



## *Tillandsia leucopetala*, a new species of Bromeliaceae from Rio Grande do Sul, southern Brazil

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### Abstract

*Tillandsia leucopetala* H. Büneker, R. Pontes & L. Witeck is an endemic saxicolous new species from Rio Grande do Sul, southern Brazil. It is described, illustrated and data about its geographic distribution and ecology are provided.

**Key words:** Taxonomy, *Tillandsia* subg. *Anoplophytum*, *Tillandsia tenuifolia* complex

### Introduction

The genus *Tillandsia* L. shows a wide geographical distribution that coincides with the distribution of Bromeliaceae as a whole. *Tillandsia usneoides* (L.) Linnaeus (1762: 411) is the species with the widest distribution of the family, occurring from the southern United States to the Patagonia in Argentina (Smith & Downs 1977). In contrast to the epiphytic species with large distribution, like *T. usneoides*, the saxicolous species often have restricted occurrence due to discontinuity and fragmentation of their habitat, occurring in rocky areas known as “inselbergs”, being often endemic in these small areas (Tardivo 2002, Coser *et al.* 2010).

Among the six currently accepted subgenera of *Tillandsia* (e.g. *Tillandsia*, *Allardtia* (A. Dietr.) Baker (1888: 40), *Anoplophytum* (Beer) Baker (1887: 212), *Diaphoranthema* (Beer) Baker (1878: 236), *Phytarrhiza* (Vis.) Baker (1887: 212) and *Pseudalcantarea* Mez (1935: 455, Barfuss *et al.* 2005)), *Anoplophytum* is the one with the highest species diversity in the state of Rio Grande do Sul, Brazil. It is the subgenus with larger-sized saxicolous species, with restricted occurrence and endemic in this state, as exemplified by *T. afonsoana* Strehl (2000: 23), *T. bella* Strehl (2000: 24), *T. itaubensis* Strehl (2000: 25), *T. jonesii* Strehl (2000: 27), *T. polzii* Ehlers (1997: 11), *T. rohdenardini* Strehl (2004: 34), *T. toropiensis* Rauh (1984: 10), *T. winkleri* Strehl (2000: 28) and *T. witeckii* Büneker *et al.* (2014: 94). This list is now expanded by the new species described here.

### Material and Methods

Specimens were collected for laboratory study, cultivation and herborization. The living specimens were included in the living collection of the Botanical Garden of Colégio Politécnico da Universidade Federal de Santa Maria (Rio Grande do Sul, Brazil). The morphological variation of this new species was observed in habitat and in cultivated specimens, which were also compared to morphologically closely related species. The quantitative and qualitative morphobiometric data were obtained in material collected *in situ*. Measures of flowers and floral parts were taken from the second or third flower from the base of the inflorescence, taking into account that the basal flowers are bigger than the apical ones. The terminology used in the description follows Smith & Downs (1977) with adaptations following

Scharf & Gouda (2008). The data on related species were obtained from the original descriptions, as well as from cultivated specimens and herbaria collection (HAS, HDCF, ICN, MPUC, PACA, PEL, RB, SMDB, SP, SPF; digital collections of B, K, NY, P, US and WU); acronyms according Thiers (continuously updated). The photographs were taken from plants in natural habitats, and the drawings were based on living material.

## Taxonomic treatment

*Tillandsia leucopetala* H. Büneker, R. Pontes & L. Witeck, *sp. nov.* (Figs. 1 A–H, 2 A–C, 3)

*Species morphologicice proxima Tillandsia toropiensis et Tillandsia nuptialis, a prima differt apparentia maiori quando florita (usque 45 cm vs. usque 30 cm longa), maiori magnitudine laminarum foliarium (usque 30 cm vs. usque 20 cm longis) et pedunculi (usque 30 cm vs. usque 19 cm longis), inflorescentia maiore, cum maiore numero florum (usque ad 11 cm longa et 11-flora vs. usque ad 5.5 cm longa, usque ad 7-flora), partibus perianthii maioribus (sepalis usque 2.6 cm longis, petalis usque 4 cm longis vs. sepalis usque 2 cm longis, petalis usque 3,4 cm longis), coloribus bractearum scapalium et floralium (generaliter luteo-virentium vs. rubentium), et sepalis lepidotis (vs. glabris); eae adaxiales connatae solum usque mediam partem (vs. connata usque ad apicem) sunt. A secunda differt habitu minus caulescente, laminis foliorum maioribus (usque ad 30 cm vs. usque ad 11 cm longis), pedunculo generaliter maiori (usque ad 30 cm vs. usque ad 14 cm longo), inflorescentia maiore et maiore numero florum (usque ad 11 cm longa et 11-flora vs. usque ad 7 cm longa et 6-flora), bracteis floralibus denso-lepidotis in facie abaxiali (vs. lepidotis solum in apice faciei externae) et partibus perianthii minoribus (sepalis usque ad 2.6 cm et petalis usque ad 4 cm longis vs. sepalis usque ad 2.1 cm et petalis usque ad 3 cm longis).*

