

New Species of *Siparuna* (Monimiaceae) II. Seven New Species from Ecuador and Colombia

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ABSTRACT. *Siparuna campii*, *S. guajalitensis*, and *S. pubancura* from central Ecuador, *S. multiflora* and *S. conica* from northwestern Ecuador and western Colombia, *S. verticillata* from Amazonian Ecuador, and *S. cascada* from southeastern Ecuador are described, illustrated, and discussed as to their relationships with morphologically similar species. Macrophotographs of male and female flowers illustrate the unusual details of *Siparuna* floral structure.

Siparuna, with about 200 named species, is the largest genus in the Monimiaceae. Recently we described four new species from Ecuador and Colombia (Renner & Hausner, 1995) as a result of treating *Siparuna* for the *Flora of Ecuador* (Renner & Hausner, submitted). Recent visits to herbaria in Quito (QCA, QCNE, acronyms following Holmgren et al., 1990) and material received in the course of ongoing monographic work on the genus have resulted in additional new species, which we describe here.

As a point of reference for the descriptions that follow we first give a brief overview of the morphology of the flowers, which is highly unusual in the angiosperms. Flowers of *Siparuna* have an obconical, cup-shaped, or slightly urceolate floral cup in which the carpels or stamens are more or less completely enclosed (Figs. 8, 9). A feature characteristic of the genus is that the bases of the tepals form a roof, or velum, which completely covers the young stamens and carpels (Fig. 9B, C, F). At anthesis, this roof opens via a central pore through which the upper parts of the styles or stamens protrude (Figs. 8B, D, 9A, D). In the female flowers the floral roof is usually differentiated into a more or less prominent cylindrical bulge and a central tube sheathing the styles (Figs. 8D, right-hand flower; 9A). In dried condition, both structures may be separated by a distinct groove. In the male flowers the pore through which the tips of the stamens protrude may be quite narrow, as in the seven species described here, or the stamens may be completely exposed on a cup-shaped receptacle as in *S. muricata*.

Siparuna campii Renner & Hausner, sp. nov.

TYPE: Ecuador. Chimborazo: Río Chanchán, 5 km N of Huigra, 2000 m alt., female, 19–28 May 1945 (fl), W. H. Camp E-3253 (holotype, NY; isotypes, AAU, BM, GH, K, MO, S, US). Figures 1, 8C, D.

A *Siparuna muricata* (Ruiz & Pavón) A. DC. foliis duplo longioribus (28–44 cm vs. 10–26 cm), staminibus paucioribus (20–30 vs. 50–72) stylisque duplo plus (7–12 vs. (2–)3–5(–6)) differt.

Dioecious treelet, 4–10 m tall, the young branchlets quadrangular and often deeply sulcate, yellowish tomentose with minute stellate hairs to glabrescent. Leaves in whorls of 3, the petioles 2–9 cm long, the lamina drying brownish, papery and brittle, lanceolate, 28–44 × 9–15 cm, the base obtuse or acute, the apex acute, upper surface with few minute stellate hairs, lower surface with somewhat longer hairs of the same type, with 16–22 pairs of secondary veins, the veins flat above, distinctly raised below, the margin crenate-dentate. Cymes umbell-shaped, 3–5 cm long, with 15–20 flowers, densely pubescent like the young branchlets. Male floral cup at anthesis 2.5–4 mm diam. and 2–3.5 mm high, obconical, with stellate hairs and short wartlike outgrowths, about 0.2 mm long, the 4–6 tepals broadly triangular, 2–3 mm long, with few minute hairs on the upper tepal tips, the floral roof distinctly raised, glabrous, when fresh yellowish green, drying black; stamens 20(–30). Female floral cup at anthesis of the same size but with longer outgrowths, up to 2 mm long, the floral roof differentiated into a cylindrical bulge separated by a distinct groove from a central acutely conical tube sheathing the styles; the styles 7–12. Fruit pear-shaped, subglabrous, 1.5–2 cm long, with thick conspicuous outgrowths and crowned by the persistent tepals, when fresh and mature reddish and with a strong pungent scent; fruitlets 5–10.

Distribution, habitat, and phenology. Endemic in the Chimborazo province in central Ecuador; growing in moist forested valleys in the afternoon fog-belt at elevations of 1500–2000 m; collected flowering and fruiting in May.



Figure 1. *Siparuna campii* Renner & Hausner (Camp E-3492, NY). Fruiting specimen.

Siparuna campii resembles *S. muricata* (Ruiz & Pavón) A. DC., which is very widespread in the Andes, in having umbell-shaped inflorescences and fruits with tuberculate outgrowths. It differs from *S. muricata* in its smaller male flowers, typically less numerous stamens, and more numerous styles.

Topotypical paratypes. Camp E-3398 (AAU, K, MO, NY, S, US), Camp E-3412 (AAU, K, MO, NY, S, US), Camp E-3492 (AAU, F, K, MO, NY, S, US).

***Siparuna guajalitensis* Renner & Hausner, sp. nov.** TYPE: Ecuador. Pichincha: Estación Río Guajalito, 1800 m alt., male, 10 June 1990 (fl), B. Øllgaard 98013 (holotype, QCA; isotypes, AAU, MO, QCNE). Figures 2, 9E, F.

Siparuna echinata (HBK) A. DC. affinis sed differt foliis oblanceolatis duplo longioribus (30–65 cm vs. 13–32 cm).

Dioecious shrub or sparsely branched treelet, 3–10 m tall, young branchlets usually quadrangular and strongly sulcate, densely covered with hispid-stellate yellowish brown hairs. Leaves opposite, the petioles 1.5–5.5 cm long, the lamina drying brown or green, chartaceous and sometimes slightly bulate above, oblanceolate, 30–65 × 13–25 cm, the base acute or obtuse, the apex acuminate to cuspidate, the tip 1.5–3 cm long, upper surface with single or few-branched stellate hairs, lower surface stellate-tomentose, especially on the veins, with 18–32 pairs of secondary veins, the veins ± inconspicuous above, slightly raised below, the margin irregularly dentate. Cymes 5–8 cm long, with 40–60 flowers, pubescent like the young branchlets. Male floral cup at anthesis 4–5 mm diam. and 3–4 mm high, subglobose, with hispid-stellate hairs and small equally pubescent outgrowths, 0.5–0.8 mm long, tepals 4–5, triangular, 2.5–4.5 mm long, the floral roof slightly raised, glabrous, when fresh pale yellow, drying black; stamens 5–6, scarcely exerted at anthesis. Female floral cup at anthesis slightly larger than in the males and with longer stellate-pubescent outgrowths (up to 2 mm long), the floral roof differentiated into a low cylindrical bulge and a central narrow tube sheathing the styles; the styles 5–6. Fruit globose and with spine-like outgrowths, 1.5–2 cm diam., when fresh and mature pink or green suffused with red, strongly lemon-scented; fruitlets 5–6.

