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New record for *Eriochrysis* (Poaceae: Andropogoneae) in the State of Rio Grande do Sul, Brazil, and a key to the species of *Eriochrysis* in Brazil

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The genus *Eriochrysis* Beauvois (1812: 8) (Poaceae: Andropogoneae) includes ca. seven species from America, Africa, and India (Clayton & Renvoize 1986). It is characterized mainly by inflorescences with golden-brown to light-brown trichomes, and heterogamous spikelets: sessile spikelets with a bisexual flower and pedicelled spikelets with a pistillate flower. Six species of the genus occur in Brazil (Filgueiras & Welker 2012), of which three were previously reported for the State of Rio Grande do Sul: *E. cayennensis* Beauvois (1812: 8), *E. holcooides* (Nees 1829: 324) Kuhlmann (1922: 89) and *E. villosa* Swallen (1966: 90) (Welker & Longhi-Wagner 2012).

During intensive field trips in southern Brazil, we found another species of *Eriochrysis* in the State of Rio Grande do Sul, *E. laxa* Swallen (1966: 89). Here, we provide a description and illustrations of this taxon, as well as data on its geographical distribution and habitat. An illustrated key to the six species of the genus that occur in Brazil is also provided.

Eriochrysis laxa Swallen (1966: 89) (Fig. 1D–G)

Type:—BRAZIL. Minas Gerais: Lavras, in wet ground near streamlet, 5 March 1925, *Agnes Chase 8729* (holotype US-1256173 photo!; isotype MO-925236 photo!).

Perennial, caespitose, (125–)140–190(–215) cm high, nodes pilose. Leaf sheaths glabrous, less commonly sparsely pilose near the apex; blades glabrous on abaxial surface, densely pilose on adaxial surface, with dense tufts of trichomes 4–8 mm long at the base of the adaxial surface behind the ligule; blades of innovations 25–50(–68) cm long, subfiliform below, 2–4 mm wide above, those of the culm (18–)35–70 cm long, 5–10 mm wide; ligule membranous-ciliate, 1–1.5 mm long. Inflorescence contracted to subcontracted, (12–)16–32 cm long, bearing numerous alternate racemes on a central axis, the lower racemes placed distantly; racemes differentiated into nodes and internodes, disarticulating at the nodes, sparsely pilose, spikelets clearly visible among the golden-brown trichomes. Spikelets paired at each node of the rachis, one sessile and one pedicelled, the pedicelled spikelet falling off first at maturity, the sessile falling off together with a rachis internode and the pedicel. Sessile spikelet (2.2–)2.5–3(–3.5) mm long, obovate, awnless, with bisexual flower; glumes chartaceous, the lower glume glabrous on back, with trichomes 1–2 mm long on margins, with the apex rounded to obtuse, the upper glume ciliate in the upper half of the margins, with the apex acute to subacute; lemmas hyaline; callus hairs reaching 1/2 to 2/3 of the length of the spikelet. Pedicelled spikelet 1.7–2.5 mm long, similar to the sessile, but with pistillate flower. Caryopsis 0.7–1 mm long.

