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**Paepalanthus bonsai**, a New Species of Eriocaulaceae from Minas Gerais, Brazil

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**Abstract.** We describe and illustrate the new species *Paepalanthus bonsai* Trovo & Sano (Eriocaulaceae, Paepalanthoideae) from the Espinhaco Range in Minas Gerais, Brazil. This species is placed in *Paepalanthus* Martius subsect. *Dichocladius* Ruhland due to its dichotomously branched stem with rigid linear leaves. The new species is compared with the sympatric and morphologically similar species *P. glaziovii* Ruhland.

**Key words:** Brazil, Eriocaulaceae, Espinhaco Range, IUCN Red List, Minas Gerais, *Paepalanthus*.

*Paepalanthus* Martius is the largest Neotropical genus of Eriocaulaceae, with approximately 450 species; its taxonomic and species diversity is concentrated in the Espinhaço Range, Brazil, and the tepuis of Venezuela. The Brazilian center is the more diverse of the two areas, and indeed a further distinction can be seen with a greater number of species in the Minas Gerais portion of the Espinhaço Range. *Paepalanthus* occurs predominantly on rocky outcrops and less frequently in open savannas (Giulietti & Hensold, 1990; Hensold, 1991, 1999; Stützel, 1998).

Ruhland (1903) divided the genus into 23 categories based on floral and especially vegetative features. One distinctive group is *Paepalanthus* subsect. *Dichocladius* Ruhland, which is distinguished by the elongate and dichotomously branched stems and by the rigid leaves no more than 2 cm long. Körnicke (1863) previously recognized the affinity of *P. dichotomus* Klotzsch ex Koernicke, *P. guyanensis* Klotzsch ex Koernicke, and *P. muscosus* Koernicke from northern South America based on the habit of these species. Later, Ruhland (1903) described *P. glaziovii* Ruhland from Minas Gerais and placed all four taxa in *Paepalanthus* subsect. *Dichocladius*. Finally, Hensold (1991) synonymized *P. guyanensis* into *P. dichotomus*. In addition, Harold Moldenke described several species of *Paepalanthus* without assigning them to infra-generic levels. Some of these species (e.g., *P. aristatus* Moldenke) have similar habit and floral morphology to species of *Paepalanthus* subsect. *Dichocladius* and may be merged within this category (Hensold, 1991, 1999).


Haec species a *Paepalanthus glaziovii* Ruhland habitu humiliori (usque ad 9 cm vs. 20 cm), caule breviores (usque ad 7.5 cm vs. 18 cm), crassiusculo vaginis foliaribus inducto et laminis foliaribus non nisi in apice caulis persistentibus differt.

Perennial herbs forming small dense cushions, 6.5–9 cm tall, stem elongate, 5–7.5 cm, branched, covered by leaf sheaths. Leaves rigid, falciform, 0.4–1.2 × 0.1–0.2 mm, adaxial surface glabrous, abaxial surface glabrescent, apex acute, margins ciliate, densely ciliate at base, restricted only to stem apex. Spathes 2–5 mm, glabrescent, apex truncate, long ciliate; scapes 1 to 6 per branch, 5–15 mm, glabrescent with simple trichomes; capitula 2–4 mm diam., urceolate; involucral bracts brown, arranged in 3 to 4 series, bracts of the inner series triangular, ca. 3 mm, with trichomes on the abaxial surface, apex obtuse, ciliate in the upper margin, those from the outer series oblong, ca. 2 mm, glabrous, apex acute, glabrous margins; receptacle hemispheric, pubescent. Flowers 3-merous, ca. 35 per capitula: 33 staminate, 2

pistillate; floral bracts narrowly oblong, ca. 3 mm, glabrous, apex acute, ciliate in the upper margin. Staminate flowers ca. 3 mm; pedicel ca. 1 mm, with trichomes; sepals oblong, ca. 3 mm, glabrous, apex obtuse, ciliate in the upper margin; corolla tubular, ca. 1.5 mm, membranaceous, hyaline, glabrous, 3-lobed; stamens ca. 2 mm; pistillodes 3, papillose. Pistillate flowers ca. 3 mm, sessile; sepals oblong, ca. 3 mm, glabrous, apex obtuse, ciliate in the upper margin; petals obovate, ca. 3 mm, glabrous, apex acute, ciliate in the upper margin; gynoecium ca. 3 mm, stigmatic portions bifid, twice the length of the
nectariferous portion; staminodes 3, scale-like. Fruit a loculicidal capsule.

Habitat and distribution. The species occurs in the Rio Preto State Park, in the Espinhaço Range in Minas Gerais State. The species was collected at an altitude of approximately 1400 m, in an area of a rocky outcrop dominated by montane meadows (an open, grass-dominated area).

IUCN Red List category. *Paepalanthus bonsai* is known from a single locality within a conservation unit.

Figure 2. *Paepalanthus bonsai* Trovó & Sano, plant habit. —A. As seen from above. —B. Lateral view. Scale bars: 1 cm. Photos of the holotype Viana et al. 2776 (SPF) in the field. (Photos by Rafael Louzada, SP.)
According to IUCN Red List criteria (IUCN, 2001), the species is considered Critically Endangered (CR B1a).

**Etymology.** The epithet *bonsai* refers to the general habit of the species. Although it forms small dense cushions in rocky crevices, the branched habit and deciduous leaves give the appearance of a miniaturized tree. The epithet is used as a noun in apposition, as supported by Art. 23.1 of the International Code of Botanical Nomenclature (McNeill et al., 2006).

**Discussion.** We place *Paepalanthus bonsai* in *Paepalanthus* subsect. *Dichocladus* based on its trimerous flowers, elongated dichotomously branched stem, and small rigid leaves. This group consists now formally of four species, excluding the species described by Harold Moldenke. *Paepalanthus bonsai* and *P*. *glaziovii* occur in Minas Gerais State, and *P*. *muscosus* and *P*. *dichotomus* occur in northern South America. Two types of floral morphology can be detected in *Paepalanthus* subsect. *Dichocladus*. The stigmatic portions are not completely fused in *P*. *bonsai* and *P*. *glaziovii* (although in the original description the author described simple stigmas for *P*. *glaziovii*), whereas they are completely fused in *P*. *muscosus* and *P*. *dichotomus*. Given that the well-defined groups in Eriocaulaceae are generally homogeneous in this floral structure and Ruhland (1903) stated that the inclusion of *P*. *glaziovii* in *Paepalanthus* subsect. *Dichocladus* was doubtful, further phylogenetic studies are required to clarify the relations among these species.

Of the species in subsection *Dichocladus*, *Paepalanthus bonsai* is morphologically most similar to *P*. *glaziovii*, which also occurs in the Espinhaço Range in Minas Gerais. Both have been collected in the same locality at a mountain locally known as Chapada do Couto; therefore, they are considered sympatric. These two species share a very similar branching pattern, urceolate capitula, and stigmatic portions that are not completely fused. However, *P*. *glaziovii* has persistent leaves among the ramifications, while *P*. *bonsai* has leaves only at the apex of the distal branches and the stem is covered by leaf sheaths. *Paepalanthus bonsai* is also distinguished by its smaller habit (ca. 10 cm tall vs. ca. 20 cm tall in *P*. *glaziovii*) and relatively thick stem with short internodes (vs. a relatively thin stem with elongated internodes in *P*. *glaziovii*).


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**Literature Cited**


