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Three new species of Trichantha from Ecuador and Peru.

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THREE NEW SPECIES OF *TRICHANTHA* FROM
ECUADOR AND PERU
(GESNERIACEAE)

Hans Wiehler*

The Genus *Trichantha* Hooker of the neotropical Gesneriaceae has been re-instated and redefined in this first issue of *Selbyana* (p. 33; cf. Wiehler, 1973, sub *Ortholoma*). Elements of this group of over 70 species came from *Columnea* Linnaeus and *Alloplectus* Martius, but many species of *Trichantha* are still new to science and await description. The three new species treated here form a unit because they are closely related one to another and to *Trichantha illepidata* (H. E. Moore) Morton from Panama. All four species grow in the same type of habitat as epiphytes, have the same general plant habit, the same degree of leaf anisophyly, the same corolla shape, the same type of maroon-purple design on the lemon yellow corolla, and the same odd appendages by the sinuses of the corolla lobes. Yet the corolla of each species shows also some specific difference; in one species the flowers are significantly smaller but more numerous than in the others. The calyx is rather distinct in each of the novelties, and one of them possesses a unique leaf texture. All three new species have horticultural value as hanging basket plants.

A *Trichantha* SPECIES FROM PERU

Plants of a new species with uncertain origin appeared recently in cultivation in the United States, Costa Rica, and England, but herbarium collections of this species, with definite Peruvian localities, have existed for a long time in European and American herbaria. The well-known German botanist and explorer Ernst Ule (1854-1915) who lived for 24 years in Brazil was apparently the first to find and collect this species in northeastern Peru (Department of San Martin) in 1903. Some details of Ule's trip are worth mentioning, for they furnish the only first-hand ecological information presently available for this new species. The herbarium sheet label reads, in German: "Felsenpf. u. Epiphyt, Bl. gelb mit purpurn gestreift. Cerro de Escaler, 1300 m. Januar 1903. Peru" (Rock plant and epiphyte, flowers yellow striped with purple). But Cerro de Escaler is not listed on any Peruvian map, old or new. Information about this mountain range and other pertinent data can be retrieved from Ule's travel reports made after his return to Germany (Ule, 1904). He had come to Peru on a rubber tree search expedition, travelling by boat the total length of the Amazon, then southwest on the rivers Marañon and Huallaga, and finally by canoe and with Indian guides and carriers on the Rio Cainarachi until the river became innavigable at the Pongo de Cainarachi (Pongo=rapsids). There they crossed a steep, rocky, and densely wooded mountain range, and arrived after a three day march in Tarapoto. One of the regions or peaks of this range is Cerro de Escaler, about 25 km north of Tarapoto. Ule found in this remote area many unusual plants and returned twice from Tarapoto to botanize there, the last time in January 1903 when he collected the new gesneriad. Cloud bursts are frequent in this region, and fast swelling rivers hindered their exploration. The highest areas of this mountain range in the eastern foothills of the Andes have an altitude of 1400 m, while the Pongo de Cainarachi has only an altitude of 250 m.

*The Marie Selby Botanical Gardens.

In June of 1929 the American botanists E. P. Killip and A. C. Smith made the second known collection of this species about 500 km south of Tarapoto, near San Ramon in the Department of Junin, in a dense forest with an altitude between 1400- 1700 m. This gesneriad-rich region is in the central part of the Andes, but it is phytogeographically similar to the Tarapoto area. The collection label reads: "Epiphyte; lvs. with dark green nerves, reddish beneath." The distribution pattern of this new species is not as odd as it might appear, for at least one other gesneriad endemic to Peru covers the same area: *Anodiscus xanthophyllus* (Poeppig) Mansf. (= *Monopyle*) has been collected around Tarapoto (*Spruce, 4400, W*), around San Ramon (*Sandeman 4995, NY*), and in areas in between.

