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A New Species of *Alsobia* (Gesneriaceae) from Belize, with a Synopsis of the Genus

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ABSTRACT. *Alsobia baroniae* L. E. Skog & Barrie, a new species of *Alsobia* Hanst. (Gesneriaceae: Episcieae), is described from the karst region of central Belize. The new species is endemic to Belize, known from but a few collections, and is distinguished from the other three known species of *Alsobia* mainly by its larger leaves, 10–26 cm long, and its densely pilose corolla. The genus is now expanded to four species. A synopsis of the genus is given, including descriptions of the genus and known species and a key to species.

Key words: *Alsobia*, Belize, Gesneriaceae, karst.

Alsobia Hanst. (Gesneriaceae: Episcieae) is a small and poorly known genus of four species ranging from Mexico to Costa Rica. Originally described by Hanstein (1854), *Alsobia* was soon after made a synonym of *Episcia* Mart. by Hanstein (1865), only to be resurrected and emended by Wiehler (1978). Until recently the genus comprised two species, *A. dianthiflora* (H. E. Moore & R. G. Wilson) Wiehler, described from Mexico, but which may have also come from Guanacaste, Costa Rica, and *A. punctata* (Lindl.) Hanst., known from Chiapas, Colima, Jalisco, and Oaxaca in Mexico, and Baja Verapaz, Guatemala. Recently, a new species, *A. chiapensis* Mart.-Mel., L. E. Skog & Pérez-Farr., was described from Chiapas, Mexico (Martínez-Meléndez

et al., 2014). A new species from Belize described in this paper brings the number of species to four.

In his 1978 paper, Wiehler distinguished *Episcia* and *Alsobia* with the former being terrestrial or saxicolous, typically with two stolons at a node, and *Alsobia* being an epiphytic genus with usually only one stolon per node. An investigation of the generic boundaries in Episcieae, based on combined molecular and morphological datasets, indicated that the separation of *Alsobia* and *Episcia* was well supported, with *Alsobia* as sister to *Cobananthus* Wiehler and *Episcia* as sister to a clade including those two genera and 12 others (Clark et al., 2006). However, *A. chiapensis* and our new species are not epiphytic but lithophytic, growing on karst outcrops and cliff faces, though still pendent. Descriptions of all four species of *Alsobia* are given below and demonstrate that the species are well differentiated.

Alsobia species have been rarely collected. All four seem to occur in localized populations of few individuals. *Alsobia chiapensis* and *A. baroniae* are restricted to karst regions in Chiapas, Mexico, and Belize, respectively. Scattered populations of *A. punctata* appear sporadically in wet montane forests from Jalisco, Mexico to Guatemala. *Alsobia dianthiflora* is known almost exclusively from cultivated material that can be traced back to only two

collections of uncertain provenance, with no documented gatherings from the wild in over 70 years.

TAXONOMIC TREATMENT

Alsobia Hanst., *Linnaea* 26: 207. 1854, emend Wiehler, *Selbyana* 5: 28. 1978. *Episcia* sect. *Alsobia* (Hanst.) Benth. in Benth. & Hook. f., *Gen. Pl.* 2(2): 1007. 1876. TYPE: *Alsobia punctata* (Lindl.) Hanst.

Rupicolous or epiphytic, suffrutescent, stoloniferous herbs or subshrubs, stolons arising singly at leafy node and terminating in leafy node, with solitary pairs of reduced leaves, less than 1 cm, usually caducous, produced at 1 or several remote, minor nodes between. Stems, leaves, flowers, and fruits variously pubescent, hairs simple and multicellular; glandular hairs present within corolla in some species. Leaves crowded at nodes, opposite, subequal in a pair but variable in size at a given node, petiolate; blades elliptic, broadly elliptic, ovate or obovate, margins variously toothed. Flowers axillary, solitary, pedicellate; calyx green or flushed red; lobes 5, connate basally, persistent in fruit; corolla oblique in calyx, infundibular, white, with pale or dark lilac, blue, or purple mottling within and on lobes, tube weakly to strongly ventricose, lobes spreading, upper and lateral lobes roughly equal in size, lower lobe larger, margins erose or fimbriate; stamens 4, about half the length of the corolla, anthers connate in a square; ovary pilose; style white, glabrous, stigma stomatomorphic. Fruit fleshy, 2-valved capsule, pilose, calyx persistent. Seeds numerous, ellipsoid, 1–1.5 mm, brown.

