



A new unexpected record of *Sinningia bullata* Chautems & M. Peixoto (Gesneriaceae) in Southern Brazil

Um novo registro inesperado de Sinningia bullata Chautems & M. Peixoto (Gesneriaceae) no Sul do Brasil

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Abstract

Sinningia bullata, a narrow endemic species in Santa Catarina was found at a new site in Rio Grande do Sul, c. 210 km southwards and c. 800 m.a.s.l. above the type location. The paper includes a description, illustrations and a dichotomous key to distinguish the species from other sympatric species. Environmental data comprise a distribution map, comments on ecology and geography, and the updated conservation status of the species.

Key words: biogeography, rare species, rock plants, subtropical endemisms, Rio Grande do Sul, Santa Catarina.

Resumo

Sinningia bullata, espécie endêmica de Santa Catarina foi encontrada em um novo local, no Rio Grande do Sul, ca. 210 km ao sul e ca. 800 msm acima da localidade-tipo. Este artigo inclui uma descrição, ilustrações e uma chave dicotômica para distinguir a espécie de outros táxons simpátricos. Dados ambientais incluem um mapa de distribuição, comentários sobre ecologia e geografia, e do estado de conservação atualizado da espécie.

Palavras-chave: biogeografia, espécies raras, plantas rupestres, endemismos subtropicais, Rio Grande do Sul, Santa Catarina.

Introduction

The neotropical genus *Sinningia* Nees (Gesneriaceae, Sinningieae) is formed by ca. 70 species of tuberous herbs or subshrubs, distributed from southern Mexico to northern Argentina (Chautems *et al.* 2010). The largest number of species is found along mountain ranges within the Brazilian Atlantic rain forest, and a lower number of species occurs in areas occupied by seasonal vegetation, such as the semi-deciduous forests of the Paraná-Paraguay river basin, the cerrados of central Brazil, and the caatingas of northeastern Brazil (Chautems 2008; Perret *et al.* 2013). The diversity centre of the genus lies in southeastern Brazil (Perret *et al.* 2007; Araújo *et al.* 2013).

According to Chautems *et al.* (2010) who recently described *Sinningia bullata* Chautems

& M. Peixoto, the species was so far only known from the type locality, in Santa Catarina Island, Southern Brazil. Thus, the species was the geographically most confined among a small set of narrow subtropical endemism, including *S. lineata* (Hjelmquist) Chautems, *S. polyantha* (DC.) Wiehler, and *S. ramboi* G.E. Ferreira *et al.* (Chautems *et al.* 2010; Ferreira *et al.* 2013, 2014).

This paper presents the first record of *S. bullata* for the State of Rio Grande do Sul. A taxonomic description, comments on ecology and geographic distribution, and conservation status is provided for this species. A dichotomous key for the identification of three related species to *S. bullata* occurring on rocky outcrops in the eastern highlands of southernmost Brazil is also presented.

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Material and Methods

Specimens of *S. bullata* were collected during field work carried out at the Canyon Fortaleza (ca. 1100msm), in Cambará do Sul, Rio Grande do Sul, Brazil, in October of 2013. Dried specimens are deposited at ICN and G (acronyms according to Thiers (continuously updated)). Additional collections from G, HBR and ICN were also studied. Plants in cultivation provenient of the type locality were also observed in the collection of Sir Mauro Peixoto (sítio Primavera, Mogi das Cruzes, São Paulo, Brazil) and at the Conservatoire et Jardin botaniques de la Ville de Genève (Switzerland).

Results and Discussion

The plants found in Rio Grande do Sul share the striking features of *Sinningia bullata*, i.e. strongly bullate leaves, dense woolly indumentum on the abaxial sides of the leaves, and corolla 3–4 cm long. However, the specimens present reduced and seasonal stems, which may be a response to the much higher elevation (and thus colder climate),

and the indument on the pedicels and calyx is less dense than the type material. Below we present an updated description based on the material collected at the new occurrence in Rio Grande do Sul.

