

## TERNSTROEMIA WASHIKIATII (PENTAPHYLACACEAE): A NEW TREE SPECIES FROM EASTERN ECUADOR

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**Abstract.** *Ternstroemia washikiatii* a new species of Pentaphylacaceae from the Amazonian forests of Eastern Ecuador, is here described and illustrated. It is distinguished from the remaining species in the genus by the large leaves (21–33 × 8.5–11 cm), and the very distinctive large fruits (4.5–5.5 × 6.5–7.7 cm) with six to nine seeds. *Ternstroemia washikiatii* is assessed as Near Threatened.

**Resumen.** Se describe e ilustra *Ternstroemia washikiatii*, una nueva especie de Pentaphylacaceae de los bosques amazónicos del oriente de Ecuador. Esta nueva especie se distingue de las restantes en este género por las hojas grandes (21–33 × 8.5–11 cm) y los frutos grandes (4.5–5.5 × 6.5–7.7 cm) con seis a nueve semillas, que son muy distintivos. A esta nueva especie se asigna el estatus de Casi Amenazada.

**Keywords:** Amazonia, Pentaphylacaceae, *Ternstroemia washikiatii*, Ecuador, endemic

*Ternstroemia* Mutis ex L. f. (Pentaphylacaceae) is widely distributed in tropical and subtropical America, Africa, Southeast and East Asia (Weitzman et al., 2004; Berry and Weitzman, 2005; Mabberley, 2008; Santamaría Aguilar et al., 2015). The genus comprises ca. 100 species, ca. 60 of those occurring in the Neotropics (Every, 2009), including the type, *Ternstroemia meridionalis* Mutis ex L. f., collected in northwestern South America. Four species were reported for Ecuador (Jørgensen and León-Yáñez, 1999, as Theaceae) but none in the Amazon region. During field work in Eastern Ecuador the senior author collected a tree with large fruits that does not match any of the current species described in the genus. After consulting collections in AAU, GB, GUAY, MO, NY, and S (herbarium acronyms according to Thiers, 2016), as well as images of type collections on JStor (plants.jstor.org) we concluded that these collections belong to an undescribed species that we formally present herein.

***Ternstroemia washikiatii*** Cornejo & C.Ulloa, *sp. nov.*  
TYPE: ECUADOR. Pastaza: 18 km E from Puyo, finca Ursula, secondary wet forest, 1°30'28"S 77°50'16"W, 650 m, 3 July 2016 (fr), *Xavier Cornejo & Naten Washikiat* 8808 (Holotype: GUAY; Isotypes: MO, NY, QCA). Fig. 1.

Species nova affinis *Ternstroemia macrocarpa* Triana & Planch. et *T. kruckhoffiana* Kobuski, a qua foliis et fructus grandioribus, semina 6–9 (vs. 16–18 *T. macrocarpa*, 1–2 *T. kruckhoffiana*) differt.

*Tree* to 14 m tall and 30 cm or more dbh; glabrous throughout. *Branches* stout, lenticellate, glabrous. *Stipules* absent. *Leaves* spirally arranged, clustered at end of terminal branches; *blades* coriaceous, shortly oblanceolate or narrowly-obovate to narrowly-elliptic, 21–33 × 8.5–11 cm, cuneate at base, barely obtuse and acuminate at apex, the acumen 1.5–2.7 cm long, margins minutely denticulate to serrulate in seedlings, turning entire with age, mature leaves

with revolute margins mainly at base, dark green (in vivo) and dark brown (dry), midvein sulcate above, pale green (in vivo) and light brown with abundant glandular darker dots and a prominent midvein beneath (dry); main lateral veins ca. 14 to 17 on each side, weakly brochodromous, intersecondaries present, glabrous on both sides; *petioles* 1.5–3 × 0.3–0.4 cm, flattened-depressed and longitudinally channeled adaxially, glabrous. *Inflorescences* and flowers not seen. *Fruits* terminal amphisarca, globose-depressed, 4.5–5.5 × 5.5–7.7 cm, mucronulate at apex, opaque orange, abundantly lenticellate and glabrous at maturity; crowned by a persistent calyx, the calyx lobes 5(–6), imbricate in 2 whorls, the external whorl of lobes cartilaginous, ovate to deltoid, 1.0–1.4 × 0.8–1.2 cm, the margins glandular denticulate, the apex apiculate, glabrous without. *Pedicels* in fruit, 1.2–1.7 × 0.7–0.9 cm, straight to weakly curved, 1-ribbed laterally, abundantly lenticellate. *Mesocarp* 0.8–2 cm thick. *Locules* 2; placentation basal, the seeds attached from the apex of a central column. *Seeds* 6 to 9, obovate to somewhat oblong, 2–3 × 1.3–2 cm (in vivo), 2–2.5 × 1.3–1.7 cm (dry), testa orange, covered by a soft, purple-red sarcotesta.