The four species of *Alsobia* are endemic to Central America. All *Alsobia* species are now or have been in cultivation (Becker, 2009; Myhr, 2010).

KEY TO THE SPECIES OF *ALSOBIA*

1. Plants epiphytic, the stolons slender, 1–2 mm in diam.; leaf blades 1.8–4 cm long, the petiole as long as or longer than the blade 3. *A. dianthiflora* (H. E. Moore & R. G. Wilson) Wiehler
- 1'. Plants epiphytic or rupicolous, the stolons stouter, 4–10 mm in diam.; leaf blades (3.5–)4–26 cm long, the petiole shorter than the blade.
2. Leaf blades 10–26 cm long; corollas 2.5–3.2 cm long, densely pilose externally, the hairs ca. 5 mm long 1. *A. baroniae* L. E. Skog & Barrie
- 2'. Leaf blades 3.5–13.5 cm long; corollas 3–4.5 cm long, tomentose externally, the hairs 1 mm or less.
3. Plants rupicolous; calyx lobes ca. 10 mm long, lanceolate to elliptic; corolla 3–4 cm long, the margins of the lobes fimbriate 2. *A. chiapensis* Mart.-Mel., L. E. Skog & Pérez-Farr.
- 3'. Plants epiphytic; calyx lobes 14–19 mm long, elliptic to oblanceolate; corolla 4–4.5 cm long, the margins of the lobes erose 4. *A. punctata* (Lindl.) Hanst.

1. *Alsobia baroniae* L. E. Skog & Barrie, sp. nov.
 TYPE: Belize. Belize: Runaway Nature Preserve, 17°18'1"N 88°26'56"W, 20 Nov. 2010, S. W. Brewer 5176 (holotype, US!; isotypes, F!, MO!).
 Figures 1, 2A–E.

Diagnosis. *Alsobia baroniae* L. E. Skog & Barrie differs from other species of *Alsobia* Hanst. in its leaf blades 10–26 cm long, corollas 2.5–3.2 cm long and densely pilose externally, hairs ca. 5 mm long, and corolla lobe margins erose.

Repent, stoloniferous perennial with branching, soft woody stems, 5–10 mm in diam. and as much as 1 or 2 m long. Upper stems, both leaf surfaces, pedicels, and calyces uniformly tomentose, hairs multicellular, 1–2 mm. Leaves equal in a pair, crowded at stem apex, blades 10–26 × 2.6–11.5 cm, elliptic to obovate, somewhat fleshy when fresh, chartaceous when dry, appressed tomentum producing velvety texture; adaxial surface dark green, with sparse, short glandular hairs among tomentum, abaxial surface gray-green, with dense, short glandular hairs among tomentum; secondary veins 4 to 5 per side, curving-ascending, merging near margin apically; base cuneate or narrowly cuneate; margin dentate-serrate; apex acute to obtuse or rounded; petiole 0.5–5.5 cm. Flowers solitary in leaf axils; pedicels ca. 10 mm, reddish; calyx 15–20 mm, connate basally, green, lobes 11–18 × 4–6 mm, lanceolate to narrowly elliptic, margins entire, apex acute, tomentose within and without; corolla oblique in calyx, 2.5–3.2 cm, white, lobes and tube within purple maculate, outer surface pilose, hairs ca. 5 mm, sparsely puberulous within, tube strongly ventricose, 3–4 mm in diam. near base, expanding abruptly to ca. 15 mm in diam. in middle, constricted at throat, lobes glabrous on inner surface, margins erose, upper and lateral lobes erect or spreading, semicircular, ca. 5 × 5 mm, lower lobe spreading, oblong, ca. 5 × 9 mm; stamens 4, free, ca. half the length of tube; anthers ca. 1 mm, white, connate apically; style ca. half the length of tube; ovary ovoid, pilose. Fruit ca. 5 × 7 mm, ovoid, pilose, enclosed within persistent calyx.

Etymology. *Alsobia baroniae* is named in honor of Ms. Ella Baron, founder and director of Ian Anderson's Caves Branch Botanical Garden, Belmopan, Belize. Ms. Baron and her husband, Mr. Anderson, have collaborated with the Marie Selby Botanical Gardens in expeditions that have greatly expanded our knowledge of the epiphytic flora of Belize. As a consequence, the number of epiphytic species recorded has increased from ca. 400 in 2000, the year the Belize checklist was published (Balick et al., 2000), to some 650 today.

