



## Revalidation of *Chusquea argentina* (Poaceae, Bambusoideae, Bambuseae) on the basis of morphological, anatomical and phenological characters

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### Abstract

*Chusquea* (Poaceae, Bambusoideae, Bambuseae) is the most diverse genus of woody bamboos in the world. In Andean Patagonian forests of southern Argentina and Chile, several species of *Chusquea* are the dominant components of the understory. *Chusquea argentina* and *C. culeou* fo. *longiramea* were described from that area on the basis of morphological characters. Some authors have considered *C. argentina* to be a valid species and others have treated this and *C. culeou* fo. *longiramea* as synonyms of *C. culeou*. This study contributes to the delimitation of these taxa. Based on morphology and anatomy, we clarify differential characters between *C. culeou* and *C. argentina* and restore the latter as a valid species. *Chusquea culeou* fo. *longiramea* is synonymized under *C. argentina*. According to data of mass flowering events recorded in southern Argentina and Chile, *C. culeou* and *C. argentina* become reproductive at different times. Anatomical descriptions of culm and foliage leaf blade epidermis and cross sections are provided for each species. Comparative tables based on diagnostic characters are also included.

**Key words:** Anatomy, Argentina, Chile, *Chusquea*, mass flowering, morphology, taxonomy

### Resumen

*Chusquea* (Poaceae, Bambusoideae, Bambuseae) es el género de bambúes leñosos más diverso del mundo. En los bosques andino-patagónicos de la Argentina y Chile, varias especies de *Chusquea* son el componente dominante del sotobosque. *Chusquea argentina* y *C. culeou* fo. *longiramea* fueron descritas para ese área sobre la base de caracteres morfológicos. Algunos autores han considerado a *C. argentina* como una especie válida y otros la han tratado junto con *C. culeou* fo. *longiramea* como sinónimo de *C. culeou*. Este estudio contribuye a la delimitación de estos taxones. Considerando aspectos morfológicos y anatómicos, se dan a conocer caracteres diferenciales de *C. culeou* y *C. argentina* y se restablece esta última como especie válida. *Chusquea culeou* fo. *longiramea* se considera sinónimo de *C. argentina*. Según información de eventos de floración masiva registrados en el sur de la Argentina y Chile, *C. culeou* y *C. argentina* florecieron en distintos momentos. Se proporciona una descripción anatómica de la caña y la lámina foliar a nivel de epidermis y sección transversal para cada especie. Se incluyen tablas comparativas basadas en caracteres diagnósticos.

**Palabras clave:** Anatomía, Argentina, Chile, floraciones masivas, morfología, taxonomía

### Introduction

*Chusquea* Kunth (1822: 151) is the most diverse woody bamboo genus in the world; it comprises ca. 163 species (Bamboo Phylogeny Group 2012, Costa da Mota *et al.* 2013, Guerreiro & Rúgolo de Agrasar 2013). The genus is distributed from Mexico to Argentina and Chile from sea level to over 4000 m. The species of *Chusquea* are often significant, sometimes dominant, components of montane forest and high altitude grassland vegetation, where they can be aggressive colonizers (Judziewicz *et al.* 1999). Woody bamboos are also well known as understory dominants in cool temperate southern South America, in Andean Patagonian beech forests of Argentina and Chile. Clark (1995) cited ca. 15 endemic species in this area.

**TABLE 2.** Comparative anatomical diagnostic characters between *Chusquea argentina* and *C. culeou*. Anatomical data for *C. culeou* are from Guerreiro *et al.* (2013a, 2013b).

	Character	<i>C. argentina</i>	<i>C. culeou</i>
Culm anatomy	Hypodermis	5–7 layers	4 layers
	Central vascular bundles	Elliptical	Depressed
	Silica bodies	Absent	Present
	Prickle hairs	Absent	Present
	Microhairs	Absent	Present
Foliar anatomy	Ribs and furrows	Present	Absent
	Long cell walls	Straight	Slightly wavy
	Silica bodies	Dumb-bell shaped all over the blade; rounded on midrib and leaf margin	Rounded and saddle shaped only on midrib
	Prickle hairs	Abundant	Scarce

These taxa have different flowering cycles, which is another line of evidence in support of recognizing them as different species. *Chusquea argentina* flowered massively in 2010–2011, 10 years after *C. culeou*, which flowered in 2000–2001.

We have provided evidence that morphological, anatomical and phenological characters are available to distinguish between *C. culeou* and *C. argentina*. We propose that they should be considered as distinct evolutionary lineages and therefore separate species. *Chusquea argentina* is restored as a valid species for southern Argentina and Chile, where it occurs sympatrically with *C. culeou* in the Andean Patagonian forests. Further studies involving molecular data would contribute valuable information to the delimitation of these taxa.

## Acknowledgements

This work received financial support through a grant of the Agencia Nacional de Promoción Científica y Tecnológica of Argentina (PICT N° 2495). The Smithsonian Institution's Cuatrecasas Award financed CG's research visit to US. Also, the Myndel Botanica Foundation financed research visits to CONC and SGO. CG thanks Dr. M. Fernanda Rodríguez for her guidance and support in anatomical studies. We thank Francisco Rojas for the illustrations.

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