Distribution, habitat, and phenology. Known only from the Pichincha region in central Ecuador where it grows in wet montane forest at elevations of 1500–2050 m; collected flowering and fruiting year-round. The species appears to be relatively abundant near the Río Guajalito scientific station,

where its flowers and fruits are occasionally used to prepare a lemon-flavored tea (*Jaramillo & Zak 8043*).

The suggested relative, *S. echinata*, has shorter, elliptic or ovate rather than oblanceolate leaves and narrower flowers. Both species have been collected numerous times at the Río Guajalito station.

Paratypes. ECUADOR. **Pichincha:** Saloya, *Acosta-Solís 5839* (F); km 56–59 on old rd. from Quito to Santo Domingo, Estación Río Guajalito, *Feil 91348* (AAU, QCA, Z); *Øllgaard 90413* (AAU, QCNE), *Grijalva 617* (MO, QCA), *Jaramillo 7826* (MO, QCA), *Jaramillo & Zak 7870* (MO, QCA), *7885* (MO, PTBG), *7892* (MO, QCA), *8043* (MO, QCA), *8073* (AAU, QCA), km 69 on old rd. Quito–San Juan–Chiriboga–Empalme, *Zak 1201* (AAU, MO, QCA); Quito–Nono–Mindó rd., 5 km N of Mindó, *Neill et al. 8944* (AAU, MO, QCNE), *Luteyn & Borchsenius 13341* (AAU, F, MJG, NY, QCA, QCNE).

***Siparuna pubancura* Renner & Hausner, sp. nov.** TYPE: Ecuador. Pichincha: SE of Santo Domingo along rd. to Puerto Limón, 500 m alt., male, 11 Dec. 1983 (fl), L. P. Kvist & A. Barfod 49088 (holotype, QCA; isotype, AAU). Figures 3, 8A, B.

Species ramulis et foliis subglabris et tepalis redactis a congeneribus in parte regionis Ecuadoriensis occidentali diversa.

Dioecious shrub, 2.5–5 m tall, young branchlets terete, with few minute stellate hairs to glabrescent. Leaves opposite, the petioles 1.5–4.5 cm long, the lamina drying dark brown or olive green, papery and brittle, oblanceolate, 13–23 × 5.5–9 cm, the base acute, the apex apiculate to acuminate, the tip to 1.5 cm long, both surfaces with few minute appressed stellate hairs, with 7–8(–10) pairs of secondary veins, the veins inconspicuous on both surfaces, the margin subentire or denticulate. Cymes to 1 cm long, with 5–10 flowers. Male floral cup at anthesis 1.5–2.5 mm diam. and 3–3.5 mm high, obconical, the tepals fused, the floral roof glabrous and forming a thin-walled central tube, when fresh green, drying black; stamens mostly 5. Female floral cup at anthesis similar in size, the tepals fused to a narrow, somewhat undulate rim, the floral roof differentiated into a ± prominent cylindrical bulge separated by a groove from a central tube sheathing the styles; the styles 5–8. Fruits globose, 1–1.5 cm diam., drying black and glabrous and with the 5–8 fruitlets distinctly protruding, when fresh and mature pink or purple and with a strong lemon smell.

Distribution, habitat, and phenology. Occurring in northwestern Ecuador where it has been collected in patches of forest surrounded by farmland and in mature rainforest; from 500 to 2000 m ele-