Discussion. *Alsobia baroniae* is known only from the karst hills of central Belize, where it grows in crevices

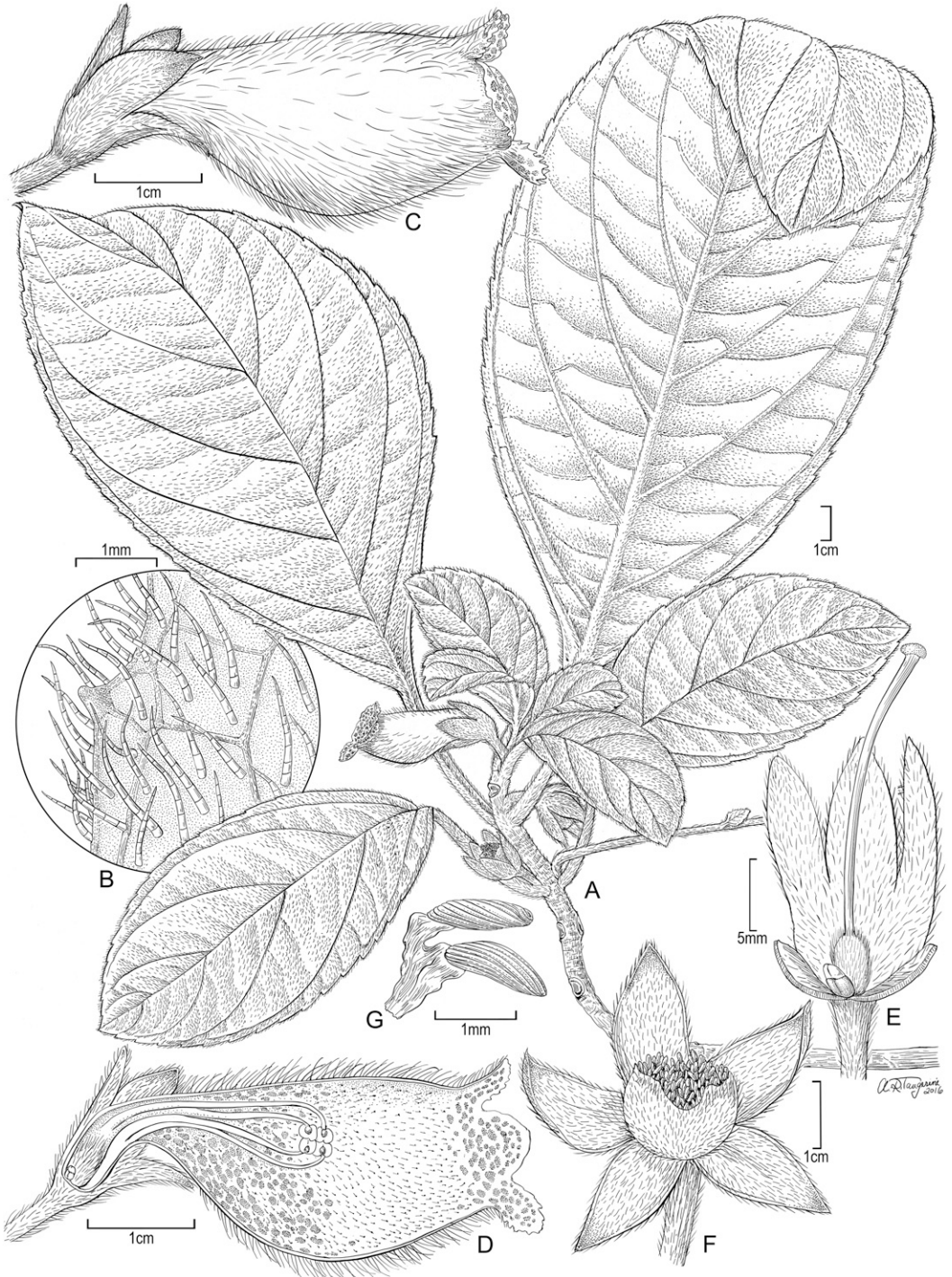


Figure 1. *Alsobia baroniae* L. E. Skog & Barrie. —A. Habit. —B. Upper leaf surface. —C. Flower, lateral view. —D. Flower, longitudinal view. —E. Calyx with ovary and pistil. —F. Calyx with fruit and seeds. —G. Seeds. All based on S. W. Brewer 5176 (USNH 3686524) and photographs by Steven Brewer.

