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Two new species of *Merostachys* (Poaceae: Bambusoideae) from the Brazilian Atlantic forest

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Abstract

Two new species, *Merostachys ramosa* and *M. ximenae,* from the Brazilian Atlantic forest are here described and illustrated. The species are apparently endemic to Minas Gerais state, with *M. ramosa* being restricted to the Parque Estadual da Serra do Brigadeiro. The conservation status of each species is examined. A key to all taxa of *Merostachys* present in eastern Minas Gerais and comments about the species are provided.

Resumo

Duas novas espécies, *Merostachys ramosa* e *M. ximenae,* ocorrentes na Mata Atlântica brasileira são aqui descritas e ilustradas. As espécies são aparentemente endêmicas de Minas Gerais, sendo *M. ramosa* restrita ao Parque Estadual da Serra do Brigadeiro. O estado de conservação de ambas é examinado. Uma chave para todos os táxons presentes no leste de Minas Gerais e comentários sobre as espécies são fornecidos.

Keywords: Woody bamboos, Arthrostylidiinae, Atlantic Forest

Introduction

Merostachys Sprengel (1825: 249), with 49 described species, is the second richest genus among Arthrostylidiinae (Bambuseae) of the Neotropical woody bamboo clade (Bamboo Phylogeny Group 2012, Santos-Gonçalves *et al.* 2012). Although just three species were included in a recent molecular phylogenetic study of subtribe Arthrostylidiinae, *Merostachys* appeared as monophyletic and sister to *Actinocladum* McClure ex Soderstrom (1981: 1201) in a strongly supported clade (Tyrrell *et al*. 2012).

Among the 15 genera currently included in Arthrostylidiinae, *Merostachys* is distinguished by the following combination of characters: pachymorph rhizomes; hollow culms (rarely pithy) with one bud per node, which develops into a basal triangular structure bearing branches in a fan-shaped (aspidate) array, branches of the same diameter; culm leaves pseudopetiolate, more or less reflexed; and terminal racemose inflorescences bearing sessile or short-pedicellate spikelets (McClure 1973, Judziewicz *et al*. 1999).

Merostachys presents a wide distribution range, occurring from southern Mexico to Argentina, from sea level up to 2300 m (Judziewicz & Clark 2007), and can be found in the interior and along the borders of forests (Judziewicz *et al*. 1999). Brazil is the center of diversity (44 spp.) of the genus, but considering the abundance and diversity, the richest biome is the Atlantic Forest with 41 species (Sendulsky 1992, 1995, 1997; Burman & Filgueiras 1993, Filgueiras & Santos-Gonçalves 2004). Some species are also found in the Amazonia and Cerrado domains (Sendulsky 1997). During fieldwork in Minas Gerais state, two unknown species of *Merostachys* were collected: *Merostachys ramosa* and *M. ximenae*, which are described and illustrated here. Additionally, a key to the species of *Merostachys* occurring in eastern Minas Gerais and comments about the species are provided.

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Material and Methods

Botanical material was collected during fieldwork in three areas in eastern Minas Gerais state: the Parque Estadual da Serra do Brigadeiro, the Parque Estadual do Rio Doce, and the Fazenda Bom Sucesso, a private area known as "*Mata do Sr. Nico*", located in the city of Viçosa.

Morphological terminology follows McClure (1966) and Judziewicz *et al*. (1999). In addition to the descriptions, short commentaries about the conservation status of each taxon described according to the standards of the International Union for Conservation of Nature (IUCN) are provided.

Measurements of the structures were taken by ruler and caliper in order to obtain their minimum and maximum dimensions. The width of sheaths and blades of culm and foliage leaves was taken at their widest points. The length of the foliage leaf blades was taken excluding the pseudopetiole, which was measured separately.
Herbaria acronyms cited follow Thiers (2016).

