

A NEW SPECIES OF *CROTON* (EUPHORBIACEAE)
FROM NICARAGUA

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ABSTRACT

Croton nubigenus, a new species of cloud forests in northern Nicaragua, belongs to sect. *Tiglium* and appears most closely related to Mexican species such as *C. adpersus*, *C. tremulifolius*, and *C. ynesae*, as well as *C. wilsonii* of Jamaica.

RESUMEN

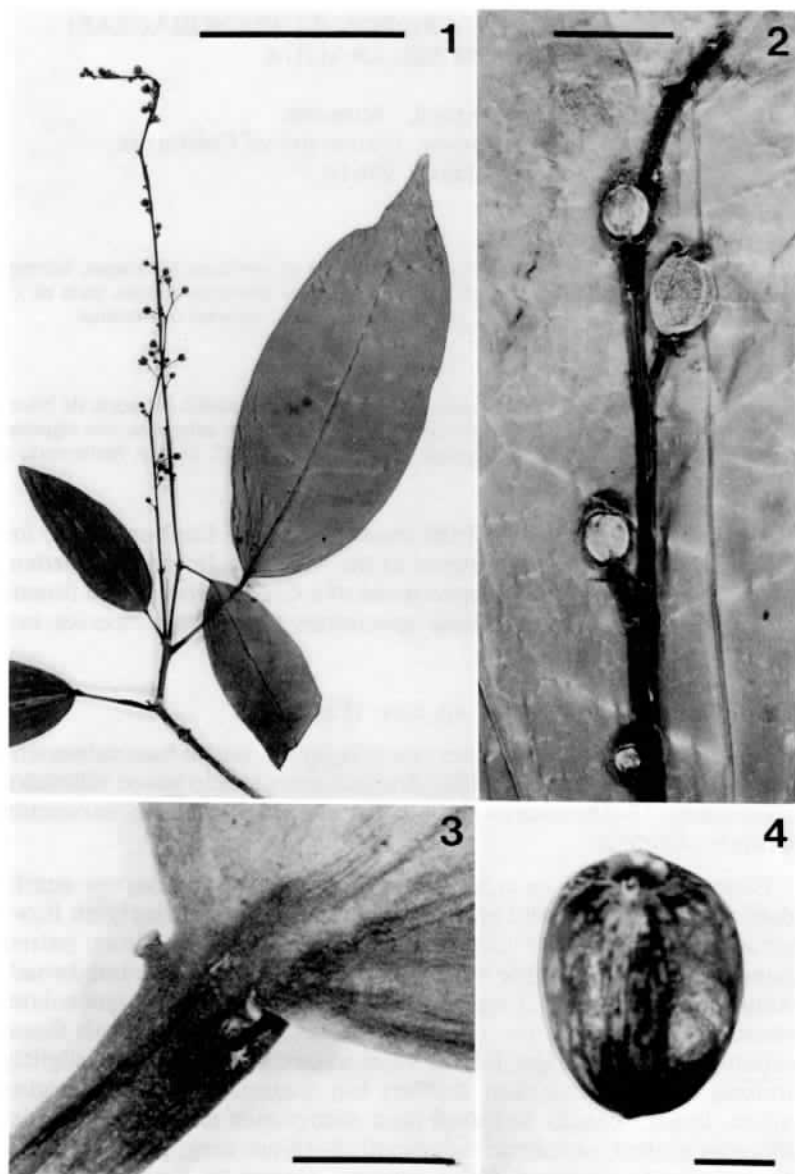
Croton nubigenus, una nueva especie de los bosques nublados del norte de Nicaragua, pertenece a la secc. *Tiglium* y parece tener afinidades estrechas con algunas especies Mexicanas como *C. adpersus*, *C. tremulifolius*, y *C. ynesae*, incluyendo a *C. wilsonii* de Jamaica.