**Eponymy:** The epithet of this taxonomic novelty honors Ramiro Washikiat, the indigenous Achuar co-collector, for his invaluable help gathering samples of this tree when first discovered.

**Paratype:** ECUADOR. Pastaza: 18 km E from Puyo, finca Ursula, secondary wet forest, 1°30'28"S, 77°50'16"W, 650 m, 10 January 2016 (fr), *X. Cornejo, R. Washikiat & A. Kay 8770* (GUAY).

**Habitat and distribution:** *Ternstroemia washikiatii* is known only from a single tree in the type locality. The habitat is a secondary Amazonian forest located at finca Ursula, a private property located 18 km E from Puyo, Pastaza province, in Eastern Ecuador.

Thanks are due to Ursula Gelchsheimer for the kind invitation to explore the finca Ursula, the type locality. We also thank the curators of AAU, GB, GUAY, MO, NY, and S for permitting us to study their holdings, and Peter Stevens for discussion on the identity of this plant, and the comments of two anonymous reviewers.

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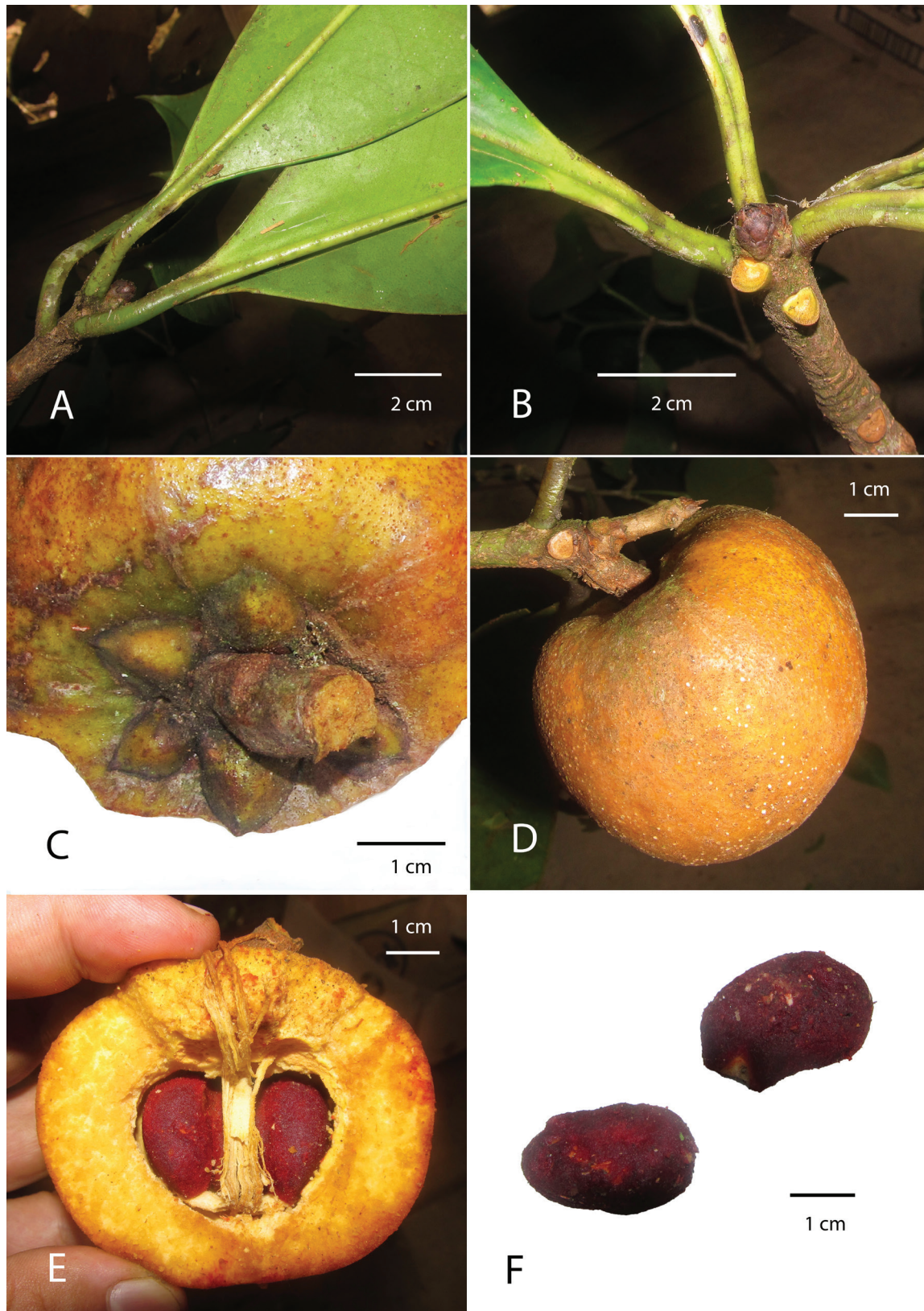