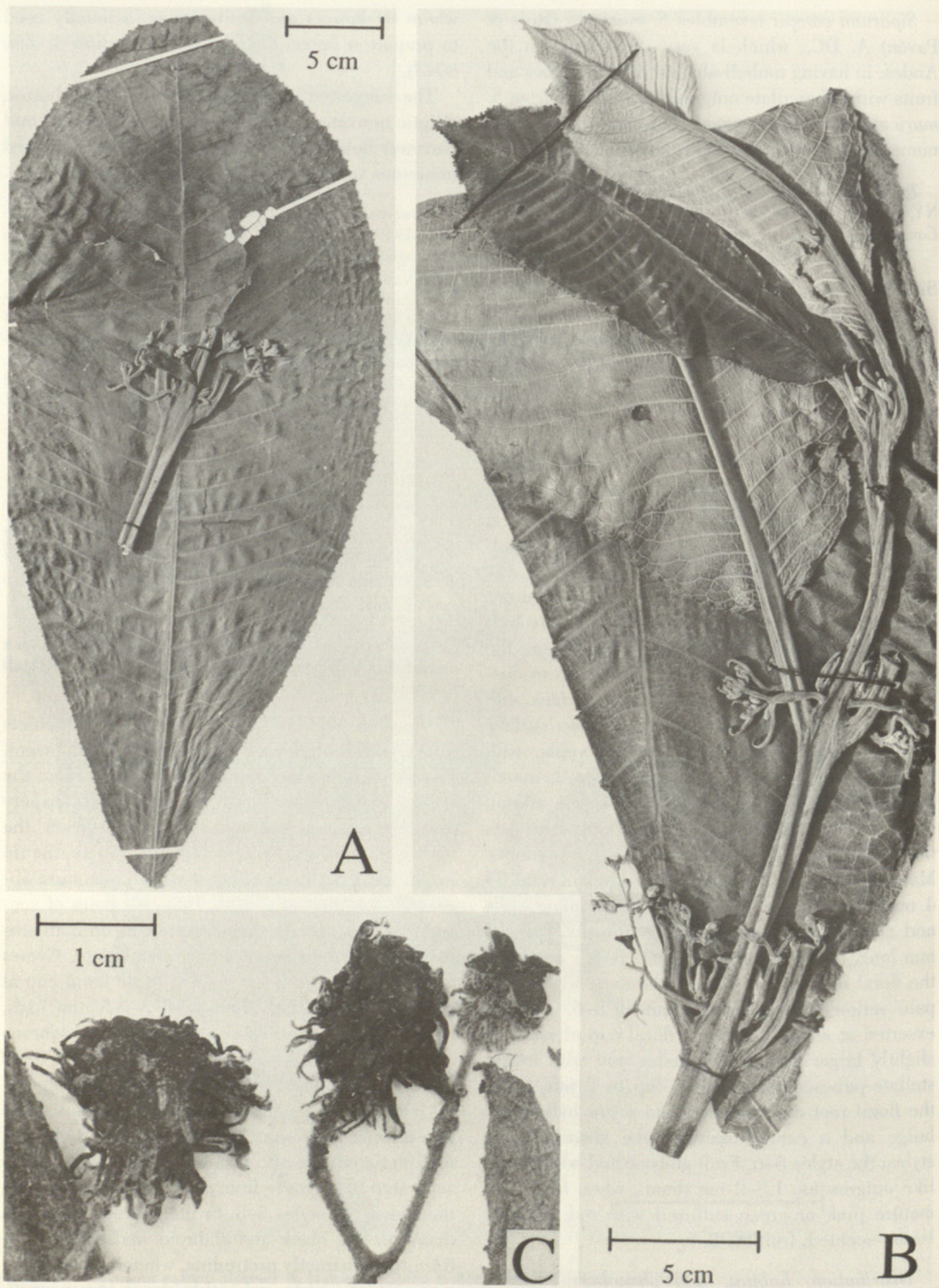


Figure 2. *Siparuna guajalitensis* Renner & Hausner (A, Feil 91348, AAU; B, Øllgaard 98013, AAU isotype; C, Jaramillo & Zak 8073, QCA). —A, B. Leaves and male inflorescences. —C. Flower and fruits.



Figure 3. *Siparuna pubancura* Renner & Hausner (A, Jaramillo 6539, QCA; B, Harling & Andersson 23342, GB).
—A. Fruiting specimen. —B. Female flowers.

vation. Flowering and fruiting at least from December to June.

Siparuna pubancura is easily recognized among western Ecuadorean species by being almost entirely glabrous. It is called "puban cura," "bu wann cura," or "guayusa" by the Colorado Indians, who use an extract of the leaves in hot water as a drink or bath against colds, fever, stomach, kidney, and bladder problems.

Paratypes. ECUADOR. **Carchi:** from Prima Vera hike about six hrs. up Río Gualchan drainage to shelter built by Nilo Ortiz, *Bradford et al.* 32 (MJG, MO, QCNE); Canton Mira, Norte del Carmen, Camino a Chical, *Palacios et al.* 9748 (MJG, MO, QCNE). **Pichincha:** Reserva ENDESA, ca. 6 km WNW of Pedro Vicente Maldonado, *Harling & Andersson* 23342 (AAU, GB, QCA), *Jaramillo* 6305 (AAU, GB, MO, QCA), 6434 (AAU, QCA), 7545 (AAU, GB, QCA), 7563 (NY, QCA), 7609 (AAU, GB, MO, QCA), *Luteyn & Borchsenius* 13356 (AAU, MJG, NY, QCA, QCNE); Río Toachi near Santo Domingo de los Colorados, *Játiva & Epling* 538 (UC, US); km 23 of Santo Domingo–Puerto Limón rd., *Kvist & Holm-Nielsen* 40216 (AAU), *Kvist* 40693 (AAU).

***Siparuna multiflora* Renner & Hausner, sp. nov.**

TYPE: Ecuador. Carchi: Canton Tulcán, Parroquia Tobar Donoso, Reserva Indígena Awá, 500 m alt., male, 19 June 1992 (fl), *G. Tipaz* 1337 (holotype, QCNE; isotypes, MJG, MO). Figures 4, 9C, D.

A *Siparuna eggersii* Hieronymus differt inflorescentiis duplo longioribus (4–8 vs. 2–4 cm) et floribus minoribus (1.3–1.7 vs. 2–4 mm diam.).

Dioecious shrub or treelet, 2–12 m tall and reaching a DBH of 10 cm, young branchlets terete and with minute appressed stellate hairs. Leaves opposite, the petioles 2.5–7 cm long, the lamina drying brown, olive-brown, or grayish brown above and olive-brown below, papery and brittle, obovate to oblanceolate, 15–29 × 7–14 cm, the base acute to obtuse, sometimes with small domatia to 0.5 cm long, the apex cuspidate, the tip 0.5–1.5 cm long, both surfaces with minute appressed stellate hairs sometimes mixed with a few stellate-lepidote hairs on the midrib, with 9–13 pairs of secondary veins, veins flat above, slightly raised below, the margin finely dentate or subentire. Cymes ample, 4–8 cm long, with 40–60 flowers. Male floral cup at anthesis 1.3–1.7 mm diam. and 1.1–1.2 mm high, subglobose or urceolate, with few minute appressed stellate hairs, tepals fused to a narrow upright rim, the floral roof slightly raised, glabrous, when fresh pale yellow or cream, drying dark brown; stamens 8–10. Female floral cup at anthesis of the same shape as in the male but slightly larger (1.5–1.8 mm diam.), the floral roof usually domed and with

only a short central tube sheathing the styles; the styles 5–8. Fruits globose, 0.8–1 cm diam., the narrow tepal rim persistent in fruit, drying glabrous and black and with the ca. 8 fruitlets distinctly protruding, when immature green with white spots, when mature yellow and purple, with a strong lemon smell.

Distribution, habitat, and phenology. Restricted to undisturbed wet forest in northwestern Ecuador; from 80 to 1500 m elevation; collected flowering and fruiting almost year-round. Known by the Spanish name "palo de monte" and the Quichua names "ingal teu" or "engal teiug"; used to make animal traps (*Aulestia et al.* 51; *Tipaz* 1337).

Siparuna multiflora resembles *S. eggersii*, also from western Ecuador, in having terete branchlets and obovate to oblanceolate leaves with minute appressed stellate hairs, but the latter species has mature flowers twice the size, a broader tepal rim, shorter inflorescences, and more numerous stamens and styles. *Siparuna eggersii* and *S. multiflora* co-occur at the Río Palenque Science Center, where they have been confused in the past.

