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NOVAE GESNERIACEAE NEOTROPICARUM V. FOUR NEW SPECIES AND
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Novae Gesneriaceae Neotropicarum V. Four New Species and Two New Combinations in *Columnnea* from South America

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ABSTRACT. A monographic study of sections *Pentadenia* and *Stygnanthe* of *Columnnea* (Gesneriaceae) has revealed four species new to science and two new combinations. These species are described here and include *C. atahualpae* and *C. hypocrytantha* of section *Pentadenia*, and *C. manabiana*, *C. suffruticosa*, *C. ultraviolacea*, and *C. xiphoidea* of section *Stygnanthe*.

Columnnea L. is a genus of neotropical plants distributed from southern Mexico to Bolivia comprising approximately 200 species. Species of *Columnnea* are readily distinguished by their long tubular corollas that are either bilabiate or ventricose, and the fleshy, indehiscent, berry fruits. The majority of species are epiphytic, although several can be terrestrial as well. A revision of the species of *Columnnea* in Ecuador conducted by Kvist & Skog (1993) and a treatment of the Gesneriaceae of Panama by Skog (1979) are the only recent taxonomic treatments of the genus. Wiehler (1973, 1983) divided the genus into four segregate genera and described a fifth genus allied to the *Columnnea* complex. These five genera were combined back into the single genus *Columnnea* by Kvist & Skog (1993). The four new species described here are the result of a monographic study of two of the smaller sections of *Columnnea*, sections *Pentadenia* and *Stygnanthe* (Smith, 1991). The two new combinations result from a recent publication of new species of Gesneriaceae (Wiehler, 1992).

***Columnnea* (section *Pentadenia*) *atahualpae* J. F. Smith & L. Skog, sp. nov.** TYPE: Ecuador. El Oro: forest along trail from Sambotambo, following headwaters of Río Moro Moro S to Buenaventura, at and along highway to Portovelo, 29 Aug. 1943, *Steyermark 54228* (holotype, F). Figure 1.

Differt a *Columnnea nervosa* (Klotzsch ex Oersted) Hanstein foliis ellipticis vel obovatis bracteis magnis corollis brevis (3.0–3.3 cm longis) marginibus integris trichomatibus appressis aureis.

Suffrutescent terrestrial (or possibly epiphytic) herbs with erect stems to 1 m tall (Fig. 1A). Stems 8–12 mm diam., tawny brown, apex appressed pubescent with golden yellow uniseriate trichomes, lower stem smooth and glabrous. Internodes 2.5–9.0 cm long, leaf scars slightly raised from the slightly swollen nodes. Leaves opposite, equal to subequal, blades obovate to elliptic, 9.2–22.5 × 3.7–7.8 cm, apex acute, base cuneate-oblique, adaxially green, strigose-appressed pilose with single-celled, transparent, and uniseriate golden yellow trichomes, abaxially silvery green-maroon, vestiture similar to adaxial surface but sparser, pubescence of veins abaxially sericeous, margin entire to slightly undulate (Fig. 1A, B). Petioles 1.0–3.2 cm, appressed pilose with uniseriate golden yellow trichomes. Inflorescences 1–7 flowers in axils of either leaf pair (Fig. 1A), floral bracts 1–2 of unequal size, lanceolate-ovate, 8–22 × 1.5–16 mm, apex acuminate, slightly constricted at base, reddish, appressed pilose with uniseriate golden yellow trichomes, margin entire. Pedicels 1.3–1.9 cm, erect in leaf axil, appressed pilose with uniseriate golden yellow trichomes, 1–several glands present on pedicel, purplish, ca. 0.4 mm long. Calyx clasping corolla at base but more open toward apex of lobes, lobes lanceolate-subulate, equal in size, 1.5–2.7 × 0.3–0.5 cm, apex long acuminate, green with red tips to purple, margins serrulate-subulate, 3–5 teeth per side, mostly basal, exterior sericeous with uniseriate golden yellow trichomes, interior surface similar but trichomes sparser (Fig. 1C). Corolla pale yellow, tubular, gibbous at base, slightly ventricose, 3.0–3.3 cm long, 3.0 mm wide at base, 5–8 mm at widest point, 4–5.5 mm before limb, exterior ap-



Figure 1. *Columnnea atahualpae* J. F. Smith & L. Skog. —A. Habit. —B. Adaxial leaf pubescence. —C. Pedicel and calyx. —D. Flower. —E. Corolla interior with stamens. —F. Gynoecium with nectaries. —G. Ovary with calyx and nectaries. —H. Berry with nectaries. —I. Seeds. (A, B, D–F from Steyermark 53840; C, G–I from Steyermark 54228.)

