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Research note

Rediscovery of *Bouteloua vaneedenii* (Gramineae: Chloridoideae): endemi species from the West Indies

Redescubrimiento de *Bouteloua vaneedenii* (Gramineae: Chloridoideae): especie endémica d las Indias Occidentales

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Abstract. *Bouteloua vaneedenii* is an endemic and extremely rare grass of the West Indies. Very few collections are known, and the most recent collection is from 1922. With the aim of finding the species, a team of Mexican and Cuban agrostologists conducted a field trip and found *B. vaneedenii* in the same locality where it was collected in 1922 on dry limestone rocks. Although it was stated that *B. vaneedenii* probably was extinct from Cuba, vigorous populations remain in at least 2 localities in Pastelillo. Further exploration may lead to the discovery of additional populations and the reevaluation of its current conservation status.

Key words: *Bouteloua vaneedenii*, Chloridoideae, Cuba, Gramineae, endemic, West Indies.

Resumen. *Bouteloua vaneedenii* es un pasto extremadamente raro, nativo de Las Indias Occidentales y del que muy pocas recolectas se conocen hasta ahora, la última se realizó en 1922. Con el objetivo de encontrar la especie, un equipo de agrostólogos mexicanos y cubanos condujeron un viaje de campo en busca de *B. vaneedenii*, la cual fue hallada en la misma localidad donde se recolectó sobre rocas calizas en 1922, a pesar de que se había señalado como probable extinta para Cuba. Se ubicaron 2 poblaciones en buenas condiciones; no obstante, es necesaria una exploración más intensa confirmar su estado actual de conservación.

Palabras clave: *Bouteloua vaneedenii*, Chloridoideae, Cuba, Gramineae, endémica, Antillas Menores.

Pilger described a new species of *Bouteloua* (Chloridoideae), *B. vaneedenii* Pilg. ex Urban, in honor of Beato Van Eeden; its description was published in Symbolae Antillanae (Urban, 1909). The species is based on *Boldingh 3512B* (1906 [US holotype fragment]) collected in St. Christopher-Nevi, Anguilla I (Urban, 1909). It is endemic to the West Indies, and very few collections are known: Pastelillo, Cuba (*Ekman 1013* [GH, TAES, HNC]), Leeward Islands, Anguila (*Boldingh 3512B* [US]), Guadeloupe (*Galla 2542* [NY]), and 2 collections from Venezuela (*H. Pittier 11338* and *Scorza 26197*). Upon revision by the authors, the Venezuelan specimens turned out to be *B. disticha* (Kunth Benth. In 1946, León recorded *B. vaneedenii* for Cuba fro the *Ekman 15407* and *15546* collections made in Octob 1922; this represents the most recent vouchered collectio of the species. Although the US herbarium voucher of *B. vaneedenii* is commonly cited as *Ekman 1013* (Catasú 1997; Gould, 1980; Siqueiros-Delgado, 2001), this numb is actually the US herbarium accession number. Accordin to the HNC (National Herbarium of Cuba) record, th accession number corresponds to the collection numb *Ekman 15546*.

Bouteloua vaneedenii is a member of the *Boutelou curtipendula* complex, a group of 11 closely relate American species (Siqueiros-Delgado, 2001, 200