The material of this species presently in cultivation in North America is of diverse origin, but it can be traced as follows: The horticulturist Rodolfo Stumpfle in Lima, Peru, obtained several collections of this species from the vicinity of La Merced, Department Junin, through one of his plant collectors during the 1960's. This collection site is near that of Killip and Smith, mentioned above (San Ramon, Junin). Sr. Stumpfle has kindly supplied me recently with the following information. According to his plant collector, this species occurs rather rarely in the high altitude forests (about 2000 meters) around La Merced, grows in the forks of trees (especially a tree called by the natives "matapalos"=strangler fig) in some humus litter, in fairly deep shade and constant high humidity. The day-time temperature may rise fairly high, but the nights are quite cool. Sr. Stumpfle has offered cuttings and seedlings of these collections for sale. This material has reached North America via two routes: 1. Mr. R. G. Wilson of San Vito, Costa Rica, brought plants from Stumpfle's establishment in Lima to his garden in Costa Rica in 1965 (*Wilson 65-352*), and Dr. D. G. Huttleston introduced this material from Wilson's settlement to Longwood Gardens, Kennett Square, Pennsylvania, in 1969 (accession number 69628). Longwood Gardens has now distributed this species to some limited extent. The collection at the University of Miami (W-1117) was obtained in May of 1971. 2. The Stumpfle collections have also been received indirectly by Mr. Maurice Mason of Norfolk, England. This material was then obtained by Mr. Irwin Rosenblum of Brooklyn, New York, in 1972 (*Rosenblum 176*), who later kindly supplied the author with cuttings at the University of Miami (W-1946).

Another source of cultivated material of this species is a collection by Mr. Lee Moore, a plant and animal collector who sent cuttings from Peru to Mrs. Maude Cogswell of Hamburg, New York, somewhere around 1970. Mrs. Cogswell has distributed this material to members of the gesneriad plant societies (University of Miami accession number W-1721). The exact origin of this material within Peru has not been ascertained, although it is known that Mr. Moore, residing in Iquitos, collected frequently in the Moyobamba region in the Department of San Martin (fide Dr. C. H. Dodson, personal communication). This is near the site of Ule's collection in 1903. — There appears to be some variation between the collections of Stumpfle and Moore (degree of redness of the abaxial lamina, calyx lobe width, corolla length), but these differences may be also due to cultural conditions and they seem to be overlapping. The description below is based, in part, on living material (W-1117, W-1721).

***Trichantha purpureovittata* Wiehler, sp. nov.**

Trichanthae illepidae (H. E. Moore) Morton affinis, a quo racemis pendentibus foliisque bullatis submembranaceis vel chartaceis differt.

Plants perennial, epiphytic or growing on rocks. Stems suffrutescent, 30+ cm long, branching only near the base, up to 11 mm in diam., older parts olive buff (Ridgway XL, 1912), young stems green. The whole plant body covered with pilose, articulated trichomes, 2-4 mm long, usually hyaline-celled, with red cells along the veins of the abaxial lamina, on pedicels and calices, hairs on olive buff stems with a golden sheen, dry.

Leaves opposite-decussate, strongly anisophyllous, subdistichous, overlapping, lamina chartaceous or submembranaceous, conspicuously bullate, asymmetrically lanceolate-elliptic, base oblique, apex acuminate, margin recurved, serrate, adaxial surface glossy bluish green with a copper sheen, the top of each bulla somewhat lighter green, veins deeply impressed, abaxial surface either medium green flushed with erythrite red (H.C.C. 00.27/1, Wilson, 1938-41) or completely erythrite red, veins prominent; larger leaf of a pair with a petiole length of 0.5-1.0 cm, lamina 12-20 cm long, 5-9 cm wide, with 6-9 pairs of veins, smaller leaf of a pair with a petiole length of 0.3-0.7 cm, lamina 2-5 cm long, 1.5-2.5 cm wide.

Inflorescences in the axils of the larger leaves of the pairs only, with the peduncle of the typical gesneriaceous cyme suppressed, the green or erythrite red pedicels subtended by 2 linear-lanceolate bracts, 5-8 mm long, 1 mm wide, pedicels typically 4, or reduced to 3, 2, or 1, each 4-5 cm long; calyx green or flushed with erythrite red, the 5 lanceolate lobes of equal length, free from the base, 1.4-1.6 cm long, 3 mm wide near the base, margin serrate, with 2-4 prominent subulate red-tipped teeth pointing outward, 2-4 mm long; corolla nearly upright in the calyx, 5.4-6.4 cm long, spur 3 mm long, sigmoid tube 4.5-5.4 cm long, narrow at base, 3 mm in diam., gradually expanding to 8-10 mm in diam. below lobes, limb oblique, 1.9-2.2 cm in diam., the 5 lobes subequal and spreading, 7-9 mm wide, with appendages, 1-3 mm long, at the sinuses of the lobes, tube inside glabrous, with glandular trichomes in dorsal part of throat, corolla canary yellow (H.C.C. 2), with 5 dahlia purple (H.C.C. 9.31) stripes from the base of the tube to the tips of the lobes, the dorsal 3 stripes prominent, the ventral ones fading; stamens 4, filaments yellow, glabrous, anthers quadrately connate, below the dorsal corolla lobes when shedding yellow pollen; ovary at anthesis light green, pubescent, style yellow, 4.8-5.2 cm long, glabrous at base, puberulous above, strongly recurved distally, stigma capitate but dorsiventrally flattened; nectary reduced to 1 dorsal, double, bilobed, white gland; berry ovoid; erythrite red (H.C.C. 00.27), sparsely pubescent, up to 2 cm long, 1.4 cm wide, seeds dahlia purple, striate, 1.5 mm, 0.5 mm wide, borne on 3.5 mm long fleshy funicles.

