A NEW SPECIES OF *ANGELONIA* (PLANTAGINACEAE) FROM MEXICO

Kerry Barringer

Brooklyn Botanic Garden
1000 Washington Avenue
Brooklyn, New York 11225-1099, U.S.A.
kbarringer@bbg.org

ABSTRACT

Angelonia parviflora Barringer, sp. nov. is a new species from Yucatán and Quintana Roo, Mexico. It differs from other Mexican species of *Angelonia* by its small flowers and fruits. It is geographically isolated on the limestone savannas of the northern Yucatán Peninsula.

Key Words: *Angelonia*, Plantaginaceae, Mexico

RESUMEN

Se describe una nueva especie, **Angelonia parviflora** Barringer, sp. nov., de la Península de Yucatán, México. Ésta difiere de las otras especies mexicanas de *Angelonia* por sus pequeñas flores y frutos. Se desarrolla geográficamente aislada en sabanas calizas del norte de la Península de Yucatán.

Palabras clave: *Angelonia*, Plantaginaceae, México

Angelonia Humb. & Bonpl. (Plantaginaceae) is a genus of about 25 species growing mainly in seasonally dry lowlands from the Caribbean and southern Mexico to Argentina. A few species are cultivated and have escaped in tropical regions worldwide. The species have distinctive flowers with a pair of shallow, saccate nectaries behind the lower lip. These contain elaiophores, mats of glandular hairs that produce a fatty oil (Vogel 1974). Centris bees, who collect the oil as a larval food, are the principal pollinators.

All of the *Angelonia* species that grow in Mexico, Central America, and the Caribbean are in Section *Angelonia* (Barringer 1982). Species in Section *Angelonia* have a shallow, depressed palate at the base of the median corolla lobe that is a landing platform for pollinating bees. There is a small, cylindric, apically bifid tooth on the outer edge of this palate. The exact function of this tooth is not known, but pollinators appear to hold on to it while visiting flowers (Vogel 1974). These species appear to be derived from the South American species, which have a greater diversity of palate and tooth morphologies (Barringer 1982).

An undescribed species of *Angelonia* grows along the northern tip of the Yucatán Peninsula in fields and savannas over limestone. It has the smallest flowers in the genus, which suggests a distinctive pollinator, as well as the smallest fruits.

Angelonia parviflora Barringer, sp. nov. (**Fig. 1**). Type: MEXICO. Yucatán: Progreso, km 31, Mérida road, in cleared marshy flats, Jul 1938, *Cyrus L. Lundell & Amelia A. Lundell 8028* (holotype: US; isotypes: F, GH, NY).

A *Angelonia angustifolia* Benth. foliis glandulosis, sepalis acutis ad 2 mm longis, capsulis ad 5 mm latis.

Annual *herb*; roots fibrous, branching from a short taproot; stem erect, to 20 cm tall, glabrous or glabrescent with glandular trichomes, slightly 4-angled, sometimes branching from near the base. *Leaves* opposite, sessile, lanceolate, 3–4 cm long, 0.8–1 cm wide, green, glandular-pubescent, membranaceous, not gland-dotted, the base narrowed, the margin serrate, the apex acute. *Inflorescence* a terminal raceme, slightly glandular-pubescent; *pedicels* 1 cm long, glandular at the base, bracteolate or ebracteolate; *sepals* ovate, 2 mm long, 1 mm wide, glabrous, the margin opaque, the apex acute; *corolla* purple; tube 3 mm long, 5 mm deep, the sacs 1–2 mm deep, with two pads of glandular trichomes on the forward surface within, the upper lobes obovate, 3 mm long, 2–3 mm wide, ciliate; lateral lobes obovate, 3 mm long, 2 mm wide, ciliate, abaxially glabrous, median lobe oblong to obovate, 4 mm long, 1–3 mm wide, adaxially glandular-pubescent, abaxi-

