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A new species of *Colubrina* (Rhamnaceae) of the Amazon region of Ecuador

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Abstract

A new species of *Colubrina* from the Amazon region of Ecuador is described and illustrated. The species is characterized by its elliptical and distichously arranged leaves, 10–18 × 4–8 cm, and the presence of basal, concave elliptical, glands, the short-shoots of the inflorescence with few nodes and seeds with two inner sides flat-concave and third side, as wide as the previous two and convex. The new species has been widely collected in areas below 700 m, and is expected to occur in similar habitats in the border areas of Colombia and Peru.

Key words: *Colubrina*, amazonica, concave glands, Ecuador

Introduction

Colubrina Richard ex Brongniart (1826: 61) in the family Rhamnaceae includes 32 species. Species of this genus are distinguished by simple, alternate, distichously arranged leaves, with two glands at the base of the leaves or glands rarely scattered on the abaxial surface. Their inflorescence are arranged in fascicles or a cyme with bisexual flowers, and with a cup-shaped floral tube, with 5 stamens clasped by the petals; a discoid nectary disc fused to the floral tube. The fruits of *Colubrina* are dry, and fragment into three dehiscent cocci at maturity.

Colubrina includes 32 species occurring in tropical America, Asia, the Pacific and Madagascar (Johnston 1971, Wendt 1983, Pennington et al 2004), with two species in Peru (Pennington et al 2004): *C. glandulosa* Perkins (1911: 465) and *C. retusa* (Pittier 1937: 428) R.S. Cowan (1952: 405). For Ecuador, Liesner (1999) has reported three species: *C. arborescens* (Miller 1768) Sargent (1913: 167), *C. elliptica* (Swartz 1788: 50) Brizicky & W.L. Stern (1958: 95) and *C. spinosa* Donn. Smith (1897: 4). For over 25 years, many collections of *Colubrina* have been made in the Amazon region of Ecuador. Some of these specimens were initially determined as *C. arborescens, C. elliptica and C. spinosa*. However, after a thorough study of the collections deposited at the herbaria QCNE and QCA in Ecuador, and a careful analysis of images of type specimens available from the database of Global Plant Initiative web site, specialized literature, and consultation with colleagues, it was concluded that such specimens were wrongly identified and corresponded to an undescribed species described below.

Colubrina amazonica W. Palacios, *sp. nov*. (Fig. 1)

The new species is similar to *C. spinosa*, but differs in its leaves which have 5–8 pairs of lateral veins and the basal concave glands elliptical, usually with the longer outer edge tangential to the leaf margin, the fascicle of sessile short-shoots with few nodes covered by overlapping bracteoles, together usually forming a globose mound and the individual short-shots not easily discernable.

Type:—ECUADOR, Sucumbíos: Quebrada Güepicillo, cuenca del Río Güepí, esquina noreste de Ecuador, Inventario Rápido, campamento 3, 00°10.38'W, 75°40.33'S, 220–276 m elev., October 2007, *W. Palacios*, *N. Dávila*, *R. Foster*, *B. Alverson*, *C. Vriesendorp*, *J. López*, *L. C. Lucitante* & *S. Descante 16111* (holotype 209784 QCNE!, isotype F!).

Tree to 15 m tall. Young branches with elongated lenticels. Leaves simple, alternate, 10–18 × 4–8 cm, elliptical, less frequent oblong or obovate, membranaceous, glabrous or rarely with scattered hairs on the median nerve on the abaxial surface, 5–8 pairs of lateral veins, and two glands in the outer margin of the base of the blade on the abaxial

surface, one to each side of midrib. The glands are elliptical, concave, with raised edges usually with the longer outer edge tangential to the leaf margin. The base of the leaflets is obtuse or acute, margins entire, apex broadly apiculate or acuminate, the tip as an extension of the midrib to form a tiny acumen or not, rarely retuse. Stipules 3–7 mm long, deciduous, lanceolate; petiole 0.8–1.3(–1.5) cm long. Inflorescence axillary or ramiflorous, sessile short-shoots with few nodes covered by overlapping bracteoles, together usually forming a globose mound and the individual short-shots not easily discernible, covered with dense hairs. Flowers 20–30 per fascicle, with scattered sinuous hairs; pedicels 0.5–1.2 cm long in flower, 1–1.8 cm long in fruit; hypanthium funnel-shaped, 1–1.5 mm long; sepals 5, ovate, 0.8–1.3 mm long; petals 5, induplicate, membranaceous, 0,7–1.2 mm; stamens 5, incurved, covered by petals; disc an annular ring, flattened, glabrous; ovary broadly ovoid, glabrous. The fruit is a trilocular capsule, rounded or slightly triangular, smooth, 8–12 mm, dividing at maturity into 3 endocarpids, endocarpids separating irregularly under of a ventral line, the 2 septa and to some degree dorsally. The base of the septum is retained on a flattened hypanthium, forming a columnella with tree basal membranaceous wings. The seeds are one per endocarpid, 4–6 mm long, with the two inner sides flat-concave and the third side as wide as the other two and convex, brown-bright.

