

A NEW SPECIES OF *CHUSQUEA* SUBG. *RETTBERGIA*
(POACEAE: BAMBUSOIDEAE: BAMBUSEAE) FROM BOLIVIA
AND A RANGE EXTENSION AND REVISED DESCRIPTION FOR *C. YUNGASENSIS*

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ABSTRACT

Chusquea latispicula, the second species of *Chusquea* subg. *Rettbergia* to be confirmed from Bolivia, is here described, illustrated, and compared with *C. yungasensis*. The new species is distinguished primarily on spikelet characters, including spikelet length and number of nerves on the lemma, but mainly by its spikelet width of 4–5 mm, for which this species is named. The new species is known from only one collection and thus is considered endemic to Bolivia. Four additional collections of *C. yungasensis* have been recorded since its original description in 2014, representing a range extension into the department of Cochabamba, which is documented herein. The newer collections also provide the basis for an updated description of this species. A preliminary conservation status assessment for *C. latispicula* and a revised one for *C. yungasensis* are included.

KEY WORDS: Andean biodiversity, ANMI Apolobamba, Chusqueinae, Neotropical woody bamboos

RESUMEN

Chusquea latispicula, la segunda especie de *Chusquea* subg. *Rettbergia* confirmada para Bolivia, es aquí descrita, ilustrada, y comparada con *C. yungasensis*. La nueva especie es distinguida principalmente por las características de la espiguilla, incluida la longitud de la espiguilla y número de nervios en la lema, pero principalmente por el ancho de sus espiguillas de 4–5 mm, por el cual la especie es nombrada. La nueva especie es conocida sólo de una colección, y por ello es considerada endémica de Bolivia. Cuatro colecciones adicionales de *C. yungasensis* han sido registradas desde su descripción original en 2014, lo que representa una extensión del rango hacia el departamento de Cochabamba, la cual se documenta aquí. Las nuevas colecciones también proporcionan las bases para una descripción actualizada de esta especie. Una evaluación preliminar del estado de conservación para *C. latispicula* y una evaluación modificada para *C. yungasensis* son incluidas.

PALABRAS CLAVES: ANMI-Apolobamba, Biodiversidad andina, Chusqueinae, Bambú leñoso Neotropical

INTRODUCTION

The Neotropical woody bamboo genus *Chusquea* Kunth (Poaceae: Bambusoideae: Bambuseae) includes approximately 204 accepted species, which are classified into five subgenera (Fisher et al. 2014; Ruiz-Sanchez et al. 2021; Refulio-Rodriguez et al. 2025). One of these, *Chusquea* subg. *Rettbergia* (Raddi) L.G. Clark, is strongly supported as monophyletic in all analyses to date (Fisher et al. 2009, 2014; Vidal et al. 2018; Guerreiro et al. 2025) and is characterized by a scandent to scrambling habit, abaxially usually retrorsely scabrous culm leaves with girdles darker in color than the sheaths, infravaginal branching, dome-shaped central buds, and spikelets with the lemma apex slightly to strongly connate (Clark 1997; Fisher et al. 2009, 2014; Mota 2013;

Mota et al. 2014). *Chusquea* subg. *Rettbergia* currently includes 15 species restricted to South America, of which 13 are native to the Atlantic forests of Brazil, one is endemic to the Yungas region of Bolivia, and another is endemic to the Central Cordillera in Antioquia, Colombia (Mota 2013; Mota et al. 2014).

Chusquea yungasensis L.G. Clark & A.C. Mota, the first species of this subgenus described from Bolivia (Mota et al. 2014), was based on three collections (two flowering) from two populations in the department of La Paz. Recent examination of herbarium specimens revealed three additional vegetative collections and one flowering collection of this species from the department of Cochabamba, which we report here, but also a single flowering collection of an undescribed species of subg. *Rettbergia* from the Yungas region of La Paz. We here describe and illustrate *C. latispicula*, comparing it with *C. yungasensis*. We also provide a preliminary assessment of the conservation status of this new species. The range extension for *C. yungasensis* is documented and we update the information from the original description, including a revised conservation assessment.