A key to the species of *Merostachys* in Eastern Minas Gerais State, Brazil

1. Fimbriae present 2
- Fimbriae absent ..... *M. fistulosa* Doell (1880: 209)
2. Internodes hispid, covered by irritating trichomes ..... *M. tatianae* Santos-Gonçalves, Carvalho-Okano & Filgueiras (2012: 938)
- Internodes glabrous, scabrous, sericeous, lanate or tomentose, not covered by irritating trichomes 3
3. Auricles present ..... *M. calderoniana* Sendulsky (1997: 290)
- Auricles absent 4
4. Infranodal band of trichomes present 5
- Infranodal band of trichomes absent 11
5. Nodes of the culm and of the branches thickened, ring-shaped ..... *M. ximenae* D.F. Parma, R.V. Vinícius-Silva & Santos-Gonçalves
- Nodes of the culm and of the branches neither thickened nor ring-shaped 6
6. Branches 0.7–2 mm in diam. 7
- Branches 2.8–7 mm in diam. 10
7. Foliage leaf blades with a band of minutely antrorse-strigose trichomes on the abaxial surface ..... *M. fischeriana* Ruprecht ex Doell (1880: 215)
– Foliage leaf blades without minutely antrorse-strigose trichomes on the abaxial surface 8
8. Foliage leaf blades with a tuft of hispid trichomes at the base of the abaxial surface ..... *M. claussenii* var. *claussenii* Munro (1868: 48)
- Foliage leaf blades without a tuft of hispid trichomes at the base of the abaxial surface 9
9. Internodes green with yellow stripes; branches 1.6–1.8 mm in diam.; spikelets 10–14 × 2.5–4 mm; anthecia brownish ..... *M. claussenii* var. *mollior* Doell (1880: 214)
- Internodes yellowish-green, without stripes; branches 0.7–1.2 mm in diam.; spikelets 6–8 × 1–1.5 mm; anthecia brownish to purplish ..... *M. exserta* Munro ex Camus (1913: 74)
10. Culm leaf sheaths scabrous and lanose on the abaxial surface; branch complement with 3–7 branches; spikelets grouped in pairs or triads ..... *M. ternata* Nees (1829: 529)
- Culm leaf sheaths sparsely hirsute on the abaxial surface; branch complement with 10–46 branches; spikelets solitary ..... *M. riedeliana* Ruprecht ex Doell (1880: 213)
11. Internodes green with yellow stripes; branch complement with 125–850 branches ..... *M. ramosa* E.M. Pianissola, R. Vinicíus-Silva & L.G. Clark
- Internodes yellowish-green, without stripes; branch complement with 20–86 branches 12
12. Wall thickness of the internodes 1.2–2.2 mm; foliage leaf blades with a tuft of hispid trichomes at the base on the abaxial surface; upper glume forming an acute angle relative to the rachis; lemma and palea dull ..... *M. brevigluma* Sendulsky (2001: 629)
- Wall thickness of the internodes 0.5–1 mm; foliage leaf blades without a tuft of hispid trichomes at the base on the abaxial surface; upper glume forming a right or obtuse angle relative to the rachis; lemma and palea shiny ..... *M. leptophylla* Sendulsky (1997: 295)

Taxonomic Treatment

Merostachys ramosa E.M. Pianissola, R. Vinicíus-Silva & L.G. Clark, *sp. nov.* (Fig. 1)

This species can be distinguished from all other species of the genus by a combination of these characters: *the occurrence of scabrous midculm internodes and 125–850 branches 16–87 cm long in the branch complement.*

Type:—BRAZIL. Minas Gerais: Araponga, Parque Estadual da Serra do Brigadeiro, Trilha do Carvão, 20º41'58"S, 42º27'33"W, 1292 m, 09 September 2013 (veg.), *M.M. Picanço, D.F. Parma & E.P. Machado 24* (holotype VIC, isotypes BHCB, ISC, SP, US).