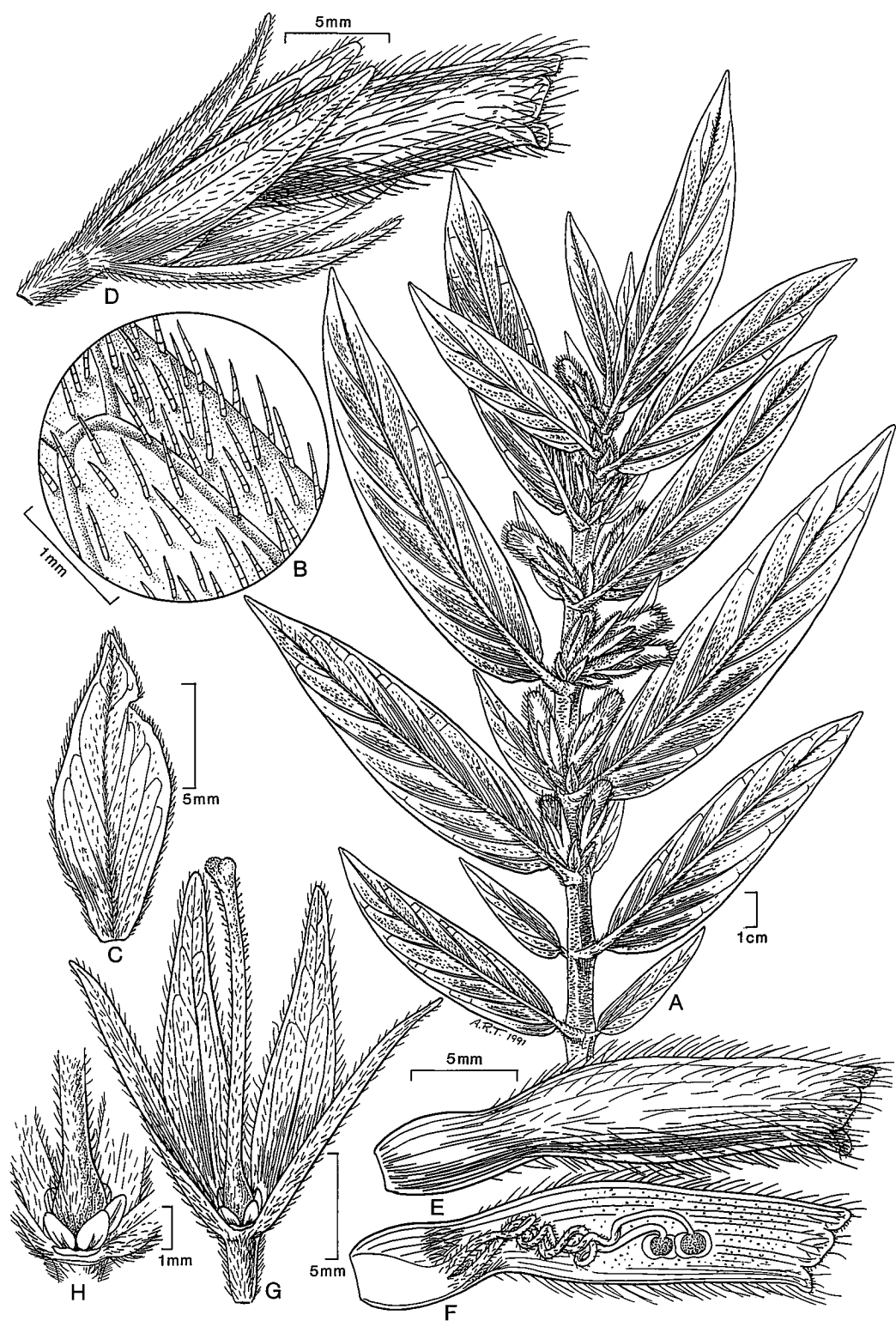


Figure 2. *Columnea manabiana* (Wiehler) J. F. Smith & L. Skog. —A. Habit. —B. Abaxial leaf pubescence. —C. Inflorescence bract. —D. Flower. —E. Corolla exterior. —F. Corolla interior with retracted stamens. —G.

pressed pilose-sericeous with uniseriate golden yellow trichomes (Fig. 1C), interior pilose-hirsute proximally with transparent uniseriate trichomes, glandular capitate trichomes dorsally and distally (Fig. 1E). Lobes equal, 2.0×1.5 – 2.0 mm, semiorbicular-acute. Stamens excluded, filaments white, sparsely pubescent, connate for 5 mm anteriorly at base and adnate to corolla base anteriorly for 3 mm, curling after anthesis, staminodes not seen, included in corolla, anthers quadrate, 1.7×1.7 mm (Fig. 1E). Ovary sericeous, 3 mm long, conical, style white, pilose at base, glandular at apex, stigma bilobed, papillose (Fig. 1F). Nectary of 5 glands, dorsal 2 enlarged (Fig. 1G). Berry globose, 1.0 cm diam., color uncertain but probably pale pink, pubescent (Fig. 1H). Seeds fusiform, red-brown, twisted, striate, 1.2–1.3 mm long (Fig. 1I).

Distribution. Known only at 1,035–1,890 m elevation in Ecuador from a small geographic area in El Oro and one other collection in Zamora-Chinchipe. The Zamora-Chinchipe collection is a poor specimen, and its placement within this species is questionable. It may represent another species or may be a specimen of *C. nervosa* (Klotzsch ex Oersted) Hanstein, a morphologically similar species. The placement of this collection in *C. atahualpae* is based on its golden yellow pubescence found throughout the vegetative parts of the plant.

Columnnea atahualpae is similar to *C. nervosa*. However, the much larger obovate-elliptic leaves, smaller corolla, large floral bracts, and entire margins are sufficient to distinguish it from this species. In addition, the golden yellow appressed trichomes, found throughout the plant, make it even more distinct from other species of *Columnnea*. This species is probably closely related to *C. lophophora* Mansfeld, which also has clustered flowers, large floral bracts, and dense vestiture. This species can easily be distinguished from *C. lophophora* in that the pubescence is tightly appressed and not as dense, or long sericeous as seen in *C. lophophora*.

The specific epithet commemorates one of the last two Sapa Incas to rule the Inca empire in the Andes, Atahualpa, executed by Pizarro in 1533.

Paratypes. ECUADOR. **El Oro:** vicinity of Ayapamba, 13, 16 Oct. 1918, *Rose & Rose 23461* (NY, US); 2 leagues NE of Curtincapa, bordering Quebradas Nudillo and Tambillo, tributary to Río San Luis and Piedra Grande, 13 Aug. 1943, *Steyermark 53840* (F, US). **Zamora-Chinchipe:** Palandra (probably Palanda), July 1876, *André 4638* (NY).