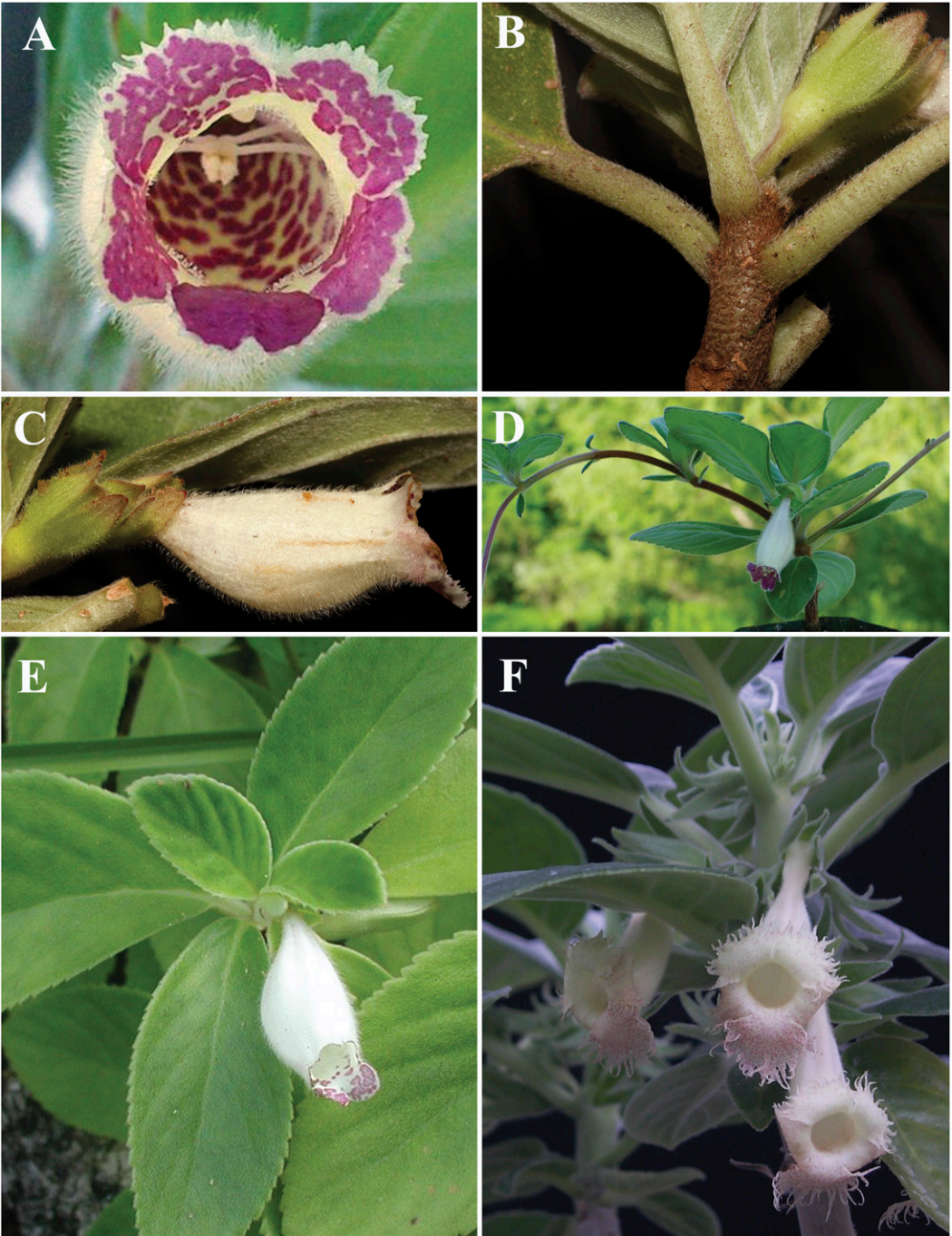


Figure 2. A–E. *Alsobia baroniae* L. E. Skog & Barrie. —A. Corolla face showing spotting in corolla tube and on limb. —B. Erect stem apex showing opposite leaves of equal size. —C. Side view of mature corolla showing ventral pouch. —D. Habit with lateral stolons. —E. Habit showing mature flower. —F. *Alsobia chiapensis* Mart.-Mel., L. E. Skog & Pérez-Farr. Mature flowers showing fimbriations along corolla lobe margins. A, D, and F photographs by Ron Myhr; B and C photographs by Steven Brewer of S. W. Brewer 5176.

and depressions in exposed rock faces at 0–100 m. The recently described species *A. chiapensis* (see below) is also apparently restricted to a similar habitat (Martínez-Meléndez et al., 2014). The two may be differentiated most readily by floral characters: the corolla of *A. chiapensis* is 3–4 cm long, and the corolla lobes are elaborately fringed with filaments up to 5 mm long; the corolla of *A. baroniae* is 2.5–3.2 cm long and the margins of the corolla lobes are erose.

