Taxonomic Notes on Mesoamerican *Annona* Section *Atta* (Annonaceae), Including *Annona pruinosa* sp. nov.

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ABSTRACT. A new species of *Annona* sect. *Atta* from the upper altitudinal limit of the Pacific dry forest of Nicaragua and Costa Rica is proposed based upon a distinctive abaxial leaf epidermis. In addition, the analysis of flowers discovered for *Annona longipes* necessitates its transfer to section *Atta*.

During preparation of treatments of the Annonaceae for the *Flora de Nicaragua* and the *Manual to the Plants of Costa Rica*, a new species of *Annona* L. sect. *Atta* C. Martius has been identified based on material from Nicaragua and Costa Rica. In addition, recent flowering collections of *Annona longipes* Saff. from Veracruz, Mexico, reveal its incorrect placement by Safford (1913) in section *Pilannona* Saff., and indicate its proper placement in section *Atta*.

Annona (section *Atta* C. Martius) **pruinosa** Schatz, sp. nov. TYPE: Nicaragua. Carazo: Finca de Minco Cabrales, 700 m al sur del reloj, 18 June 1982 (fl, fr), *L. Reyes V. 64* (holotype, MO; isotype, HNMN). Figure 1.

A speciebus aliis Annonae sectionis Attae laminis subtus pruinosis differt.

Tree to 10 m tall; young branches very sparsely white-tomentose, at length glabrescent. Petiole 0.8–1.3 cm long, slender, deeply canaliculate, very sparsely tomentose, drying black; lamina chartaceous, elliptic to obovate-elliptic, 6.4–15 cm long, 3.2–8.3 cm broad, the base cuneate to obtuse, the apex acute to rounded, the upper surface glabrous, the lower surface granular pruinose and initially sparsely white-puberulous, at length glabrescent, the venation eucamptodromous with 9–14 secondary veins per side, the primary vein slightly impressed adaxially, prominently elevated and sparsely golden puberulous, as are the slender secondary veins, abaxially. Flowers solitary, terminal but appearing leaf-opposed or supra-axillary by displacement during growth of the renewal shoot; pedicel slender, 1.3–2.4 cm long, to 3.1 cm long, 0.2 cm diam. and becoming rigid in fruit, white-tomentose, bearing a minute bract 0.8–0.9 cm from the base; sepals triangular, 0.2–0.3 cm long, 0.3 cm broad, the apex acute, densely white-tomentose; petals 3 (the outer petal whorl only, the inner whorl absent or at most represented by tiny vestigial petals), fleshy, triquetrous, narrowly oblong-elliptic, 1.8–2.4 cm long, 0.5–0.8 cm broad, the apex acute to obtuse, the base concave inside, the outer surface white-sericeous toward the base, becoming sparsely puberulous toward the apex, the inner surface densely tomentose; stamens numerous, 1 mm long, the connective expanded truncate discoid, minutely papillose, yellow, contrasting with the white thecae; carpels 25–36. Fruit syncarpous, subglobose to broadly ovoid, to 4.5 cm long, to 4.5 cm diam., the apex rounded, the surface initially areolate, but then smooth with no evidence of the individual carpels at maturity, green, or light and dark green mottled, initially puberulous, at length glabrescent; seeds flattened ellipsoid-obovoid, to 1.6 cm long, 0.9 cm broad, 0.6 cm thick, the seed coat very thin, smooth-reticulate, light brown.

Paratypes. COSTA RICA. GUANACASTE: Parque Rincón de la Vieja, Hacienda Santa María, sendero a las pailas, 10°48′N, 85°10′W, 700–800 m, 13 Aug. 1987 (fr), *G. Herrera 693* (CR, MO); El Mirador, Río Negro, 10°47′40″N, 85°18′35″W, 1 Oct. 1990 (fr), *G. Rivera 679* (CR, MO). PUNTARENAS: San Luis, Monteverde, Río Guacimal, 10°16′N, 84°49′W, 700 m, 24 June 1988 (fr), *Bello et al. 24* (CR, MO, U), Cantón de Puntarenas, Monteverde, cliff edge on Pacific slope, Bajo Tigre trail, 10°18′N, 84°48′W, 900 m, 20 Oct. 1990 (fr), *Haber & Zuchowski 10110* (CR, MO), 27 Dec. 1991 (fr), *Schatz et al. 3230* (MO). NICARAGUA. CHONTALES: ca. 2.8 km above (N of) Cuapa, ca. 12°17′N, 85°23′W, 400–500 m, 4 Sep. 1977 (fr), *Stevens 3634* (HNMN, MO, WIS); 2–3 km NE of Cuapa, 12°17′N, 85°22′W, 400 m, 24 Sep. 1983 (fr), *Nee & Sebastian 28486* (HNMN, MO, WIS). BOACO: Las Pitas, carretera a Camoapa (No. 19), 12°28′N, 85°35′W, ca. 400 m, 29 Aug. 1981 (fr), *Moreno 10651* (HNMN, MO).

