presenta hojas con peciolo más largos [(12–)15–30(–35) mm], láminas obtusas, sin domacios axilares asociados a las venas del envés, inflorescencias más largas (10–20 cm) y los frutos más grandes en este género en el Neotrópico (4.5–5 cm de largo).

Introduction

Chionanthus Linnaeus (1753: 8) (Oleaceae) is a genus of ca. 100 species, mainly pantropical (Green 1994, 2009). It is ascribed to the tribe Oleae (Hoffmannsseg & Link ex Brown 1810: 522) Dumortier (1827: 52) subtribe Oleinae (Hoffmannsseg & Link 1809: 62) Wallander & Albert (2001: 390). In its current circumscription (Stearn 1976, Green 1994, Wallander & Albert 2000, Green 2004), *Chionanthus* includes many tropical species and a small group of species of temperate and subtropical areas of North America and Asia. Recent phylogenetic studies based on DNA (Hong-Wa & Besnard 2013) suggest the need to transfer some species of paleotropical *Chionanthus* (African and Indo-Pacific) to the genus *Noronhia* Stadman ex Du Petit-Thouars (1806: 8), the latter distributed mainly in Madagascar.

Until recently, 20 species of *Chionanthus* were known from Mesoamerica and South America, some of which were described in the last decade (Lombardi 2006, Green 2009, Cornejo *et al.* 2011). In Colombia, two native species, *C. compactus* Swartz (1788: 213) and *C. implicatus* (Rusby 1907: 314) Green (1994: 270), and the Ecuato-peruvian *C. pubescens* Kunth (1818: 235), occasionally cultivated in cold weather gardens (Green 1994), were known. More recently, as a result of study of herbarium collections of Colombia, three more new species of *Chionanthus* were identified. In all cases they came from the Subandean forests of central and west Colombia: *C. abriaquiensis* Fernández-Alonso & Cogollo (2016a: 63), from the Western Cordillera of Antioquia; a second one from the Central Cordillera, in the departments of Quindío and Risaralda, is in the process of description (Fernández-Alonso & Cogollo 2016b); and the third species, from the western Valle del Cauca, very distinctive for its leaves and fruit size, is here described.

Materials and methods

For the present study, classical taxonomic methods were followed. From herbarium collections, reproductive parts were rehydrated and dissected. Measurements of morphological features were done using a stereoscopic microscope Nikon SMZ645. Detailed photographs were taken with a Canon Power Shot A70. The studied collections were provided by COL, CUVC, FMB, HUA, JAUM, MA and MEDEL, which sent loans and allowed the consultation of some collections.

Chionanthus megistocarpus Fern.Alonso & Cogollo *sp. nov.* (Figs. 1, 2, 3)

Type:—**COLOMBIA**. Valle del Cauca, mun. de La Cumbre, Corregimiento de Bitaco, Reserva Agua Bonita, 1700–1900 m, vertiente occidental de la Cordillera Occidental; 10–15 December 1998, (fl, fr), *W.G. Vargas 5234* (holotype HUA-129462!).

Chionanthus megistocarpus is similar to *Chionanthus colonchensis* Cornejo & Bonifaz, from the Pacific moist forest of Ecuador; but differs from the latter by its leaves with longer petioles [12–)15–30(–35) mm long], blade without domatia, longer inflorescences (10–20 cm long), shorter corollas (3–6 mm long) and larger fruits (45–50 × 42–47 mm).