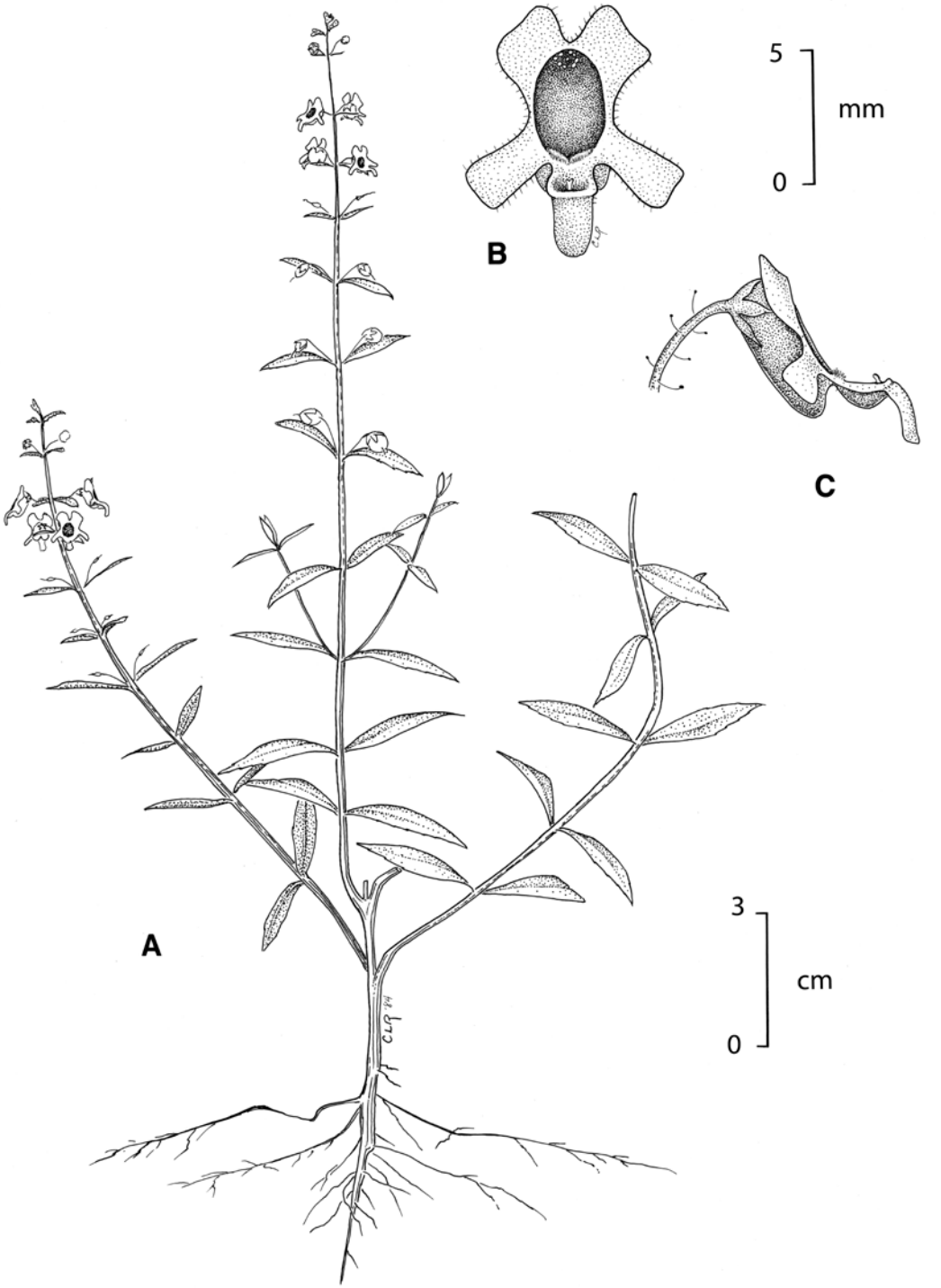

Fig. 1. *Angelonia parviflora* Barringer. **A.** Habit. **B.** Corolla. **C.** lateral view of flower.

ally glabrous, palate crateriform, 3 mm long 2 mm wide, ciliate; horn 1 mm tall, bifid; *stamens* 4 mm long, the filaments glandular-pubescent, the thecae ellipsoid, sessile, divaricate; ovary and style glabrous. *Capsule* globose, 4–5 mm diam., thin-walled, matte; fruiting pedicel slightly recurved, 0.8–1.0 cm long; *seed* light brown, obpyramidal to obconic, 0.5–1.5 mm long. 0.5–1.5 mm wide, the exotesta reticulate, the longitudinal walls not elongate, the margins slightly thick, the radial walls striate, imperforate.

Distribution and Habitat.—Mexico (Yucatán & Quintana Roo). Seasonally wet, open grasslands and thorn scrub on stony, pitted land. (Fig. 2).

Vernacular names.—This is one of the species called "Xac-xvi," "Xacxiu" "Xakxiw" or "Chi-Bálam xíw," "boca de la vieja." These names have also been used to refer to *A. angustifolia* and *A. ciliaris*.