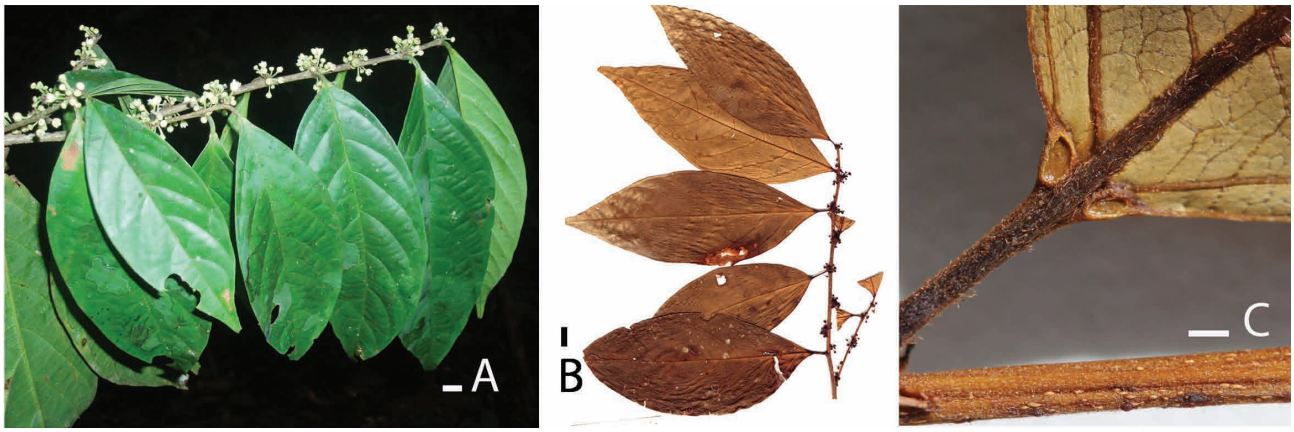

FIGURE 1. *Colubrina amazonica*: A. photograph of fresh (bar = 1 cm), B. pressed specimen (bar = 1 cm) and C. detail of glands on the abaxial leaf (bar = 2 mm). A and B material from *Palacios 16111 et al.* (F), isotype; C from *Cerón* et al 8750 (QCNE).

Etymology:—The name of the new species refers to the Amazon region of Ecuador where the species is found.

Distribution and habitat:—The new species has been described based on specimens of Amazon region of Ecuador, however, according Pool (pers. comm., 2015), at least two collections of Peru Amazon deposited MO, corresponding to the new species.

Etnobotany and vernacular names:—This species is called "oncatahue" (Waorani name) by the local inhabitants.

Phenology:—Flowering occurs mainly from August to November and fruits from December to April.

Specimens examined:—Sucumbíos: Cantón Shushufindi, Comunidad San Isla, 00°20'15"S, 76°20'01"W, *E. Freire & I. Suárez 5050, 5065* (MO, n.v, QCNE!); *R. Bensman 307* (QCNE!); Comunidad de Santa Elena, 00°20'46"S, 76°33'14"W, 250 m, *D. Reyes 230* (MO, n.v, QCNE!). Napo: Estación Biológica Jatun Sacha, Río Napo, 8 km al E de Misahuallí, 01°04'S, 77 36 *W, 450 m. R. Bensman 102* (QCNE!); *C. Cerón 6109, 6138, 6151, 7361* (MO, n.v., QCNE!); *C. Cerón & C. Iguago 5362, 5368, 5391, 5397, 5524, 5529, 5626, 5633* (MO, n.v., QCNE!); *C. Cerón, M. Crizón & C. Iguago 8750* (MO, n.v., QCNE!); Carretera Campococha-Chontapunta, 00°55'S, 077°25'W, *T. Núñez & G. Tapuy 661 (MO)*. Orellana: Joya de los Sachas, Pompeya. Sendero hacia el Río Indillama a partir de la casa de S. Papa, 00°25'S 076°37'W, *E. Gudiño & S. Papa 1918* (MO); Cantón Orellana, Comuna Parutu Yacu, 15 este de Coca, Laguna Taracoa, 00°25',S,76°50',W, 240 m, *D. Neill & W. Rojas 9983* (MO, n.v., QCNE!); Parque Nacional Yasuní, vía Maxus, 00°35'S, 76°30 W, 230 m, *D. Neill et al., 10288* (MO, n.v., QCNE!); *M. Aulestia et al., 2992* (MO, n.v., QCNE!); *M. Aulestia & N. Andi 648* (MO, n.v., QCNE!); *M. Aulestia, et al.,1200* (MO, n.v., QCNE!); *Dik 780* (MO, n.v., QCA, QCNE!); *J. Macía & C. Vélez 1925* (QCNE!); *B. Ollgaard et al.,57055* (QCNE!); *N. Pitman & M. Aulestia 220* (QCA!, QCNE!); *F. Hurtado 3032* (MO, n.v, QCNE!); *K. Romoleroux & R. Foster 2493* (MO); *G. Villa et al. 148* (MO, n.v.); Carretera MAXUS km 3.5–3.9, 00°25'S, 76°37'W, *E. Gudiño et al., 2105, 2295* (MO); *A. Grijalva et. al., 396, 400, 417* (MO, QCNE); Tiputini, Biodiversity Station, 00°38'S, 076°10'W, *N. Pitman & T. Delinks 2969* (MO); Reserva Etnica Huaorani. Carretera y oleoducto de Maxus, Km 116+6, 01°03'S, 076°12'W, *M. Aulestia* y *Bainca 3475* (MO). Pastaza: Pozo Petrolero Namoyacu, 30 km al sur de Curaray, 76°57' W, 01°40'S, 290 m, *S. Espinoza y T. Coba*

