

NOTES ON CENTRAL AMERICAN ARISTOLOCHIACEAE

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Barringer, Kerry (Department of Botany, Field Museum of Natural History, Chicago, IL 60605-2496). Notes on Central American Aristolochiaceae. *Brittonia* 35: 171–174. 1983.—*Aristolochia pfeiferi*, from Panama, and *A. cruenta*, from Costa Rica, are described. *A. chapmaniana* Standl. is placed in synonymy under *A. tonduzii* Schmidt, *A. belizensis* Lundell is placed in synonymy under *A. ovalifolia* Duchartre, and *A. petenensis* Lundell is placed in synonymy under *A. bullata* Pfeifer. The status of *A. steyermarkii* Standl. is reevaluated.

Recent collections from Central America include specimens of two new species of *Aristolochia* and others that indicate that the taxonomy of some species needs to be reevaluated. Pfeifer (1966, 1970b) wrote the most recent revisions for the North and Central American species and supplemented these with later papers (Pfeifer, 1970a, 1976a, 1976b). In addition Lundell (1971) described two new species from Belize. Otherwise, recent work has focused on the South American species.

Aristolochia pfeiferi K. Barringer, sp. nov.

Ab *A. tonduzii* Schmidt foliis ovatis subcordatis supra pilosis, calycis pilosi limbo intus papilloso utricula longiori differt.

Herbaceous liana; younger stems ribbed, densely pubescent with brown, multicellular trichomes over 1 mm long. Pseudostipules absent. Leaves alternate, distichous, borne on swollen nodes; petiole 3–4 cm long, densely pilose; blade ovate, 12–14 cm long, 8–10 cm wide, the apex acuminate, the base slightly cordate, finely pubescent above, densely pubescent below, the venation pinnate, with 3 major veins diverging from the base, the secondary veins subopposite the tertiary veins diverging at right angles from the midrib and secondaries. Flowers axillary, appearing solitary; pedicel 3.5 cm long, pubescent; bract at base of ovary 3 mm long; ovary ribbed, 3 cm long; calyx densely pilose on the outside, the utricle ovoid, 3 cm long, 1.5 cm diam, white-hairy within, the syrinx 3–4 mm long, the tube 1 cm long, 0.5 cm diam, the limb cucullate, 5 cm long, 2 cm deep, the upper portion papillate within. Gynostemium 6-lobed, coroniform, stipitate, 6 mm tall, bearing 6 tetradecate anthers. Fruit and seed unknown.

TYPE: PANAMA. COLÓN: Santa Rita Ridge, 23 Mar 1972, *Dwyer & Gentry 4810* (HOLOTYPE: F!; ISOTYPE: MO!).

Additional collection examined: PANAMA. COLÓN: hills just N of Río Grande, elev. 100–200 m, 16 Nov 1975, *Davidse & D'Arcy 10075* (MO!).

This species is related to *A. maxima* Jacq. and the other neotropical species with ovate-oblong leaves, hooded calyx limb, and fruit with persistent, scalariform placenta connecting its valves. Inflorescences in this group are often branched, but may be reduced to a single flower as in *A. tonduzii* Schmidt. Additional collections are needed to determine the fruit type of *A. pfeiferi* and whether its inflorescence develops branches.

Aristolochia cruenta K. Barringer, sp. nov.

Ab *A. ruiziana* (Kl.) Duchartre foliis ovatis, inflorescentiis racemosis bracteolatis, florumque minorum tubo utricula longiori limboque calycis apiculato differt.

Woody liana; older stems with winged, corky bark; younger stems glabrous. Pseudostipules absent. Leaves alternate, distichous; petioles 3.5–6 cm long; blade

triangulate, 10–12 cm long, 8–10.5 cm wide, glabrous dark green above, very light green below, the base shallowly cordate, the apex acuminate, the venation palmate, with 5 major veins diverging from the base. Flowers in racemes from older branches; pedicel 1.5–2 cm long, glabrous; ovary 1 cm long; calyx glabrous on the outside, yellow, marked with reddish-purple, the utricle ovoid, 1.5–2 cm long, the tube forming an acute angle with the utricle, 1.5–2.5 cm long, the limb peltate, spreading, slightly bilobed at the base, 3.5–5 cm long, 3–4 cm wide, the apex acuminate, marked with purple between the veins, with a reddish-purple spot at the upper junction of the tube and the limb. Gynostemium 6-lobed, coroniform, stipitate, 4–5 mm tall, bearing 6 tetradecate anthers. Young fruit glabrous, slightly apiculate. Seed unknown.

TYPE: COSTA RICA. HEREDIA: Puerto Viejo, Finca La Selva, OTS Station, Hartshorn trail, 850 m E, 100 m alt., 20 Oct 1980, *Hammel 10242* (HOLOTYPE: DUKE!).

Vegetatively, this species resembles *A. gigantea* Mart. & Zucc. but the leaves are smaller and glabrous. The flowers are unlike those of any Central American species but resemble those of *A. ruiziana* (Kl.) Duchartre which is native to the eastern slopes of the Andes from Colombia to Chile. The species keys to *A. inflata* H.B.K. in Pfeifer (1966). From this *A. cruenta* differs in its ovate, shallowly cordate leaves and its smaller flowers with narrower limb.

ARISTOLOCHIA TONDUZII Schmidt

Aristolochia tonduzii Schmidt, Repert. Sp. Nov. 23: 284. 1927. TYPE: COSTA RICA. SAN JOSÉ: Tucurrique, Las Vueltas, 700 m, 2 May 1899, *Tonduz 13175* (HOLOTYPE: B (destroyed); LECTOTYPE: CR!; ISOTYPE: US!).

