



Chusquea nedjaquithii (Poaceae: Bambusoideae, Bambuseae, Chusqueinae), a new endemic species from Oaxaca, Mexico

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Abstract

Chusquea is the most diverse among woody bamboo genera, with 174 described species. Not surprisingly, *Chusquea* is the most diverse bamboo genus in Mexico, and with the description of *C. nedjaquithii* the number of species will increase to 20, representing almost 45% of the total Mexican woody bamboo diversity. Based on fieldwork in the Mexican state of Oaxaca and revision of herbarium specimens we describe and illustrate *C. nedjaquithii*, a species endemic to the Sierra Madre del Sur in Oaxaca, Mexico. *Chusquea nedjaquithii* is similar to *C. liebmannii* but differs in having culms with deciduous hairs, an oblate central bud and fewer subsidiary buds, strongly geniculate branches in one row forming an incomplete verticil, oblique foliage leaf blade bases, and longer inner ligules in the foliage leaves. A key to the Mexican *Chusquea* species based on vegetative characters is provided.

Keywords: endemic, Neotropical cloud forest, Sierra Madre del Sur, woody bamboo

Resumen

El género *Chusquea* es el más diverso entre los géneros de bambúes leñosos. En México no es la excepción, con la descripción de *C. nedjaquithii*, se incrementa el número de especies a 20, representando casi el 45% de la diversidad total de bambúes leñosos en México. Basados en trabajo de campo en el estado de Oaxaca y revisión de especímenes de herbarios, describimos e ilustramos *C. nedjaquithii* endémica de la Sierra Madre del Sur en Oaxaca, México. *Chusquea nedjaquithii* es similar a *C. liebmannii*, pero difiere en tener culmos con pelos hirsutos y deciduos, yema central oblada y menos yemas subsidiarias, ramas fuertemente geniculadas formando un verticilo incompleto en una única fila, hojas del follaje con bases oblicuas y lígula interna más larga. Se presenta una clave de las especies Mexicanas de *Chusquea* basada en caracteres morfológicos vegetativos.

Palabras clave: especie endémica, Bosques nublados Neotropicales, Sierra Madre del Sur, bambúes leñosos

Introduction

Chusquea Kunth (1822: 151) is the most diverse woody bamboo genus, with 174 described species (Fisher *et al.* 2009, 2014; Bamboo Phylogeny Group 2012; Costa Mota *et al.* 2014a,b; Guerreiro & Rógulo de Agrasar 2014). *Chusquea* species are found in a wide range of habitats, from Andean montane forests, páramos, subpáramos, campos de altitude, Atlantic forests, Southern beech forests to Neotropical cloud forests, tropical dry forests, pine-oak and fir-pine forests in South America, Mexico, Central America and the West Indies (Clark 1989; Judziewicz *et al.* 1999; Fisher *et al.* 2009; Ruiz-Sanchez & Clark 2013; Ruiz-Sanchez *et al.* 2014). Species of *Chusquea* range from sea level to 4,300 m in elevation, giving this genus the broadest altitudinal range of any bamboo. *Chusquea* species tend to form a visible and sometimes dominant component of the vegetation (Clark 1989; Judziewicz *et al.* 1999; Fisher *et al.* 2009).

Recent molecular phylogenetic studies indicate that *Chusquea* is a monophyletic lineage, recognized as the

Comparison:—Morphologically *Chusquea nedjaquithii* is most similar to *C. liebmannii*. The differences between *C. nedjaquithii* and *C. liebmannii* are the following: main culms with deciduous hairs, becoming strigose, central bud oblate, subsidiary branches 13–17 arranged in a single row in two patches (forming an incomplete verticil) and strongly geniculate, foliage leaf blades oblique at the base and with an inner ligule 5–10 mm long in *C. nedjaquithii*, vs. culms glabrous, central bud circular, subsidiary branches > 100 in 2 to 3 rows forming a complete verticil and not geniculate, foliage leaf blades attenuate at the base and with an inner ligule 0.5–1 mm long in *C. liebmannii*.

Etymology:—This species honors Mr. Ned Jaquith (1939–2013), a long-time bamboo grower and nurseryman who gave unstintingly of his knowledge and enthusiasm for bamboo species. We recognize Ned’s extensive contributions to the bamboo community by dedicating this species to his memory.

Phenology:—Flowers of this species have never been collected. However, E. Ruiz-Sanchez observed some dead individuals in the population that could have flowered and died one or two years prior to the type collection.

Additional specimen examined:—MEXICO. Oaxaca: Candelaria Loxicha, Portillo del Rayo, Finca El Encanto, 15°58’41”N, 96°31’43”W, 1600 m, 22 Nov. 2012, L. Cervantes 08BA (XAL).

Discussion

With the description of *C. nedjaquithii* the number of native Mexican bamboos will increase to 47 described species representing all three Neotropical woody bamboo subtribes (Arthrostylidinae, Chusqueinae and Guaduinae). Of those 47 Mexican bamboo species, almost half (20) belong to *Chusquea* (Ruiz-Sanchez & Clark 2013; Ruiz-Sanchez *et al.* 2014). Guaduinae are represented by three genera, *Guadua* Kunth (1822: 150), *Olmeca* Soderstr. (1982: 161) and *Otatea*, and 20 described species (Ruiz-Sanchez *et al.* 2011a, b; Ruiz-Sanchez 2012, 2013; Londoño and Ruiz-Sanchez 2014) and the rest (seven) species are Arthrostylidinae (Cortés Rodríguez 2000). According to the most recent taxonomic classification of the Bambusoideae (Bamboo Phylogeny Group 2012) the Neotropical woody bamboos comprise 405 described species, of which the Mexican bamboo species account for 12%.

The Mexican *Chusquea* species inhabit mainly tropical dry forests, pine-oak and pine-fir forests and Neotropical cloud forest. The latter represents the main habitat for *Chusquea* in Mexico as 17 of the 20 species inhabit this type of forest (Ruiz-Sanchez *et al.*, 2014).

Sosa *et al.* (2013) published a study using two chloroplast genes (*matK* and *rbcL*) and one spacer (*psbI-psbK*) sequenced from 36 native Mexican bamboo species, to test if those markers could be used to discriminate (barcode) bamboo species. Only *matK* in combination with *psbI-psbK* could distinguish between taxa and only at the generic level. We therefore encourage the use of morphology to identify woody bamboos at the species level.

Chusquea nedjaquithii is known from a single locality in the Sierra Madre del Sur in the state of Oaxaca. We therefore propose the inclusion of this species in the IUCN red list under the “endangered” category of protection.

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