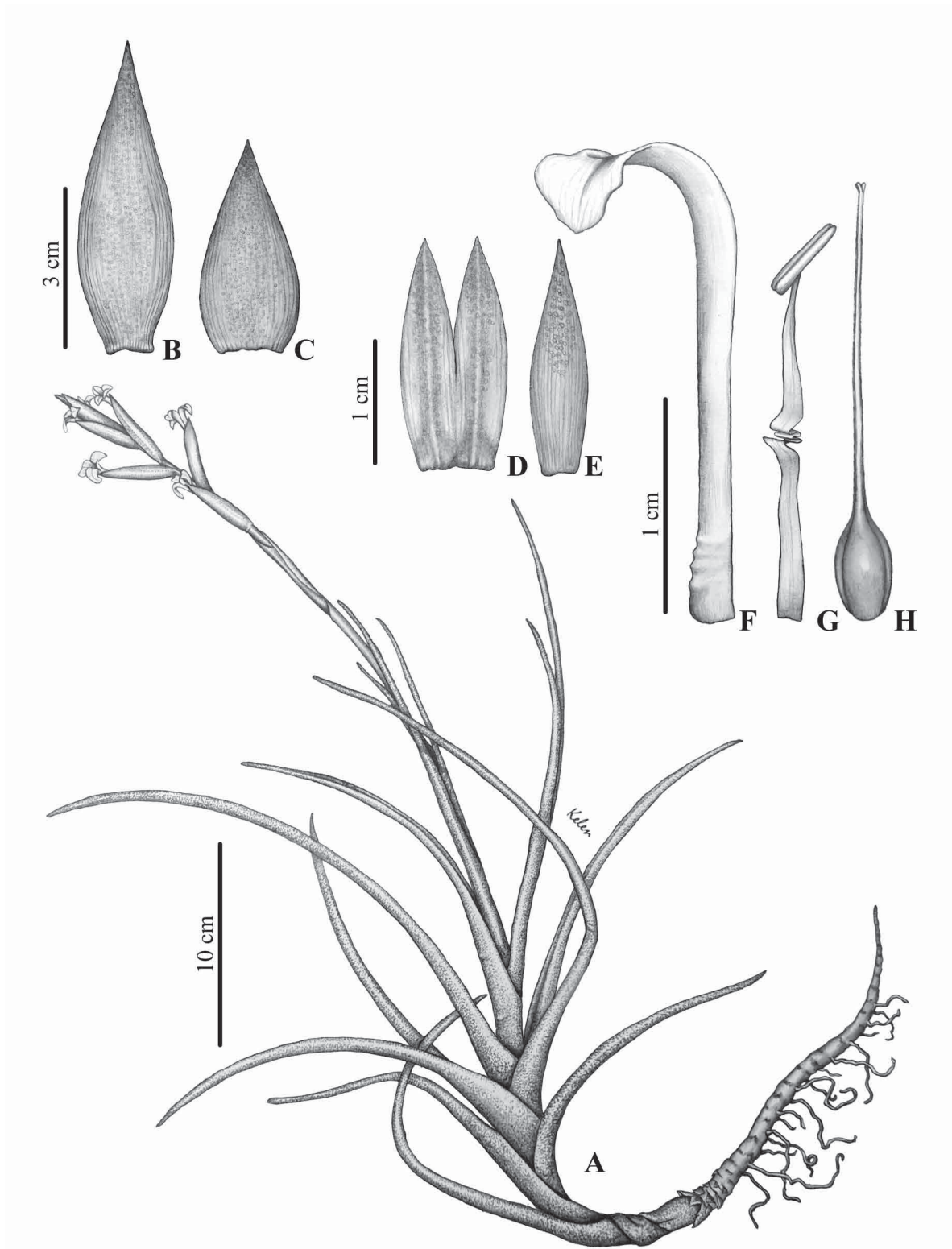
**Type:**—BRAZIL. Rio Grande do Sul: Santiago, saxicola no Perau do Macaco Branco, em escarpa rochosa às margens do rio Jaguarizinho, ocorrendo junto a *Eriocactus claviceps* e *Dyckia* sp., 277 m elevation, 4 July 2013, H.M. Büneker 249, R.C. Pontes & L. Witeck (holotype HDCF!; isotype US!, RB!, SMDB!).