Paratypes. ECUADOR. **Esmeraldas:** 10 km N of Lita, *Acevedo & Daly* 1681 (QCA, NY), 1689 (QCA, NY); Reserva Etnica Awá, *Aulestia et al.* 51 (QCNE), 121 (QCNE), 411 (QCNE), 623 (QCNE), *Rubio et al.* 973 (AAU, MO, QCNE); creek pouring into Río Palaví across from Awá camp, *Hoover et al.* 3087 (QCA); Reserva Ecológica Cotacachi-Cayapas, *Tirado et al.* 474 (QCNE). **Carchi:** above San Marcos de los Coaquiéres, *Øllgaard et al.* 57226 (AAU, QCA), 57382 (AAU, QCA), 57531 (AAU, QCA); about 30 km past Lita on rd. to Alto Tambo, *van der Werff et al.* 12114 (AAU, QCNE). **Pichincha:** Santo Domingo de los Colorados, 1000 m, *Croat* 72995 (MO). **Los Rios:** Río Palenque, *Dodson & Gentry* 5508 (F, GB, MO, QCA, SEL, US), *Dodson* 6653 (MO, SEL), *Dodson & Gentry* 12841 (MO, SEL).

***Siparuna conica* Renner & Hausner, sp. nov.**

TYPE: Ecuador. Carchi: Reserva Etnica Awá, Comunidad de Gualpi Medio, 900 m alt., female, 21 May 1992 (fl), *C. Quelal* 685 (holotype, QCNE; isotypes, MJG, MO). Figure 5.

A *Siparuna aspera* (Ruiz & Pavón) A. DC. differt foliis tenuioribusque, nervis lateralibus paucioribus (9–13 vs. (12–)16–20(–26)) et floribus angustioribus.

Dioecious shrub or treelet, sometimes semi-scandent over other trees, 3–7(–15) m tall, the young branchlets terete or subquadrangular, with brownish stellate hairs. Leaves opposite, those of a pair slightly unequal in size, the petioles (2.5–)3–5(–6.5) cm long, the lamina drying khaki to burnt umber, chartaceous, smooth, obovate, 20–30 × 12–14.5(–17) cm, the base truncate, cordate or more rarely obtuse, the apex acuminate, the tip 0.5–1(–

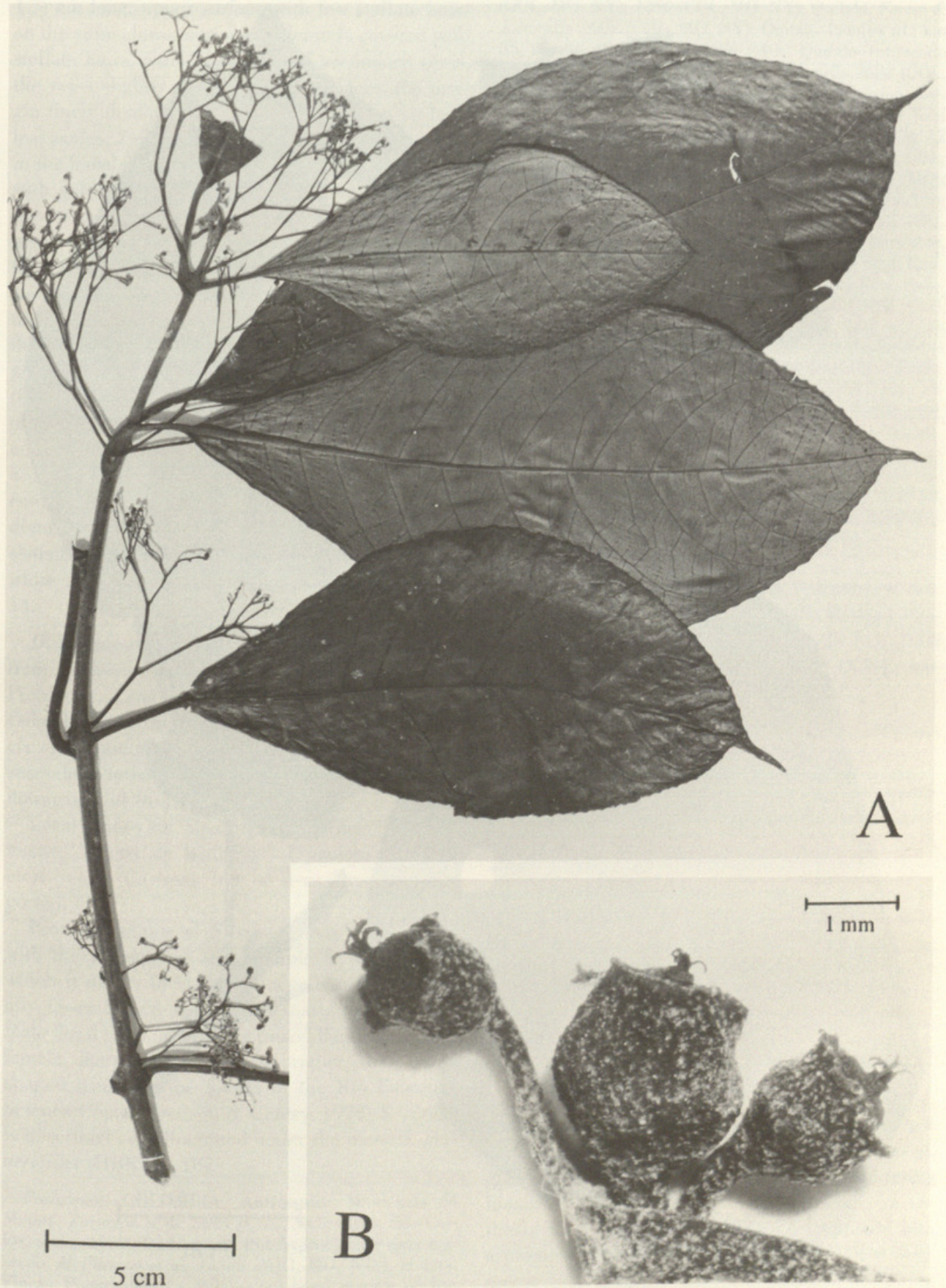


Figure 4. *Siparuna multiflora* Renner & Hausner (A, *Aulestia et al.* 121, QCNE; B, Øllgaard et al. 57531). —A. Flowering male specimen. —B. Young fruits.