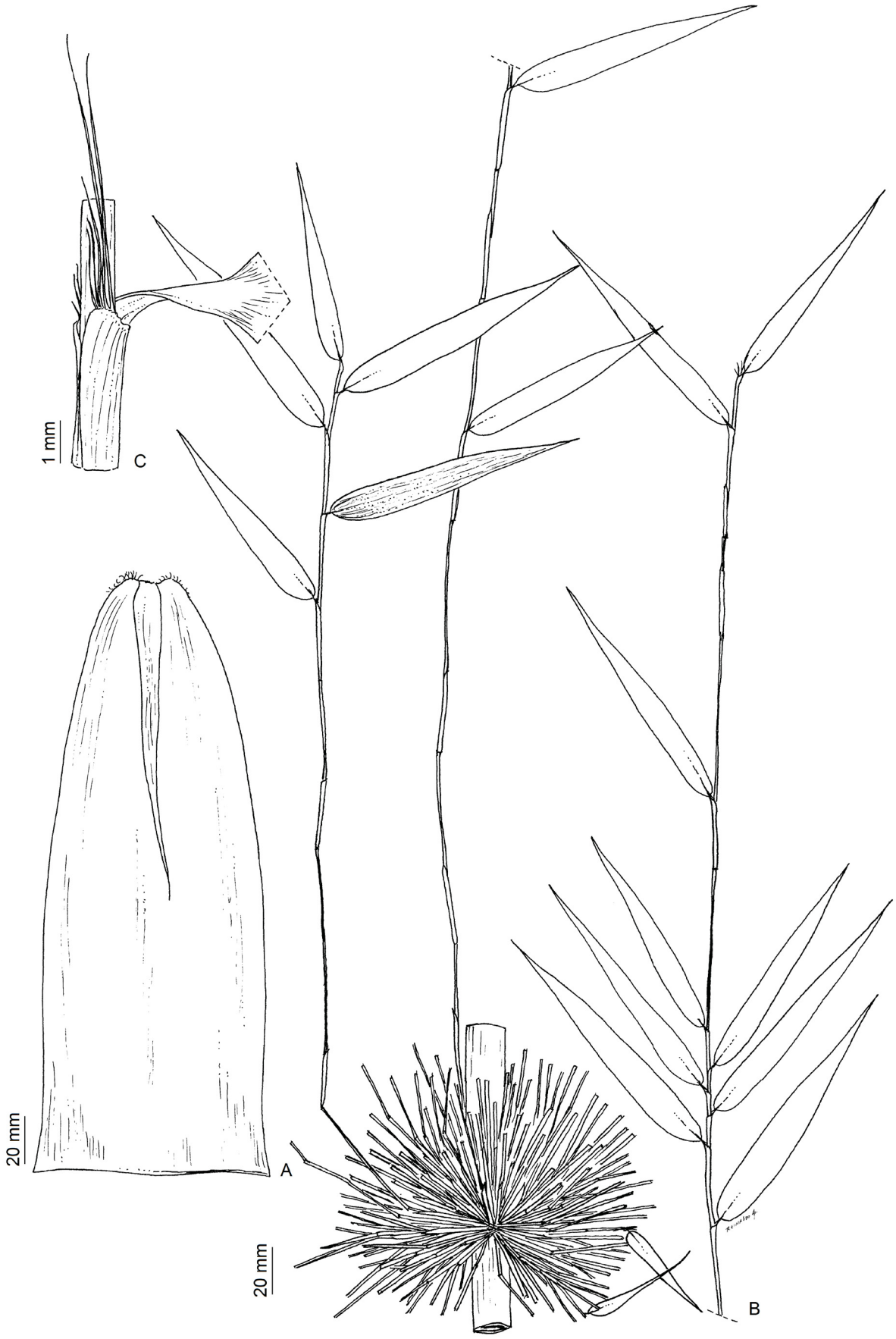

FIGURE 1. *Merostachys ramosa*. A (*Pianissola & Parma 38*) A. Culm leaf. B–C (*Picanço et al. 24*). B. Branch complement with foliage leaves. C. Ligular area of a foliage leaf with fimbriae. (Illustration by Reinaldo Pinto).