Alsobia baroniae has come to the attention of gesneriad enthusiasts and, like several of its congeners, has been brought into cultivation (Myhr, 2010), including recently by Bruce Holst at Marie Selby Botanical Gardens, Sarasota, Florida (Holst, pers. comm.).

The material growing at Selby Gardens (*Holst 11149*) was field collected in Belize at Cayo, Black Drop Hole Trail, Caves Branch Valley, 210 m, 17°7.71'N; 88°42.53'W, on 15 Dec. 2014. No wild-collected voucher was made in Belize, only a living collection for cultivation, which was given a field number, *Holst et al. 10181*. As no field specimens were made, *Holst 10181* and *Holst 11149* constitute a single gathering.

Paratypes. Specimen collected from the wild: BELIZE. **Belize:** Gracie Rock, 1.5 mi. S of Mi. 22 on Western Hwy., growing on limestone, 4–5 June 1973, *Croat 23849* (MO, US). Specimen collected from cultivation: Marie Selby Botanical Gardens, Sarasota, Florida, U.S.A., 6 July 1915, *Holst 11149* (SEL, US).

2. *Alsobia chiapensis* Mart.-Mel., L. E. Skog & Pérez-Farr., *Revista Mex. Biodivers.* 85: 344. 2014. TYPE: Mexico. Chiapas: Municipio de Ocozocoautla de Espinosa, camino de terracería al parque ecoturístico El Aguacero, 100 antes, zona de amortiguamiento de la Reserva de la Biosfera Selva El Ocote, 660 m, 6 May 2011, *N. Martínez-Meléndez & R. Martínez-Camilo 2989* (holotype, HEM not seen; isotypes, MEXU not seen, MO!). Figure 2F.

Repent, stoloniferous perennial with erect, terete, flowering stems, 14–45 cm tall, 4–8 mm in diam. Stems, both leaf surfaces, pedicels, and calyces uniformly tomentose, hairs 0.5–1 mm, multicellular, white. Leaves crowded at stem apex, subequal, blade 3.5–13.5 × 2–6.6 cm; elliptic; somewhat fleshy when fresh, chartaceous when dry; adaxial surface dark green, with sparse, short glandular hairs among appressed tomentum, abaxial surface gray-green, with dense, short glandular hairs among appressed tomentum; secondary veins 4 or 5 per side, curving-ascending, prominent on lower surface; base cuneate to rounded; margins serrulate to serrate; apex acute; petiole 0.7–3 cm. Flowers solitary in leaf axils; pedicels 5–10 mm; calyx connate basally, lobes ca. 10 × 2 mm, lanceolate to narrowly elliptic,

green, tomentose on both surfaces, margins entire, apex acute; corolla oblique in calyx, 3–4 cm, infundibular, white or pale green, lobes purple maculate, outer surface tomentose, puberulent near throat within, tube 25–35 mm, ventricose, swollen at base, 2–3 mm in diam. above base, expanding abruptly to 7–9 mm near middle and 7–8 mm at throat, lobes glabrous on inner surface, margins fimbriate, upper and lateral lobes erect or reflexed, ca. 5 × 5 mm, semicircular, lower lobe spreading, 6 × 9 mm; stamens 4, free, ca. half the length of tube; anthers ca. 0.8 mm, yellow; style ca. half the length of tube, glabrous; ovary ovoid, pilose. Fruit 8–10 mm, globose or broadly ovoid, pilose.

Discussion. *Alsobia chiapensis* is endemic to Chiapas, where it grows on karst rocky cliffs in tropical deciduous forest at 400–1350 m. *Alsobia baroniae*, which is also apparently restricted to karst, is similar vegetatively, but differs in having smaller flowers, with the corollas 2.5–3.2 cm versus 3–4 cm, with erose, not fimbriate, corolla lobes.