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characterized by multiple (12–80) pendulous, unilateral branches, deciduous at maturity, falling intact with the branch rachis, and 1–9 spikelets per branch. *Bouteloua vaneedenii* (Figs. 1a, b) is a perennial herb, caespitose, with conspicuous rhizomes; culms 30–50 cm long and erect; leaves filiform, ashy, and involute, 6–10 cm long and 0.5–1.5 wide; inflorescence composed of unilateral racemes with 15–35 branches, each branch with 2 or 3 spikelets, each with 1 fertile and 1 reduced floret (Fig. 1c); glumes of the fertile floret shorter than the spikelets, purple, 1-veined, keeled; lower glume slightly shorter than the upper; fertile lemma ovate, coriaceous, 3.5–5 mm long, keeled, 3–veined, trifid at the apex, or with 3 short awns; rudimentary floret with lemmas 3–awned, the central one longer than the lateral; anthers orange; caryopsis with adherent pericarp (Clayton et al., 2002). The diagnostic morphological characters that differentiate *B. vaneedenii* from other species of the complex are the filiform, ashy, and involute leaves, the small ligule 0.5 mm long, and its preference for calcareous soils. There are no chromosome counts for *B. vaneedenii*. Gould and Kapadia (1964) suggested a strong relationship between pollen size and ploidy level in the *Bouteloua curtipendula* complex, and pollen size in *B. vaneedenii* might indicate diploidy. Gould (1980), based on leaf morphology, proposed a close relationship between *B. vaneedenii* and *B. warnockii* Gould et Kapadia, whereas Griffiths (1912) proposed a relationship with *B. uniflora* Vasey. Nevertheless, molecular evidence does not support these hypotheses, suggesting instead a close relationship with *B. curtipendula* (Michx.) Torr. var. *curtipendula* and *B. disticha* (Siqueiros-Delgado, 2001).

The conservation status of *B. vaneedenii* is controversial. Berazaín-Iturralde et al. (2005), based on an extensive field and herbarium work, considered this taxon as near-threatened ("casi amenazado"), as it is restricted to the fast-disappearing coastal xeromorphic habitat. On the other hand, Borhidi and Muñiz (1983) categorized this taxon as "rare" (R), because it is distributed only in the Cuban province of Camagüey. Catasús (1997) surmised that *B. vaneedenii* could even be extinct in Cuba, and the IUCN (2001) listed *B. vaneedenii* as critically endangered (CR 1a), based on its reduced distribution and fragmented habitat. Its current conservation status needs to be re-assessed.

With the aim of finding the most elusive member of the *Bouteloua curtipendula* complex, *Bouteloua vaneedenii*, a team of Mexican and Cuban agrostologists traveled in 2006 to the locality of Pastelillo in the Pastelillo Peninsula, 4.8 km N of Nuevitas in the Bay of Nuevitas, N of Camagüey, and within the Archipelago of the same name in Cuba. We reached Punta Gorda, a small community of scattered houses overlooking Nuevitas Bay and facing the Ballenato Islands. Punta Gorda is traversed by old train tracks running parallel to the rocky edge of the sea, close to the petroleu terminal of Pastelillo, at 21º 32' 29" N and 77º 13' 15 W (Fig. 2). The old train station was apparently built facilitate import and export of products such as syrup ar petroleum during the 1920s. Large storage tanks serve as useful geographic reference to locate the area. We walked a white calcareous slope, facing south along the seashor With little difficulty, we discovered a healthy, ashy, sti *Bouteloua* in the piedmont. A vigorous population of *vaneedenii* was growing in the same locality where Ekma collected it in 1922, on dry limestone rocks.

We looked for other localities nearby with simil attributes and found additional populations of the speci along the road from Varaderito to Bahia Honda, ca. 2 k from Pastelillo; *Bouteloua vaneedenii* covered slopes wi exactly the same characteristics as in the previous locality 21º 32' 23" N and 77º 14' 17" W.

In both places, *Bouteloua vaneedenii* grows in ope sunny areas, particularly on inaccessible calcareous rock slopes, from the piedmont to around 25 m in elevatio (Fig. 3). Interestingly, populations of *B. vaneedenii* fa south and are exposed to the sea breeze. The surroundi vegetation consists of thorny, coastal xeromorphic shrub usually accompanied by deciduous and sclerophyllou shrubs or small trees. Palms, succulents and lianas a common elements in this habitat. Among the representativ species of this community are: *Aristida* spp., *Brya ebenu* (L.) DC., *Bourreria cuneifolia* O. E. Schulz, *Bursera inaguensis* Britton, *Caesalpinia vesicaria* L., *Caesalpini pauciflora* (Griseb.) C. Wright ex Sauvalle, *Chiococc alba* (L.) Hitchc., *Coccothrinax salvatoris* León, *Diospyro crassinervis* (Krug et Urban) Standl., *Encyclia* spp *Exostema caribaeum* (Jacq.) Roem. et Schult., *Galacti striata* (Jacq.) Urban, *Heliotropium microphyllum* Sw *Lantana* spp., *Neea shaferi* Standl., *Pilosocereus* af *millspaughii* (Britton) Byles et G. D. Rowley, *Plumeri tuberculata* Lodd., *Rondeletia camarioca* C. Wright, *Savi bahamensis* Britton, *Stigmaphyllon diversifolium* (Kunth A. Juss., *Tillandsia* spp., *Thrinax radiata* Lodd. ex Schul et Schult. f., *Urechites lutea* (L.) Britton, *Zamia pumil* L., *Ziziphus acutifolia* (Griseb.) M. C. Johnst. This pla community is currently highly fragmented and influence by secondary and invasive elements such as *Acaci farnesiana* (L.) Willd., *Dichanthium annulatum* (Forssk Stapf, *Dichrostachys cinerea* (L.) Wight et Arn., *Leucaen leucocephala* (Lam.) De Wit, *Paspalum millegrana* Schrad *Sporobolus indicus* (L.) R. Br., and *Waltheria indica* L.