A. chapmaniana Standley, Contr. Arnold Arbor. 5: 60. 1933. TYPE: PANAMA. CANAL ZONE: Barro Colorado Is., Barbour Point, 15 Nov 1931, *Shattuck 413* (HOLOTYPE: F!).

A. maxima Jacq. var. *cordata* Standley, Field Mus. Publ. Bot. 8: 136. 1938. TYPE: PANAMA. CANAL ZONE: Barro Colorado Is., shores of Gatun Lake S of laboratory, 28 Aug 1929, *Bangham 455* (HOLOTYPE: A; ISOTYPE: F!).

Pfeifer (1966) treated *A. tonduzii* and *A. chapmaniana* as distinct species, describing the calyx of *A. chapmaniana* as glabrescent and without maculae and that of *A. tonduzii* as pubescent and with a maculate limb. *A. tonduzii* was known only from the type. Recent collections and my own field work in Costa Rica have shown me that the characters used to distinguish the species vary with age and condition of the flowers and that the two are synonymous. The species is known from Nicaragua to Panama in lowland forests.

ARISTOLOCHIA OVALIFOLIA Duchartre

Aristolochia ovalifolia Duchartre, Ann. Sci. Nat. Bot. ser. 4, 2: 50. 1854. TYPE: MEXICO. OAXACA: 660 m alt., *Galeotti 213* (HOLOTYPE: G; PHOTO F ex G!).

A. belizensis Lundell, Wrightia 4: 174. 1971. TYPE: BELIZE. TOLEDO DIST.: in cohune ridge, Botan Creek, Río Grande, 20 May 1944, *Gentle 4617* (HOLOTYPE: LL!).

Pfeifer (1966) cited the Galeotti specimen at P as the holotype, but Duchartre refers specifically to the specimen in the Delessert herbarium now at G. The species resembles *A. maxima* Jacq. and *A. tonduzii* and can be distinguished from these by its usually glabrous, cordate-based leaves and small fruits. The specimens of *A. belizensis* have fruits 8–10 cm long, which is typical for *A. ovalifolia*.

ARISTOLOCHIA BULLATA Pfeifer

Aristolochia bullata Pfeifer, Ann. Missouri Bot. Gard. 53: 134. 1966. TYPE: MEXICO. GUERRERO: Dist. Galeana, forested hillside, alt. 25–100 m, *Hinton 14569* (HOLOTYPE: US!; ISOTYPES: GH, NY).

A. petenensis Lundell, *Wrightia* 4: 174. 1971. TYPE: GUATEMALA. PETÉN: Dolores, bordering Arroyo Mul in low forest about 300 m S, 13 Jul 1961, *Contreras 2597* (HOLOTYPE: LL).

Lundell's description provides the first detailed data on the vegetative and fruit morphology for this species. Similar specimens have recently been collected near Laguna Encantada, 3 km northeast of San Andrés Tuxtla, Veracruz, Mexico, by Juan Calzada (4225, F!) and José Ortega Ortiz.

ARISTOLOCHIA STEYERMARKII Standley

Aristolochia steyermarkii Standley, *Field Mus. Publ. Bot.* 22: 329. 1940. TYPE: GUATEMALA. QUEZALTENANGO: along Quebrada San Gerónimo, Finca Pirineos, lower S-facing slopes of Volcán Santa Marta between Santa María de Jesús and Calahuache, alt. 1300–2000 m, 1–2 Jan 1940, *Steyermark 33455* (HOLOTYPE: F!).

Small, somewhat sprawling tree to 6 m tall; stems glabrous. Pseudostipules absent. Leaves alternate; petiole 1–1.5 cm long; blade narrowly elliptic to oblong, 10–20 cm long, 4–8 cm wide, glabrous, the base rounded, the apex acuminate, green above, silvery-blue beneath, the venation pinnate. Flowers solitary in leaf axils; pedicel to 2 cm long; calyx glabrous on the outside, the utricle ellipsoid, 2–2.5 cm long, the syrx absent, the tube extended from the side of the utricle, 5 mm long, the annulus 3–4 mm long, the limb pendent, 3-lobed, 3–3.5 cm long, the median lobe lowest, crateriform, cuspidate, the lateral lobes triangulate, with a persistent rugose swelling near the annulus. Gynostemium 3-lobed, columnar, stipitate, 5 mm tall, with 3 anthers. Fruits capsular, slightly woody, 3–5 cm long, narrow, glabrous, the valves 5 mm wide and rough-textured, dehiscence basipetal, becoming recurved and spreading. Seeds unknown.

Additional collection examined: GUATEMALA. QUEZALTENANGO: Finca St. John of Mr. Whitehead, ca 5 km S of Santa María de Jesús on the SE slopes of Volcán Santa Marta, 17 May 1966, *Walker 441* (GH, F!, LL).

Standley described *A. steyermarkii* from fruiting material, distinguishing it from *A. arborea* Linden by the glabrous leaves, glaucous beneath, and solitary, axillary fruits. Pfeifer (1966) reduced the species to synonymy under *A. arborea*, but flowering material collected by Walker from near the type locality shows that *A. steyermarkii* is distinct, with a rugose swelling on the limb. The species keys to *A. arborea* and *A. bullata* in Pfeifer's (1966) revision and can be distinguished from these species by the following key.

- 1 Twigs and undersurfaces of leaves pubescent; growing below 1300 m.
 - 2 Shrubs or small trees; flowers in branched inflorescences; calyx limb with a stipitate bulla *A. arborea*
 - 2 Lianas; flowers solitary, axillary; calyx limb with a sessile bulla *A. bullata*
- 1 Twigs and undersurfaces of leaves glabrous; growing above 1500 m; lianas; flowers solitary, axillary; calyx limb with a sessile, rugose swelling *A. steyermarkii*

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