FIGURE 1. *Ternstroemia washikiatii* Cornejo & C.Ulloa. **A**, terminal leafy branch bearing petioles and cuneate leaf bases, abaxial view; **B**, terminal leafy branch bearing channelled petioles and fresh petiolar scars, adaxial view; **C**, fruit with pedicel and persistent calyx, basal view; **D**, mature fruit attached to a terminal branch, lateral view; **E**, Longitudinal section of a mature fruit; **F**, detached seeds. Photographs by X. Cornejo based on the Holotype.

**Seed germination:** Seeds outside of the fruit have been observed to germinate after six to seven months without removal of the sarcotesta. After falling, the fruits remain hard and last for several months on the forest floor until they decompose. A cut of fully closed fruit revealed that the seeds have the ability to germinate before the exocarp and mesocarp decay, and without help of dispersers. Those young seedlings carefully removed from closed fruits could potentially be cultivated. These observations suggest that the fruits could be harvested from the forest and stored in a moist, shady environment for several months in order to manage the species for reforestation, forest restoration, or ex situ conservation programs.

**Conservation status:** At present, the native vegetation of the area where *Ternstroemia washikiatii* occurs is mostly conserved. However, deforestation and forest fragmentation is expected in the near future due to road construction and

mainly due to the advance of the agricultural frontier and land use or forest conversion to cattle farms. Therefore, the preliminary status of Near Threatened (NT) (IUCN, 2012), is assigned to this species.

Because of the large size of the fruits, compared to other Neotropical species, *Ternstroemia washikiatii* may resemble the Colombian *T. macrocarpa* Triana & Planch. or the Brazilian *T. kruckoffiana* Kobuski; however, *T. washikiatii* differs from both species by the distinctively larger fruits and longer leaf blades, different number of seeds, and different pattern of distribution and elevation. It is most likely that these are the largest fruits in the genus in the Neotropics, being much wider than those of *T. kruckoffiana*. Although we did not find flowers, having monitored the phenology of the tree for a year, other species in the genus have been described and compared with fruiting characters (Kobuski, 1942). Table 1 presents the differences among these species.

TABLE 1. Comparison of *Ternstroemia washikiatii* Cornejo & C.Ulloa with similar large fruited species.

	<i>T. WASHIKIATII</i>	<i>T. MACROCARPA</i>	<i>T. KRUCKOFFIANA</i>
Calyx lobes (fruit)	10–14 × 8–12 mm	20 × 11–14 mm	8–10 × 7–8 mm
Leaves	21–33 cm × 8.5–11 cm	8–16 × 5–8 cm	12–20 × 4–5 cm
Fruit length × diam.	4.5–5.5 × 5.5–7.7 cm	2–2.5 × 2 cm	4–5 × 3.5–4 cm
Number of seeds	6–9	16–18	1–2
Elevation	650 m	2500–3000 m	160 m
Distribution	Pastaza, Ecuador	Andes, Colombia	Amazonas, Brazil

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