MATERIALS AND METHODS

Herbarium material for the new species was limited to two duplicates from LPB and MO and material for *C. yungasensis* came primarily from the Bolivian herbaria BOLV, HSB, LPB and USZ (Thiers 2025+). Herbarium specimens were observed with the assistance of a Bausch & Lomb 0.7–3X StereoZoom dissecting microscope (Bausch & Lomb, Laval, Quebec, Canada) or a hand-lens. We followed the morphological definitions and terminology of Fadrique et al. (2019) and Clark (1989). The description of *C. yungasensis* was based on Mota et al. (2014) but was updated to reflect newly available collections.

Foliage leaves were excluded from measurement if they appeared to be immature or if they represented a flag leaf (the apical most leaf subtending a synflorescence exclusive of spathe bracts). Leaf sheath summit extensions, when present, were measured from the connection of the leaf sheath and the pseudopetiole to the apparent termination of the leaf sheath tissue where it is visible as a ridge fused to the inner leaf ligule. Synflorescences were measured from the base of the first spikelet-bearing branch or pedicel on the flowering stem to the tip of the flowering stem on which the most distal spikelet was attached. The peduncle was measured between the last leaf node and the first spikelet-bearing branch of pedicel on the flowering stem. Proportional measurements of glumes, lemma, and palea were taken from the base of the spikelet and compared against the full spikelet length, as in Clark (1989). Pohl's solution (Pohl 1965) was used for the dissection of spikelets.

The map and informal conservation assessment were completed using QGIS Desktop version 3.18.2-Zürich (QGIS Development Team 2021). Void-filled digital elevation models (DEMs) of South America and Central America created by the World Wildlife Fund and published by the U.S. Geological Survey through the HydroSHEDS program were used to provide elevational shading on the map (World Wildlife Fund 2006; World Wildlife Fund 2007). Both DEMs were licensed under the Creative Commons Attribution Non Commercial 3.0 Unported license (CC BY-NC, <https://creativecommons.org/licenses/by-nc/3.0/deed.en>). National and Bolivian departmental borders were mapped using shapefiles obtained from the HCMGIS QGIS plugin (Quach 2025). When not provided on specimen labels, collection locations were estimated using Google Earth Pro 7.3.6.1020 (Google 2025). Location coordinates in decimal degrees were placed in brackets when converted from degrees, minutes, and seconds, with coordinates placed in brackets with an asterisk when estimated from label data. The informal conservation assessments, including the extent of occurrence (EOO) and area of occupancy (AOO) were performed following the guidelines of the International Union for Conservation of Nature (IUCN 2012, 2018, 2024).

TAXONOMY

Chusquea latispicula L.G. Clark, **sp. nov.** (Figs. 1, 2). TYPE: BOLIVIA. LA PAZ: Bautista Saavedra, Área Natural de Manejo Integrado Apolobamba, Wayrapata, entre Charazani y Apolo, bajando a 150 m del camino, bosque montano pluvial de Yungas, con *Oenocarpus bataua*, [–15.0867°, –68.4833°], 1380 m, 9 Abr 2010 (fl), I. Loza, P.M. Jørgensen & P. Calvi 1470 (HOLOTYPE: LPB!; ISOTYPE: MO barcode 2361780!).

Diagnosis.—*Chusquea latispicula* is similar to *C. yungasensis* but differs in having its internodes canescent and scabrid below the nodes (vs. glaucous), foliage leaf blades 1–1.5 cm wide [vs. (1.3–)1.5–3.1 cm wide], synflorescences weakly paniculate (vs. racemose), spikelets 12.5–13.2 mm long and 4–5 mm wide [vs. 9–11.5(–12.2) mm long and 3–4 mm wide], glume III 2/3–3/4 the spikelet length (vs. ca. 1/2), glume IV ca. 9/10 the spikelet length (vs. 3/4–9/10), and lemmas 11-, 13- or 15-nerved (vs. 7-nerved).