Plants with culms initially erect then clambering on vegetation. Culms 11–20 m tall; internodes 44–98 cm long, 0.8–3.5 cm in diam., hollow, cylindrical, green with yellow stripes, scabrous, walls 2.7–4 mm thick, ratio of wall thickness: culm diam. 0.13–0.35, very thin to moderately thick, lumen 0.6–3.2 cm in diam., large, not filled by a pith; nodes not prominent, brown, without a fringe of trichomes at the nodal line. Culm leaves 28–53.7 cm long; sheaths 16–41 × 6.5–10 cm, glabrous on the adaxial surface, shiny, sparsely sericeous on the abaxial surface, apex scabrous, sometimes hirsute, margins apically fimbriate; auricles absent; fimbriae 3.6–7.8 mm long, not fused, straight to sinuous, entangled at the apex, yellowish; inner ligule 0.6–1.4 mm long, membranous, apex ciliate; blades 12–12.7 × 1 cm, scabrous on the adaxial surface, hirsute on the abaxial surface, margins scabrous, apex scabrous. Branch complement with 125–850 branches, the branches 16–87 cm long, 0.7–1.8 mm in diam., rebranching from the lower nodes of the first order branches; nodes not prominent, brown to black, without a fringe of trichomes at the nodal line. Foliage leaves 3–10 per branch; sheaths 1.5–4.3 cm × 1.4–3.8 mm, glabrous, the overlapping margin ciliate; auricles absent; outer ligule 0.1–0.2 mm long, apex ciliate; inner ligule 0.1–0.3 mm long, membranous, apex ciliate; fimbriae 2–7 mm long, not fused, straight to sinuous, generally entangled at the apex, yellowish to brownish, often yellowish at the base and becoming brownish toward the apex; pseudopetiole 2–3.8 mm long, dark green to black, glabrous to pubescent, twisted; blades 5–13 × 0.7–1.7 cm, L:W = 6–14.6, lanceolate, with 3–5 scabrous marginal ribs toward the apex on the adaxial surface, apex glabrous, scabrous elsewhere, acuminate, abaxial surface with a tuft of hispid trichomes at the base, apex scabrous, glabrous elsewhere, base symmetric to asymmetric, the apex acuminate, margins scabrous. Inflorescence not seen.

TABLE 1. Morphological comparison of *M. ramosa*, *M. leptophylla* and *M. exserta*.

Characters	***Merostachys ramosa***	***Merostachys leptophylla***	***Merostachys exserta***
Thickness of the internode wall (mm)	2.7–4	0.5–1	1.4–2.5
Internode pilosity	scabrous	glabrous	glabrous to scabrous
Internode color	green with yellow stripes	yellowish-green	yellowish-green
Branches per branch complement	125–850	20–72	20–497
Length of branches (cm)	16–87	7–40.7	12–49
Length of foliage leaf blades (cm)	5–13	4–10	4–9.5
Width of foliage leaf blades (cm)	0.7–1.7	0.4–1.5	0.30–1.13
Foliage leaf blade L:W ratio	6–14.6	6–14	6–12
Tuft of hispid trichomes at the base of abaxial surface of the blade of foliage leaves	present	absent	absent
Elevation (m)	1290–1520	240–300	910–1390
Distribution	Minas Gerais	Minas Gerais and Bahia	Minas Gerais

Comments:—*Merostachys ramosa* with its large number of branches (125–850) per node resembles *M. exserta*, which has 20–497 branches per node (Vinícius-Silva 2015), but differs by a few characteristics (Table 1). In overall aspect, including the relatively narrow leaf blades, *M. ramosa* most closely resembles *M. leptophylla*. These two species have foliage leaf blades without a band of minute antrorse strigose trichomes on the abaxial surface, between

the marginal stripe and the rest of the blade. However, *M. ramosa* differs from *M. leptophylla* by the presence of a tuft of hispid trichomes at the base of the foliage leaf blade on the abaxial surface, internodes green with yellow stripes and mostly scabrous, a large number of branches (125–850) per node, and it occurs at a higher altitudinal range (1290–1520 m). *Merostachys leptophylla* has foliage leaf blades without a basal tuft of hispid trichomes on the abaxial surface, internodes yellowish-green and glabrous, fewer branches (20–72) per node, and its altitudinal range is completely lowland (240–300 m) (Table 1).

Distribution and habitat:—*Merostachys ramosa* is known only from the state of Minas Gerais, Brazil. It is known from five populations in the Parque Estadual da Serra do Brigadeiro at 1290–1520 m elevation, along the borders of the vegetation locally known as Floresta Atlântica Estacional Semidecidual Montana (Veloso *et al.* 1991).