Specimens examined. MEXICO. **Chiapas:** at el Sumidero, 22 km al N de Tuxtla Gutierrez, 19 Aug. 1972, *D. E. Breedlove 27154* (DS); steep-walled canyon at the head of the Río de a Venta at the Chorreadero near Derna, 24 Aug. 1972, *D. E. Breedlove 27390* (DS, MO, US); 24 Aug. 1974, *D. E. Breedlove 36543* (CAS); 13 km E of Ocozocoautla on Rte. 190, then N on rd. to Aguacera. 2 Oct. 1984, *M. J. Huft, E. Cabrera & R. Torres 2246* (MO).

3. *Alsobia dianthiflora* (H. E. Moore & R. G. Wilson) Wiehler, *Selbyana* 5: 28. 1978. Basionym: *Episcia dianthiflora* H. E. Moore & R. G. Wilson, *Gentes Herbarum* 8: 378, fig. 122. 1954. TYPE: cultivated in Florida, U.S.A., from material reportedly collected in Guerrero, Mexico, *Moore 6824* (holotype, BH!). Figure 3E, F.

Epiphytic subshrub with slender, creeping, stoloniferous, trailing stems, 1–2 mm in diam., green or reddish, tomentose, often with 1 to 3 pairs of minute leaves, 1–2 mm, along stem between nodes. Leaves clustered at nodes on short shoots, subequal; blade 1.8–4 × 1–1.6 cm; elliptic to broadly elliptic, moderately fleshy when fresh, membranous when dry; adaxial surface dark green or flushed red basally, uniformly puberulent, hairs ca. 0.5 mm; abaxial surface paler, uniformly puberulent, hairs longer, to 1 mm, along midvein; lateral veins 2 or 3 per side, prominent and red on lower surface; base obtuse or cuneate; margins with 3 to 5 shallow, rounded teeth; apex rounded to bluntly acute; petiole 18–32 mm, red, puberulent. Flowers solitary; pedicels 3–8 mm, puberulent, green; calyx lobes 6–10 × ca. 1 mm, linear, free nearly to base, green, pilosulous; corolla oblique in calyx, 3.3–4 cm,