Trees (10–)15–30 m tall and 20–50 cm DBH; evergreen, young shoots yellowish, with noticeable lenticels; apex of shoots and buds with brown indumentum; hairs moniliform and flexuous, more or less bristly, soon deciduous; terminal buds with subcoriaceous cataphylls, 4–5 mm long, densely covered with brown to slightly silver hairs, appressed. Leaves opposite (rarely subopposite), without stipules; petioles flattened, more or less grooved on adaxial face, (12–)15–30(–35) mm long; with conspicuous basal pulvinus, up to 10 mm long, often bent at an angle of 45 degrees, glabrescent; blades coriaceous (papiraceous during anthesis) more or less delicate, obovate-lanceolate to elliptic, (10–)14–18 (up to 27 cm long in saplings) × (4–)6–9 cm; base narrowly cuneate, gradually tapered to the petiole, apex usually obtuse, margin entire, thick and irregularly undulate; midrib adaxially darker than the blade, with 10–13(–14) pairs of secondary veins, impressed; abaxial side with prominent midrib and secondary veins, broquidodromous distally; third- and fourth-order veins polygonal-reticulated, slightly prominent; glabrescent beneath, without domatia at the confluence of lateral veins and midrib. Inflorescences axillary, large branched panicles, 8–16(–20) cm long, with 4–6 pairs of first order branches, 3–4 cm long, with bracts up to 15 mm long, yellowish-green, promptly deciduous; branches arranged in a cymose pattern and with pairs of persistent bracts 3–4 × 1–2 mm, narrowly lanceolate; all branches, bracts and pedicels densely covered by a thin, erect or ascending indumentum, brown or pale brown; third order branches 1–2 cm long, with cymes of dichasial type; each cyme accompanied by bracts, dry brown or light brown, broadly lanceolate, arched, obtuse, 2 × 0.9 mm, hairy. Flowers bisexual, fragrant, with pedicels 1–3 mm long, densely brown-pubescent; flower buds subglobose, with calyx lobes incurved, young petals arched and facing the axis of the flower; mature calyx persistent, short, cup-shaped, ca. 2 × 2.5 mm, with four lobes 0.4–0.6 mm long, broadly triangular or more often obtuse or rounded, slightly unequal, densely covered with short, brown indumentum; corolla white-green, membranous, rigid; four petals, linear or gradually widened at the base, apex slightly truncated, 3–6 mm × 0.3–0.4, glabrous on both sides or sparsely covered with a band of hairs on the outer side; stamens 2, 1–1.3 mm long, generally not exceeding the calyx, the corolla and the pistil in length; filaments 0.2–0.3 mm long, connective very thin, shorter than the anther, without visible appendix, anther truncate-ellipsoid, ca. 1 × 0.7 mm, pistil ovoid-fusiform, 1.3–1.5 × 0.6 mm, gradually narrowed towards the style, stigma slightly 2-lobed. Fruit peduncle up to 5.5 cm long, usually with a single or few drupes developed; fruit subglobose to ellipsoid and purple when mature, 45–50 × 42–47 mm; epicarp with irregular surface, with sparsely distributed small lenticels or tubers, with a single large pyrene and a seed.

Etymology:—The specific epithet refers to the large size of the mature fruit, the largest for this genus in the Neotropics.

Distribution, habitat and phenology:—*Chionanthus megistocarpus* is only known from Subandean cloud forests, located between 1700–2100 m elevation in the Valle del Cauca, Colombia. It grows in pristine forests in the basin of the Bitaco river, a tributary of Dagua river. This region belongs to the western slope of the Western Cordillera of Colombia.

Specimens with flowers have been collected in December, and with fruits from July to December. Dispersion of the fruits of this species seems to be carried out by some kind of Caracidae and toucans (Ramphastidae) that inhabit these forests type (Ríos *et al.* 2004).