Conservation:—We applied the IUCN criteria (2015) and propose an IUCN red list category of vulnerable (VU = D2) given the low occupancy area of 20 km² and the number of locations in the same conservation unit equal to five.

Etymology:—The specific epithet *ramosa* refers to the large number of branches in the branch complement of this species.

Additional specimens examined:—BRAZIL: Minas Gerais: Araponga, Parque Estadual da Serra do Brigadeiro, Serra das Cabeças, trilha do mamute, 21 January 2014, veg., *E.M. Pianissola & D.F. Parma 38* (VIC); Trilha da Toca da Onça, 04 December 2013, veg., *E.M. Pianissola 19* (VIC); Trilha do Carvão, 06 August 2013, veg., *M.M. Picanço & E.P. Machado 12* (VIC); ibidem, 09 September 2013, veg., *M.M. Picanço, D.F. Parma & E.P. Machado 21* (VIC); ibidem, 09 September 2013, veg., *M.M. Picanço, D.F. Parma & E.P. Machado 23* (VIC); ibidem, 09 September 2013, veg., *M.M. Picanço, D.F. Parma & E.P. Machado 27* (VIC); ibidem, 10 October 2013, veg., *M.M. Picanço, D.F. Parma & E.P. Machado 32* (VIC); Trilha do Panelão dos Muriquis, 21 October 2013, veg., *E.M. Pianissola, A.L. Fontes & M.N. Moura 09* (VIC); Trilha do Pico do Boné, 05 december 2013, veg., *E.M. Pianissola 24* (VIC).

Merostachys ximenae D.F. Parma, R. Vinícius-Silva & A.P. Santos-Gonçalves*, sp. nov.* (Fig. 2)

This species can be distinguished from all the other species of the genus by a combination of these characters: *culm leaf sheaths lanate abaxially, internodes covered with lanate trichomes, which occur in higher density on both the supranodal and the infranodal bands (bands 2–13 mm wide), culm and branches with thickened ring-like nodes, and paired (two fertile or one fertile and the other rudimentary), sometimes solitary, spikelets.*

Type:—BRAZIL. Minas Gerais: Viçosa, Fazenda Bom Sucesso, Mata do Sr. Nico, 20º47’40.02”S, 42º50’38.24”W, 750 m, 12 September 2014 (fl.), *D.F. Parma & Celso Antônio 44* (holotype VIC, isotypes ISC, MO, RB, SP).

Plants with culms initially erect then clambering on vegetation. Culms 2–15 m tall; internodes 30.5–86 cm long, 0.5–3 cm in diam., hollow, cylindrical, yellowish-green, covered by lanate trichomes which occur in higher density on the supranodal and infranodal bands, bands 2–13 mm wide; walls 1–2.4 mm thick, ratio of wall thickness: culm diam. 0.12–0.28, very thin to thin, lumen 1.3–2 cm in diam., large, not filled by a pith; nodes prominent, thickened, ring-like, dark brown to black, without a fringe of trichomes at the nodal line. Culm leaves 19.5–45 cm long; sheaths 13.2–32.6 × 2.4–12.5 cm, glabrous on the adaxial surface, shiny, lanate on the abaxial surface, apex scabrous, sparsely hirsute, margins apically fimbriate; auricles absent; fimbriae 3.6–14 mm long, not fused, straight at the base and sinuous at the apex, yellowish to reddish, sometimes yellowish at the base and becoming brown toward the apex; inner ligule 0.5–3.4 mm long, membranous, apex ciliate; blades 6.3–12.3 × 0.56–1.3 cm, glabrous on the adaxial surface, glabrous and glaucous on the abaxial surface, margins scabrous toward the apex, apex acute. Branch complement with 10–87 branches, the branches 50–171.5 cm long, 2.7–4.8 mm in diam., lower nodes not rebranching; nodes prominent, thickened, ring-like, brownish to black, with an infranodal band of lanate trichomes ca.1.5 mm long. Foliage leaves 8–27 per branch; sheaths 3.4–11 cm × 2.4–13.2 mm, hirsute to lanate, sometimes glabrous, overlapping margin ciliate; auricles absent; outer ligule 0.2–0.6 mm long, apex ciliate; inner ligule 0.2–1.6 mm long, membranous, pubescent, apex ciliate; fimbriae 1–9.3 mm long, not fused, straight to sinuous, yellowish to reddish, sometimes yellowish at the base and becoming reddish toward the apex; pseudopetiole 3–8.5 mm long, greenish to brownish, glabrous, straight to twisted; blades 14.5–27 × 3–6 cm, L:W = 3.2–6.6, lanceolate to oval-lanceolate, with 2–4 scabrous marginal ribs toward the apex on the adaxial surface, the opposite marginal region with minute antrorse strigose trichomes toward the apex, glabrous elsewhere, with a band of minute antrorse strigose trichomes between the marginal stripe and the rest of the blade along the upper $^{2}/_{3}$ of the marginal stripe on the abaxial surface; marginal region opposite to the stripe hispid, glabrous elsewhere, the base asymmetric, the apex acuminate, margins scabrous. Inflorescences ca. 7 cm long, racemose, pectinate, with ca. 26 spikelets per raceme; rachis velutinous; pedicels 0.5–1 mm long, velutinous. Spikelets 11–12.5 × 1.5 mm, 1-flowered, paired, sometimes solitary, pairs composed of two fertile spikelets or one fertile and