Sinningia bullata Chautems & M. Peixoto, *Candollea*. 65: 242. 2010. Type: BRAZIL. SANTA CATARINA: Florianópolis, Testa do Macaco, ca. 315 m, fl., 6.III.2006, *A. Reis et al.* 5040 (holotype: HBR!; isotypes: G!, HUMC, US). Fig. 1a-e

Rupicolous herb, with aerial stems arising from superficially exposed tubers. Stems 10–15 cm long, usually unbranched, covered by a dense woolly indumentum. Leaves decussate, 1–2 nodes, isomorphic, petiole 0.5–1 cm long, light green; blades elliptic to obovate, 4–6 cm long, 3–4.5 cm wide, chartaceous, apex obtuse to rounded, base acute to cuneate, vivid green, adaxial surface bullate and glabrous, especially at young stage, abaxial surface covered with a white, dense woolly indumentum at young stage, becoming looser and brownish on older leaves, veins green,

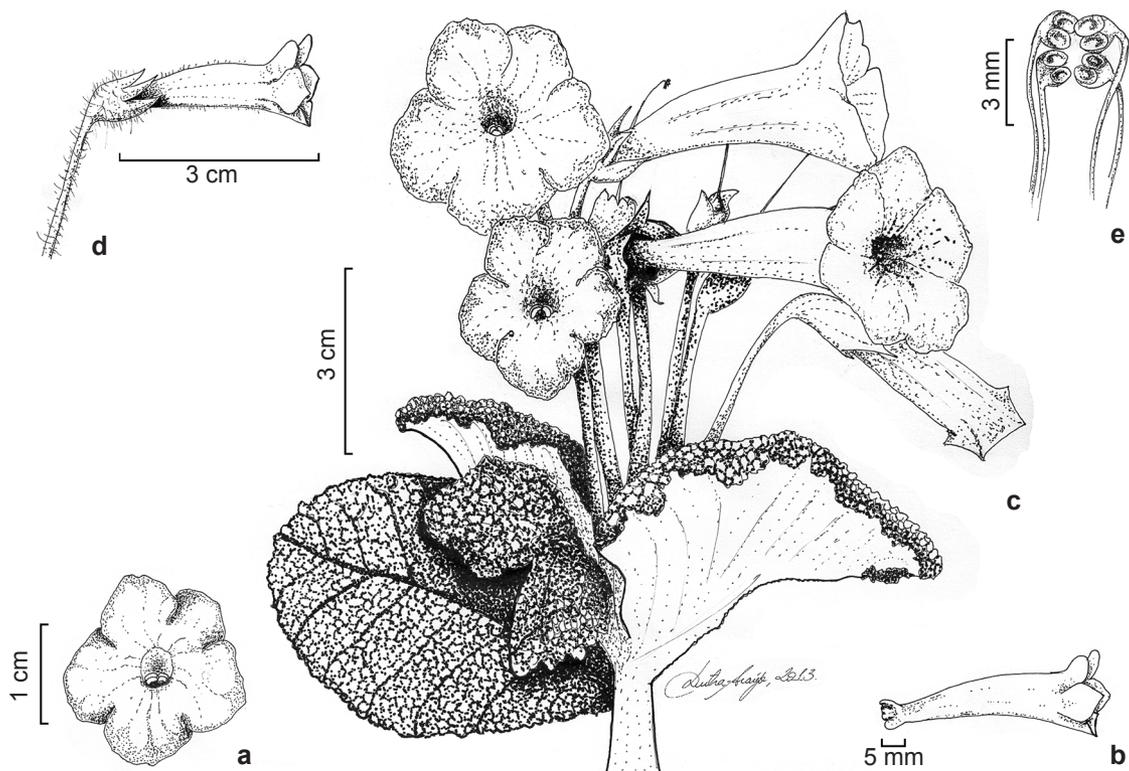


Figure 1 – a-e. *Sinningia bullata* Chautems & M. Peixoto – a. corolla in frontal view; b. corolla outline in lateral view; c. habit; d. corolla, calyx and pedicels in lateral view; e. anthers in frontal view.