Columnnea* (section *Stygnanthe*) *manabiana (Wiehler) J. F. Smith & L. Skog, comb. nov. Basionym: *Pentadenia manabiana* Wiehler, *Phytologia* 73: 236. 1992. TYPE: Type material from cultivated plants, 8 July 1987, *Wiehler 87102* (holotype, GES not seen; isotypes, B, F, HBG, K, MO, NY, QCA, SEL, U, US, none seen). Type material in cultivation is from live material collected in Ecuador. Manabí: km 67 on road from Chone–Santo Domingo, 500 m, on 31 July 1977, by C. H. & H. C. *Dodson 6791* (AAU, MO, SEL). Figure 2.

Epiphytic herbs (Fig. 2). Stems 6–8 mm diam., squarish when dried, apex pubescent, lower stem smooth and glabrous. Internodes 1.1–2.6 cm long, slightly swollen. Leaves opposite, strongly unequal, blades lanceolate to slightly falcate, larger leaf of a pair 8–16.2 \times 1.6–4.5 cm, apex acute, base rounded and strongly oblique, adaxially green but suffused with pink, abaxially pink-purple, slightly pilose with uniseriate red trichomes on both surfaces, margin entire to slightly undulate, lateral veins 5–6 per side. Petioles 2–5 mm, slightly pilose with uniseriate red trichomes (Fig. 2A, B). Smaller leaf 1.6–3.7 \times 0.4–1.1 cm, otherwise as larger leaf. Inflorescences of 2–4 flowers per axil of larger leaf (Fig. 2A). Floral bracts 2, conspicuous, ovate, 1.3–1.9 \times 0.5–0.9 cm, apex acute, green suffused with red, weakly pilose with uniseriate transparent trichomes, margin entire (Fig. 2C). Pedicels 2.5–4 mm, villous. Calyx loosely clasping corolla, lobes equal to subequal, lanceolate-elliptic, 1.2–1.6 \times 2–4.5 mm, apex acute, green or green with red tips, slightly pilose with uniseriate transparent trichomes on both surfaces (Fig. 2D). Corolla yellow, tubular, constricted at base, 1.8–2.4 cm long, 2–2.3 mm wide at base, 3–4.5 mm at widest point, 2.5–3.5 mm before limb, exterior glabrate to villous at apex (Fig. 2E), interior slightly pubescent at base, glandular distally, lobes semiorbicular, inconspicuous, equal-subequal, ca. 1 \times 1.5 mm (Fig. 2F). Filaments connate anteriorly for 5 mm, adnate to corolla base anteriorly for 4.5 mm, white, slightly pubescent at base to halfway up filaments, anthers quadrate, 1.3 \times 1.3 mm (Fig. 2F). Ovary 2 mm long, pilose, style white, slightly pubescent, glandular at apex, stigma bilobed (Fig. 2G). Nectary of 5 free glands, the dorsal glands enlarged (Fig. 2H). Berry ovoid, 9 \times 5 mm, dark in color when dried, probably white, slightly pilose.

←

Gynoecium with calyx and nectaries. —H. Ovary with nectaries and calyx. (A, B from *Dodson et al. 9170*; C–H from *Dodson et al. 6791*.)

Distribution. Known only in Ecuador from Manabí and El Oro, 70–500 m.

This species was long believed to be a morphological variant of *C. spathulata* Mansfeld, but analysis of cpDNA (Smith, 1991) showed it to be markedly different from that species and more closely allied with *C. inconspicua* Kvist & L. Skog. Once the populations that differed from *C. spathulata* were identified based on cpDNA restriction site variation, morphological characters were also detected that distinguish this species, such as large conspicuous floral bracts and falcate leaves.

This species can be distinguished from other species of *Columnnea* on the basis of its long, narrow, lanceolate to slightly falcate leaves and small yellow corollas shared with *C. inconspicua* Kvist & L. Skog, to which it is most closely related (Smith, 1991). It is distinguished from *C. inconspicua* by the presence of large, conspicuous, ovate floral bracts that partly obscure the inflorescence.

Additional specimen examined. ECUADOR. **El Oro:** highway from Guayaquil to Machala, 1 km S of Ponce Enriquez and 2 km in from road on low hill, 70 m, 9 Oct. 1979, *Dodson et al.* 9170 (MO, SEL, US).

Columnnea (section *Pentadenia*) **hypocyrtantha** (Wiehler) J. F. Smith & L. Skog, comb. nov. Basionym: *Pentadenia hypocyrtantha* Wiehler, *Phytologia* 73: 234. 1992. TYPE: Bolivia. Santa Cruz: near Fortaleza between Siberia and Comarapa on the Cochabamba–Santa Cruz road, 2,500 m, 15 Jan. 1965, *Vogel 498* (holotype, US; isotypes, A, F, Z). Figure 3.

Suffrutescent, epiphytic, sublignose herbs with upright ascending stems (Fig. 3A). Stems to more than 50 cm tall, 4–5.5 mm diam., apex sparsely pilose, lower stem smooth and glabrous. Internodes 0.7–32 mm long, nodes slightly swollen, leaf scars raised. Leaves opposite, equal-subequal, blades ovate, 6.3–13.3 × 2.9–8.1 cm, apex acuminate, base rounded, slightly oblique, adaxially dark green, slightly pilose with uniseriate transparent trichomes, abaxially maroon or green suffused with purple, glabrate to sparsely pilose with uniseriate transparent trichomes on the veins, 4–7 lateral veins per side, margin minutely denticulate. Petioles 0.9–2.1 cm long, slightly pilose with uniseriate transparent trichomes (Fig. 3A, B). Inflorescences of axillary, solitary flowers, ebracteate or possibly bracts caducous (Fig. 3A). Pedicels 4–6.4 cm long, red-purple, erect in axil, slightly pilose with uniseriate transparent trichomes, and with oblong, 0.5–0.7-mm dark glands near apex. Calyx clasping corolla, lobes equal, ovate, 12–16 × 4.5–9 mm, apex long