Figure 5. *Siparuna conica* Renner & Hausner (Cazalet & Pennington 5242, B). Fruiting specimen.

1.5) cm long, upper surface with few stellate hairs on the veins, lower surface moderately covered with stellate hairs, with 9–13 pairs of secondary veins, the veins slightly raised on both surfaces, the margin finely dentate or crenate. Cymes often on leafless nodes, 2–7 cm long in the males, 1–3 cm long in the females, with 15–25 flowers, densely covered with golden-brown or grayish stellate hairs. Male floral cup at anthesis 2.5–3 mm diam. and 4–7 mm high, narrowly obconical, pubescent like the cymes, tepals 4–6, triangular, 2–3 mm long, with a few stellate hairs on the upper tepal tips or glabrous, the floral roof glabrous and centrally raised to a thin-walled tube surrounding the pore, when fresh greenish yellow or yellow, drying black; stamens 4–6, the outer ones distinctly exerted at anthesis and often with their tips bent backwards. Female floral cup at anthesis more densely pubescent, the tepals 4–5 mm long, the floral roof conspicuously acute-conical; the styles 10–14. Fruits globose, 1.5–2 cm diam., with stellate hairs and crowned by the persistent tepals, when fresh and mature dull red with white spots and with an astringent odor; fruitlets 8–14.

Distribution, habitat, and phenology. Known from northwestern Ecuador (provinces of Los Rios, Pichincha, Esmeraldas, and Carchi) and western Colombia (provinces of Nariño, Cauca, Valle, Chocó, and Antioquia); lowland tropical wet forest and secondary forest; from 10 to 1800 m. Collected flowering and fruiting year-round.

Local names for *Siparuna conica* are “limón de monte,” “rama de hediondo” (Spanish), and “ne chin buca” (Cayapa), but no uses have been reported.

Poor collections of *S. conica* may be confused with the widespread and variable *S. aspera*, from which it differs in having thinner leaves with usually fewer lateral veins, more narrowly obconical male floral cups, an acutely raised floral roof in the female flowers, and globose rather than pear-shaped fruits. In the florula of the Rfo Palenque Science Center (Dodson & Gentry, 1978) *S. conica* is described and illustrated under the name *S. gesnerioides* (HBK) A. DC.

Paratypes. COLOMBIA. **Antioquia:** Municipio de Mutatá, Zarucchi *et al.* 5099 (COL, MO); Mpio. San Carlos, along creeks leading into ISA hydroelectric dam reservoir, McPherson *et al.* 13323 (MJG, MO, WIS); Mutatá, Fincas Puenteadero-La Palma, left-hand margin of Rfo Mutatá, Fonnegra *et al.* 2213 (MO), 2257 (MO). **Chocó:** Municipio Quibdó, Arias 052 (COL); Rfo San Juan, near Palestina, Cuatrecasas 16928 (F, US); Rfo Calima, Quebrada La Brea, Cuatrecasas 21277 (F, US); Municipio de Pizarro, km 30–33 of rd. Pié de Pepé-Puerto Meluk, Espina 1857 (MO); Quibdó-Guayabal rd., Forero *et al.* 1289

(COL, MO, NY), 1290 (COL, MO, NY); Quibdó, Forero & Jaramillo 2607 (COL, MO, NY); Quibdó-Itsmína rd., km 36, Forero & Jaramillo 2656 (MO); Quibdó-Tutunendo rd., 15 km from Quibdó, Forero & Jaramillo 2632 (COL, MO); hoyá del Rfo San Juan, Rfo Bicordó, Noanamá, Forero *et al.* 4755 (COL, MO); Rfo San Juan between Tadó and El Tapón, Gentry & Fallen 17749 (COL, F, MO); 12 km E Quibdó, Gentry & Renteria A. 23882 (AAU, COL, MO); 14 km E Quibdó, Gentry & Renteria A. 24121 (MO); area of Baudó, Fuchs & Zanella 21899 (G, MO, NY, US); rd. Bolívar-Quibdó, near km 210, Juncosa 1145 (MO, PTBG). **Valle:** Rfo Naya, upriver from Puerto Merizalde, Gentry & Juncosa 40681 (COL, MO). **Cauca:** Bajo Calima, Buenaventura, Monsalve B. 577 (MO). **Nariño:** above Barbacoas, Ewan 16852 (BM, S, US). ECUADOR. **Carchi:** Parroquia Maldonado, Reserva Etnica Awá, Aulestia *et al.* 683 (QCNE), Grijalva *et al.* 582 (QCNE), Quelal *et al.* 541 (MO, QCNE), Rubio *et al.* 1042 (AAU, QCNE). **Esmeraldas:** Rfo San Miguel, Harling 4668 (S); Eloy Alfaro, Reserva Ecológica Cotacachi-Cayapas, Tirado *et al.* 696 (QCNE). **Los Rios:** Rfo Palenque Biological Station, Dodson & Dodson 6788 (AAU, MO, QCA, SEL), Dodson *et al.* 7570 (F, MO, QCNE, SEL). **Pichincha:** Santo Domingo de los Colorados, Cazalet & Pennington 5242 (B, FHO, K, NY, UC, US); km 41 of rd. Santo Domingo-Quinindé, Zak *et al.* 5509 (MO, QCA, QCNE).

***Siparuna verticillata* Renner & Hausner, sp. nov.**

TYPE: Ecuador. Napo: Estación Biológica Jatun Sacha, 450 m alt., male, 17–24 Feb. 1988 (fl), C. E. Cerón 3591 (holotype, QCNE; isotypes, AAU, MO). Figures 6, 9A, B.

A *Siparuna gilgiana* Perkins foliorum pilis simplicis (non stellatis) et staminibus 5 (vs. 2) differt.