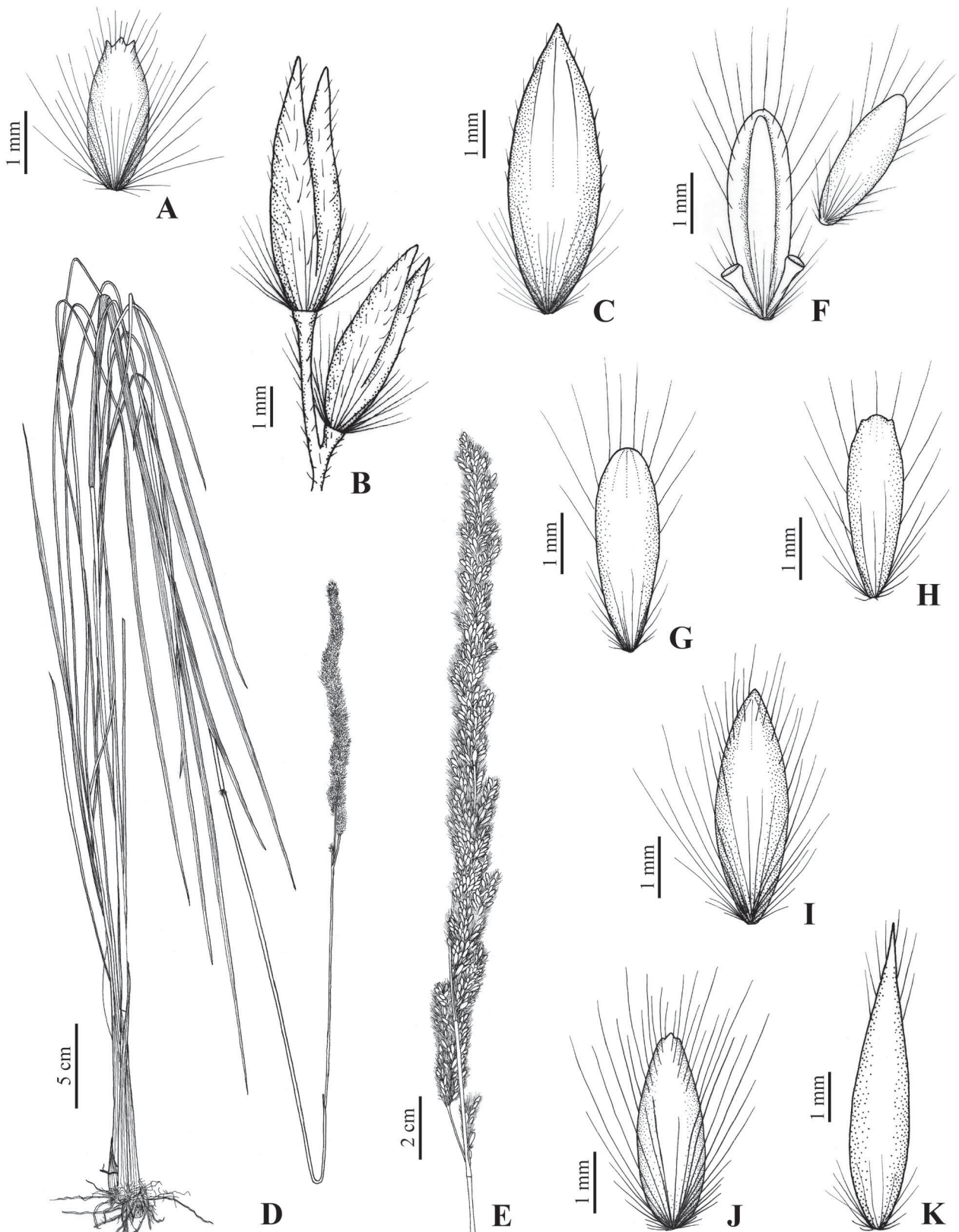


FIGURE 1. Morphological details of the *Eriochrysis* species. **A.** *E. cayennensis*, lower glume of the sessile spikelet (Longhi-Wagner & Welker 10781, ICN). **B.** *E. filiformis*, pair of spikelets (Câmara & Filgueiras 30, ICN). **C.** *E. holcoides*, lower glume of the sessile spikelet (Longhi-Wagner & Welker 10731, ICN). **D–G.** *E. laxa* (Welker 489, ICN). **D.** habit. **E.** inflorescence. **F.** pair of spikelets. **G.** lower glume of the sessile spikelet. **H.** *E. aff. laxa*, lower glume of the sessile spikelet (Welker 487, ICN). **I–J.** *E. villosa*. **I.** lower glume of the sessile spikelet (Welker 328, ICN). **J.** lower glume of the sessile spikelet (Welker 182, ICN). **K.** *E. warmingiana*, lower glume of the sessile spikelet (Filgueiras 1902, ICN). Illustrations by Anelise Scherer and Cassiano A. D. Welker.

Distribution and habitat:—Colombia, Bolivia, Paraguay, Argentina, and Brazil (Swallen 1966). In Brazil, it occurs from the States of Goiás to Santa Catarina (Swallen 1966, Smith *et al.* 1982) and in Rio Grande do Sul, in marshlands and wet grasslands.

Eriochrysis laxa is morphologically similar to *E. cayennensis* and *E. villosa*, distinguished mainly by the less pilose inflorescences, resulting in clearly visible spikelets among the trichomes (Fig. 1E), and the obovate sessile spikelets (Fig. 1F–G). *Eriochrysis cayennensis* and *E. villosa* have densely pilose inflorescences with spikelets hidden among the trichomes, and ovate to elliptic sessile spikelets. Furthermore, the apex of the lower glume is rounded to obtuse in *E. laxa* (Fig. 1G), but truncate and trilobed in *E. cayennensis* (Fig. 1A), and acute to subacute, not lobed (Fig. 1I) or with inconspicuous lobes (Fig. 1J) in *E. villosa*.

Eriochrysis holcoides and *E. warmingiana* (Hackel 1883: 254) Kuhlmann (1922: 29) differ from *E. laxa* by the lanceolate to elliptic sessile spikelets and the lower glume with an acute or acuminate apex (Fig. 1C, 1K). *Eriochrysis filiformis* (Hackel 1889: 29) Filgueiras (1997: 231) differs from *E. laxa* and the other Brazilian species of the genus by having a pair of spikelets consisting of short- and long-pedicelled spikelets (Fig. 1B). Note that because of this characteristic, *E. filiformis* was initially erroneously placed in the tribe Paniceae (Filgueiras 1997). *Eriochrysis filiformis* also has narrower leaf blades than the other species.