During the preparation of the treatment of the Euphorbiaceae for the "Flora of Nicaragua" project at the Missouri Botanical Garden, I encountered a number of specimens of a *Croton* from cloud forests on peaks in Nicaragua. These specimens represent a species not formerly described.

Croton nubigenus Webster, sp. nov. (Figs. 1-4)

Arbor dioica, foliis penninerviis subglabris, limbo basi subsessilibiglanduloso, stipulis deltoidis, floribus receptaculo parce villosulo, staminibus 13-15, ovario stellato-hirtello, stylis bifidis, caruncula seminis obsoleta.

Dioecious shrubs or trees 3-5 m high; twigs and leaves nearly glabrous (with appressed pauciradiate stellate hairs mainly on flowers and young growth). Leaves with petioles 1.5-7 cm long; paired glands at apex of petiole subsessile, 0.4-0.6 mm high and broad; stipules deltate, 0.2-0.3 mm; blade chartaceous, oblong-lanceolate, bluntly acuminate at tip, cuneate at base, glabrous on both faces; venation pinnate, major lateral veins about 8-10 on a side, slightly arching, veinlet reticulum distinct but tenuous beneath; margins entire. Inflorescences terminal (and sometimes also at uppermost adjacent nodes), racemose, unisexual, 5-18 cm long; pistillate flowers solitary at nodes, 4-6 per raceme; staminate flowers 2-5 per node; bracts deltate, entire, about 0.5 mm long. Staminate flower: pedicel 2.5-4.5 mm long; sepals 5, valvate or slightly imbricate,



FIGS. 1-4. Photographs of *Croton nubigenus*. FIG. 1. Flowering branch of staminate plant (*Pipoly 6038*). FIG. 2. Apical portion of pistillate inflorescence (*Grijalva 313*). FIG. 3. Base of leaf blade showing petiolar glands (*Grijalva 313*). FIG. 4. Adaxial view of seed (*Pipoly 6052*). Bar equals 5 cm in Fig. 1, 1 cm in Fig. 2, 2.5 cm in Figs. 3 and 4.

deltate-ovate, acute, glabrous or with very sparse appressed stellate hairs, 1.8–2 mm long, 1.2–1.5 mm broad; receptacle sparsely villose; petals 5, elliptic-spatulate, glabrous on both faces, short-villosulous at tip and margins near base, 1.7–2 mm long, 0.5–0.8 mm broad; stamens 13–15; filaments glabrous, anthers 0.6–0.8 mm long. Pistillate flower: pedicel becoming 5–8.5 mm long, 0.8–1 mm thick, subglabrous; sepals 5, lanceolate, entire, acute, basally connate, 1.2–1.5 mm long, subglabrous or sparsely appressed-stellate abaxially, copiously hirsutulous (with simple hairs) adaxially; disk patelliform, thickish, shallowly 5-lobed, subglabrous, 1.5–1.8 mm across; petals obsolete (represented by tufted hairs); ovary ellipsoidal, densely stellate with more or less appressed 8–12-radiate hairs about 0.2–0.3 mm across; styles bifid, 2.5–3.5 mm long, branches slender. Capsule not seen intact; columella slender, 8–8.5 mm long; seeds plump, ellipsoidal, brownish, smooth, 7.3–8 mm long, 5.5–5.6 mm broad; caruncle reduced or obsolete.

TYPE: Nicaragua, Zelaya, primary cloud forest on summit of Cerro La Pimententa, 900–980 m, 13°45'N, 84°59'W, 13 Apr 1979, *Pipoly 5113* (Holotype: MO; isotype, DAV).

PARATYPES: Nicaragua, Zelaya, Cerro La Pimententa, *Pipoly 6038, 6052* (DAV, MO); Cerro El Hormiguero, *Grijalva 313, 462* (DAV, MO); Cano El Hormiguero, *Pipoly 6102* (DAV, MO).