Dioecious shrub or treelet, 3–6 m tall, occasionally scandent, the young branchlets terete, with few short thick simple hairs. Leaves in whorls of 3, rarely opposite, the petioles 1–2 cm long, the lamina drying grayish brown or brown, chartaceous, oblong or elliptic, 8–17 × 3–6 cm, the base acute to obtuse, the apex acuminate to cuspidate, the tip 0.5–1 cm long, both surfaces with short simple or bifid hairs, with 6–8(–10) pairs of secondary veins, the veins smooth above, slightly raised below, the margin subentire or serrulate. Cymes 1–2.5 cm long, with 10–20 flowers. Male floral cup at anthesis 1.5–2 mm diam. and 1.8–2 mm high, obconical, the tepals fused to a narrow undulating rim about 0.8 mm broad, the floral roof moderately raised, glabrous, when fresh pale yellow or cream, drying black; stamens mostly 5. Female floral cup at anthesis obconical, the floral roof differentiated into a prominent cylindrical bulge separated by a deep groove from a hardly raised central tube sheathing the styles; styles 8–12. Fruit globose, 1–1.5 cm diam., glabrescent and with the 6–12 fruitlets distinctly protruding in dried condition, when fresh and mature yellowish red or purple with pale brown or green spots and a strong lemon smell.

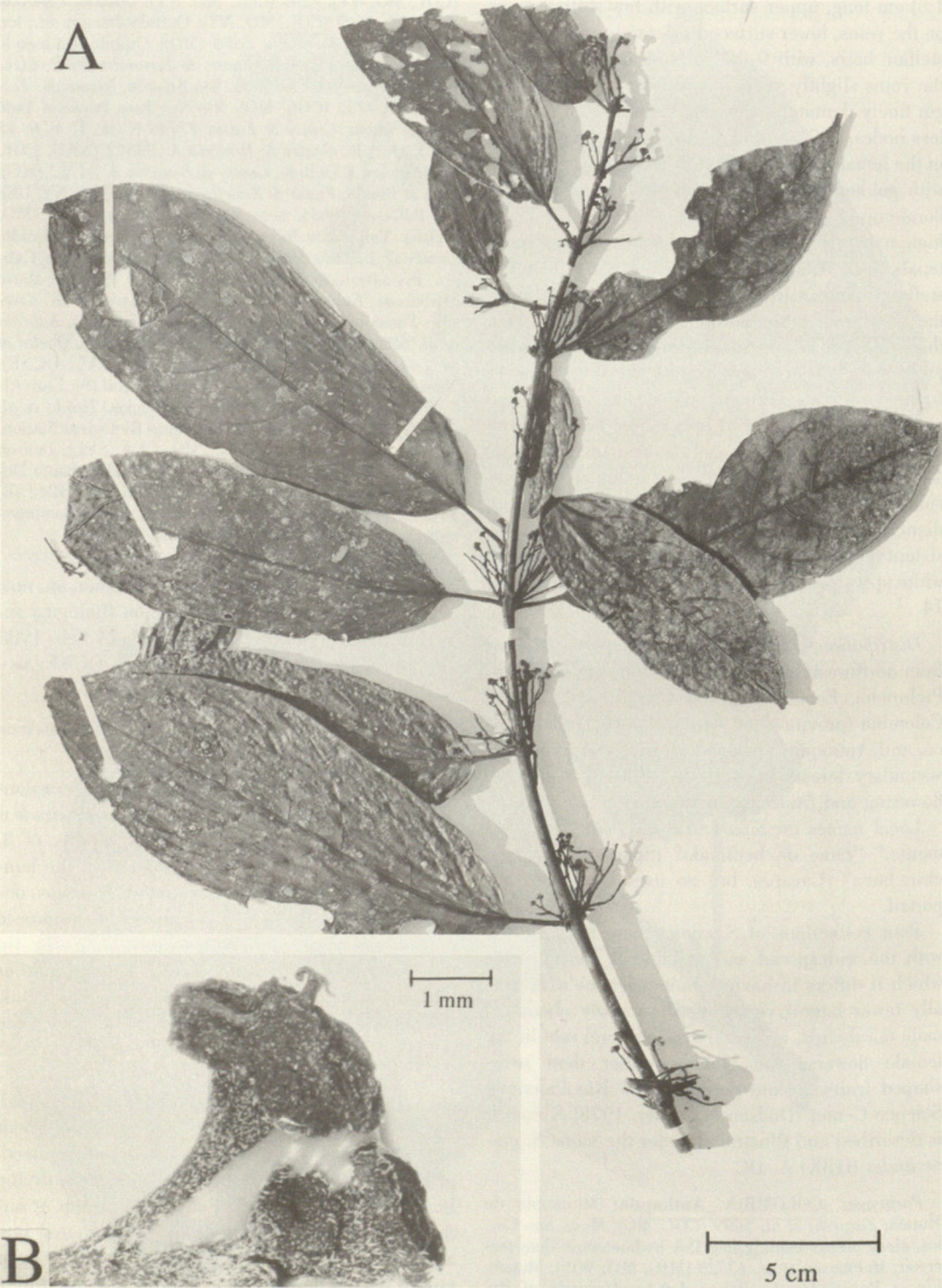


Figure 6. *Siparuna verticillata* Renner & Hausner (A, Cerón 3591, AAU isotype; B, Neill et al. 6342, QCNE). —A. Flowering male specimen. —B. Female flower.



Figure 7. *Siparuna cascada* Renner & Hausner (Jaramillo & Widderskjold 5651, MO). Flowering female specimen.