Bouteloua vaneedenii is an extremely rare plant in Cub and probably throughout the West Indies. We confirm th rediscovery of *B. vaneedenii* in Cuba in the same locali where it was originally collected by Ekman 84 years ag as well as its presence in nearby areas. Future exploration

Figure l. *Bouteloua vaneedenii*. A, plant habit; B, inflorescence; C, inflorescence branch showing 2 spikelets. Vertical bars in A ar
B= 1 cm, C= 1 mm.

Figure 2. Old train tracks in Punta Gorda, Pastelillo Peninsula, Camagüey, Cuba.

Figure 3. Habitat of *Bouteloua vaneedenii*. Calcareous slopes facing the bay.

the West Indies will give evidence of its current distribution and abundance, and will assist to assess its conservation status. This discovery may allow Cuban environmental authorities to implement control policies to protect and preserve *B. vaneedenii*, given that the West Indies provide a unique natural habitat for this endemic species.

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Literature cited

Berazaín-Iturralde, R., F. A. Areces-Berazaín, J. C. Lazcano-Lara and L. R. González-Torres. 2005. Red list of Cuban vascular flora. Documentos 4. Jardín Botánico Atlántico, Gijón. 86 p.

Borhidi, A. and O. Muñiz. 1983. Catálogo de plantas cubanas amenazadas o extinguidas. ACC, Instituto de Botánica, La Habana. 85 p.

Catasús, L. 1997. Poaceae de Cuba, I. Fontqueria 46:70-75.

Clayton, W. D., K. T. Harman and H. Williamson. 2002. World grass species: descriptions, identification, and information retrieval. The Board of Trustees, Royal Botanic Garden Kew, Richmond, Surrey. 389 p.

Gould, F. W. 1980. The genus *Bouteloua* (Poaceae). Annals of th Missouri Botanical Garden 66:348-416.

Gould, F. W. and Z. J. Kapadia. 1962. A new *Bouteloua* from th Southwest. Southwestern Naturalist 7:176-181.

Gould, F. W. and Z. J. Kapadia. 1964. Biosystematic studies the *Bouteloua curtipendula* complex. II. Taxonomy. Britton 16:182-207.

Griffiths, D. 1912. The grama grasses: *Bouteloua* and relate genera. Contributions from the United States Nation Herbarium 14:343-428.

International Union for Conservation of Nature. 2001. IUCN re list categories, version 3.1. Gland.

León, H. 1946. Flora de Cuba I. Contribuciones Ocasionales d Museo de Historia Natural del Colegio De La Salle 8:120.

Siqueiros-Delgado, M. E. 2001. Phylogenetics of the *Boutelou curtipendula* complex (Gramineae: Chloridoideae). Ph. dissertation, Claremont Graduate University and Ranch Santa Ana Botanic Garden, California. 140 p.

Siqueiros-Delgado, M. E. 2007. *Bouteloua vaneedenii* Pil ex Urban, una especie endémica de las Antillas Menores Cuba. Investigación y Ciencia 38:9-13.

Urban, I. 1909. Fundamenta Florae Indiae Occidentali Symbolae Antillarum 6:2.