Rhizomes and mature **culms** not seen. **Internodes** 18–21.5 cm long, 1–1.5 mm in diameter, terete, solid, canescent and scabrid below the nodes. **Culm leaves** apparently persistent but incomplete; sheaths retrorsely scabrous except below the apex and at the base, 9.8–16 cm long; girdle 2–3 mm long, darker brown than the sheath, canescent but hairs wearing off with age, trichomes 2(–3) mm long; blades apparently deciduous. **Nodes** with the nodal line dipping markedly below the bud/branch complement; central bud ± circular in outline and horizontally oriented, dome-shaped, not developed, subtended by 3–5 subsidiary branches. **Branching** infravaginal; subsidiary branches (8–)10–12.5 cm long excluding the synflorescences, spreading, leafy. **Foliage leaves** 4–6 per complement; sheaths stramineous with pale green spots, keeled, glabrous, the sheath summit extension absent on the overlapping side, margin sparsely ciliate and with a tuft of cilia at the apex, the sheath summit extension absent or to 0.5 mm long on the underlapping side, bearing a tuft of cilia but otherwise the underlapping margin glabrous; outer ligules 0.2–0.3 mm long, erect, ciliate; inner ligules ca. 1 mm long, confluent with the sheath apex or sheath summit extension, sparsely to densely pubescent abaxially; pseudopetioles ca. 2 mm long, glabrous except for a line of sparse hairs along one side of the midrib abaxially, dark purple at the base and stramineous to green above; blades (6.3–)9.4–11.5 cm long, 1.1–1.5 cm wide, L:W = (5.4–)6.8–9.5, the flag leaf blades 4–6.1 cm long, 0.8–1 cm wide, L:W = 5–6.1, ovate-lanceolate, glabrous, not tessellate, base rounded-attenuate, midrib straw-colored, distinguishable for ca. 3/4 of the blade length, slightly excentric with three second order veins on one side and four on the other, ratio of wider side to narrower side 1:1 to 1.23:1, margins scabrid to sparsely scabrid, apex acute. **Synflorescences** 2.5–4 cm long including the apical spikelet, 1.5–2(–2.5) cm wide, ± straight, not or only slightly exerted from the subtending leaf, weakly paniculate, sometimes the lowermost branch short and bearing abortive spikelets, subtended by a flag leaf or rarely a slightly spatulate bract with no blade, bearing 8–15 spikelets, each 1st order branch or pedicel subtended by a small bract 0.5–2 mm long; peduncle and rachis angular, densely hispid-pubescent; pedicels 2–4.5 mm long, angular, densely pubescent. **Spikelets** 12.5–13.2 mm long, 4–5 mm wide, laterally compressed, straight; glumes I and II abaxially short-pubescent over most of the body, ± glabrous toward the margins, and hispid-pilose along the midrib, especially toward the apex; glume I 4–6.5 mm long including the awn, extending 1/3–1/2 the spikelet length, 5- or 7-nerved, apex acute, awn 0.4–1.5 mm long; glume II 5–7 mm long including the awn, extending ca. 1/2 the spikelet length, 7- or 9-nerved, apex ± attenuate, awn 0.5–1 mm long; glumes III and IV navicular, apiculate, abaxially scabrid, scabrid-pubescent at the apex; glume III 8–9 mm long, extending 2/3–3/4 of the spikelet length, 11-nerved, the awn 0.5(–1) mm long; glume IV 9–11 mm long, extending ca. 9/10 of the spikelet length, 7- or 9-nerved, the awn ca. 0.5 mm long; lemma 11–12 mm long, 11-, 13- or 15-nerved toward the base, navicular, mucronulate, apex slightly connate; palea 10.3–11 mm long, 10–12-nerved, navicular, bi-mucronulate. **Lodicules** present but not in good condition. **Stamens** not seen. **Gynoecium** with styles 2, stigmas 2. **Fruit** not seen.

Etymology.—This species is named for its distinctively wide spikelets.

Distribution and Habitat.—*Chusquea latispicula* is treated here as a Bolivian endemic, but it could possibly be found in southern Peru given its proximity to the border. This species is found at ca. 1380 m in elevation, in the sub-Andean mountain ranges of the basimontane ecological floor of the extreme southeast Natural Area of Integrated Management Apolobamba (ANMI-Apolobamba). The vegetation is Yungas montane forest, and at the collection site there is a mixture of Amazonian and Andean-Yungas plants (transitional Amazon forest). This kind of forest is characterized by the presence of the palm *Oenocarpus bataua* Mart. and the tree