Phenology.—Blooming from March to October.

Representative specimens examined: **MEXICO. Quintana Roo:** 4 km S of Puerto Morelos, *Téllez & Cabrera 3276* (F, MO, NY, US); Lázaro Cárdenas, El Edén Ecological Reserve, ca 20 km NW of Cancún, La Sabana near center of Preserve, 21°12.51'N, 87°11.64'W, 6 m, 27 Mar 1996, *Pitzer & Misquez 2548* (MO); Vallarta, 31 Aug 1980, *Souza, Téllez, & Cabrera 11201* (MEXU, MO). **Yucatán:** Maxcanũ, Chunchucmil rumbo al rancho Sin-Kewel, 20°38'35"N, 90°12'41"W, 1 m, 10 Oct 1986, *Chan 7103* (MO); Maxcanũ, 0–5 m, 10 Jun 1999, *Carnevali, May, & Tapia 5567* (MO); Dzemul, 30 Jun 1999, *Carnevali, et al. 5583* (MO); Progreso, 3–10 m, 21 Jun 2000, *Carnevali, Tapia, & May 5985* (MO); Dzemul, 2 km al S de entronque a las Ruinas de Xcambo, 21°18'00"N, 89°19'58"W, 7 Mar 2003, *Carnevali, Duno, and May 6743* (NY, MEXU, MO, XAL); 10–15 km N of Chuehuemi, *Darwin 2402* (TULANE); Progreso, *Floree s.n.* (F); Progreso, *Gaumer 1140* (F, GH, NY); Calotmul, *Gaumer 2198* (F, GH, MO, PH, US); Silam, *Gaumer 2199* (F); San Anselmo, *Gaumer 2200* (BM, F, K, P, W); Mérida road, Progreso, Jul 1938, *Lundell & Lundell 8028* (F, GH, NY, US); km 29 Mérida road, Progreso, *Lundell & Lundell 8031* (PH, US); Sisal to Mérida, *Schott 827* (F); near Sisal, *Schott 828* (MO, US); near Sisal, *Schott 917* (F); Merida, *Souza 256* (US); Progreso, *Steere 3034* (BM, F, MO, PH).

Angelonia parviflora is most easily distinguished from other *Angelonia* species by its small flowers and fruits. The flowers are 5 mm or less wide across the mouth and only 3 mm deep. The nectary sacs are relatively shallow at 1 mm deep. The fruits are 4–5 mm in diameter, about half the diameter of most other species. In addition, the species can be distinguished by the long, sparse glandular trichomes on the pedicels but these wear off and are usually present only at the base of the pedicels in older flowers and fruits.

Specimens of *Angelonia parviflora* have been identified as *A. angustifolia* Bentham, a species which is native to other parts of Mexico (Fig. 2), but which is often found in cultivation. *Angelonia angustifolia* differs in having glabrous pedicels, acuminate sepals 3–5 mm long, and capsules 7–10 mm in diameter. Its flowers are much larger; more than 7 mm across the mouth and 3–5 mm deep. *Angelonia ciliaris* B.L. Rob. can be found in southern Mexico, Belize, and Guatemala (Fig. 2) (Standley & Williams 1973) but, in addition to having larger flowers and fruits, that species has distinctive pubescent stems, leaves and pedicels.

The species of *Angelonia* growing in southern Mexico, Guatemala, and Belize can be difficult to distinguish, because they all have lanceolate leaves and blue or white flowers. South American species, not included in many keys for the region, have spread from cultivation making identifications more difficult. The following key distinguishes the species, both native and cultivated, that grow in the region.

KEY TO THE SPECIES OF *ANGELONIA* IN SOUTHERN MEXICO, GUATEMALA, AND BELIZE

1. Stem or inflorescence glandular-pubescent.
   2. Leaves to 4 cm long; upper corolla lobes 2–3 mm wide. Yucatán _____ **A. parviflora** Barringer
   2. Leaves more than 4 cm long; upper corolla lobes more than 3 mm wide. South America (cultivated).
      3. Pedicels 2 per axil; sepals acute. E. Brazil (cultivated) _____ **A. biflora** Benth.
      3. Pedicels 1 per axil; sepals acuminate.
         4. Capsules 10 mm diam.; lateral and median corolla lobes abaxially glabrous, bracts ovate to cordate Colombia and Venezuela (cultivated) _____ **A. salicariifolia** Humb. & Bonpl.
         4. Capsules 6–8 mm diam.; lateral and median corolla lobes abaxially glandular-pubescent, bracts lanceolate; horn 2 mm long. E. Brazil (cultivated) _____ **A. gardneri** Hook.f.
1. Stem or inflorescence eglandular pilose to glabrous.
   5. Sepals acuminate _____ **A. angustifolia** Benth.
   5. Sepals acute, cuspidate.
      6. Pedicels pubescent; corolla tube 6–7 mm deep; stem and leaves densely pubescent. Belize, Guatemala, and Southern Mexico _____ **A. ciliaris** B.L. Rob.

