

Botanical-Biology

***Guilleminea densa* (Amaranthaceae): a new record for the Brazilian flora**

Guilleminea densa (Amaranthaceae): um novo registro para a flora brasileira

Lucas Gonçalves da Cunha^I, Thais Scotti do Canto-Dorow^{II}

^I Universidade Federal de Santa Maria, Santa Maria, RS, Brasil

^{II} Universidade Franciscana, Santa Maria, RS, Brasil

ABSTRACT

This paper presents the first record of *Guilleminea densa* for Brazil. Until now, the genus *Guilleminea* was only represented in Brazil by *G. fragilis* Pedersen, found in Mato Grosso do Sul. *Guilleminea densa* is native to most of South America and part of North America and has been recorded as invasive in southern Africa. This species can be easily identified by its glabrous leaves on the adaxial face and densely woolly on the abaxial face, with a dense inflorescence of whitish and woolly flowers. The species was recognized during a floristic survey of ruderal species in the municipality of Santa Maria, in the central region of Rio Grande do Sul, Brazil, where it was found in an urbanized environment. The paper provides descriptions, illustrations, and information on habitat, distribution, and taxonomy.

Keywords: Biogeography; Native species; Ruderal flora

RESUMO

O presente trabalho apresenta o primeiro registro de *Guilleminea densa* para o Brasil. O gênero *Guilleminea*, até o presente, no Brasil, estava representado somente por *G. fragilis* Pedersen, no Mato Grosso do Sul. *Guilleminea densa* é nativa na maior parte da América do Sul e, em parte da América do Norte, sendo registrada como invasora no sul do continente africano. Essa espécie pode ser facilmente identificada por suas folhas glabras na face adaxial e densamente lanuginosas na face abaxial, inflorescência densa, com flores esbranquiçadas e lanuginosas. A referida espécie foi reconhecida durante um levantamento florístico de espécies ruderais no município de Santa Maria, região central do estado do Rio Grande do Sul, no Brasil, quando foi encontrada em ambiente urbanizado. São apresentadas descrição, ilustrações e informações sobre hábitat, distribuição, taxonomia.

Palavras-chave: Biogeografia; Espécie nativa; Flora ruderal

1 INTRODUCTION

The genus *Guilleminea* Kunth belongs to the family Amaranthaceae A.Juss., which comprises about 170 genera and 2000 species, with 27 genera and about 157 species occurring in Brazil, including 3 genera and 74 species endemic to the country (Flora e Funga do Brasil, 2024; Souza, Lorenzi 2005). In Rio Grande do Sul state, 16 genera and about 51 species are cited, of these 23 are under some degree of threat in the state (Flora e Funga do Brasil, 2024; Marchioretto, 2013; Vasconcellos, 1986). The family has a cosmopolitan distribution, predominantly in tropical and subtropical regions of America and Africa (Vasconcellos, 1982; Siqueira, 2004). With varied habits, the representatives are predominantly herbs, subshrubs, shrubs, or climbers, annual or perennial (Siqueira, 2004; Souza, Lorenzi, 2005).

Amaranthaceae species can be found in various types of environments, such as rocky fields, forest edges, savannas, altered areas like vacant lots and cultivated lands, and although some species are found inside forests, they predominantly occupy open spaces, such as grasslands, savannahs, rock formations, and some species can grow on disturbed areas (Marchioretto, 2014; Siqueira, 2004; Souza, Lorenzi, 2005). In the floristic survey conducted in the municipality of Santa Maria, central region of Rio Grande do Sul, Brazil, several species of the family exhibited ruderal behavior, including the one described in this work.

The genus *Guilleminea* is represented by perennial herbs, rarely woody, often procumbent; opposite leaves, extremely variable in size, shape, and pilosity; the basal rosette may be persistent or wither before anthesis; inflorescences of a single flower or 2 to 30 flowers, densely aggregated at the nodes (Mears, 1967).

Guilleminea densa is the only widely distributed species of the genus, with its range extending from the southern United States to central Argentina (Pedersen, 2000). In the Argentine Andes, it is found at elevations of up to 2000 m (Pedersen, 2000). It has also been collected in Africa (South Africa, Angola, Botswana, Lesotho, Malawi,

Mozambique, Namibia, Kenya, Zambia, Zimbabwe), as well as in Oceania (Australia), where it is considered an introduced species (POWO, 2024).

In Brazil, until now, the genus was only represented by the species *G. fragilis* Pedersen, recorded in the state of Mato Grosso do Sul (Flora e Funga do Brasil, 2024; Pedersen, 2000). In revisions of the Amaranthaceae family, such as for São Paulo (Siqueira, 2002), Bahia (Senna et al., 2010), Serra dos Carajás in the state of Pará (Senna, Lima, 2017), São Bento do Sul (Schwirkowski, 2024), and for the state of Rio Grande do Sul (Marchioretto et al., 2008), the presence of *Guilleminea densa* (Willd. ex Roem. & Schult.) Moq. was not recorded.