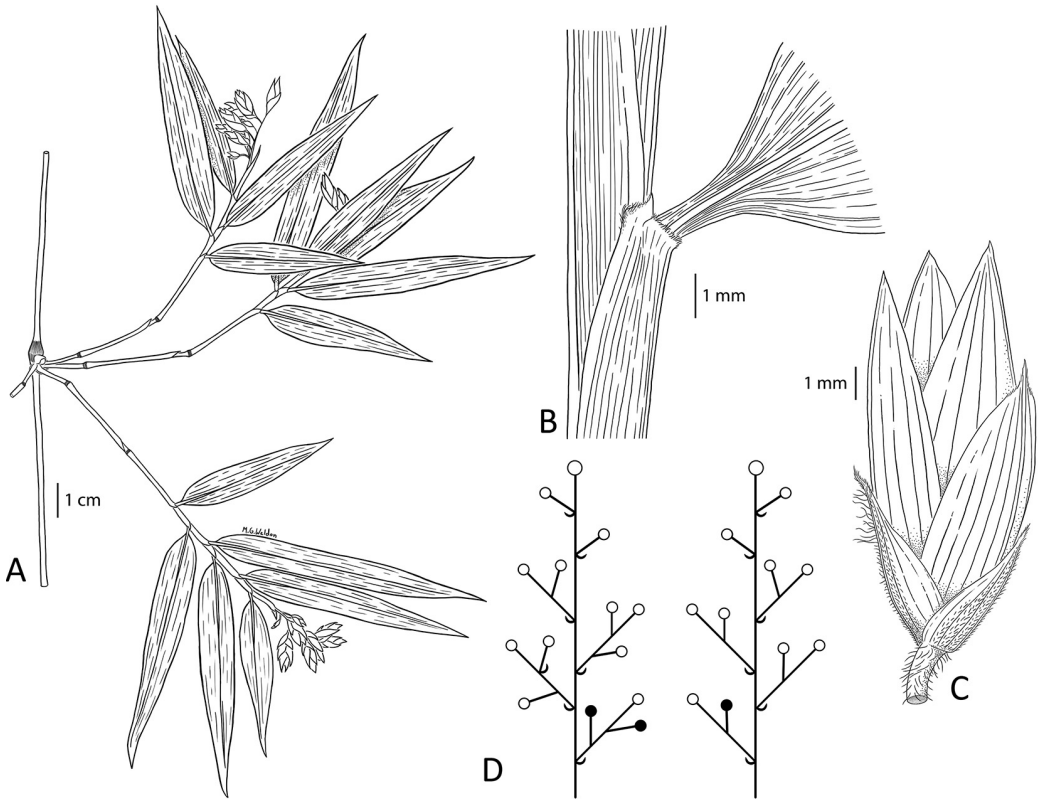


FIG. 1. *Chusquea latispicula*. A. Branch complement with leafy subsidiary branches and synflorescences. B. Ligular region of the foliage leaf. C. Spikelet. D. Diagrams of synflorescence branching, open circles = mature spikelets, closed circles = abortive spikelets. Based on Loza *et al.* 1470. A-C drawn by M.G. Weldon; D by E.K. McMurchie.

Protium montanum Swart. (Marconi Ripa 2019) and is found typically at 1200–1400 m (Navarro *et al.* 2002). The bioclimate is pluvial and humid.

Phenology.—*Chusquea latispicula* is known only from the type collection. No information was provided regarding the extent of flowering, so nothing about its flowering behavior or cycle can be inferred at this time.

Informal Conservation Assessment.—*Chusquea latispicula* is known from only a single collection; thus, we cannot calculate EOO. The AOO of *C. latispicula* is 4 km². The location of the only known population of *C. latispicula*, alongside Ruta Nacional 16 in ANMI-Apolobamba, raises the risk of a decline in habitat quality. We therefore project that were a formal conservation assessment to take place, *C. latispicula* would be considered Critically Endangered under criterion B2ab(iii).