Distribution and habitat. Annona pruinosa is known from southern Nicaragua and the Pacific slope of the Tilarán range in northwestern Costa Rica, in moist forest between 400 and 800 m, i.e., the upper altitudinal limit of the Pacific dry forest.

The affinities of *Annona pruinosa* within section *Atta* lie probably with several Caribbean species (*A. urbaniana* R. E. Fries, from Haiti; *A. praetermissa* Fawcett & Rendle, from Jamaica; and *A. cubensis*

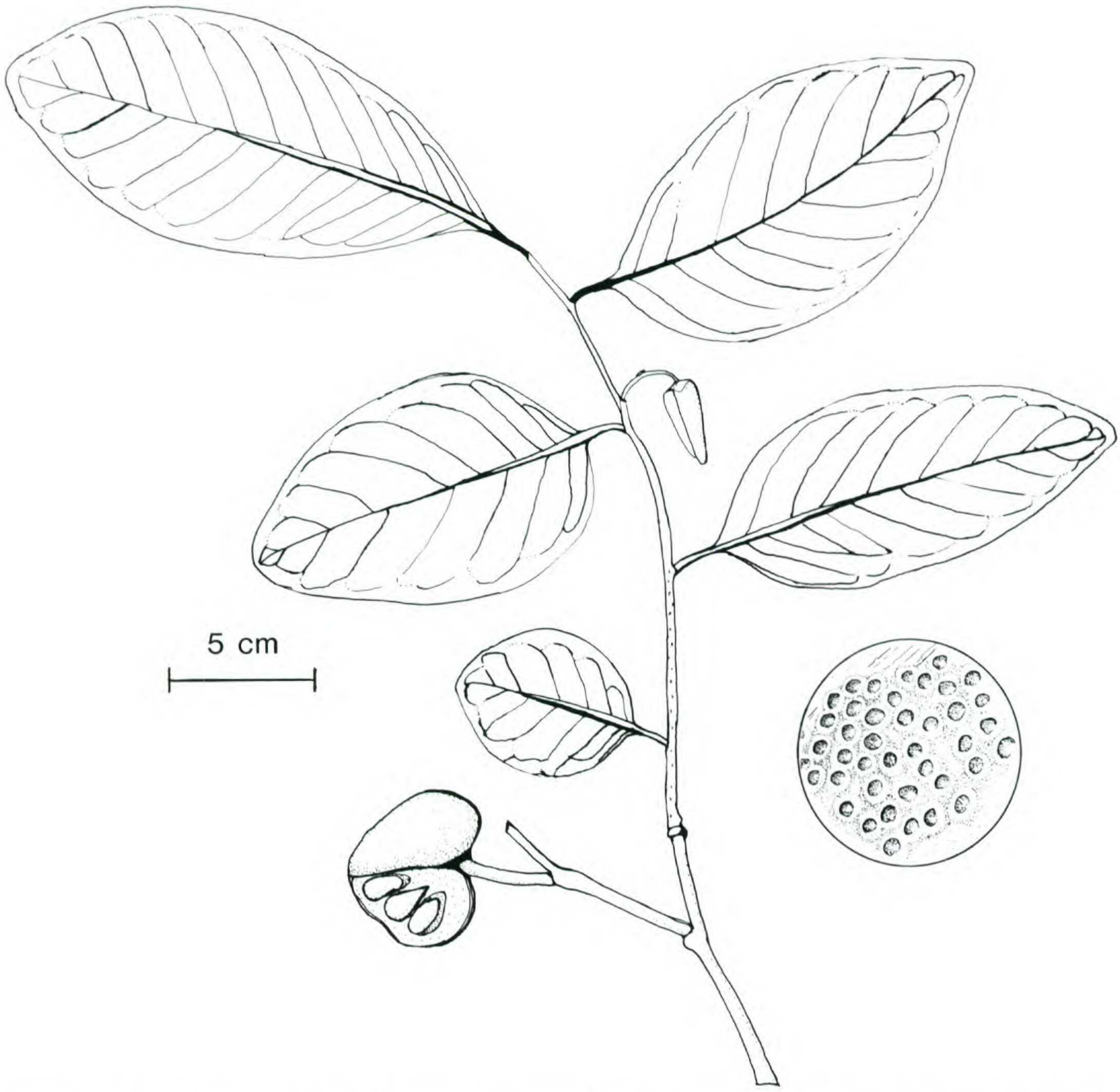

Figure 1. *Annona pruinosa* Schatz, flowering and fruiting branch (from *L. Reyes V. 64*). Inset: magnification of abaxial leaf surface, ×200.

R. E. Fries, from Cuba), all of which possess glaucous leaf undersides. In Costa Rica, collections of *A. pruinosa* have been referred to *A. lutescens* Saff., described from southern Mexico and Guatemala, which, however, possesses a fruit twice as large as *A. pruinosa* and lacks the pruinose leaf underside. *Annona lutescens* is probably better placed in synonymy as merely a broad-leaved variant of *A. reticulata* L.

