A New Species of Zinowiewia (Celastraceae), and Notes on the Genus in Ecuador

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ABSTRACT. Zinowiewia is a small neotropical genus of 17 species. Two species are reported to occur in Ecuador: Zinowiewia australis Lundell and the new Zinowiewia madsenii C. Ulloa & P. M. Jørgensen. A key to the Ecuadorian species, descriptions, and an illustration of the new species are provided.

Turczaninow (1858) described Wimmeria integerrima, questioning its generic position. A year later he recognized this species as belonging to a new distinct neotropical genus, Zinowiewia Turczaninow (Turczaninow, 1859). The genus remained monotypic until Lundell (1938) described six new species. The following year he published a revision of the genus containing seven species (Lundell, 1939a), and shortly after he added two new species (Lundell, 1939b, 1940).

Between 1964 and 1988 five species from Mexico and Central America were described (Lundell, 1981, 1985, 1987; Williams, 1964) and two from northern South America (Lundell, 1970; Steyermark, 1988), bringing the number of recognized species to 16.

The genus was recently reported to occur in Ecuador from collections made in the province of Loja (Madsen, 1991; Ulloa Ulloa & Jørgensen, 1993). These collections appeared to represent an undescribed species endemic to a small area of the Podocarpus National Park. Further examination of the specimens deposited at the Missouri Botanical Garden showed the presence of a second species in Ecuador, Zinowiewia australis Lundell.

The species of Zinowiewia are trees or shrubs characterized by their one-winged samaras, decussate leaves, and one- to several-times forked cymes. The genus is distributed from south-central Mexico through Central America to Peru, from 250 to 3,150 m elevation. At present two distinct species occur in Ecuador.

KEY TO THE SPECIES OF ZINOWIEWIA IN ECUADOR

1a. Leaves 4.2-9 cm long, 2-4.5 cm wide, membranaceous to subchartaceous, petioles 6-11 mm long; cymes subsessile, 4- to 6-times forked; samaras 20-28 mm long, 7.5-17 mm wide; Amazonian lowlands . . . . . Zinowiewia australis

1b. Leaves (0.9-)1.8-3(-4.2) cm long, (0.7-)1.4-1.8(-2.3) cm wide, subcoriaceous to coriaceous, petioles 2-4 mm long; cymes on peduncles up to 8 mm long, 1- to 2-times forked; samaras 14-19 mm long, 4-7.5 mm wide; upper Andean forest . . . . . Zinowiewia madsenii

Zinowiewia australis Lundell, Bull. Torrey Bot. Club 65: 469. 1938.

Tree to 40 m high; buttressed; trunk canalicate; bark fissurate (Palacios et al. 3528); branchlets slender. Leaves membranaceous to subchartaceous, dark green; petioles deeply canalicate, 6-11 mm long; leaf blades ovate-elliptic, lanceolate or elliptic, 4.2-9 cm long, 2-4.5 cm wide, apex acuminate to apiculate, base narrowed, acute, decurrent, margin revolute; venation reticulate, midvein impressed above, prominent beneath, the main lateral veins 4-6 on each side, elevated above and beneath. Inflorescence a dense cyme on mostly defoliate branches, to 2.4 cm long, forked 4-6 times, subsessile, peduncle up to 1.5 mm long, primary branches up to 7 mm long; bracts and bracteoles up to 0.8 mm long; pedicels of all flowers jointed at or near the base, up to 0.5 mm long below joint. Flowers green; calyx lobes 5, 0.3-0.5 mm long, 0.7-0.8 mm wide, widely ovate, slightly 3-lobed, central lobe acute, margin light green, entire; petals 5, 0.9-1.2 mm long, 0.5-0.8 mm wide, lanceolate-ovate, acute to obtuse; stamens 5, filaments 0.6 mm long, borne on angles of disk, anthers 0.2 mm long; disk fleshy, pentagonal, margin slightly elevated; ovary 2-locular, submerged in the disk, 2 ovules in each locule. Fruits (from the original description and Peruvian material) broadly obovulate to obovate samaras, 20-28 mm long, 7.5-17 mm wide, strongly veined, apex rounded, mucronate; seed 1, 8-11 mm long, 2.5-3 mm diam.