acuminate, green with red tips to maroon, both surfaces glabrate with margin entire-ciliate (Fig. 3C). Corolla orange-red, limb and lobes green, tubular, strongly ventricose-saccate with pouch occasionally projecting forward beyond the opening of the corolla, strongly constricted at opening, slightly gibbous at base, 2.4–3.5 cm long, 4–8 mm wide at base, 1.1–1.8 cm at widest point, 3.5–4.5 mm before limb, exterior glabrate-pubescent, trichomes denser toward limb (Fig. 3D), interior glabrous, lobes semiorbicular, equal in size, approximately 1 × 2 mm (Fig. 3E). Filaments glabrous, white, anthers quadrate, 1.5 × 1.5 mm (Fig. 3E). Ovary glabrous, 6 mm long, style glabrous, white, stigma stomatomorphic (Fig. 3E). Nectary of 3–5 free glands, 2 dorsal glands enlarged, slightly connate (Fig. 3E). Berry globose, 9 mm diam., glabrate, green with purple stripes (Fig. 3F).

Distribution. Known only from the type from near Cochabamba, Bolivia, and a few collections nearby at 2,000–2,950 m, growing in cloud forests, and so far only collected in January.

Columnnea hypocyrtantha resembles *C. trollii* Mansfeld to which it is probably related on the basis of the strongly ventricose corolla. However, it is easily distinguished from *C. trollii* by its glabrate, ovate leaves, glabrous ovary, and corolla pouch that projects forward beyond the opening of the corolla, a character not seen in any other species of *Columnnea*. The species is only known from a few collections within a narrow geographic and temporal range. Therefore, it is difficult to evaluate phenology or distribution accurately.

The name is probably derived from the pouchlike nature of the corolla, which resembles that of the old genus *Hypocyrtia* C. F. P. Martius (now a synonym of *Nematanthus* Schrader).

Additional specimens examined. BOLIVIA. **Cochabamba:** Prov. Chapare, road from Cochabamba to Villa Tunari, 13–16 Jan. 1981, *Luer et al.* 564 (SEL), 22 Jan. 1980, *Luer et al.* 4877 (SEL); Prov. Carrasco, km 262 on road from Santa Cruz–Cochabamba, 2 km E of Siberia, 18 Jan. 1983, *Besse et al.* 1725 (US); Prov. Carrasco, Serrania Siberia, 20–35 km W of Comarapa on old Cochabamba–Santa Cruz road (Hwy. 4), 14–15 Jan. 1990, *Dorr & Barnett* 7045 (US).

Columnnea (section *Stygnanthe*) **suffruticosa** J. F. Smith & L. Skog, sp. nov. TYPE: Colombia. Choco: Mpio. San José del Palmar, Cerro del Torrá, 7 Jan. 1984, *Silverstone-Sopkin et al.* 1594 (holotype, CUVG; isotypes, MO, US). Figure 4.

Columnnea ambiguae (Urban) B. Morley affinis sed foliis brevioribus ovatoribus caulibus magis ligneis differt.