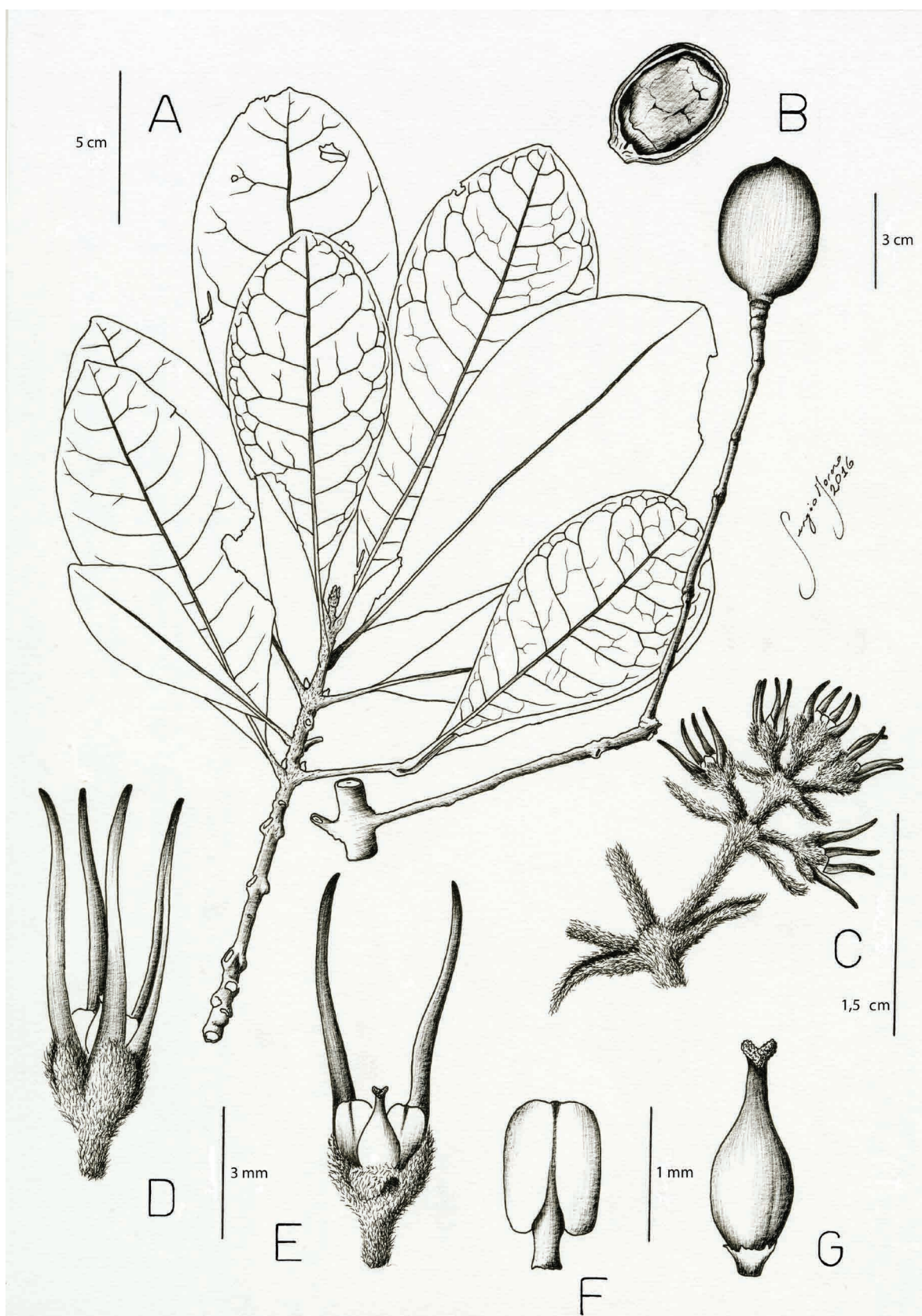


FIGURE 1. *Chionanthus megistocarpus* Fern.Alonso & Cogollo. A. Terminal branch showing the arrangement of the leaves. B. Fruit with partial fragment of a inflorescence branch and a sagittal section of a fruit showing the endocarp. C. Distal portion of an inflorescence branch (third-order branch), with cymes of dichasial type, with bracts. D. Flower showing the arrangement of sepals and petals. E. Dissected flower showing the calyx lobes, two sub-sessile stamens in their natural position, two petals and pistil. F. Detail of a stamen, the filament and the anthers. G. Pistil and the two divergent stigma lobes. A–B. Drawn from the paratype *W. G. Vargas 5358* (HUA), C–G. from the holotype *W. G. Vargas 5234* (HUA). Illustrations by Sergio Moreno.



FIGURE 2. *Chionanthus megistocarpus* Fern.Alonso & Cogollo. Photograph of two branches with inflorescences and open fruit remnants. Holotype, *W.G. Vargas 5234* (HUA-129462).



FIGURE 3. *Chionanthus megistocarpus* Fern.Alonso & Cogollo. A. Terminal bud. B. Distal part of an inflorescence, with dichasia. C. Axes of the inflorescence with some immature fruits. D. Epicarp of the mature fruit showing inside the woody endocarp and seed. Photographs: A and D (Vargas 5358); B (Vargas 5234) and C (Mendoza 15252). Scale bars = 1.0 cm.