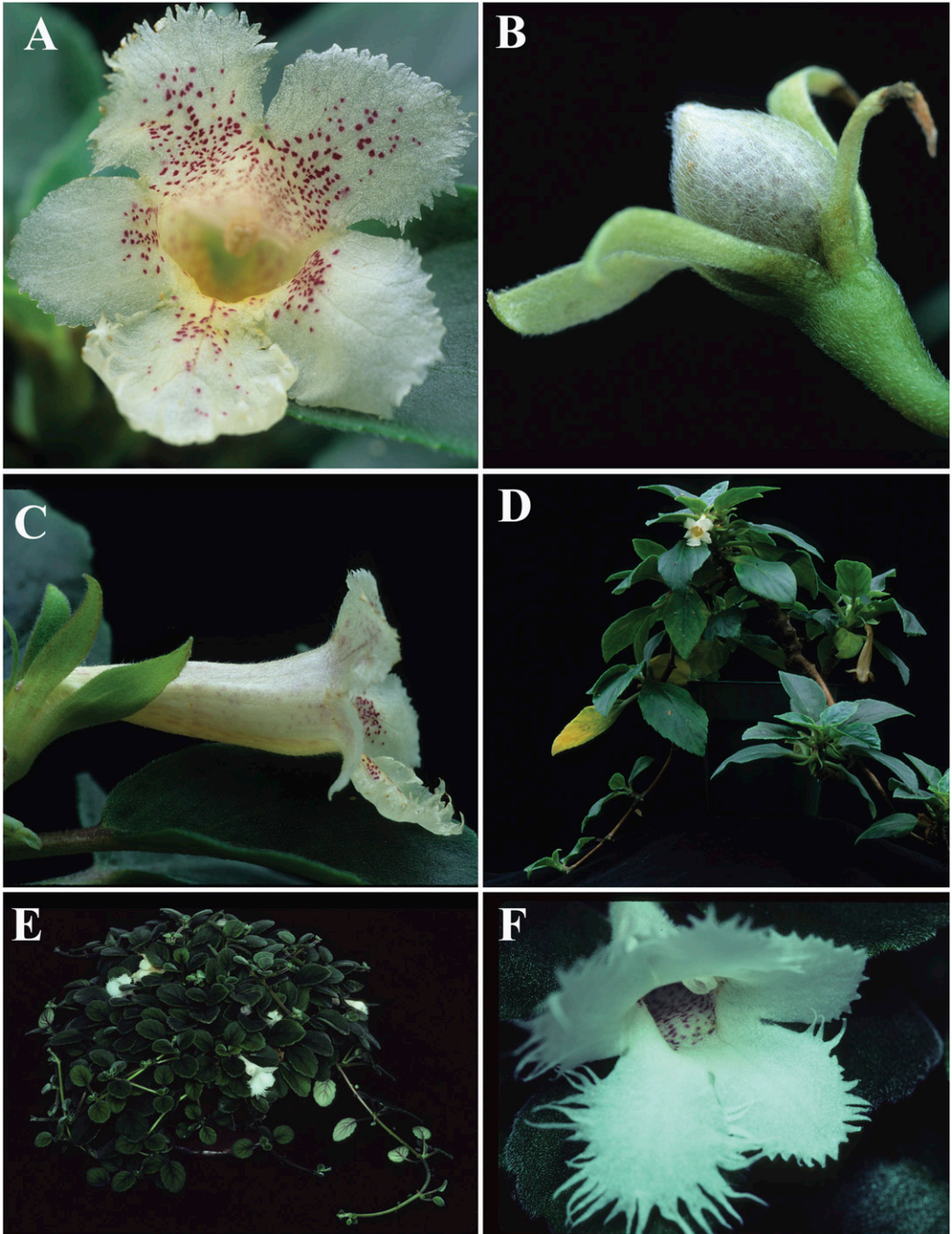


Figure 3. A–D. *Alsobia punctata* (Lindl.) Hanst. —A. Face view of corolla showing spotting on limb and inside tube. —B. Mature fruit with persistent calyx. —C. Side view of mature flower. —D. Habit showing stolon at lower left. E, F. *Alsobia dianthiflora* (H. E. Moore & R. G. Wilson) Wiehler. —E. Habit showing elongated stem at lower right. —F. Mature corolla showing spots in tube and fimbriations along corolla lobe margins. A–D photographs by John L. Clark of *J. L. Clark 8842*; E and F photographs by Leslie Brothers of *USBRG #1995-033*.

white, faintly mottled with purple with a ring of glandular hairs at the throat within, sparsely pilosulous without, tube 2.6–3.2 cm, ca. 2 mm wide at base, expanding to 7–12 mm, lobes 5–12 × 5–10 mm, subequal, margins fimbriate with teeth 3–6 mm; stamens 13–18 mm; anthers connate. Fruit not seen.

Discussion. *Alsobia dianthiflora* differs from other *Alsobia* species in its slender green to reddish stolons and relatively small leaves with petioles as long as or longer than the blades. The corolla lobes with fimbriate margins are similar to those found also in *A. chiapensis*, but the corollas in *A. dianthiflora* are longer, 3.3–4 cm versus 2.5–3.2 cm, and less strongly ventricose.

The exact range of *Alsobia dianthiflora* is unknown. The species is probably from premontane wet forest at 800–1000 m. The few specimens available, including the type, are preserved cuttings taken from garden or greenhouse plants. Moore (1954) identified the source of his plant, which was grown in the greenhouse at Robert Wilson's Fantastic Gardens, Miami, Florida, as a collection made in the wild in Guerrero, Mexico, but this may be inaccurate, as the species has apparently not been collected there since. A specimen collected by M. Grayum (*Grayum 9319*, MO) was taken from a plant at the Marie Selby Botanical Gardens, Sarasota, Florida, from material collected originally by John Hall in Costa Rica. The collecting location is, again, questionable, given that Hall over the years reported several different localities and that subsequent visits to those sites have been unsuccessful (Kriebel, 2010; M. Grayum, pers. comm.). Another specimen, collected in El Salvador at the Jardín Botánico La Laguna (*Calderón JBL00073*, MO), may not indicate the natural occurrence of *A. dianthiflora* in that country. The species, along with several cultivars, remains in wide cultivation among gesneriad fanciers (Becker, 2009).