one rudimentary spikelet; glumes 2, unequal, puberulous on the abaxial surface, midribs minutely scabrous; lower glume 2–2.5 × 1–1.5 mm, ca. $^{1}/_{5}$ of the spikelet length, 1-nerved, margins ciliate; upper glume 4–4.5 × 2.5–3 mm, ca. $^{2}/_{5}$ of the spikelet length, mucronate, 8–9-nerved, dark-spotted on the adaxial surface, margins ciliate toward the apex; lemma 8–10 × 4–5 mm, 10–13-nerved, dark-spotted on the adaxial and puberulous on the abaxial surfaces, margins apically ciliate, one margin ciliate from the base towards the apex; palea 9.5–11 × 3–5 mm, 8-nerved, dark-spotted on the adaxial and puberulous on the abaxial surfaces, margins apically ciliate, midribs forming a keel; keel ciliate towards the apex; rachilla extension ca. 9–10.5 mm long, with a rudimentary floret at the apex; lodicules 3, 2.5–3.5 mm long, membranous; androecium degraded; gynoecium with an elongate ovary, style bifid, stigmas 2, plumose. Caryopsis not seen.

Comments:—*Merostachys ximenae* resembles *M. annulifera* Sendulsky (1997: 286) because of the prominent, thickened ring-like nodes of the culms and branches, and by the lanceolate to oval-lanceolate foliage leaf blades. However, *M. ximenae* differs by having lanate internodes, culm leaves lanate abaxially, and a branch complement with 10–87 branches 50–171.5 cm long; *M. annulifera* has scabrous internodes, culm leaf sheaths glabrous to scabrous on the abaxial surface and a branch complement with 5–25 branches 30–35 cm long (Table 2).

TABLE 2. Morphological comparison of *M. ximenae* and *M. annulifera*.

Characters	***Merostachys ximenae***	***Merostachys annulifera***
Internode pilosity	lanate with higher density of trichomes on supranodal and infranodal bands	scabrous
Culm leaf sheath pilosity	lanate	glabrous to scabrous
Branches per branch complement	10–87	5–25
Length of branches (cm)	50–171.5	30–35
Length of foliage leaf blades (cm)	14.5–27	7–12
Width of foliage leaf blades (cm)	3–6	2.2–3.5
Foliage leaf blade L:W ratio	3.2–6.6	2.3–4.2
Elevation (m)	250–750	50–705
Distribution	Minas Gerais	Bahia

Distribution and habitat:—*Merostachys ximenae* is known only from the state of Minas Gerais, Brazil. It is known from five populations (Parque Estadual do Rio Doce, Parque Estadual da Serra do Brigadeiro, Conceição do Ibitipoca, Estação Experimental de Treinamento e Educação Ambiental Mata do Paraíso and Fazenda Bom Sucesso), at 250–750 m elevation, along the borders of the vegetation locally known as Floresta Atlântica Estacional Semidecidual Montana (Veloso *et al.* 1991).