TYPE: *PERU*: JUNIN: Schunke Hacienda above San Ramón, elevation 1400-1700 m, dense forest; "Epiphyte; lvs. with dark green nerves, reddish beneath." 8-12 June 1929, *E. P. Killip & A. C. Smith 24873* [Holotype: US (No. 135950); Isotype: F].

DISTRIBUTION: Known thus far only from the type locality in the Dept. of Junin, and from Cerro de Escaler, ca. 25 km NNE of Tarapoto, Dept. San Martín. Apparently endemic to Peru.

ADDITIONAL MATERIAL EXAMINED: PERU: DEPT. SAN MARTIN: Cerro de Escaler, 1300 m, "Felsenpf. u. Epiphyt, Bl. gelb mit purpurn gestreift." January 1903, *E. Ule 6806* (HBG); cultivated material from Peru, without localities: grown at University of Miami, Florida, as W-1117, 25 Nov. 1971, *H. Wiehler 71333* (SEL); grown as W-1721, 14 March 1974, *H. Wiehler 7461* (SEL, three others to be distributed).

TWO *Trichantha* SPECIES FROM ECUADOR

The discovery of these species is the result of field work on Gesneriaceae in Ecuador in 1971 (partially supported by National Science Foundation Grant G.B. 17923, C. H. Dodson, principal investigator, and by the Research Fund of the American Gloxinia and Gesneraid Society). Both species are apparently endemic to Ecuador, occurring on the rain forest slopes of the eastern foothills of the Andes. The type collections come from the area around Tena, a small picturesque frontier town near Indian territory. The whole region around Puyo and Tena is rich in Gesneriaceae, but poorly botanized. There exists one other recent collection of *Trichantha brenneri*, from the province of Morona-Santiago, an area about 260 km SSE of Tena. *Trichantha tenensis* apparently has never been collected before. The description of both species is based on living material growing at the greenhouses of the University of Miami.

Trichantha tenensis Wiehler, sp. nov.

Species haec ab *Trichantha illepida* (H. E. Moore) Morton differt lobis laciniatis calicum et corollis grandioribus.

Plants perennial, epiphytic in the rain forest canopy. Stems suffrutescent, ascending, ca. 40 cm long, branching only near the base, up to 1.4 cm in diam., older parts olive buff (Ridgway XL), young stems green. The whole plant body covered with pilose, articulated, hyaline-celled trichomes, 2-5 mm long, those on the olive buff stems somewhat hispid, with a golden sheen, dry.

Leaves opposite-decussate, strongly anisophyllous, subdistichous, lamina subcoriaceous, elliptic, base oblique, apex acuminate, margin crenulate-serulate, adaxial surface bluish green, veins impressed, abaxial surface either medium green or flushed or mottled with, or completely dark red (= Indian lake, H.C.C. 8.26), veins prominent; larger leaf of a pair with a petiole length of 0.5-1.0 cm, lamina 11-20 cm long, 4.5-9.0 cm wide, with 5-6 pairs of veins, smaller leaf of a pair with a petiole length of 0.3-0.7 cm, lamina 1.5-3.0 cm long, 1.0-1.5 cm wide, early caducous.