Distribution. Venezuela to Peru, in lowland to submontane forests, 250-1,250 m elevation.

Zinowiewia australis is characterized by its large, dark, thin leaves, long peduncles, subsessile cymes forked 4-6 times, and large obovate samaras.

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Figure 1. *Zinowiewia madsenii* C. Ulloa & P. M. Jorgensen. —A. Habit. —B. Inflorescence in bud. —C. Flower. —D. Fruits. Habitat and flower based on Madsen 86233 (AAU), inflorescence based on Madsen 85826 (AAU), fruits based on Madsen 86076 (AAU).
Specimens examined. ECUADOR. Napo: Via Coca-Loreto–Holín, sitio Huaticocho, 00°45'S, 77°29'W, 500–575 m, 11 Jan. 1989 (fl), Palacios, Igagio & Hurtado 3526 (MO, QCNE), 10 Jan. 1989 (fl), Hurtado, Palacios & Igagio 1384 (MO, QCNE). PERU. Pasco: Oxapampa, Gran Pajonal, ca. Chequitano, 10°45'S, 74°23'W, 1,250 m, 23 Sep. 1983 (fl, fr), Smith 5178 (MO).

Zinowiewia madsenii C. Ulloa & P. M. Jorgensen, sp. nov. TYPE: Ecuador. Loja: Parque Nacional Podocarpus, E of Nudo de Cajanuma, just N of Centro de Informacion, sample plot site, wet montane forest, 04°05'S, 79°10'W, 2,900 m, 14 Oct. 1989 (fl, fr), Madsen 86233 (holotype, AAU). Figure 1.

Zinowiewia sulphurea Lundell affinis sed petioli brevioribus, foliis minoribus, nervis lateralis paucioribus, pedicellis brevioribus, disco quinqueangulato, samara 2-seeded. Zinowiewia sulphurea Lundell from the Andes of Colombia.

Both species grow in the same type of habitat, have reddish, grooved, thick branchlets, short internodes, coriaceous leaves with revolute margins, reticulated venation on lower surface, few-times branched cymes, and sepals with erose, reddish margin. The Colombian species differs, however, in having longer lanceolate leaf blades (5–8 cm long), with 6–8 pairs of main lateral nerves, longer petioles (5–8 mm), longer pedicels (up to 3 mm long), annular disk, and 2-seeded samaras.

Zinowiewia madsenii is readily distinguished by its dense foliage of small leaves with very short petioles. Furthermore, the occurrence of cymes 1-forked and sometimes sparsely pubescent is unusual within the genus. One collection (Madsen 85771) has an additional infertile branch with herbaceous longer leaves, 6.1 cm long, 2.5 cm wide, that may correspond to a juvenile or a shaded shoot. This species is named after the Danish botanist Jens E. Madsen, the only person who has collected this species and the one who brought this interesting plant to our attention.

Paratypes. ECUADOR. Loja: same locality as holotype, 28 Oct. 1988 (fl), Madsen 75523 (AAU), 3 Feb. 1989 (fl), Madsen 85771 (AAU), 20 July 1989 (fl, fr), Madsen 86076 (AAU, QCA), 14 Oct. 1989 (fl, fr), Madsen 86226 (AAU); above Nudo de Cajanuma, trail to Mirador, scrub and ridge-top vegetation above tree line 3,000–3,150 m, 23 Feb. 1989 (fl), Madsen 85826 (AAU).

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Distribution. Southern Ecuador, in upper montane rainforest, at 2,900–3,150 m elevation.

Zinowiewia madsenii most closely resembles Z. sulphurea Lundell from the Andes of Colombia.

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