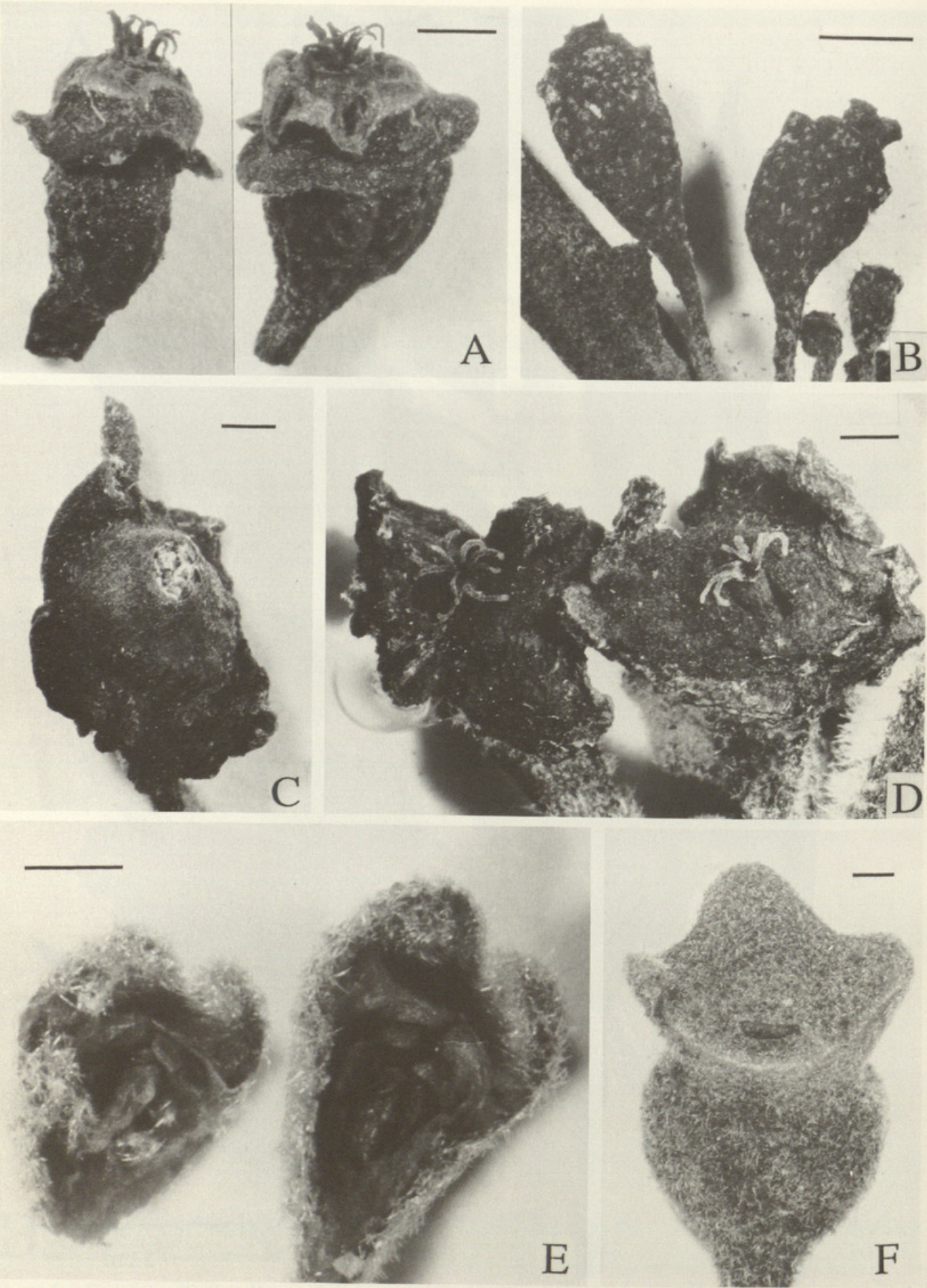


Figure 8. Male and female flowers of three new species of *Siparuna*; bars equal 1 mm. —A. *S. pubancura*, female flowers (Jaramillo 6305, QCNE). —B. *S. pubancura*, male flowers from the type (Kvist & Barfod 49088, AAU). —C. *S. campii*, male flower (Camp E-3398, US). —D. *S. campii*, female flowers from the holotype (Camp E-349, NY). —E. *S. cascada*, section through a young male flower showing arrangement of stamens (Feil 91326, AAU). —F. *S. cascada*, young fruit, one tepal removed (Jaramillo & Winnarskjold 5653, AAU).