Inflorescences in the axils of the larger leaves of the pairs only, the peduncle of the cyme suppressed, the green or dahlia purple (H.C.C. 9.31) pedicels subtended by 2 linear lanceolate bracts, 5-9 mm long, 1 mm wide, pedicels 4, or reduced to 3, 2, or 1, each 3-4 cm long; calyx green, blotched with dahlia purple on the lobes, or completely colored, the 5 lanceolate lobes of equal length, free from the base, 1.6-2.0 cm long, 3-5 mm wide near the base, margin laciniate, the 8-10 close-set teeth pointing outward, 2-5 mm long; corolla nearly upright in the calyx, 5.5-6.7 cm long, spur 5 mm long, sigmoid tube 4.4-5.5 cm long, narrow at base, 4 mm in diam., gradually expanding, somewhat inflated in the middle, 1.1-1.5 cm in diam., slightly constricted below the lobes, limb oblique, 2.0-2.5 cm in diam., the 5 lobes sub-

equal and spreading, 6-7 mm long, 9-10 mm wide, with appendages, 2-5 mm long, at the sinuses of the lobes, tube inside glabrous, with glandular trichomes in the dorsal part of the throat, corolla canary yellow (H.C.C. 2), with 5 prominent dahlia purple stripes from the base of the tube to the tips of the lobes; stamens 4, filaments yellow, glabrous, anthers quadrately connate, below the dorsal corolla lobes when shedding yellow pollen; ovary anthesis medium green, pubescent, style yellow, 5-6 cm long, puberulous, at anthesis medium green, pubescent, style yellow, 5-6 cm long, puberulous, tary reduced to 1 dorsal double bilobed white gland; berry ovoid, sparsely pubescent, ca. 2 cm long, 1.5 cm wide; seeds buff-colored, striate, 1 mm long, 0.4 mm wide, borne on 3.5 mm long fleshy funicles.

TYPE: *ECUADOR*: PROV. NAPO: Tena: "Rain forest above Misión Evangelica, past Hacienda Dos Rios, about 4 km N. of Tena, elev. ca. 700 m. Epiphyte about 9 m up in tall tree, lvs. bright red below." Grown from cuttings brought back to the University of Miami, Florida, accession number W-1584, 11 March 1973, *H. Wiehler 7318* (Holotype: US, isotypes: SEL, seven others to be distributed).

DISTRIBUTION: Known only from two localities in the vicinity of Tena, Ecuador. Apparently endemic to Ecuador.

OTHER MATERIAL EXAMINED: *ECUADOR*: NAPO: Tena: sterile material type locality and type plant, 3 August 1971, *H. Wiehler 71122a* (SEL); mountain range about 4 km S. of Tena, rain forest, ca. 600-700 m alt.: "Epiphyte, 11 m up in tree, easily visible by red underside of lvs." 4 August 1971, *H. Wiehler 71132* (SEL) — (cuttings of this collection cultivated at University of Miami as W-1585, calyx somewhat larger than that of type collection); cultivated material at the University of Miami, W-1585, 21 March 1972, *H. Wiehler 7321* (US, SEL, others to be distributed).