On the digital platforms researched, both national and international, which present the distribution of species and herbarium collections, there are no records of the species for Brazil. For example, on speciesLink (2024), *G. densa* has been recorded in the following South American countries: Argentina, Bolivia, Colombia, Ecuador, Paraguay, and Peru. The Global Biodiversity Information Facility (GBIF, 2024), BioDiversity4All (2024), and the Royal Botanic Gardens Kew (POWO, 2024) also do not show records of *G. densa* for Brazil.

The aim of this study is to report a new record of *Guilleminea densa* for Brazil, collected in the municipality of Santa Maria, located in the central region of Rio Grande do Sul.

2 MATERIALS AND METHODS

The identification of the material was based on dried specimens available in national and international herbaria, including F (Field Museum of Natural History), MO (Missouri Botanical Garden), K (Royal Botanic Gardens), L (Naturalis Biodiversity Center), BHCB (Universidade Federal de Minas Gerais) (acronyms according to Thiers, 2024).

The material collected in Brazil, during a floristic survey of ruderal species in the municipality of Santa Maria, Rio Grande do Sul, by the first author was incorporated

into the herbarium of the Department of Biological Sciences of the Universidade Federal de Santa Maria (SMDb).

Information about the habit and height of *G. densa* was based on specialized literature (Mears, 1967), as well as the information available on the labels of the studied materials. The description was complemented with scientific literature (Mears, 1967; Pedersen, 2000) and nomenclatural data consulted on Tropicos (2025). As specialized literature, the characteristics of the species were compared with those presented in the illustration and description of Henrickson's study (1987).

3 RESULTS AND DISCUSSION

Guilleminea densa (Willd. ex Roem. & Schult.) Moq. in A. DC. Prod. 13(2): 338. 1849. Type: ECUADOR, Quito, Humboldt & Bonpland 2220. [Holotype: Herb. P (P00679601 image seen!); Isotypes: P-Herb. Humb. (P00136007 image seen!); (Microfiche, photos GH, NY), P (fragment)].

Prostrate herb, 5-18 cm in diameter, stem internodes 0.1-2.5(-5.0) cm long, 0.5-1.5 mm in diameter, shorter distally, slightly zigzag, reddish, densely woolly with whitish trichomes, root thickened above, forming a distinct ligneous tuber. Basal leaves rosulate, oblong, elliptic to lanceolate, 4-14 mm long, 2-3 mm wide, acute at the apex, cuneate, petiole winged, 1-4 mm long; stem leaf blades broadly to narrowly ovate, oblong-ovate, oblong, rhombic, elliptic to lanceolate, 3-6 mm long, 1-2 mm wide. Inflorescence in clusters of 5-12 flowers, in dense racemes, 2-4 mm long; nodal trichomes on the rachis 1-1.5 mm long; bracts translucent, thin, elliptic-ovate, 0.6-1.6 mm long, bracts of similar texture, 1.2-2 mm long, and 0.6-1 mm wide; pedicel (when present) 0.2-0.3 mm long; calyx 1.7-2.3 mm long; calyx tubes 0.8-1.2 (-1.5) mm long, translucent, membranous and clear, densely villous-woolly on the outside, with white wavy trichomes 1-3 mm long; corolla with 5 lobes, equal to subequal, ovate to elliptic, 0.8-1.5 mm long, 0.4-0.6 mm wide, acute to rounded with folded margin at the tip, membranous translucent except along the midrib, which extends to the lower half,

usually without chlorophyll but sometimes with chlorophyll around the lower midrib, villous at least near the base; staminal filament tube supported at an even level near the top of the calyx tube, tube 0.1-0.2 mm high, free filaments broadly dilated at the base, narrowed above; anthers 0.13-0.25 mm long; mature ovary 1.1-1.4 mm long and 0.5-0.6 mm wide, terminal bifid style 0.2-0.3 mm long, stigmatic lobes imperceptible. Seeds 0.8-0.9 mm long, 0.6-0.7 mm wide, shiny, reddish-brown.