Conservation:—We applied the IUCN criteria (2015) and propose an IUCN red list category of least concern (LC) because of the wide distribution of the taxon in the state, especially within conservation units.

Etymology:—The specific epithet honors the Colombian researcher Lic. Ximena Londoño, who has greatly contributed to knowledge of Neotropical bamboos.

FIGURE 2. *Merostachys ximenae*. A–D (*Parma & Celso Antônio 44*) A. Culm leaf. B. Branch complement with foliage leaves. C. Infranodal band of lanate trichomes. D. Floriferous branch. E–M (*Santos-Gonçalves et al. 196*) E. Branch leaf and fimbriae. F. Section of inflorescence. G. Spikelet. H. Lower glume. I. Upper glume. J. Lemma. K. Palea and rachilla extension. L. Lodicules. M. Gynoecium. (Illustration by Reinaldo Pinto).

Additional specimens examined:—BRAZIL: Minas Gerais: Lima Duarte, Estrada para Conceição do Ibitipoca, próximo à Cachoeira das Andorinhas, 16 April 1992, veg., *R.C. Oliveira, M.C.M. Garcia & L.P. Oliveira 87* (CESJ); Marliéria, Parque Estadual do Rio Doce, Estrada da Ponte-Queimada, 24 August 1999, veg., *Santos-Gonçalves et al. 196* (VIC); ibidem, 22 September 1999, veg., *Santos-Gonçalves et al. 204* (VIC); Viçosa, Fazenda Bom Sucesso, Mata do Sr. Nico, 27 August 2014, veg., *D.F. Parma & R.V. Silva 39* (VIC); ibidem, 12 September 2014, veg., *D.F. Parma & Celso Antônio 43* (VIC); Viçosa, EPTEA—Mata do Paraíso, trilha da Pesquisa, 15 March 2015, veg., *R.V. Silva & D.F. Parma 57* (VIC); Araponga, Parque Estadual da Serra do Brigadeiro, Trilha do Jequitibá, 26 June 2015, veg., *A.P. Silva & D.F. Parma 238* (VIC).

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REFERENCES

Bamboo Phylogeny Group (2012) An updated tribal and subtribal classification of the bamboos (Poaceae: Bambusoideae). *Bamboo Science & Culture* 24: 1–10.

Burman, A.G. & Filgueiras, T.S. (1993) A review of the woody bamboo genera of Brazil (Gramineae: Bambusoideae: Bambuseae). *Thaiszia* 3: 53–88.

Camus, E.G. (1913) *Les Bambusées: Monographie, biologie, culture, principaux usages* 1. Rue de Tournon, Paris, 215 pp.

Doell, J.C. (1880) Graminea II. Stipaceae, Agrostideae, Arundinaceae, Pappaphoreae, Chlorideae, Avenaceae, Festucaceae, Bambusaceae, Hordeaceae. *In:* Martius, C.F.P. (Ed.) *Flora Brasiliensis, enumeratio plantarum in Brasilia hactenus detectarum :quas suis aliorumque botanicorum studiis descriptas et methodo naturali digestas partim icone illustratas*. Monachii et Lipsiae, R. Oldenbourg, 342 pp. http://dx.doi.org/10.5962/bhl.title.454

Filgueiras, S.T. & Santos-Gonçalves, A.P. (2004) A checklist of the basal grasses and bamboos in Brazil (Poaceae). *Bamboo Science & Culture* 18: 7–18.

IUCN (2015) *The IUCN Red List of Threatened Species. Version 2015.4.* IUCN Red list Unit, Cambridge U.K. Available from: http://www.iucnredlist.org/ (accessed 13 June 2016)

Judziewicz, E.J. & Clark, L.G. (2007) Classification and biogeography of new world grasses: Anomochlooideae, Pharoideae, Ehrhartoideae, and Bambusoideae. *Aliso* 23: 303–314. http://dx.doi.org/10.5642/aliso.20072301.25

Judziewicz, E.J., Clark, L.C., Londoño, X. & Stern, M.J. (1999) *American bamboos.* Smithsonian Institution Press, Washington D.C., 392 pp.