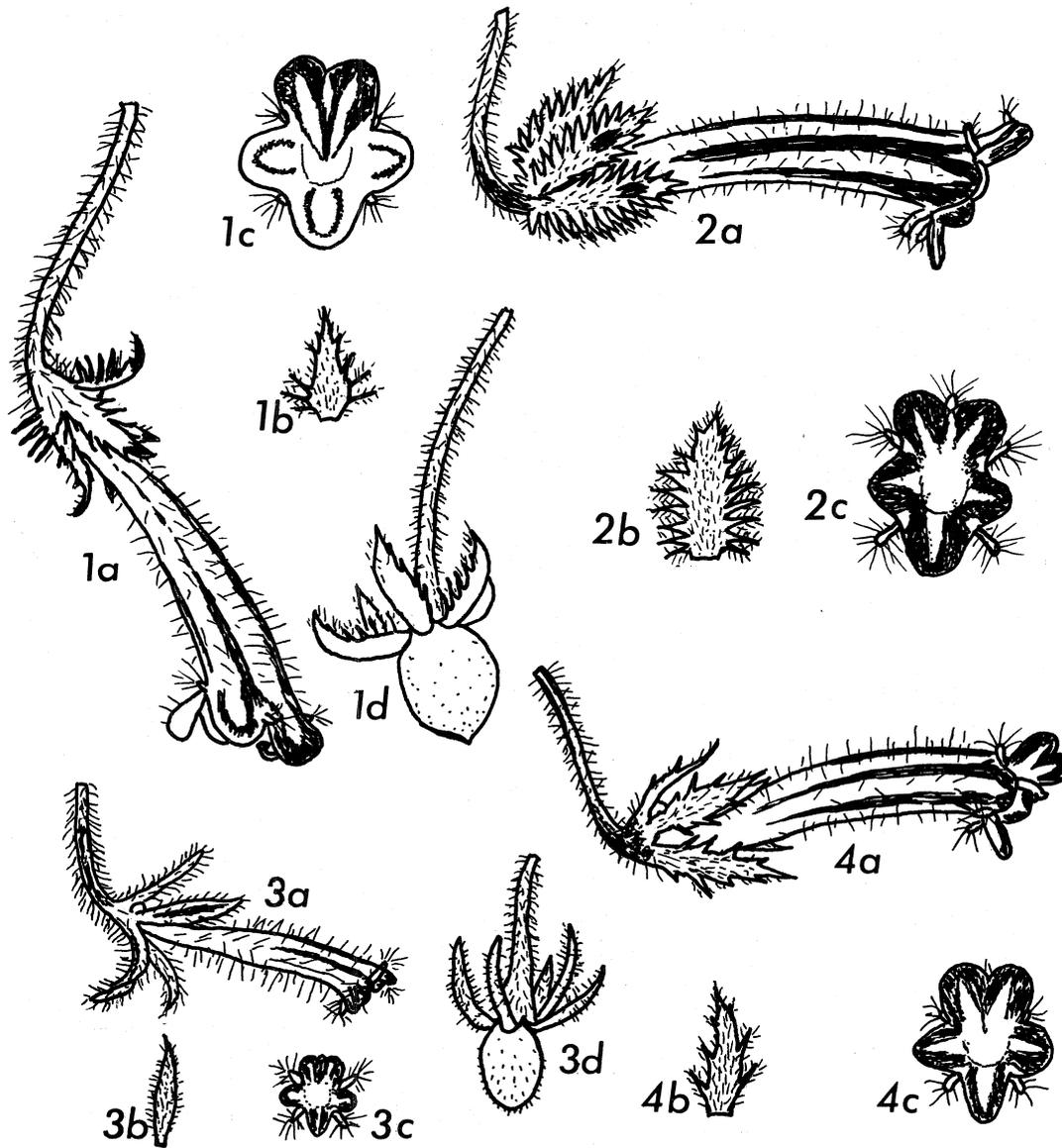
***Trichantha brenneri* Wiehler, sp. nov.**

Species foliis chartaceis, lobis integeribus calicum, et corollis parvioribus a *Trichantha illepada* (H. E. Moore) Morton diversa.

Plants perennial, epiphytic, stems suffrutescent, erect or spreading, ca. 30-60 cm long, branching only near the base, up to 0.7 cm in diam., older internodes olive buff (Ridgway XL), new growth green. The whole plant body covered with pilose, articulated trichomes, 1.5-4 mm long, usually hyaline-celled, sometimes with red cells on pedicels and calices, dried hairs on olive buff stems with a golden sheen.

Leaves opposite-decussate, strongly anisophyllous, overlapping, almost distichously arranged on a single plane, lamina chartaceous, oblanceolate-elliptic, base oblique, apex acute, margin dentate, adaxial surface glossy bluish green, veins impressed, abaxial lamina either medium green flushed with maroon (H.C.C. 10.30) or completely maroon, veins prominent; larger leaf of a pair with a petiole length of 0.5-1 cm, lamina 11-15 cm long, 4.5-5.5 cm wide, with 6-8 pairs of veins, smaller leaf of a pair with a petiole length of 0.3-0.8 cm, lamina 6-7.5 cm long, 2.5-3 cm wide.

Inflorescences in the axils of the larger leaves of the pairs only, the peduncle of the compound cyme suppressed, the maroon-flushed pedicels subtended by 2-6 lanceolate bracts, 5-8 mm long, 2 mm wide, pedicels 6 or less, each 1.5-2.2 cm long; calyx green with a maroon flush or completely



LEGEND FOR FIGURES 1-4

a: flower, b: lateral calyx lobe, flattened in Figs. 1 and 2, c: frontal view of corolla limb, with appendages, d: fruit. (All Figures natural size)

1. *Trichantha purpureovittata* (W-1721)
2. *T. tenensis* (W-1585)
3. *T. brenneri* (W-1501)
4. *T. illepida* (G-257, clone of type plant).