Killeen (1990) described *Eriochrysis* × *concepcionensis* Killeen (1990: 157) as a hybrid between *E. laxa* and *E. cayennensis*, based on a single population with intermediate morphology found in Santa Cruz (Bolivia) in the same habitat as both parental species. We also found some specimens with intermediate morphology between *E. laxa* and *E. cayennensis* in a marshland in Rio Grande do Sul (Brazil) together with specimens of the two latter species. These plants, here treated as *E. aff. laxa* and represented by the specimen *Welker 487* (ICN), have obovate sessile spikelets as *E. laxa* and densely pilose inflorescences as *E. cayennensis*. The apex of the lower glume is rounded as *E. laxa*, but has inconspicuous lobes (Fig. 1H). These individuals are likely natural hybrids between these species. We are conducting molecular and cytogenetic studies to examine this issue.

Key to the *Eriochrysis* species in Brazil

1. Pair of spikelets consisting of two pedicelled spikelets, one short- and the other long-pedicelled (Fig. 1B) *E. filiformis*
- Pair of spikelets consisting of one sessile and one pedicelled spikelet (Fig. 1F) 2
2. Inflorescence sparsely pilose; spikelets clearly visible among the trichomes (Fig. 1E)..... 3
- Inflorescence densely pilose; spikelets hidden among the trichomes..... 5
3. Sessile spikelet obovate, lower glume with the apex rounded to obtuse (Fig. 1G) *E. laxa*
- Sessile spikelet lanceolate to elliptic, lower glume with the apex acute or acuminate (Fig. 1C, 1K) 4
4. Inflorescence 5–14 cm long, contracted, racemes adpressed *E. holcoides*
- Inflorescence 17–30 cm long, subcontracted to slightly open, racemes divergent especially at the base of the inflorescence *E. warmingiana*
5. Lower glume of sessile spikelet with the apex truncate, trilobed (Fig. 1A); sessile spikelet 1.8–3.5 mm long *E. cayennensis*
- Lower glume of sessile spikelet with the apex acute to subacute, not lobed (Fig. 1I) or with inconspicuous lobes (Fig. 1J); sessile spikelet 3–5 mm long *E. villosa*

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Appendix

Selected material studied:

Eriochrysis cayennensis:—BRAZIL. Rio Grande do Sul: Cidreira, Lagoa da Antônia, 14 November 2008, *Welker 183* (ICN); São Borja, BR-285, 29 March 2012, *Welker 486* (ICN); São Francisco de Paula, 30 March 2009, *Longhi-Wagner & Welker 10781* (ICN). Santa Catarina: Florianópolis, Ilha de Santa Catarina, Lagoa da Conceição, 12 September 1985, *Souza 778* (HUCS). ***E. filiformis***:—BRAZIL. Distrito Federal: Brasília, Área do Cristo Redentor, 21 August 1990, *Câmara & Filgueiras 30* (ICN). Goiás: Alto Paraíso de Goiás, Chapada dos Veadeiros, 7 September 1994, *Filgueiras & Fonseca 3006* (ICN, SP). Tocantins: Mateiros, 8 December 2005, *Rua et al. 691* (CEN). ***E. holcooides***:—BRAZIL. Rio Grande do Sul: Farroupilha, 10 November 1957, *Camargo 2499* (PACA); Rio Grande, Est. Domingos Petrolini, 9 November 1945, *Swallen 7307* (PEL); São José dos Ausentes, 15 January 2009, *Longhi-Wagner & Welker 10731* (ICN); Vacaria, Estação Experimental de Forrageiras, 16 September 1971, *Valls 1593* (ICN). ***E. laxa***:—BRAZIL. Minas Gerais: Santa Vitória, 25 January 1996, *Pietrobon-Silva 2766* (ICN). Rio Grande do Sul: São Borja, BR-285, 29 March 2012, *Welker 489* (ICN); São Luiz Gonzaga, BR-285, 28 March 2012, *Welker 481* (ICN). São Paulo: Paraguaçu Paulista, Estação Florestal, 7 February 1965, *Clayton 4569* (SP). ***E. aff. laxa***:—BRAZIL. Rio Grande do Sul: São Borja, BR-285, 29 March 2012, *Welker 487* (ICN). ***E. villosa***:—BRAZIL. Rio Grande do Sul: Cidreira, 14 November 2008, *Welker 182* (ICN); São Luiz Gonzaga, BR-285, 24 March 2010, *Welker 328* (ICN); Tupanciretã, 15 November 1956, *Mohr dieck 36* (BLA). Santa Catarina: Rio Caçador, 21 January 1946, *Swallen 8237* (PEL). ***E. warmingiana***:—BRAZIL. Mato Grosso do Sul: Aquidauana, 26 February 1930, *Chase 11063* (SP); Campo Grande, 16 April 1984, *Valls et al. 7605* (CEN, SP). Minas Gerais: Formoso, Parque Nacional Grande Sertão Veredas, 5 November 1989, *Filgueiras 1902* (ICN, SP).