Chusquea latispicula has longer [12.5–13.2 vs. 9–11.5(–12.2) mm] and usually wider (4–5 mm vs. 3–4 mm) spikelets than *C. yungasensis*, but differs from it in several other flowering characters, including especially lemma nerve number but also rachis indument, development of a subtending spatheate bract, and a weakly paniculate (vs. racemose) synflorescence structure (Table 1). In the vegetative condition, foliage leaf blade width [1–1.5 cm in *C. latispicula* and (1.3–)1.5–3.1 cm in *C. yungasensis*] and internode indument just below the nodes (canescent and scabrid in *C. latispicula* vs. glaucous in *C. yungasensis*) distinguish these two species.

TABLE 1. Morphological comparison of *Chusquea latispicula* and *C. yungasensis*.

Character	<i>C. latispicula</i>	<i>C. yungasensis</i>
Internode indument	canescent and scabrid below the nodes	glaucous for 2–3 mm below the nodes
Foliage leaf blade length (cm)	(6.3–)9.4–11.5	(6.5–)9.5–16.7
Foliage leaf blade width (cm)	1–1.5	(1.3–)1.5–3.1
Synflorescence structure	weakly paniculate	racemose
Spatheate bract	usually absent	present
Rachis indument	densely hispid-pubescent	pubescent
Pedicle length (mm)	2–4.5	1–2
Spikelet length (mm)	12.5–13.2	9–11.5(–12.2)
Spikelet width (mm)	4–5	3–4
Glume III relative to the spikelet	2/3–3/4	1/2–3/4
Glume IV relative to the spikelet	ca. 9/10	3/4–9/10
Lemma length (mm)	11–12	9–11
Lemma nerve number	11, 13 or 15	7
Elevation	ca. 1380 m	1550–2400 m

Chusquea yungasensis L.G. Clark & A.C. Mota, Phytotaxa 161(3):212. 2014. (Fig. 2). TYPE: BOLIVIA. LA PAZ: PROV. Nor Yungas, Parque Nacional Cotapata, sendero Sillutinkara, [–16.2401°, –67.8872°], 2228 m, 14 Apr 2013 (fl), I. Jiménez 5848 (HOLOTYPE: LPB!, ISOTYPES: BOLV!, HSB!, USZ!).

Culms 0.6–1.2 cm in diameter, 2.5–4 m long, scandent and climbing. **Internodes** (17–)26.7–43 cm long, terete to subterete, glabrous, glaucous for 2–3 mm below the nodal line. **Culm leaves** 38.5–55.5 cm long, persistent, longer than the internode, juncture of sheath and blade abaxially obscure but concave; sheaths (26.2–)32.4–44.5 cm long, 2.8–3.6 times the length of the blade, adaxially glabrous, lustrous and sometimes hirsute distally, abaxially retrorsely scabrous but becoming glabrous toward the base, one side ciliate along its entire length, sheath summit extension present on the underlapping side only, 1.6–2.2 mm long, erect, ciliate; girdles 2–4 mm long, glabrous, dark brown, thickened at the juncture with the sheath; inner ligules 0.5–2 mm long, asymmetric, lacerate; blades 5–11(–14.1) cm long, narrowly triangular, erect, persistent, adaxially pubescent, abaxially glabrous to scabrous, margins glabrous. **Nodes** at mid-culm with one dome-shaped central bud subtended by 7–10 smaller subsidiary buds in 1–2 rows in a constellate arrangement; nodal line horizontal but dipping markedly below the bud/branch complement; supranodal ridge swollen, usually prominent to inconspicuous. **Branching** infravaginal; central branch developing horizontally at first, usually becoming geniculate, nearly as robust as the main culm; leafy subsidiary branches (3–)11 per node, 26–50 cm long, 1.2–2.6 mm in diameter, geniculate, rebranching at the nodes of fertile branches, the girdles at the lower nodes usually dark brown, glabrous. **Foliage leaves** 3–6 per complement; sheaths striate, keeled, glabrous, stramineous to green-stramineous, the margins glabrous, sheath summit extension on the underlapping side only, (0.5–)1.2–3.1 mm, glabrous; outer ligule 0.1–0.4(–0.5) mm long, unlobed, truncate, erect, extending as a rim along the junction of the sheath summit extension and the inner ligule often for the full length, glabrous; inner ligule 1–3.4 mm long, asymmetrical but rounded at the apex, confluent with the sheath summit extension, abaxially puberulent, ciliate; pseudopetiole 3.2–5.8(–6.4) mm long, glabrous, usually dark brown on both sides at the base; blades (6.5–)9.5–16.7 cm long, (1.3–)1.5–3.1 cm wide, L:W = 4.5–8, lanceolate to ovate-lanceolate, glabrous, not tessellate, adaxially green, abaxially a basal tuft of hairs absent, lighter green, the base symmetrical to slightly asymmetrical, attenuate, margins scabrid, the apex tapering, acuminate, the midrib slightly excentric, adaxially barely distinguishable, abaxially slightly raised and visible for nearly the full length. **Synflorescences** 2.5–3 cm long, 1–2.5 cm wide, closed, racemose, exerted to partially exerted, usually subtended by a spatheate bract with the sheaths 2.5–4 cm long, expanded, the blades 2–2.5 cm long, green and arching over the synflorescence; main axis more or less flattened, crooked, pubescent; branches 0.3–0.4 cm long at the base, angular, pubescent, ascending, usually subtended by a small bract 0.2–0.4 mm long; pedicels 1–2 mm long, angular, pubescent, often subtended by a minute bract. **Spikelets** 9–11.5(–12.2) mm long, 3–4