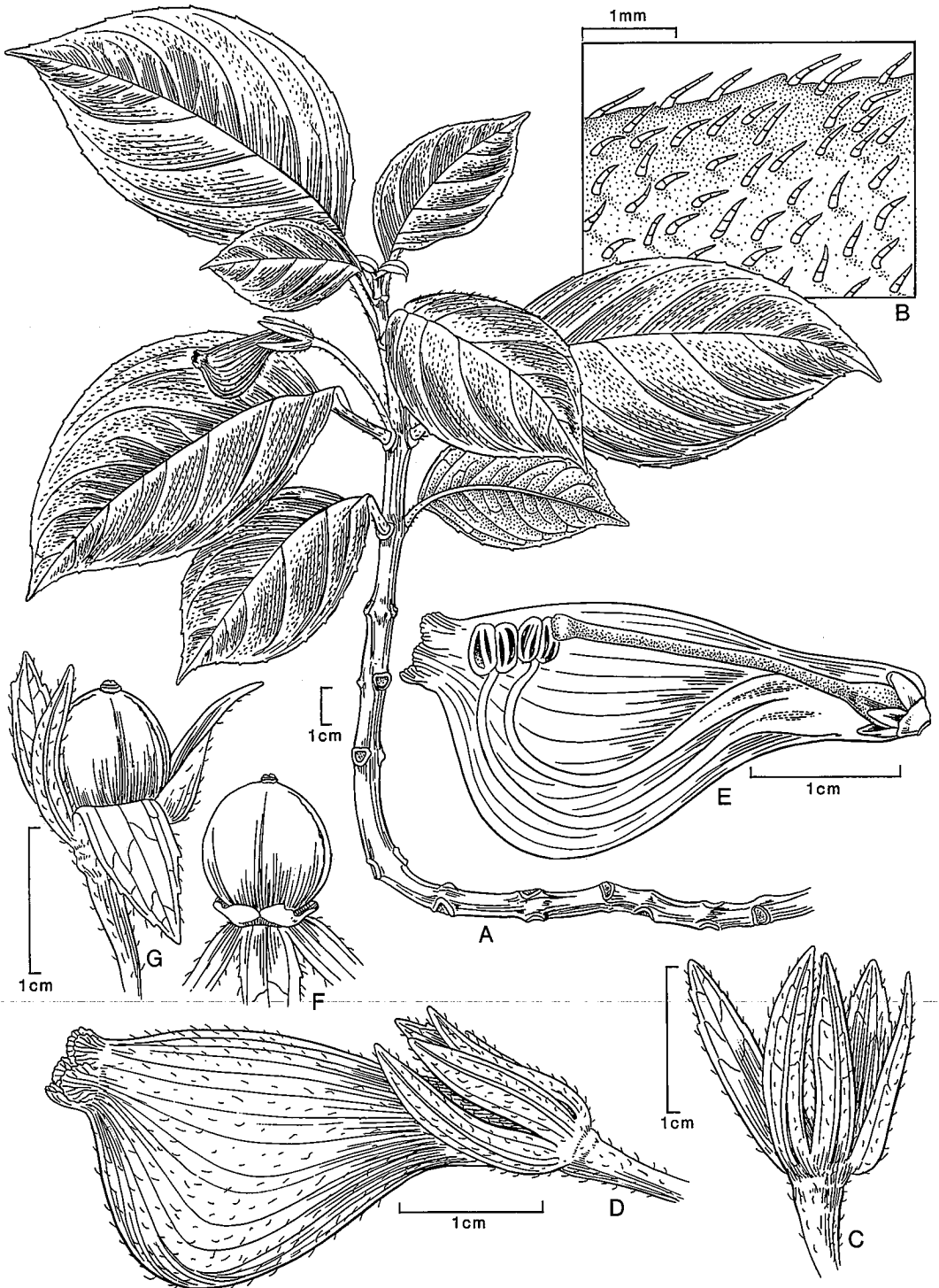


Figure 3. *Columnnea hypocyrtantha* (Wiehler) J. F. Smith & L. Skog. —A. Habit. —B. Adaxial leaf pubescence. —C. Pedicel and calyx. —D. Flower. —E. Corolla interior with stamens, gynoecium, and nectaries. —F. Berry with nectaries and calyx lobes pulled away. —G. Berry as seen naturally. (A, B from Besse *et al.* 1725; C-G from Dorr & Barnett 7045.)



Figure 4. *Columnea suffruticosa* J. F. Smith & L. Skog. —A. Habit. —B. Adaxial leaf pubescence. —C. Flower. —D. Corolla interior with stamens and gynoecium. —E. Pouchlike protuberances on interior of corolla. —F. Gynoecium with nectaries and calyx. —G. Berry with nectaries. (A from *Silverstone-Sopkin et al.* 1594; B from *Silverstone-Sopkin et al.* 4289; C-G from *Silverstone-Sopkin et al.* 4530.)

Small woody-sublignose shrubs, epiphytic or terrestrial (Fig. 4A). Stems to 2 m, 2–3 mm diam., pubescent or hirsute with uniseriate trichomes at apex, lower stem dark purple, smooth, and glabrous. Internodes 1–3.5 cm long. Leaves opposite, unequal. Larger leaf blades in a pair elliptic-ovate, 1.4–5 × 0.9–2.5 cm, apex acute, base rounded oblique, adaxially dull green, glabrate, abaxially purple mottled to all purple, glabrate, margin crenulate, lateral veins 3–6 per side. Petioles 2–10 mm long, pilose-hirsute (Fig. 4A, B). Smaller leaf blades elliptic-ovate, 0.7–3.9 × 0.4–1.8 cm, otherwise as larger leaf. Inflorescences of 1–2 flowers per axil (Fig. 4A). Floral bracts caducous, linear, up to 3 mm long. Pedicels 5–11 mm, erect, hirsute with purple or transparent uniseriate trichomes. Calyx loosely clasping corolla, lobes equal-subequal, spatulate, 6–11 × 1.5–5 mm, acute, green or purple, margins serrate, exterior surface hirsute to slightly so, interior surface glabrous (Fig. 4C). Corolla yellow with orange spots on lobes, tubular, constricted at base, 1.5–3.1 cm long, 2 mm at base, 4–6 mm at widest point, 3–5 mm before limb, lobes subequal, semiorbicular, 1–2 × 1.5–2 mm, exterior surface slightly sericeous with purple or transparent uniseriate trichomes (Fig. 4C), interior glabrous, glandular distally and dorsally (Fig. 4D). Two pouchlike invaginations occasionally present on dorsal surface of corolla (Fig. 4E). Filaments connate anteriorly for 2.5 mm, adnate to corolla base anteriorly for 1.5 mm, white, glabrous, anthers quadrate, 1.5 × 1.5 mm (Fig. 4D). Ovary 2 mm long, glabrous to sericeous at apex, style white, glabrous with glandular trichomes at apex, stigma stomatomorphic, white (Fig. 4F). Nectary of 5 free glands or with 2 dorsal glands connate (Fig. 4F, G). Mature berry unknown, immature fruit ovoid, 3 × 2 mm, white, glabrous to sparsely pilose (Fig. 4G).

Distribution. Known only from the type locality in Choco, Colombia, and one additional locality nearby on the Choco–Valle del Cauca border at 1,870–2,500 m.

Although it is known from only a few collections, four made within a few days of each other, and the others from the same general locality, this species is distinct from other species of section *Stygnanthe*. The shrubby woody habit of this species readily distinguishes it from other species in this section. In addition, the small, ovate, crenate leaves are distinctive. Phylogenetically, *Columnnea suffruticosa* is most likely related to *C. colombiana* (Wiehler) Kvist & L. Skog, as based on a cladistic analysis of morphology (Smith, 1991). However, the corolla lobes with darker colored spots (a character not used in

the analysis and previously overlooked in species descriptions) may place it in the clade with *C. ovatifolia* Kvist & L. Skog, *C. lavandulacea* Kvist & L. Skog, and *C. crassicaulis* (Wiehler) Kvist & L. Skog (Smith, 1991). Four of the collections are epiphytic, the others are terrestrial. The subtle morphological differences between the two groups are undoubtedly due to environmental effects of the two habitats. The epiphytic collections have smaller leaves, purple pubescence, and more purple coloration in general. This is likely due to the higher amount of sunlight obtained by the epiphytic individuals than any other factor. Coloration of trichomes, if variable within an individual or species, tends to be present in trichomes more likely to receive sunlight (pers. obs.).

The name is derived from the stems, which are woody at the base.