Conservation status:—So far, the known distribution of *Chionanthus megistocarpus*, is restricted to the Subandean forest altitudinal range, in the Bitaco river basin, Western Cordillera of Colombia. In this region there are crops of tea (*Camelia sinensis*) and the forest remnants are undergoing some degree of alteration because of deforestation. According to the IUCN categories (2012) it should be considered in the category: data deficient (DD). Although it may probably be classified later as endangered (EN), if its restricted distribution associated with preserved relict forest is confirmed.

Additional specimen examined:—COLOMBIA. Valle del Cauca, mun. de La Cumbre, Corregimiento de Bitaco, Vereda Chicoral, 2020 m, 3°33'56"N, 76°35'3"W, 23 July 2003 (fr), *H. Mendoza et al.* 15250 (CUVC-50208!, FMB-65599!); ibidem, 2093 m, 22 July 2003 (fr), *H. Mendoza et al.* 15252 (COL-568134!, FMB-100001!); ibidem, 2030 m, 23 July 2003, *H. Mendoza et al.* 15261 (FMB-65601!); ibidem, 2020 m, 23 July 2003, *H. Mendoza et al.* 15286 (FMB-65602!); ibidem, 2020 m, 23 July 2003, *H. Mendoza et al.* 15325 (FMB-67599!); ibidem, Reserva Agua Bonita, 1700–1900 m, 10–15 December 1998, (fr), *W.G. Vargas* 5358 (HUA-125583!).

Discussion:—*Chionanthus megistocarpus* can be easily separated from the rest of the Neotropical species of the genus by its fruit size (4.5–5 cm long) and its obovate-elliptic and obtuse leaves, without domatia on the abaxial side. It is morphologically similar to *C. colonchensis* Cornejo & Bonifaz in Bonifaz & Cornejo (2004: 160–161), which grows in tropical moist forests (600 m) in western Ecuador, but this species can be separated by the presence

of shorter petioles (5–18 mm) and longer blades (13.5–30 cm), with domatia, larger flower corolla (> 10 mm long) and black and smaller fruits (30–40 mm long) when mature. The other two Colombian species that grow in the range of Subandean forests, *C. abriaquiensis* (Fernández-Alonso & Cogollo 2016a) and *C. vargasii* (Fernández-Alonso & Cogollo, 2016b, in press) also have large inflorescences (> 10 cm long), but they can be clearly separated because, unlike *C. megistocarpus*, they have narrowly elliptical or oblong leaves, with 12–16 veins on each side, and domatia associated with the veins on the abaxial side of the leaves.

Key to separate *Chionanthus megistocarpus* from morphologically similar species in the north of South America.

1. Deciduous trees, flowers with pink or purple petals, 15–25 mm long. Plants growing in Inter-Andean dry forest *C. pubescens* Kunth
- Evergreen trees, flowers with white petals, rarely pale lilac, less than 15 mm long. Plants growing in tropical wet, gallery forest, moist forest, Subandean cloud forest.....2
2. Leaves coriaceous, elliptical or elliptical-oblongate, fruit 30–50 mm long 3
- Leaves not coriaceous and elliptical or elliptical-oblongate, fruit shorter than 30 mm long (Other species of north of South América).
3. Petiole 6–18(–20) mm long, blades with domatia in the veins of the lower surface; axillary inflorescences 5–10 cm long, corolla 13–17 mm long; mature fruit subglobose, 30–40 × 25–30 mm, black when mature (moist forest, c. 600 m, western Ecuador) *C. colonchensis* X. Cornejo & C. Bonifaz
- Petiole (12–)15–30(–35) mm long, blades without domatia on the lower surface; axillary inflorescences 8–16(–20) cm long, corolla less than 10 mm long; mature fruit ellipsoid 45–50 × 42–47 mm, purple when mature (Subandean forest 1700–2100 m, western Colombia)..... *C. megistocarpus* Fern. Alonso & Cogollo

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