maroon, the 5 calyx lobes subequal, free from the base, 1.5-1.7 cm long, 3 mm wide, margins entire; corolla nearly upright in the calyx, 3.6-4.2 cm long, spur 3 mm long, sigmoid tube 3.1-3.3 cm long, narrow at base, 2.5 mm in diam., gradually expanding to 4.5 mm in diam. below the lobes, limb oblique, 9-10 mm in diam., the 5 lobes subequal and spreading, 2-4 mm long, 3-4 mm wide, with appendages, 1-4 mm long, at the sinuses of the lobes, tube inside glabrous, with glandular trichomes in the dorsal part of the throat, corolla canary yellow (H.C.C. 2/2), with 5 faint maroon stripes from the middle of the tube to the tips of the lobes, the 2 dorsal lobes blotched with maroon; stamens 4, filaments yellow, puberulous, anthers quadrately connate, below the dorsal corolla lobes when shedding yellow pollen; ovary at anthesis whitish, pubescent, style yellow, 3.2-3.5 cm long, puberulous, recurved apically, stigma stomatomorphic but dorsiventrally flattened; nectary reduced to 1 dorsal double bilobed white gland; berry ovoid, white or pale pink, pubescent, up to 1.9 cm long, 1.2 cm wide; seeds tan-colored, striate, 1.3 mm long, 0.5 mm wide, borne on 3 mm long fleshy funicles.

TYPE: *ECUADOR*: NAPO: Tena; plant actually grown in garden of Hotel Turingia in Puyo, 50 km S. of Tena, but found as "epiphyte on tree stump, in the woods around Tena" by the Hotel owner, Mr. Joe Brenner; cuttings brought to the University of Miami, Florida, in 1971, and plants cultivated there with accession number W-1501, 3 August 1972, *H. Wiehler* 72335 (Holotype: US; isotypes: SEL, others to be distributed).

DISTRIBUTION: In the rain-forested slopes and foothills of the eastern Andes in Ecuador. Apparently endemic to Ecuador.

OTHER MATERIAL EXAMINED: *ECUADOR*: PROV. PASTAZA: Puyo: part of original plant cultivated in garden of Hotel Turingia in Puyo, 30 July 1971, *H. Wiehler* 7178 (SEL); Prov. Morona-Santiago: Gualaquiza: Misión Bomboiza: "Misión Salesiana, primary and secondary tropical rain forest, ± 700-800 m alt.", 28 September 1967, *B. Sparre* 19098 (S).

This species is named in honor of Joe Brenner, a collector and grower of native Orchidaceae and Gesneriaceae who transplanted this *Trichantha* into his garden in Puyo, Ecuador, introduced it to the author, and proved very helpful during the author's field study of Gesneriaceae in the "Oriente."

KEYS TO THE SPECIES

1. Leaves bullate, stems pendent:
 - Sepal margin serrate, with 2-4 subulate teeth on each side; corolla 5.4-6.4 cm long:

T. purpureovittata
1. Leaves flat, stems ascending:
 2. Sepal margin entire; corolla about 4 cm long:

T. brenneri
 2. Sepal margin indented; corolla about 5-6 cm long:
 3. Sepal margin with ca. 8 laciniate, close-set teeth on each side:

T. tenensis
 3. Sepal margin with 3-5 serrate-subulate, widely separated teeth on each side:

T. illepida

HYBRIDIZATION EXPERIMENTS

The three new species have been involved in the following artificial hybridization experiments:

1. *T. purpureovittata* W-1117 ♀ × *Columnnea flaccida* Seem. G-327 ♂
Hybrid accession number W-1594. Four plants germinated from 2 berries harvested, grew to maturity and flower freely. The hybrids are intermediate to the parents; pollen stainability 0%.
2. *Columnnea wilsonii* Wiehler G-1327 ♀ × *T. tenensis* W-1584 ♂.
Hybrid accession number W-1915. Seven plants germinated from the seed of one berry. The hybrids are intermediate to the parents; pollen stainability 0%.
3. *Columnnea wilsonii* Wiehler G-1327 ♀ × *T. brenneri* W-1501 ♂.
Hybrid accession number W-1920. Eight plants germinated from the seed of two berries. The hybrids are intermediate to the parents; pollen stainability 0%.
4. *T. brenneri* W-1501 ♀ × *T. tenensis* W-1584 ♂.
Hybrid accession number W-1921. About 100% seed production, about 90% germination. The hybrids are intermediate to the parents; pollen stainability 91%.

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