Annona (section *Atta* C. Martius) **longipes** Saff., Contr. U.S. Natl. Herb. 16(10): 269, pl. 89. 1913. TYPE: Mexico. Veracruz: Cantón de los Tuxtlas, near the outlet of Lake Catemaco, 28 Apr. 1894 (fr), *Nelson 430* (holotype, US; isotype, NY).

Additional specimens examined. MEXICO. VERACRUZ: Laguna Encantada, 2 Nov. 1971 (st), *Beaman 5242* (XAL); 5 km SW of Santiago Tuxtla and Hwy. 180 at bridge over the Río Tepango (Río Grande), 18°27′N, 95°19′W, 160 m, 14 Dec. 1985 (fl), *Nee 32131* (NY, WIS, XAL), 5 Apr. 1983 (fl, fr), *Nee & Taylor 26490* (F, WIS, XAL), 30 May 1986 (fl, fr), *Schatz & Alverson 1161* (MEXU, U, WIS, XAL).

Although flowers were lacking, Safford (1913) nonetheless confidently assigned *Annona longipes* to his newly circumscribed section *Pilannona*, presumably based on the indument, which, as he acknowledged, is erect in contrast to appressed (sericeous) in *Annona sericea* Dunal and its allies. Nevertheless, he remarked that *A. longipes* lacked a muricate fruit surface, an essential characteristic of other members of section *Pilannona*. Fries (1931:

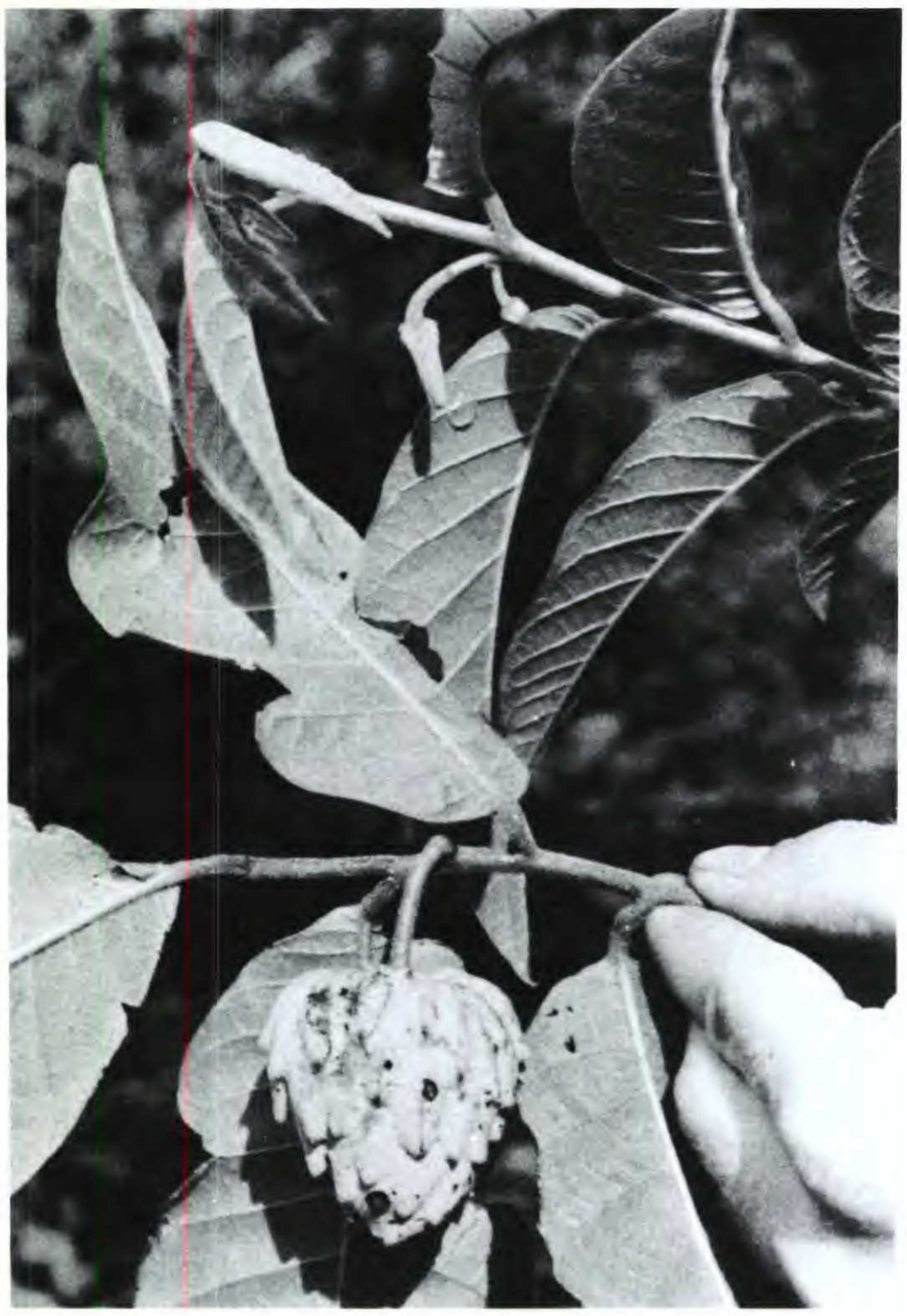

Figure 2. *Annona longipes*, flowering and fruiting branches (*Schatz & Alverson 1161*).

245–246) followed Safford in retaining *A. longipes* in section *Pilannona*, stating that "Da indessen die Blüten nicht bekannt sind, kann die Stellung der Art nicht mit voller Sicherheit angegeben werden" [insofar as the flowers are unknown, the position of the species cannot be determined with complete certainty].

Flowers remained unknown until 1983, when Nee & Taylor (*26490*) re-collected *A. longipes* near Santiago Tuxtla. In contrast to the broadly ovate outer petals of species in section *Pilannona*, *A. longipes* possesses outer petals typical of species in section *Atta*, i.e., distinctly keeled on the inner surface or triquetrous (Safford, 1914) (Fig. 2). Within section *Atta*, *A. longipes* is most closely related to several species with similar indument, including *A. longiflora* S. Watson from western Mexico, and the cultivated *A. cherimola* Miller, probably native to Ecuador. As such, *A. longipes* holds promise for possible hybridization with *A. cherimola* in the development of a second lowland "custard apple" cultivar; the "Atemoya," a hybrid between *A. cherimola* and *A. squamosa* L., has already proven successful in southern Florida. Plants originating from seed of *Schatz & Alverson 1161* are now in cultivation in the Climatron at the Missouri Botanical Garden. Known only from the above-cited collections, *A. longipes* is apparently rare in the wild. Its range appears to fall within the rain shadow of the coastal Los Tuxtlas volcanic peaks, and therefore, climatically within a somewhat drier phase of "Selva Alta Perennifolia," which has now largely been converted to pasture and agriculture.

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