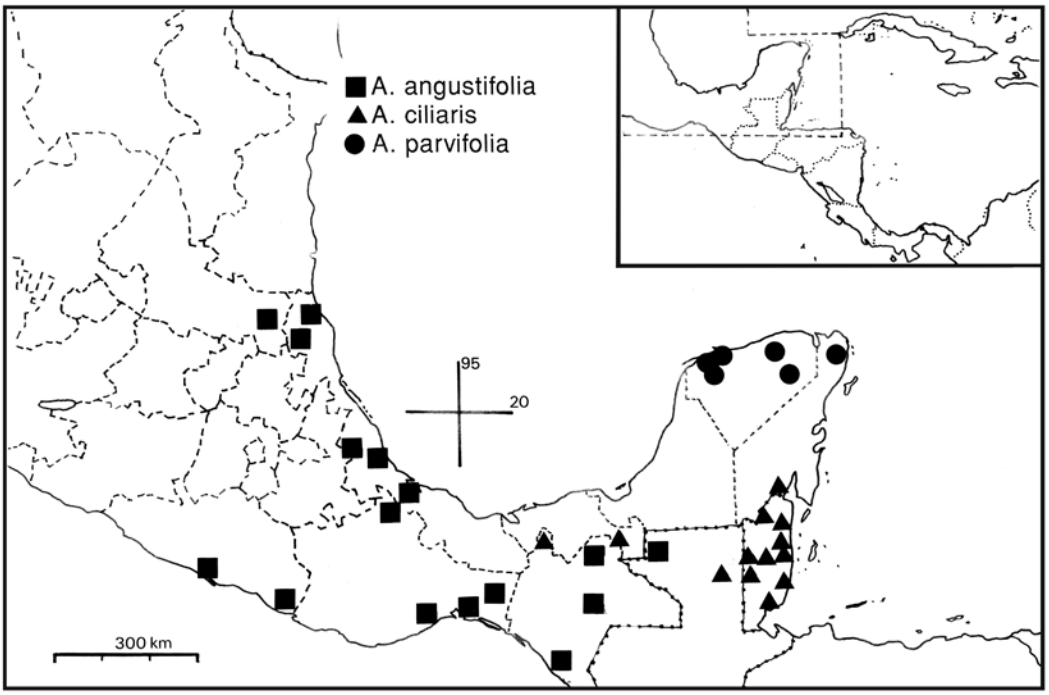

Fig. 2. Distribution of *Angelonia parviflora* compared to *Angelonia angustifolia* and *Angelonia ciliaris*.

6. Pedicels glabrous; corolla tube 9 mm deep; stem glabrous to slightly pubescent on the angles. Cuba and Jamaica _____ **A. pilosella** J. Kickx

ACKNOWLEDGMENTS

I thank Gregory Anderson, and William Crepet for their help with this research.I also want to acknowledge the help of the late Howard Pfeifer. Maarten Christenhusz was very helpful in checking the key and raised a number of interesting questions in discussions on the Mesoamerican scrophs. The careful reviews improved the manuscript and are gratefully acknowledged. I also thank the curators of A, BM, F, GH, K, MEXU, MO, NY, P, TEX, W, XAL, and US for allowing me to study the collections in their care. I am very grateful to Clara Richardson for the fine illustration.

REFERENCES

Barringer, K. 1982. A revision of *Angelonia* (Scrophulariaceae). Ph.D. Thesis. University of Connecticut, Storrs, CT.

Standley, P.C. and L.O. Williams. 1973. Scrophulariaceae. In: Flora of Guatemala, part IX, no. 4. Fieldiana, Bot. 24:319–416. (*Angelonia,* pp. 326–327).

Vogel, S. 1974. Ölblumen und ölsammelenden Bienen. Trop. Subtrop. Pflanzenwelt 7:1–267.