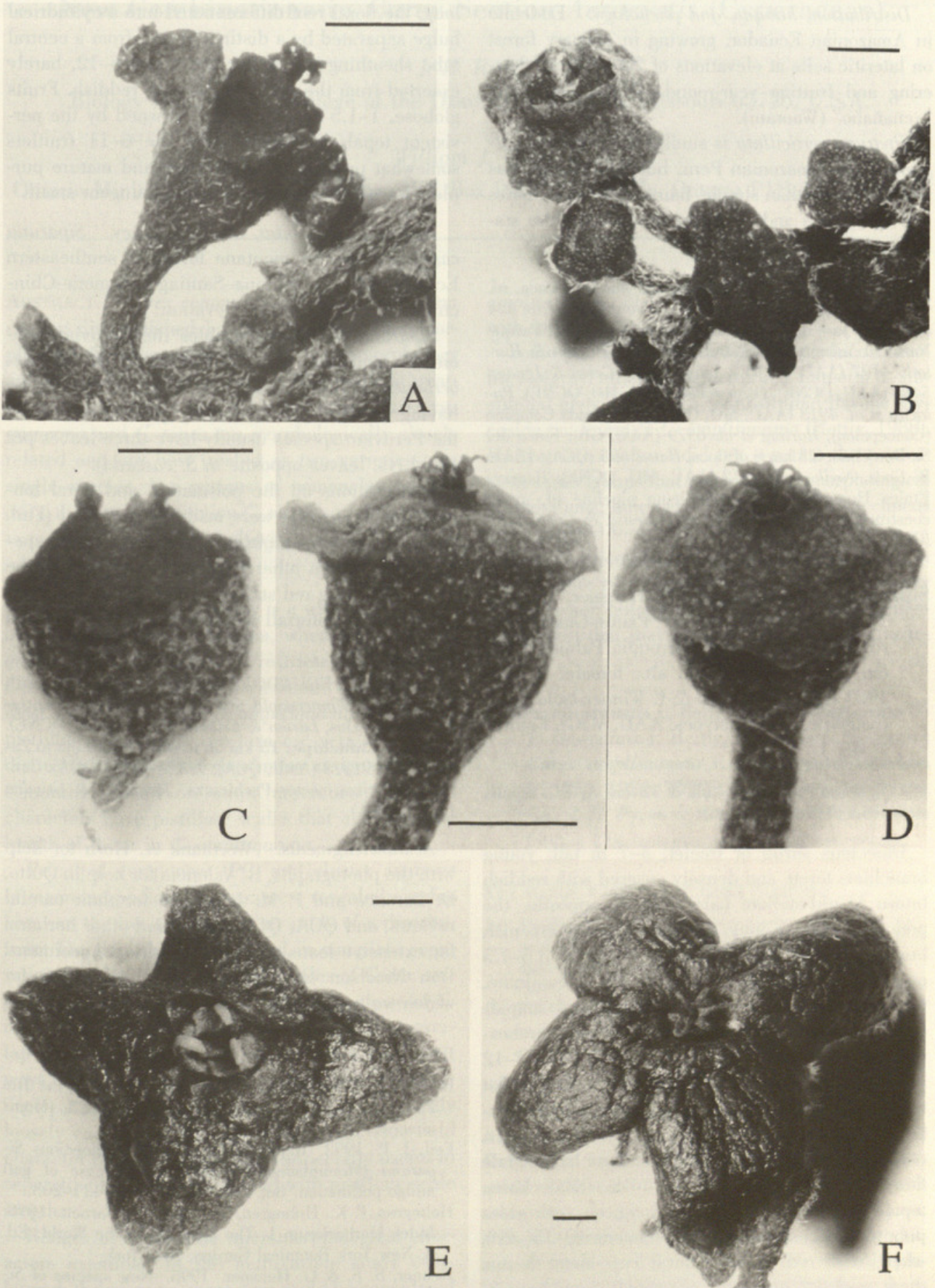


Figure 9. Male and female flowers of three new species of *Siparuna*; bars equal 1 mm. —A. *S. verticillata*, female flower (Hutzel 693, QCA). —B. *S. verticillata*, male flowers from the holotype (Cerrón 3591, QCNE). —C. *S. multiflora*, male flower (Aulestia et al. 121, QCNE). —D. *S. multiflora*, female flowers (Øllgaard et al. 57531, AAU). —E. *S. guajalitensis*, male flower (Jaramillo & Zak 7885, PTBG). —F. *S. guajalitensis*, female flower (Jaramillo & Zak 8073, AAU).

Distribution, habitat, and phenology. Endemic in Amazonian Ecuador; growing in primary forest on lateritic soils at elevations of 200–450 m; flowering and fruiting year-round. Vernacular name: “veñañabo” (Waorani).

Siparuna verticillata is similar in habit to *S. giligiana* from Amazonian Peru, but that species has stellate, rather than simple, hairs on the leaf blades and floral cups and always seems to have two stamens.

Paratypes. ECUADOR. **Napo:** 45 km N of Coca, rd. Coca–Lago Agrio, Rfo Palanda Yacu, *Bohlin & Bohlin* 324 (GB); San José de Payamino, *Irvine* 507 (QCNE); Parque Nacional Yasuní, Pozo Petrolero Daimi 2, *Cerón & Hurtado* 4197 (AAU, QCNE); Jatun Sacha, *Cerón & Iguazo* 5486 (AAU, QCNE), *Cerón* 6344 (AAU, MO, QCNE), *Palacios et al.* 4913 (AAU, MO, QCNE); Hacienda Cotapino (Concepción), *Harling et al.* 6979 (AAU, GB); Finca del Sr. Berceño, 8.5 km S of Coca, *Huttel* 693 (QCA); 15 km W Coca, *Neill et al.* 6342 (AAU, MO, QCNE); Reserva Etnica Huaorani, Maxus petroleum pipeline rd. under construction km 75–76, 250 m, *Aulestia & Gonti* 1799 (QCNE).

Siparuna cascada Renner & Hausner, sp. nov.

TYPE: Ecuador. Azuay: Paute–Guarumales rd., sector Amaluiza, Parroquia Palmas, Canton Paute, ca. 1800 m alt., female, 9 Aug. 1983 (fl), *J. Jaramillo & V. Winnerskjold* 5653 (holotype, QCA; isotypes, AAU, MJG). Figures 7, 8E, F.

A *Siparuna tomentosa* (Ruiz & Pavón) A. DC. tepalis conspicuis (3–5 mm) differt.

Dioecious shrub or treelet, 3–7 m tall, young branchlets terete and densely covered with reddish brown hispid-stellate hairs. Leaves opposite, the petioles 1–2.5 cm long, the lamina drying greenish brown, chartaceous, lanceolate, 8–20 × 3.5–7.5 cm, the base acute to obtuse, the apex acuminate, the tip about 1 cm long, upper surface with hispid-stellate hairs, lower surface more densely pubescent with softer hairs of the same type, with 8–12 pairs of secondary veins, the veins almost flat above, slightly raised below, the margin finely dentate. Cymes 3.5–4 cm long, with 5–12 flowers, densely covered with brownish stellate hairs. Male floral cup obconical, with brownish stellate hairs, tepals 4, triangular, 3–4 mm long, on both sides pubescent like the floral cup; stamens 10–15(–20), when fresh red. Female floral cup about 5 mm diam. and 3.2 mm high, the tepals fused to a 3-mm-broad collar, their free apical lobes 0.8–2 mm

long, the floral roof differentiated into a cylindrical bulge separated by a distinct groove from a central tube sheathing the styles; the styles 6–12, barely exerted from the pore, when fresh reddish. Fruits globose, 1–1.5 cm diam. and crowned by the persistent tepals, in dried fruits the 6–11 fruitlets somewhat protruding, when fresh and mature purple with white spots and a strong pungent smell.

Distribution, habitat, and phenology. *Siparuna cascada* grows in montane forest in southeastern Ecuador (Azuay, Morona–Santiago, Zamora–Chinchipe) at 1500–2000 m elevation.

Siparuna cascada resembles the Peruvian species *S. tomentosa* (Ruiz & Pavón) A. DC., *S. webbaueri* Perkins, and *S. saurauifolia* Perkins in having reddish brown densely pubescent leaves; the Peruvian species usually have three leaves per whorl (vs. leaves opposite in *S. cascada*).

Observations on the pollination and floral longevity of *S. cascada* were made by J. P. Feil (Feil, 1992, sub *S. saurauifolia*) who found that the species differs from other Ecuadorean species of the genus in having red stamens and stigmas. He studied it near a waterfall to which the epithet *cascada* refers.

Paratypes. ECUADOR. **Azuay:** Guarumales trail, *Jaramillo & Winnerskjold* 5651 (MO). **Morona–Santiago:** Guarumales, *Larsen & Eriksen* 45296 (QCA, QCNE). **Zamora–Chinchipe:** 15 km on new rd. from Loja to Zamora, *Feil* 91313 (AAU, QCA), 91326 (AAU, QCA); Cantón Nangaritza, sector Pachicutza, *Jaramillo & Grijalva* 13371 (QCA).

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