This new species appears to be rather narrowly restricted to cloud forests on peaks of a small area of the Cordillera Isabella near the boundaries of the departments of Jinotega and Zelaya. In the last complete revision of *Croton* by Mueller Argovienensis (1866), it would key down near *Croton wilsonii* Griseb., a Jamaican species referred by Mueller to series III of sect. *Croton*. According to the revision of his supraspecific taxa of *Croton* in the "Flora Brasiliensis" (Mueller 1873), the position of *Croton wilsonii* would fall in sect. *Croton*, subsect. *Cleodora*, ser. *Medea*. As noted by Bentham (1880) and others, however, the sectional and subsectional taxa of Mueller are defined arbitrarily and often are highly unnatural. It appears on the basis of a number of common characters (discussed below) that *C. wilsonii* and *C. nubigenus* should be referred to sect. *Tigliamentum* (Kl.) Baillon. Although Baillon (1858) included in his section the single species *C. tigliamentum* L., a medicinal plant native to India, Mueller (1866) recognized several related Asiatic and African species (with-out, however, granting *Tigliamentum* any formal taxonomic recognition).

In the absence of any thorough revision of the genus *Croton* during the century subsequent to Mueller's monographic work, description of new species has taken place with little appreciation of possible biogeographic relationships. The relationships among species of sect. *Tigliamentum* have been almost totally obscured by the complications of fragmentation of effort and failure of the classical 19th century classifications to adequately reflect phylogeny.

Croton nubigenus clearly belongs in the same section as *C. wilsonii* because of its sparse indumentum of appressed stellate hairs, penninerved leaves biglandular at base, small entire sepals of pistillate flowers and bifid styles. It differs from the Jamaican species, however, in its broader entire leaves, sexual condition (dioecious instead of monoecious), larger stamen number, and distinctly pedicellate pistillate flowers. Among species of mainland North America, *C. nubigenus* shows some similarity to *C. ynesae* Croizat from western Mexico. *Croton ynesae* nevertheless differs in many ways, including coarsely serrate leaves, monoecious inflorescences, reduced pistillate calyx, and carunculate seeds. In South America, there are a few species that are suggestively similar to *C. nubigenus*, including *C. fraseri* Muell. Arg. from Ecuador and *C. sapiifolius* Muell. Arg. from Brazil. Mueller (1865, 1866) made the latter species the type of sect. *Quadrilobus* Muell. Arg. because of the 4-merous flowers, but in both vegetative and floral characters it somewhat resembles *C. nubigenus* and *C. wilsonii*. If the American species of the "Tigium" alliance are treated as a section distinct from the Old World species, then sect. *Quadrilobus* would be the correct name. However, although our knowledge of these plants is still rather fragmentary, I believe that it is better to recognize sect. *Tigium* in an inclusive sense to include not only sect. *Quadrilobus* but also sect. *Gymnocroton* Baillon (1858), based on the Australian *C. verreauxii* Baillon. The widespread but fragmentary nature of the distribution of sect. *Tigium* (s. lat.) raises interesting biogeographical questions that can only be answered by a revision of the sections of *Croton*, and a more thorough study of the species putatively related to *C. nubigenus*.

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LITERATURE CITED

- BAILLON, H. 1858. Étude général du groupe des Euphorbiacées. Victor Masson, Paris.
- BENTHAM, G. 1880. Euphorbiaceae. In G. Bentham and J. D. Hooker, *Genera Plantarum* 3:239-340. L. Reeve & Co., London.
- MUELLER, J. 1865. Vorläufige Mitteilungen aus dem für De Candolle's Prodrömus bestimmten Manuscript. *Linnaea* 34:1-224.
- . 1866. Euphorbiaceae In A. De Candolle, ed., *Prodrömus systematis naturalis regni vegetabilis* 15(2):189-1261. Victor Masson, Paris.
- . 1873. Euphorbiaceae [part 1]. In A. W. Eichler, ed., *Flora Brasiliensis* 11(2): 1-292. Munich.

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