Paratypes. COLOMBIA. **Choco:** Mpio. San José del Palmar, Cerro del Torrá, up from heliport, 19 Aug. 1988, Ramos *et al.* 1357 (CUVC), 5 Aug. 1982, *Silverstone-Sopkin* 1225 (CUVC), 4 Jan. 1984, *Silverstone-Sopkin* 1496 (CUVC, MO), 6 Jan. 1984, *Silverstone-Sopkin et al.* 1563 (MO), 5 Jan. 1984, *Silverstone-Sopkin et al.* 1548 (CUVC, MO), 13 Jan. 1984, *Silverstone-Sopkin et al.* 1812 (CUVC), 10 Aug. 1988, *Silverstone-Sopkin et al.* 4289 (CUVC, US), 17 Aug. 1988, *Silverstone-Sopkin et al.* 4530 (CUVC, US), 15 Aug. 1988, *Silverstone-Sopkin et al.* 4442 (CUVC). **Valle del Cauca:** Mpio. El Cairo, ca. 21–25 km beyond El Cairo toward Choco border, 13 May 1988, Luteyn *et al.* 12288 (CUVC), 25 Apr. 1989, Luteyn & Giraldo 12644 (CUVC).

***Columnnea* (section *Stygnanthe*) *ultravioleacea* J.**

F. Smith & L. Skog, sp. nov. TYPE: Bolivia. La Paz: Prov. Sud Yungas, Huancané, 9 km from San Isidro (N of Chulumani), 2,450 m, 1 Jan. 1984, Beck 8741 (holotype, LPB; isotype, US). Figure 5.

Pentadeniae fritschii (Rusby) Wiehler affinis sed sepalis angustiore violaceis pedicellis violaceis corollis luteis differt.

Semiscandent herbaceous, terrestrial shrubs (Fig. 5). Stems to 1.2 m, 5–6 mm diam., red-brown, apex pubescent, lower stem smooth and glabrous (Fig. 5A). Internodes 1.3–4.5 cm long. Leaves in whorls of 4, equal to subequal, blades elliptic, 2.5–4.5 × 1–2 cm, apex acute, base rounded-cuneate, oblique, adaxially dark green, glabrous, abaxially dark purple, strigillose, appressed hirsute on veins with red uniseriate trichomes, margin entire, ciliate with red uniseriate trichomes, lateral veins 4–5 per side. Petioles 2–6 mm long, purple, pilose-hirsute with red uniseriate trichomes (Fig. 5A, B). Inflorescences of solitary flowers per leaf axil (Fig. 5A). Floral bracts linear, 3–8 mm × up to 0.5 mm, acute, purple,

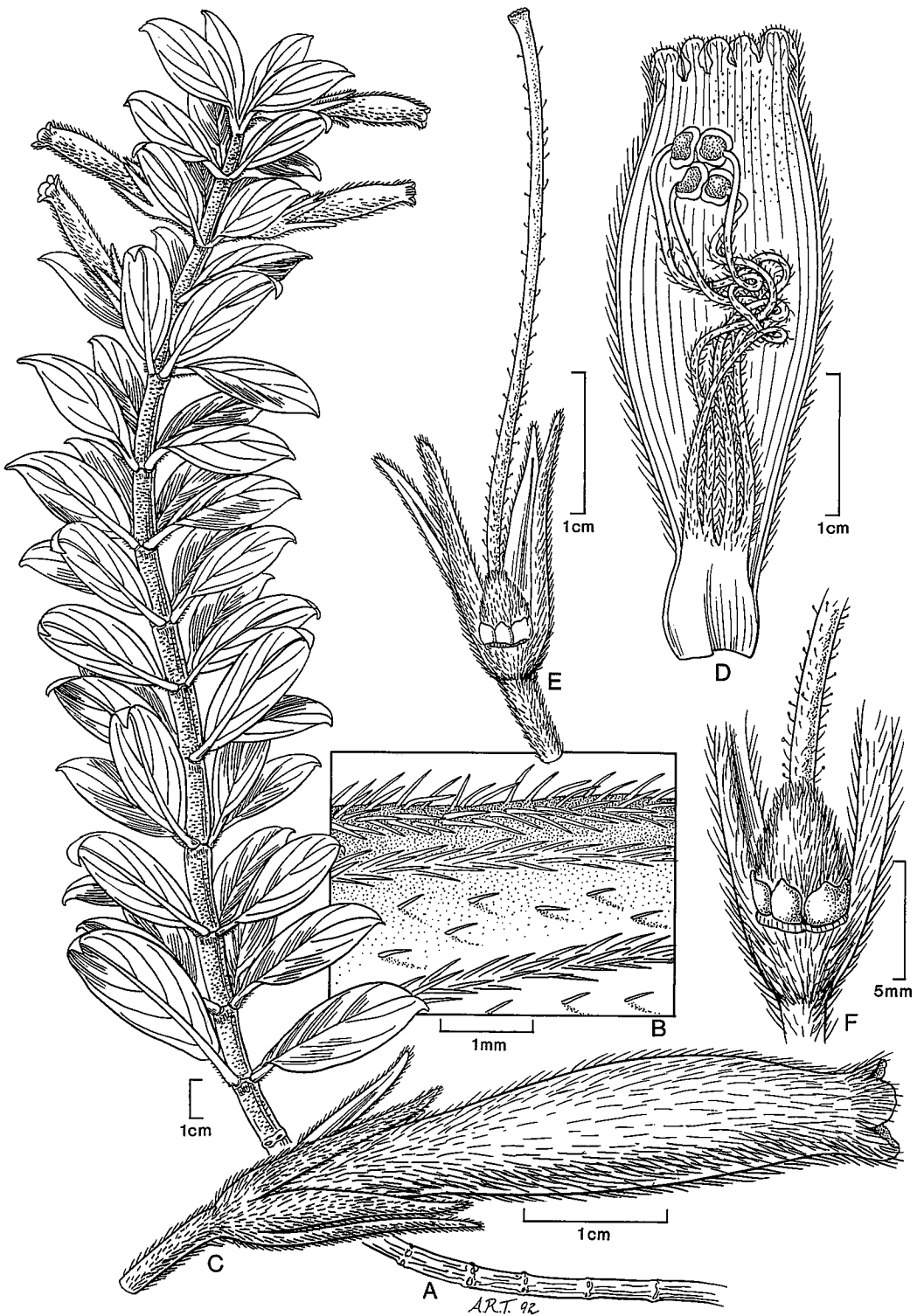


Figure 5. *Columnnea ultravioleacea* J. F. Smith & L. Skog. —A. Habit. —B. Abaxial leaf pubescence. —C. Flower. —D. Corolla interior with retracted stamens. —E. Gynoecium with nectaries and calyx. —F. Ovary and nectaries. (All from Beck 8741.)