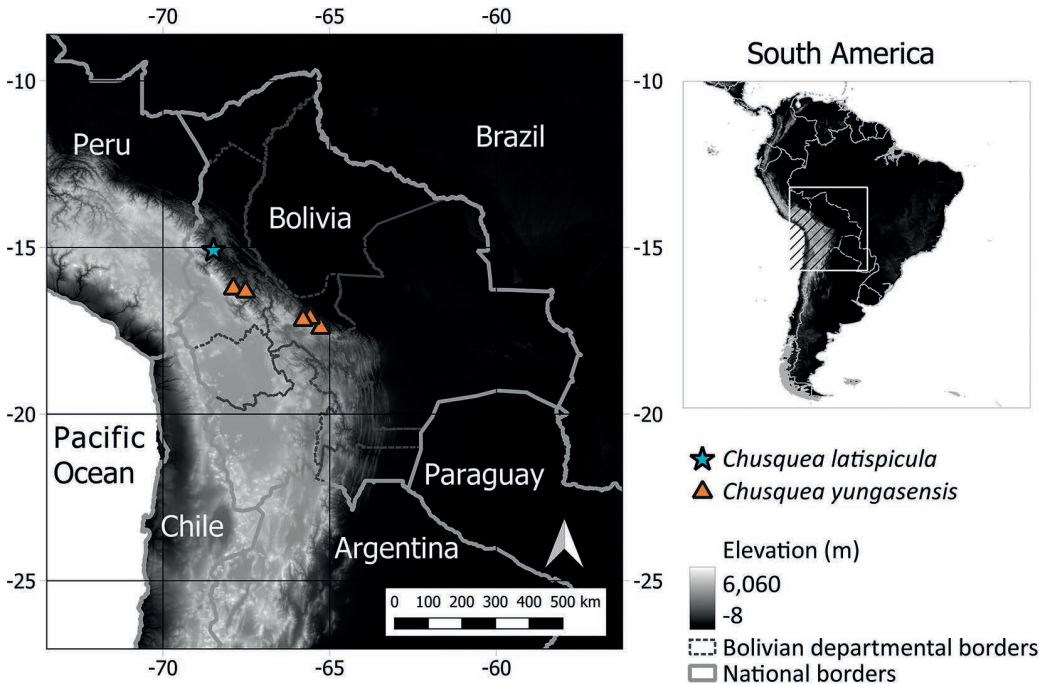


FIG. 2. Map showing the geographic distributions of *Chusquea latispicula* and *C. yungasensis* in Bolivia. The white/hatched box on the South America inset indicates the area depicted in the main map. Prepared by E.K. McMurchie.