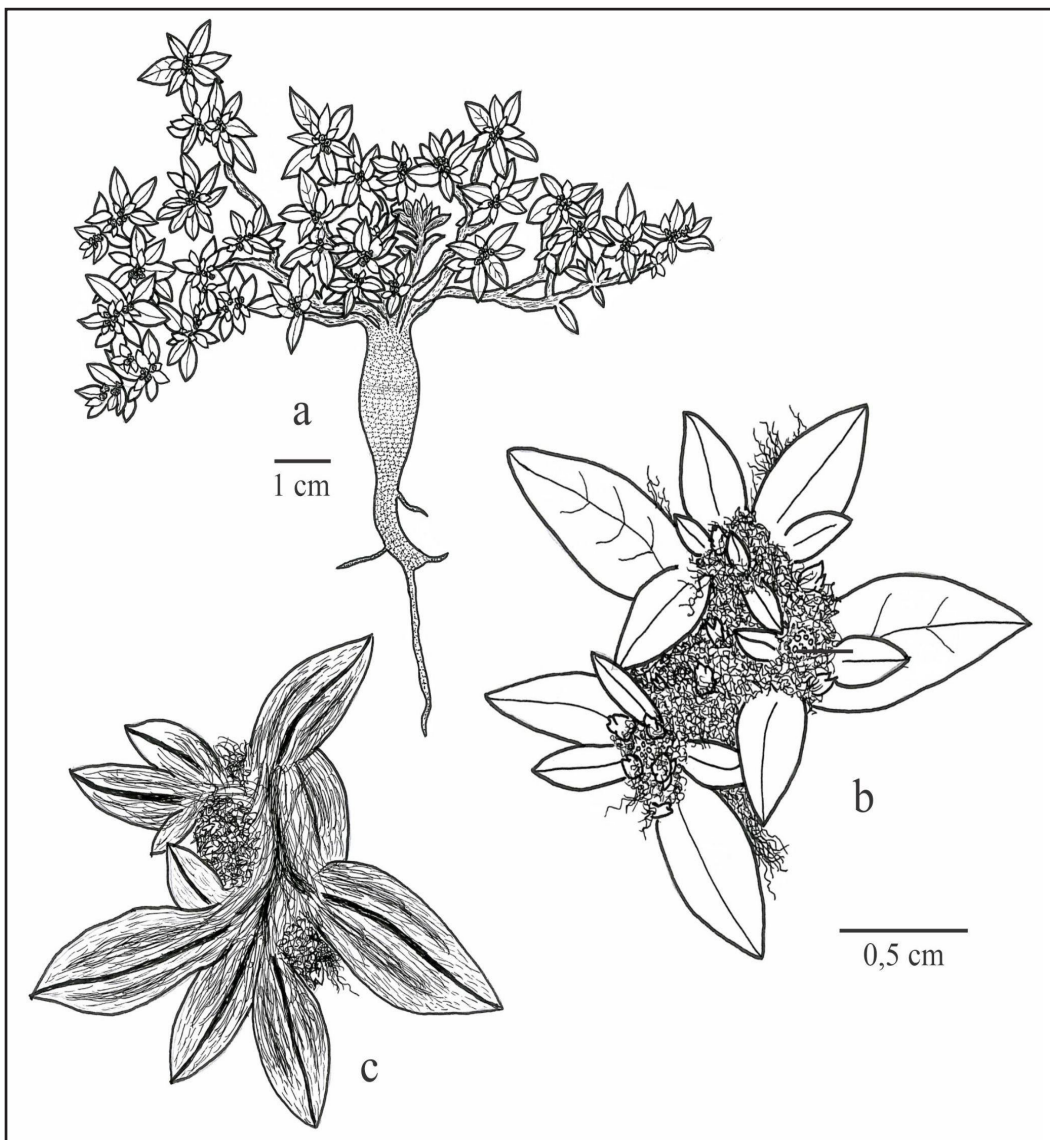
Figure 1 – *Guilleminea densa*: a new record for Brazil. a. Habit. b. Branches with flowers. c and d. Flower details from above. e. Tuberous root, characteristic of the species. f. Flower detail, with pollen on the anthers. g. Location map of the record



Source: Authors' private collection (2024)

Examined Material: BRAZIL: RIO GRANDE DO SUL: SANTA MARIA, city, urban area, Camobi neighborhood, Cohab Fernando Ferrari, 17th Street, corner with Robson Flores Street, coordinates 29°42'41"S 53°43'39"W, 139 m altitude, 33, Cunha, L. G. & Canto-Dorow, T., 13/02/2024 (SMDB 23073).

Figure 2 – *Guilleminea densa*: a new record for Brazil. Illustration a. Habit b. Adaxial surface appearance of leaf blades. c. Abaxial surface appearance



Source: Illustrated by Lucas G. Cunha (2024)

Identification key for *Guilleminea* Species in Brazil
(Adapted from Pedersen, 2000)

1. Inflorescence with 5-12 flowers, root forming a tuber*Guilleminea densa*
1. Inflorescence with 1-3 flowers, woody root, not tuberous*Guilleminea fragilis*

4 CONCLUSIONS

With this new record, the genus *Guilleminea* is now represented by two species in Brazil. Despite their similarities, *G. densa* can be distinguished by its tuberous root, while *G. fragilis* always has a woody root that never forms a tuber. Additionally, the number of flowers per inflorescence differs, with *G. fragilis* having 1 to 3 flowers and *G. densa* having more than 5.

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Authorship contributions

1 –Lucas Gonçalves da Cunha

Master's Degree in Networked Educational Technologies from the Federal University of Santa Maria.

<https://orcid.org/0000-0002-6167-985X> • luccas.cunha@gmail.com

Contribution: Conceptualization, Methodology, Data curation, Investigation, Resources, Project administration, Visualization, Writing - original draft, Writing – review & editing

2 – Thais Scotti do Canto-Dorow

PhD in Sciences/Botany from the Federal University of Rio Grande do Sul. .

<https://orcid.org/0000-0002-6282-7957> • thaisdorow@gmail.com

Contribution: Data Curation, Formal analysis, Investigation, Supervision, Validation, Writing – review & editing

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