slightly pilose on outer surface, glabrous on interior, margin entire. Pedicels 8–16 mm, purple, erect, pilose-hirsute with red uniseriate trichomes, with darker purple, 0.4–0.7-mm-long oval-elliptic glands near calyx. Calyx loosely clasping corolla, lobes equal-subequal, lanceolate-linear, 13–21 × 1.2–2 mm, acute, purple, margin entire, exterior surface sparsely hirsute with red uniseriate trichomes (Fig. 5C), interior surface glabrous. Corolla light yellow, lobes purple inside, tubular, slightly ventricose, long constriction at base, constricted at limb, 4.1–4.4 cm long, 2–2.5 mm wide at base, 5.5–7 mm at widest point, 3.5–4 mm before limb, lobes equal-subequal, semiorbicular, 2–3 × 2–3 mm, exterior surface densely sericeous with uniseriate transparent trichomes (Fig. 5C), interior slightly pilose at base, glandular distally and dorsally (Fig. 5D). Filaments connate anteriorly for 8 mm, adnate to corolla base anteriorly for 4.5 mm, white, slightly pilose, anthers quadrate, 1.5–2.5 × 1.5–2 mm (Fig. 5D). Ovary 4 mm long, sericeous, red and transparent uniseriate trichomes, style red at base turning yellow, slightly pilose at base, glabrous at apex, stigma stomatomorphic, white (Fig. 5E). Nectary of 5 free glands (Fig. 5F). Berry ovoid, 8–9 × 3–4.5 mm, dark purple with white spot where style was attached, sericeous with red and transparent trichomes.

Distribution. Known only from the type locality in Bolivia at 2,400–2,450 m. Flowering in January, fruiting in May.

Columnnea ultraviolacea and *Pentadenia fritschii* (Rusby) Wiehler (soon to be transferred to *Columnnea*) are the only two species of *Columnnea* to have leaves in whorls of four, easily distinguishing these species from others and thus allying them in a phylogenetic sense. They are distinguished from each other by the yellow corollas, purple coloration of the vegetative parts, and narrow lanceolate-linear sepals of *C. ultraviolacea*. These two are obviously sister species, based on their leaf arrangement, and are closely related to *Columnnea moesta* Poeppig, another Bolivian species (Smith, 1991), based on cpDNA variation (Smith, 1991).

The epithet is derived from the bright purple coloration of all vegetative parts and the fruits.

Paratypes. BOLIVIA. **La Paz:** Sud Yungas, 9.2 km toward San Isidro from Huanacáné, 2 May 1989, *Smith & Smith 1829* (LPB, WIS).

Columnnea (section *Stygnanthe*) ***xiphoidea*** J. F. Smith & L. Skog, sp. nov. TYPE: Peru. Uca-yali: Divisoria, 59 km from Tingo María on road to Pucallpa, 17 Nov. 1949–15 Jan. 1950, *Allard 21230* (holotype, BH; isotype, US). Figure 6.

Columnnea ovatifoliae Kvist & L. Skog affinis sed foliis longioribus lanceolatis differt.

Herbs with stems to 2 m, 4 mm diam., red-brown, quadrangular when dried, apex slightly to densely sericeous, lower stem smooth (Fig. 6A). Internodes 1.6–4.3 cm long. Leaves equal-subequal, blades lanceolate, slightly falcate, 7–9.1 × 1.4–2 cm, apex acuminate, base rounded, oblique, adaxially green with purple margin, hirsute-pilose with uniseriate red trichomes, abaxially dull rose red, strigose with single-celled trichomes and pilose with red uniseriate trichomes, veins slightly pilose with red uniseriate trichomes, margin entire, lateral veins 6 per side. Petioles 2.5–4 mm, pilose-sericeous with red uniseriate trichomes (Fig. 6A, B). Inflorescences of 1–3 flowers per axil of either leaf (Fig. 6A). Floral bracts 1–2 per inflorescence, linear, 4–11 × 0.5–2 mm, acute, maroon, sericeous, entire (Fig. 6C). Pedicels 7–13 mm long, erect, sericeous with uniseriate transparent trichomes. Calyx clasping corolla, lobes equal, lanceolate, 15–21 × 2–4 mm, apex acute, margin entire, exterior surface green with purple margin and some purple mottling, pilose and strigose, sericeous at base, interior surface bright red-purple, pilose-sericeous (Fig. 6D). Corolla crimson, lobes with dark purple spot inside, tubular, slightly ventricose, constricted at base, 4.2 cm long, 4.5 mm wide at base, 1.1 cm at widest point, 0.8 cm before limb, lobes subequal, semiorbicular, 2 × 3 mm, exterior villous-sericeous, denser toward limb (Fig. 6D), interior hirsute-pilose with glandular trichomes dorsally and distally (Fig. 6E). Filaments connate at base anteriorly for 5 mm, adnate to corolla at base anteriorly for 4 mm, yellow, hirsute, anthers quadrate, 1.7 × 1.7 mm (Fig. 6E). Ovary 3 mm long, sericeous, style yellow, glabrous, stigma bilobed, yellow, papillose (Fig. 6F). Nectary of 4–5 free glands, the 2 dorsal glands slightly connate (Fig. 6G). Fruit not seen.