mm wide, laterally compressed; glumes I and II awned, keeled, abaxially scabrous to hispid on midrib and awn; glume I (3–)5–6.5 mm long, 2/5–3/5 times the length of the lemma, the awn 2–3 mm long, 3-nerved; glume II 4.5–7.1 mm long, 2/5–3/5 times the length of the lemma, the awn 2–3 mm long, 3-nerved; glumes III and IV abaxially scabrous; glume III 5–8.5 mm long, 1/2–3/4 times the length of the lemma, awn 0.5–0.8 mm long, 5-nerved; glume IV 7–10.5 mm long, 3/4–9/10 times the length of the lemma, mucronate, 5-nerved; lemma 9–11 mm long, acute, abaxially scabrous, margins ciliate on the upper 1/2, 7-nerved, margins free at the apex; palea 9–10 mm long, usually overtopping the lemma, acute, 6-nerved, margins connate at the apex, sulcate only at the apex, the sulcus scabrous-hispid. **Lodicules** 3; villous; anterior pair ca. 2.5 mm long, posterior one ca. 2 mm long. **Stamens** 3; anthers 6–7 mm long. **Ovary** ca. 2 mm long, glabrous. **Fruit** unknown.

Phenology.—In the National Park and Natural Area of Integrated Management Cotapata (PN-ANMI Cotapata), Dept. La Paz, along a short section of the Sillutinkara trail, between 2203–2273 m in elevation, nine small populations of *Chusquea yungasensis* were recorded in September 2012 by IJP, all in the vegetative phase. Seven months later, in 2013, one individual was collected in the reproductive phase (Jiménez 5848), and the rest of the populations remained vegetative. The following year, in October, all populations showed massive flowering in an advanced state (i.e., in the process of wilting and dying). By November 2017, several juvenile plants were observed in the previously registered populations, measuring from 25 to 80 cm tall. *Baya et al.* FB 64, from 2020, is the only other known flowering collection, but it is from a different population so that it is difficult to infer a flowering cycle for this species.

Informal Conservation Assessment.—With the addition of newly-located specimens of *C. yungasensis*, we calculated the EOO of this species as 3378 km². Although the specimens Kessler *et al.* 7420 and Kessler *et al.* 7875 are very geographically close, likely collected within about a quarter of a kilometer of each other, they fell within separate 2 km² grid cells; all other specimens were found at much greater distances from each other.

Thus, we calculated the AOO of this species as 28 km². *Chusquea yungasensis* has now been collected in seven locations; however, parts of its habitat within its range in Cochabamba are near recent human development (e.g., Jiménez et al. 9715, collected alongside a new roadway), implying a decline in habitat quality. Additionally, the reproductive cycle of this species results in a highly variable number of mature individuals within each population. Accounting for the expanded range of this species, we now project that *C. yungasensis* would be considered Endangered under criteria B12b(iii)c(iv) were a formal conservation analysis to take place.

Mota et al. (2014) described the inner ligules of the culm leaves as being 0.8–2 cm long in the original description of *C. yungasensis*. This was an error in units and should have been 0.8–2 mm. We have corrected that here. Measurements of both vegetative and reproductive characters were taken from the four collections from the department of Cochabamba and are incorporated into this revised description.

Additional specimens examined. **BOLIVIA. Dept. Cochabamba:** Prov. José Carrasco Torrico, Parque Nacional Carrasco, a 800 m de un río, [−17.416915°, −65.266427°, 1771 m, 16 Ene 2020 (fl), Baya et al. FB 64 (BOLV)]; Prov. José Carrasco Torrico, 137 km Antigua carretera Cochabamba-Villa Tunari, [−17.1000°, −65.5833°], 1600 m, 18 Jul 1996, Kessler et al. 7420 (LPB); Prov. José Carrasco Torrico, 136 km Antigua carretera Cochabamba-Villa Tunari, [−17.1167°, −65.5833°], 1550 m, 28 Ago 1996, Kessler et al. 7875 (LPB); Prov. Chapare, carretera nueva Cochabamba-Santa Cruz, desde la tranca de Locotal bajando por la carretera, [−17.1817°, −65.7954°], 1789 m, 5 Ago 2023, Jiménez et al. 9715 (BOLV). Dept. La Paz: Provincia Sud Yungas, Huancané, 7 km hacia el sur, [−16.33°, −67.52°]*, 2400 m, 3 Sep 1981 (fl), Beck 4722 (K, LPB, M, US); Provincia Nor Yungas, Parque Nacional Cotapata, sendero Sillutinkara, [−16.2384°, −67.8884°], 2203 m, 18 Sep 2012, Jiménez 5694 (BOLV, LPB, USZ).

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