Specimens examined. EL SALVADOR. **San Salvador:** Jardín Botánico La Laguna, Zona 60, 2 Apr. 1987, *M. Calderón JBL00073* (MO). Specimens cultivated in the U.S.A.: from source plants reportedly collected in MEXICO. **Guerrero:** Conservatory, Cornell University, 25 June 1955, *W. J. Dress 6038* (US); cultivated at Cornell University, Ithaca, NY, from cuttings of type plant grown at Fantastic Gardens, May 1955, *H. E. Moore, Jr. 6824bis* (US); grown in Hortorium Conservatory, Cornell University, Ithaca, NY, 16 July 1977, *M. H. Stone 1395* (US); from plant cultivated at Cornell University & Marie Selby Botanical Gardens, acc. no. G-111, 1957, *R. G. Wilson s.n.* (SEL, US). From source plants reportedly collected in COSTA RICA. **Guanacaste:** from plant cultivated at Marie Selby Botanical Gardens, acc. no. W-2282, 23 Feb. 1989, *M. H. Grayum 9319* (MO).

4. *Alsobia punctata* (Lindl.) Hanst. *Linnaea* 26: 207. 1854. Basionym: *Drymonia punctata* Lindl., *Edwards's Bot. Reg.* 28: Misc. 63. 1842. *Episcia punctata* (Lindl.) Hanst., *Linnaea* 34: 342. 1865. TYPE: cultivated in England from material collected in Guatemala ["Mts. of Salama"], *Hartweg 1103* (holotype, CGE!). Figure 3A–D.

Columnnea septentrionalis C. V. Morton, *Baileya* 15: 119. 1967. TYPE: Mexico. Jalisco: 10 m S of Autlán, 5700 ft., 20 Aug. 1949, *R. L. Wilbur & C. R. Wilbur 2463* (holotype, US!; isotype, MICH!).

Epiphytic subshrub, stems to ca. 50 cm, pendent, 2.5–4 mm in diam., sparsely pilose near apex, nitid, producing branching stolons to 20 cm or more, often with 1 or 2 pairs of small leaves, 3–5 mm, between nodes. Leaves crowded at shoot apices, nearly equal; blade 5–12.5 × 2.5–11 cm, elliptic to ovate, membranous; adaxial surface dark green, sparsely pilosulous; abaxial surface gray-green, sparsely pilosulous; lateral veins 5 to 7, prominent on lower surface, green or often reddish on younger leaves; base cuneate to obtuse; margins crenate-serrate; apex acute; petiole 1–6 cm, pilosulous. Flowers solitary; pedicels 3–6 mm, reddish, pilosulous; bracts linear-subulate, 3.5–4.5 mm; calyx lobes unequal, free nearly to base, lateral and anterior lobes 17–19 mm, pilosulous, margins entire, ciliate, apex acuminate; anterior lobes ca. 4.5 mm wide at middle, lateral lobes ca. 3 mm wide at middle, posterior lobe linear, 14–15 × 1–1.3 mm; corolla 4–4.5 cm, white with numerous red-purple spots within throat, 9–11 mm broad at throat, sparsely pilosulous outside, glabrous within, limb 2–2.5 cm broad, not strongly bilabiate, lobes 7–8 mm, spreading, erose; stamens glabrous; disc gland ca. 1.5 mm; ovary narrowly cylindrical, densely white-pilose; style ca. 2 cm, glandular-pilosulous. Fruit 11–14 × 8–9 mm, ovoid, pilose.

Discussion. *Alsobia punctata* grows in perennial tropical forest or montane forests at 800–1630 m in Guatemala (Baja Verapaz) and Mexico (Chiapas, Colima, Guerrero, Jalisco, Oaxaca). This species is also in cultivation and was a parent with *A. dianthiflora* of the cultivar *Alsobia 'Cygnet'* (Wiehler, 1978; Becker, 2009: 62). The specimen cited as *Episcia punctata* in the *Checklist of the Vascular Plants of Belize* (Balick et al., 2000), *Croat 23849* MO, is recognized here as *A. baroniae*. As far as we are aware, *A. punctata* does not occur in Belize.

Specimens examined. MEXICO. **Chiapas:** Motozintla de Mendoza, 19–24 July 1941, *E. Matuda 4864* (MO, US). **Colima:** Rancho El Jabali, 20 km (airline) N of Colima in the SW foothills of Volcán de Colima, 19 Sep. 1991, *A. C. Sanders 11469* (UCR, US). **Jalisco:** Mpio. Zapotitlán, Rancho El Borbollón, 4 km al N de Hacienda de San Antonio, 18 Aug.

1990, *J. Villa C., S. D. Koch & J. Chávez L. 859* (US); heavily forested slopes in mountains 12 mi. SSW of Autlán, 2 July 1949, *R. L. Wilbur & C. R. Wilbur 1475* (MICH, US).

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