

*Tillandsia deppeana* (Bromeliaceae), an endangered species in Cuba

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*Tillandsia deppeana* Steud. (Fig.1), although recently reported as endemic to Mexico (Espejo et al 2004), is the single species, among currently known Cuban bromeliads (11 genera and 58 spp.), found only in Mexico and Cuba (Till 1999). [editor's note: for a recent review of *Tillandsia* species known from Cuba, see Lucia Hechavarría-Schwesinger. ***Tillandsia* L. (Bromeliaceae) in Cuba: an overview.** Journal of the Bromeliad Society 56(6): 246-252. 2006.]

The first Cuban collection of *Tillandsia deppeana* dates from 1929, when J. G. Jack (1861-1949), a Canadian Botanist and Dendrologist at Arnold Arboretum (Stafleu & Cowan 1979) collected the specimen Jack 7293 in Buenos Aires, Trinidad Hills, Central Cuba, when he was visiting the Atkins Tropical Botanic Garden in Cienfuegos. Since then, the specimen has been subject to a long list of misidentifications. In 1931, when revising the Cuban specimens of La Salle Herbarium, L. B. Smith (1904-1997) (Stafleu & Cowan 1985) determined it as an uncertain variety of *Tillandsia rubra* Ruiz & Pav. Carabia, with his revision of Bromeliaceae for Cuba, disagreed with the application of the name *T. rubra* to the specimen, consequently he identified the specimen as a new species and named it *T. smithiana* Carabia (1941), to honor the world specialist of the family (Bromeliaceae) Lyman B. Smith. Nevertheless, Smith (1956) not convinced with Carabia's determination, checked again the specimen and compared it with the Mexican *T. paniculata* Schldtl. & Cham., a species that was renamed by Steudel as *T. deppeana* and reduced to synonymy of *T. rubra* by Mez (1896, 1935). Smith, in his revision of *Tillandsia* for his monumental monographic work on the family Bromeliaceae (Smith & Downs 1977), follows the authority of Mez and erroneously places *T. smithiana* in the synonymy of *T. fendleri*, something very understandable if we keep in mind that for him *T. paniculata* Schldtl. & Cham., and *T. smithiana* Carabia were synonymous with *T. rubra* Ruiz & Pav., a species considered synonymous with *T. fendleri* at the time. The mystery of *T. smithiana* was solved by Till (1999) who compared the lectotype of *T. paniculata* (= *T. deppeana* Steud.; *Schiede & Deppe* 1008, LE), and the holotype of *T. smithiana* and noticed the great resemblance of both species placing *T. smithiana* consequently under the synonymy of *T. deppeana* Steud.

In Cuba, flowering *T. deppeana* plants can reach 60 cm tall. The species is characterized by a water-holding, funnellform rosette, of several dark green membranaceous leaves, with purple or brown dots of variable size and randomly distributed on blades; sheaths ovate-lanceolate, inflated (15 X 5 cm); blades ligulate, flat with acute apex (30-40 cm

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Figure 1. A blooming plant of *Tillandsia deppeana*, growing on *Cinnamomum montanum* at the northern crest of Pico San Juan, Cienfuegos, Central Cuba. Photo by Maikel Cañizares Morera.

long), covered by a waxy layer with scattered trichomes embedded. The inflorescence is erect, green-reddish, once-branched, subdigitate, with 6-16 spikes arranged in a spiral around the main axis. Spikes linear, complanate, 15-35 x 0.8-1.4cm with 15-25 flowers per spike. Scape erect, short and stout, completely concealed by leaves, with triangu-

lar, foliose, imbricate bracts (20-30cm long). Primary bracts membranaceous, reduced to widely ovate sheaths with filiform blades and apex acute, 10 cm long, shorter than spikes, green. Floral bracts are lanceolate (2 cm long), papyraceous, nerved and carinate, apiculate, partially imbricate, shorter than the sepals. Flowers sub-sessile, 6.5 cm long. Corolla lilac. Stigma and stamens exserted (Fig. 2). The fruit is capsular, 4 cm long. The species grows in rainforest habitats and blooms from February to June.

All Cuban *T. deppeana* herbaria specimens have been collected from Pico Potrerillo (863m altitude) and the Pico San Juan region (1140m altitude), the highest mountains of Guamuhaaya, the mountainous massif of Central Cuba (Fig. 3). Nevertheless, recent expeditions looking for populations of the species in Guamuhaaya carried out by the authors from 2006 through 2014, recorded its present day occurrence only in the Pico San Juan region growing on trees and limestone of the cliffs.

The population growing in the crests of Pico Potrerillo could have been extirpated when hurricane Dennis devastated the forests in 2005. In the Pico San Juan region, the species has a small population at Pico Mandulo (989m a.s.l.), SW of Pico San Juan. In this population, no more than 20 individuals, all juveniles, occupy just 50m<sup>2</sup>, growing on limestone.

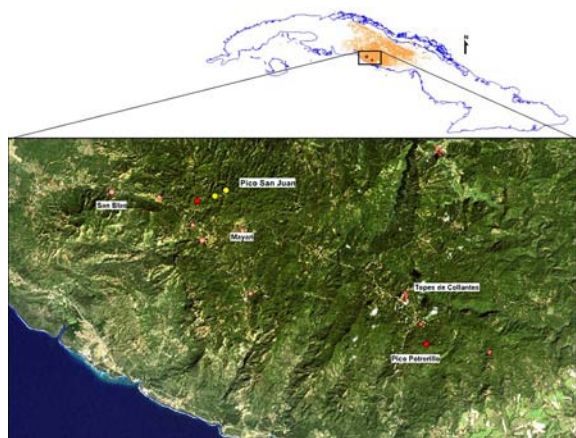


Figure 3. Historic (red dots) and current (yellow dots) distribution of *T. deppeana* in Central Cuba. Pink dots of varying sizes show the location of settlements in the region. Figure prepared by Maikel Cañizares Morera.



Figure 2. An open flower of Cuban *Tillandsia deppeana*. Photo by Maikel Cañizares Morera.

The species also has an epiphytic population, with mature plants, on the northern crest of Pico San Juan (1113m a.s.l.; Fig. 4). Here, fewer than 10 individuals are found, growing on *Cinnamomum montanum*(Sw.) J. Presl. (Lauraceae) trees.

Due to its local distribution in the highest mountains of Central Cuba, reduced to a small surface and its scarcity (total less



Figure 4. Pico San Juan, the region of highest peaks in Guamuhaia, the mountainous massif of Central Cuba. Photo by Maikel Cañizares Morera.

than 50 individuals) and fragmented populations it is considered a critically endangered species in Cuba (CR [C2a(i);D]; IUCN 2010). The known population status of the species is a reason to consider *Tillandsia deppeana* as a conservation target in the flora conservation program in the operative management plan of the Ecological Reserve Pico San Juan. In order to protect the species a monitoring protocol to update current population structure, as well as the study of the related fauna and flora, and environmental educational activities involving local communities are some of the tasks are now being carried out in the area.

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