Distribution. Known only from the type locality in Peru and nearby, at 1,600 m.

The lanceolate, isophyllous leaves and bright red, densely sericeous-lanate corolla of *Columnnea xiphoidea* readily distinguish it from any other species of *Columnnea*. Although no formal cladistic analysis has been performed on this species, *Columnnea xiphoidea* is potentially related to two different clades within section *Stygnanthe*, based on its morphological features. The lanceolate, slightly falcate leaves would tend to ally it with the *C. inconspicua* Kvist & L. Skog–*C. manabiana* clade (Smith, 1991). However, the slightly ventricose, densely sericeous-lanate corolla with dark purple spots on the interior of the lobes would place it with the *Pentadenia*

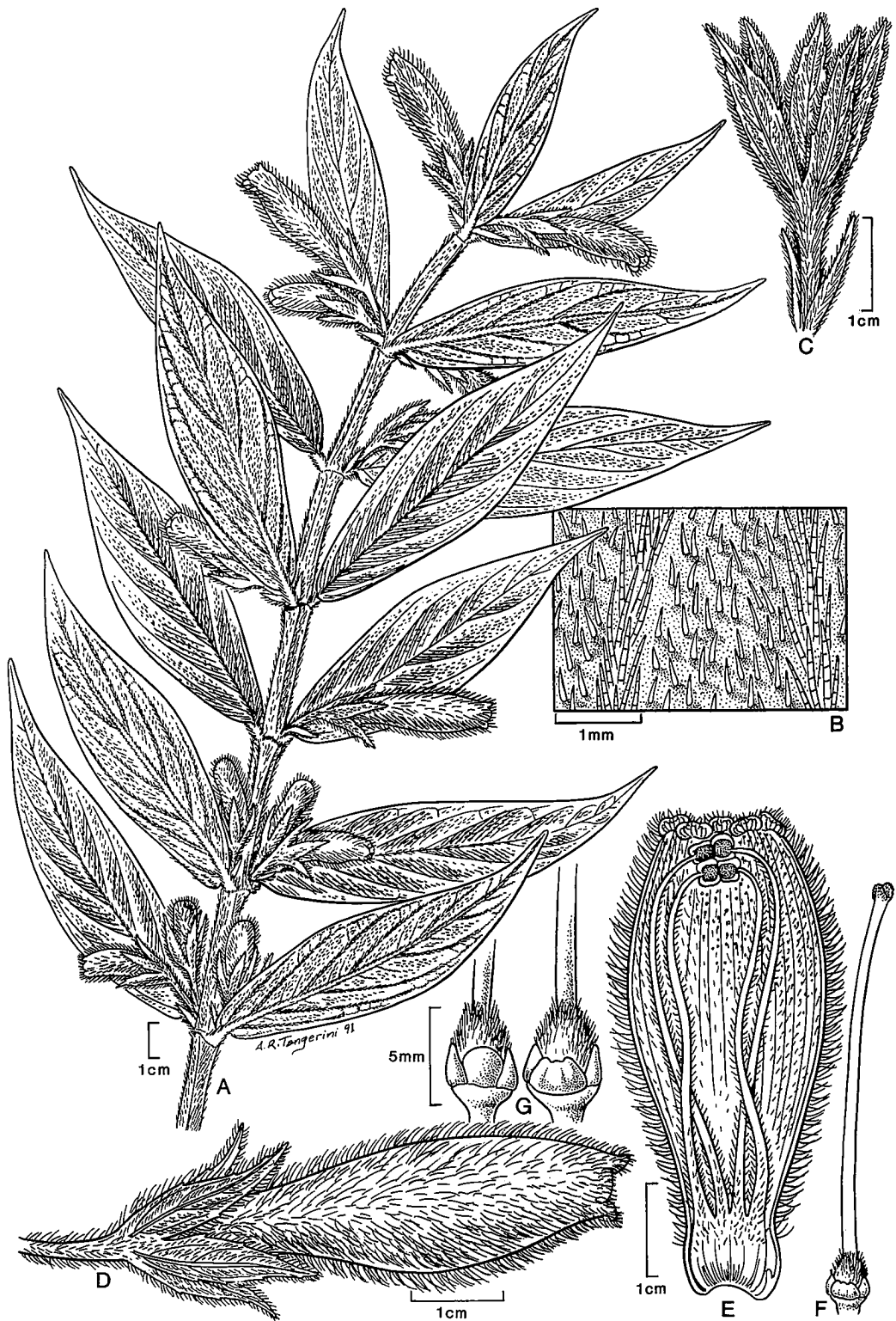


Figure 6. *Columnnea xiphoidea* J. F. Smith & L. Skog. —A. Habit. —B. Abaxial leaf pubescence. —C. Pedicel with floral bracts and calyx. —D. Flower. —E. Corolla interior with stamens. —F. Gynoecium with nectaries. —G. Ovary and nectaries. (All from *Allard 21230.*)

fritschii (Rusby) Wiehler—*C. ultraviolacea* clade (Smith, 1991).

The name is based on the long, swordlike leaves of this species, which are unique in section *Stygnanthe*.

Paratypes. PERU. **San Martín**: La Divisoria, "Margarita," 14 Aug. 1946, *Ferreyra 1012* (US); La Divisoria, 59 km from Tingo María on road to Pucallpa, 15 Nov. 1949–15 Jan. 1950, *Allard 21280* (US), *Allard 21300* (US). **Huánuco**: Cordillera Azul, ca. 39.2 km E of Tingo María on road to Pucallpa, 19 Nov. 1979, *Jones & Davidson 9339* (LAM); ca. 43 km E of Tingo María on road to Pucallpa, 21 Nov. 1979, *Jones & Davidson 9432* (LAM).

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