McClure, F.A. (1966) *The bamboos: a fresh perspective*. Harvard University Press, Cambridge, 347 pp.

McClure, F.A. (1973) Genera of bamboos native to the new world (Gramineae: Bambusoideae). *Smithsonian Contributions to Botany* 9: 1–148. http://dx.doi.org/10.5479/si.0081024X.9

Munro, W. (1868) A monograph of the Bambusaceae, including descriptions of all species. *Transactions of the Linnean Society of London* 26: 1–157.

Nees, C.G. (1829) Gramineae. *In:* Martius, C.F.P., Eichler, A.W. & Urban, I. (Eds.) *Flora Brasiliensis; seu Enumeratio plantarum in Brasilia tam sua sponte quam accedente cultura provenientium, quas in itinere auspiciis Maximiliani Josephi I. Bavariae regis annis 1817–1820 peracto collegit, partim descripsit; alias a Maximiliano seren. principe Widensi, sellovio aliisque advectas addidit* 2 (1). Stuttgartiae, Sumptibus J.G Cottae, pp. 1–608. http://dx.doi.org/10.5962/bhl.title.15660

Santos-Gonçalves, A.P., Carvalho-Okano, R.M. & Filgueiras, T.S. (2012) A new species of *Merostachys* (Poaceae: Bambusoideae) from southeastern Brazil. *Systematic Botany* 37: 938–940. http://dx.doi.org/10.1600/036364412X656400

Sendulsky, T. (1992) *Merostachys burmanii* (Poaceae: Bambusoideae: Bambuseae), a new species from Brazil. *Novon* 2: 111–113. http://dx.doi.org/10.2307/3391668

Sendulsky, T. (1995) *Merostachys multiramea* (Poaceae: Bambusoideae: Bambuseae) and similar species from Brazil. *Novon* 5: 76–96. http://dx.doi.org/10.2307/3391839

Sendulsky, T. (1997) Twelve new species of *Merostachys* (Poaceae: Bambusoideae: Bambuseae) from Brazil. *Novon* 7: 285–307. http://dx.doi.org/10.2307/3391946

Sendulsky, T. (2001) *Merostachys* Spreng. (Poaceae, Bambusoideae, Bambuseae): a new species from Brazil and critical notes on "group *speciosa*". *Kew Bulletin* 56: 627–638.

Soderstrom, T.R. (1981) Observations on a fire-adapted bamboo of the Brazilian Cerrado, *Actinocladum verticillatum* (Poaceae: Bambusoideae). *American Journal of Botany* 68: 1200–1211.

Sprengel, C.P.J. (1825) Classis 1-5: Monandria, Diandria, Triandria, Tetandria, Petandria. *In:* Linnaei, C. (Ed.) *Systema vegetabilium* 1 (16). Dieterich, Gottingen, pp. 1–992. http://dx.doi.org/10.5962/bhl.title.822

Thiers, B. (2016) *Index Herbariorum: A global directory of public herbaria and associated staff*. New York Botanical Garden's Virtual Herbarium. Available from: http://sweetgum.nybg.org/ih/ (accessed 22 April 2016)

Tyrrell, C.D., Santos-Gonçalves, A.P., Londoño, X. & Clark, L.G. (2012) Molecular phylogeny of the arthrostylidioid bamboos (Poaceae: Bambusoideae: Bambuseae: Arthrostylidiinae) and new genus *Didymogonyx*. *Molecular Phylogenetics and Evolution* 65: 136–148. http://dx.doi.org/10.1016/j.ympev.2012.05.033

Veloso, H.P., Rangel-Filho, A.L.R. & Lima, J.C.A. (1991) *Classificação da vegetação brasileira adaptada a um sistema universal*. Fundação Instituto Brasileiro de Geografia e Estatística (IBGE), Rio de Janeiro, 124 pp.

Vinícius-Silva, R. (2015) *Merostachys Spreng. (Poaceae: Bambusoideae: Bambuseae: Arthrostylidiinae) no leste do estado de Minas Gerais*. Thesis, Universidade Federal de Viçosa, Viçosa, 151 pp.