Saxicolous plant, caulescent, flowering 15–45 cm high; *roots* developed, branched; *stem* naked or covered by remaining dead sheaths. *Leaves* 9–15 in number, succulent, polystichous, erect or suberect, slightly curved from the center to the apex, sometimes subsecund; *sheaths* 2.1–5 × 2–4 cm, ovate-elliptic, greenish-white, adaxially lepidote at the distal end, abaxially white, densely-lepidote at the apex, margins with fimbriate trichomes at the distal end; *blades* very narrowly triangular, canaliculate, acute, 12–30 × 0.9–2.3 cm, densely velutinous-lepidote, greenish-cinereous, basal margins with protruded larger trichomes. *Peduncle* erect-arcuate, 12–30 cm long, terete, greenish, sparsely lepidote in the upper portion; *peduncle bracts* the basal ones foliaceous, densely lepidote, the upper ones narrowly elliptic to lanceolate, attenuate-acuminate, 3–7 × 1.2–2 cm, exceeding the internodes, greenish, lepidote abaxially. *Inflorescence* simple, lax, 4–11 flowered, 4.3–11 cm long; *rachis* flattened, conspicuous, green; *floral bracts* 2.6–4 × 1–2.1 cm, ovate to narrowly elliptic, acute to attenuate, greenish, rose-orange in the upper portion, lepidote abaxially, the basal ones exceeding the flowers. *Flowers* polystichously arranged, suberect or erect, 0.3–1.5 cm apart, inconspicuously pedicellate; *pedicel* ca. 1 mm long; *sepals* 1.8–2.6 cm long, lanceolate to narrowly elliptic, acute, translucent, yellowish, reddish-green, whitish-pink, whitish-orange or whitish-green, abaxially sparsely lepidote mainly at the apex, the abaxial one ecarinate, free, the adaxial ones carinate and connate to the middle; *petals* 2.5–4 cm long, white, claw sublinear; *blades* elliptic, obtuse or rounded apex, patent at anthesis; *stamens* included, ca. 2.5 cm long, equaling the petal claw; *filaments* sublinear-complanate, plicate above the middle; *ovary* obovoid, ca. 5 mm long, whitish-green; *stigma* simple-erect.

**Etymology:**—The specific epithet of the new species refers to the white color of its petals (*leucos* = white, *petala* = petal).

**Distribution and habitat:**—*Tillandsia leucopetala* is currently known from the type locality only, where it was found growing saxicolous on a single steep rock in the Jaguarizinho river valley, together with other xerophytic Bromeliaceae (e.g. *Dyckia* sp.), Cactaceae (e.g. *Cereus hildmannianus* Schumann (1890: 202), *Eriocactus claviceps* Ritter (1966b: 115), and *Opuntia* sp.) and Gesneriaceae (e.g. *Sinningia* sp.).

**Conservation Status:**—*Tillandsia leucopetala* is possibly endemic to the type locality and its known population has about 150 individuals. According to the criterion D1 (very small or restricted population) of IUCN (2012), it is considered an endangered species (EN).



**FIGURE 1.** A–H. *Tillandsia leucopetala* (H. Büneker et al. 249). A. Habit. B. Abaxial side of scape bract. C. Abaxial side of floral bract. D. Abaxial side of connate and carenate adaxial sepals. E. Abaxial side of abaxial sepal. F. Petal. G. Stamen. H. Pistil.

**Observations:**—*Tillandsia leucopetala* belongs to the subgenus *Anoplophytum sensu* Smith & Downs (1977: 668) by having elongated stamens and pistil equaling the claw of the petals and plicate filaments. By having the adaxial sepals carinate and distinctly connate, the species proposed here belongs to the *T. tenuifolia* complex *sensu* Tardivo (2002: 118).





**FIGURE 2.** A–C. *Tillandsia leucopetala* (H. Büneker *et al.* 249). **A.** General view of the type locality. **B.** Population at the type locality in flowering, together with *Eriocactus claviceps*. **C.** Habit.

The new species is morphological closely related to *T. toropiensis*, which is endemic of the central region of the state of Rio Grande do Sul, growing saxicolous associated to the Cactaceae with *Eriocactus magnificus* Ritter (1966a: 50), on steep rocks along the Toropi River (Rauh 1984). *Tillandsia leucopetala* differs from *T. toropiensis* by its larger size (flowering up to 45 cm long *vs.* up to 30 cm long), longer leaf blades (12–30 cm *vs.* 8–20 cm), longer peduncle (12–30 cm *vs.* 8–19 cm), longer inflorescence (4.3–11 cm *vs.* 2.5–5.5 cm), with comparatively more flowers (4–11 *vs.* 3–7), as well as longer sepals (1.8–2.6 cm *vs.* 1.7–2 cm) and longer petals (up to 4 cm *vs.* up to 3.4 cm). *Tillandsia leucopetala* also differs by the color of the usually yellowish-green peduncle bracts and floral bract (*vs.* reddish), and by the lepidote sepals (*vs.* glabrous), having the adaxial ones connate up to the middle portion (*vs.* almost completely connate).



**FIGURE 3.** *Tillandsia leucopetala* (H. Büneker et al. 249). Detail of the inflorescence.

*Tillandsia leucopetala* has some morphological affinity with *Tillandsia nuptialis* Braga & Sucre (1969: 1), an endemic species from Rio de Janeiro, Brazil. However, it can be distinguished by its shorter stem, longer leaf blades (12–30 cm *vs.* 9–11 cm long), usually longer peduncle (up to 30 cm *vs.* up to 14 cm), longer inflorescence (up to 11 cm *vs.* up to 7 cm) with more flowers (to 11-flowered *vs.* ca. 6-flowered), floral bracts densely lepidote throughout the abaxial surface (*vs.* lepidote at the apex only), longer petals (up to 4 cm *vs.* up to 3 cm) and longer sepals (up to 2.6 cm *vs.* up to 2.1 cm).

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