577 (MO, n.v., QCNE!). According Pool (pers. comm., 2015) the specimens Ayala 2330 and 2361, both from Peru, Prov. Loreto, Dtto. Tigre, on Rio Corriente Forestales Shiviyacu, both in MO, appear to be this same species.

Discussion:—Liesner (1999) reported three species of *Colubrina* for Ecuador: *C. arborescens*, *C. elliptica* and *C. spinosa*. Subsequent analyses of voucher specimens at MO and CQA suggest different. For instance, collections such as Neill 6869 (MO) reported as *C. elliptica*, corresponds to *C. arborescens*; while the collection of Cerón & Iguago 5397 (MO) reported as *C. spinosa*, corresponds to the new species described here. In addition, the sterile collection of *Cerón & Yánez 59922* (MO, CQA!), could correspond to *C. glandulosa* var. *glandulosa*. Furthermore, the status of *C. arborescens* is unclear. This species is cultivated in the Coast, from where it was supposedly taken to the Amazonian region of Ecuador. It is locally known as *caoba de Manabí*, in honour of the Manabí Province, so some argue that it is in fact a species native to Ecuador. To facilitate identification of *C. amazonica* a comparative table including other *Colubrina* species found in Ecuador is presented below (Table 1).

TABLE 1. *Colubrina amazonica* comparison with other species of Ecuador

	C. amazonica	*C. spinosa*	*C. glandulosa* var. *glandulosa*	*C. arborescens*
Buds	Subglabrous glabrous or with scattered and winding hairs	With ascending appressed trichomes, ferrugineous or reddish-brown	Ferrugineous	Ferrugineous
Leaf shape	Elliptical, less frequent oblong or obovate	Generally elliptical, broadly elliptic or oblanceolate (rarely obovate)	Ovate, lanceolate, less frequent elliptic	Oblong, less frequent elliptic
Venation	Pinnate: 5–8 secondary pairs	Pinnate: 8–12(–13) pairs	Basal trinerve; upper veins strongly ascending	Pinnate: 5–7 pairs
Glands on the abaxial lamina	Two elliptical and concave, usually with the longer outer edge tangential to the leaf margin	Two fungiform, circular or globose, attached basally to abaxial leaf surface and along part of circumference tangentially to leaf margin	Two elliptical basal glands, but sometimes also other scattered glands especially in the basal part of the lamina	Several circular glands, scattered near the margin of the lamina
Inflorescences	Axillary or ramiflorous fascicles of few short-shoots, with few nodes, together usually forming a globose mound and the individual short-shots not easily discernable, with dense hairs	Axillary fascicles of several short shoots, ferrugineous -tomentose almost hairless; often elongated and thick short shoots, usually several to many nodes, generally individually discernible	A wide cyme to 5 cm long	A cyme to 2.5 cm long.

In her treatment of *C. spinosa* for Flora Mesoamericana, Pool (2015) studied several Ecuadorian specimens deposited at MO and cited above. Pool also concluded that some specimens were not *C. spinosa* and belong to an undescribed species. *Colubrina amazonica* is similar to *C. spinosa*, considered native to Central America and Mexico, in many characters: leaf (position, shape, size, pubescence and arrangement), inflorescence type (fascicled short-shoots, the short-shoots with nodes covered by over lapping bracteoles), flowers (size, nature of disc, annual ring not obscuring semi-inferior ovary) and fruits (size and nature, including presence of columnella) but differs in the leaves with 5–8 secondary veins, a pair of concave and elliptical glands usually with the longer outer edge tangential to the leaf margin and short-shoots of inflorescence with few nodes, together usually forming a globose mound and the individual short-shots not easily discernable. In contrast, *C. spinosa* has leaves with 8–12(–13) pairs of secondary veins, two fungiform (that is circular with strongly raised margin and depressed center) or globose glands, the glands attached basally to abaxial leaf and along part of circumference tangentially to leaf margin, and short-shoots of inflorescence with several to numerous nodes and individually discernable (Pool 2015).

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