margin irregularly crenate, 5–7 pairs of veins. Inflorescence a frondose florescence of pair-flowered cymes with 1–8 flowers. Pedicels 3–4.5 cm long, reddish. Calyx narrowly campanulate, fused at the base for ca. 0.3 cm, lobes 0.5 cm long, narrowly lanceolate, apex acute, base truncate, margin entire, pale green, pubescent. Corolla tubular, erect in the calyx, 3–4 cm long, ca. 4 mm in diam. at base, tube 2.5–3 cm long, 4–6 mm wide, orange, pubescent, limb nearly regular, lobes 8–10 × 10–12 mm, spreading and forming a right angle with the tube, the 2 dorsal ones narrower, up to 7–8 mm wide, tube internally light orange with darker lines, extending over the lateral and ventral lobes. Stamens 4, included, filaments ca. 2 cm long, white, glabrous, anthers coherent, all together in frontal view star-shaped, pollen cream; nectary formed by two completely separate glands. Ovary greenish, style ca. 2.5 cm, white, glabrous. Fruit not seen.

Material examined: BRAZIL. RIO GRANDE DO SUL: Cambará do Sul, Cânion Fortaleza, 15.X.2013, fl., *G.E. Ferreira et al. 238* (ICN, G). SANTA CATARINA: Florianópolis, Testa do Macaco, 13.XII.1972, fl., *A. Bresolin 661* (HBR); Testa do Macaco, 12.I.1973, fl., *A. Bresolin 678* (HBR).

Flowers from October to November, fruits not seen.

Sinningia bullata occurs in Southern Brazil, where it is currently known from very restricted localities in the states of Santa Catarina and Rio Grande do Sul. In the former state the species occurs on granitic outcrops in a more shaded environment at 315msm. In the later state the species inhabits rhyolitic outcrops exposed to full light and eventually strong winds at 1100msm, at the upper edges of the southeast escarpment of Fortaleza canyon (Fig. 2d).

According to the IUCN criteria, this species can be classified as Endangered (EN) B1ab, based on the extent of occurrence estimated to be less than 5,000 km² in only two locations (IUCN 2013).

Key to distinguish *Sinningia bullata* from related species

1. Leaves inserted along 4–7 nodes *Sinningia macrostachya*
- 1'. Leaves inserted along 1–2 nodes 2
2. Leaf-blades green to purplish, veins vinaceous on the abaxial surface *Sinningia ramboi*
- 2'. Leaf-blades green, veins always green on the abaxial surface 3
3. Leaves 4–6 × 3–4.5 cm, bullate, abaxial surface white, brownish on older leaves, dense woolly *Sinningia bullata*
- 3'. Leaves 9.5–15 × 7–14 cm, not bullate, abaxial surface pale green, tomentose *Sinningia lineata*

So far, this species was recorded only from the type locality, a hill called “Testa do Macaco”, (ca. 315msm) covered with humid forest and with some rocky outcrops near the top. On this hill, the species was found at a humid and shaded place (Fig. 2e-f), only a few kilometres south from the city of Florianópolis, Santa Catarina (Chautems *et al.* 2010). The new record extends the area of occurrence of the species much more southwards, as the new finding place lies some 210 km far away from the previously known area (Fig. 3). The habitat also differs strikingly from the type locality, as the new population of about 15 individuals was growing on basaltic outcrops at the upper edges of the escarpment (ca. 1100msm), southeast of the Fortaleza canyon. Additionally the new occurrence extends the elevation range in ca. 800msm. The

vegetation around the rocky outcrops is formed by a mosaic of the high-altitude fields, peat-bogs, and cloud forests (Fig. 3). The new locality where *S. bullata* was found is subject to high radiation and strong winds, a xerophytic habitat shared with a cactus (*Parodia haselbergii* subsp. *graessneri* (K.Schum.) Hofacker & P.J.Braun (Fig. 2d). These factors may be possibly causing the reduced stems (10–15 cm long vs. 15–30 cm long) and the smaller leaves (4–6 × 3–4.5 cm vs. 7–15 × 4–10 cm) when compared to the type collection.

One possible explanation for the relatively great latitudinal and altitudinal gap of *Sinningia bullata* is the scarcity of plant collections along the steep slopes of the eastern highlands of Santa Catarina and Rio Grande do Sul. Although the entire region was surveyed in an early paper by

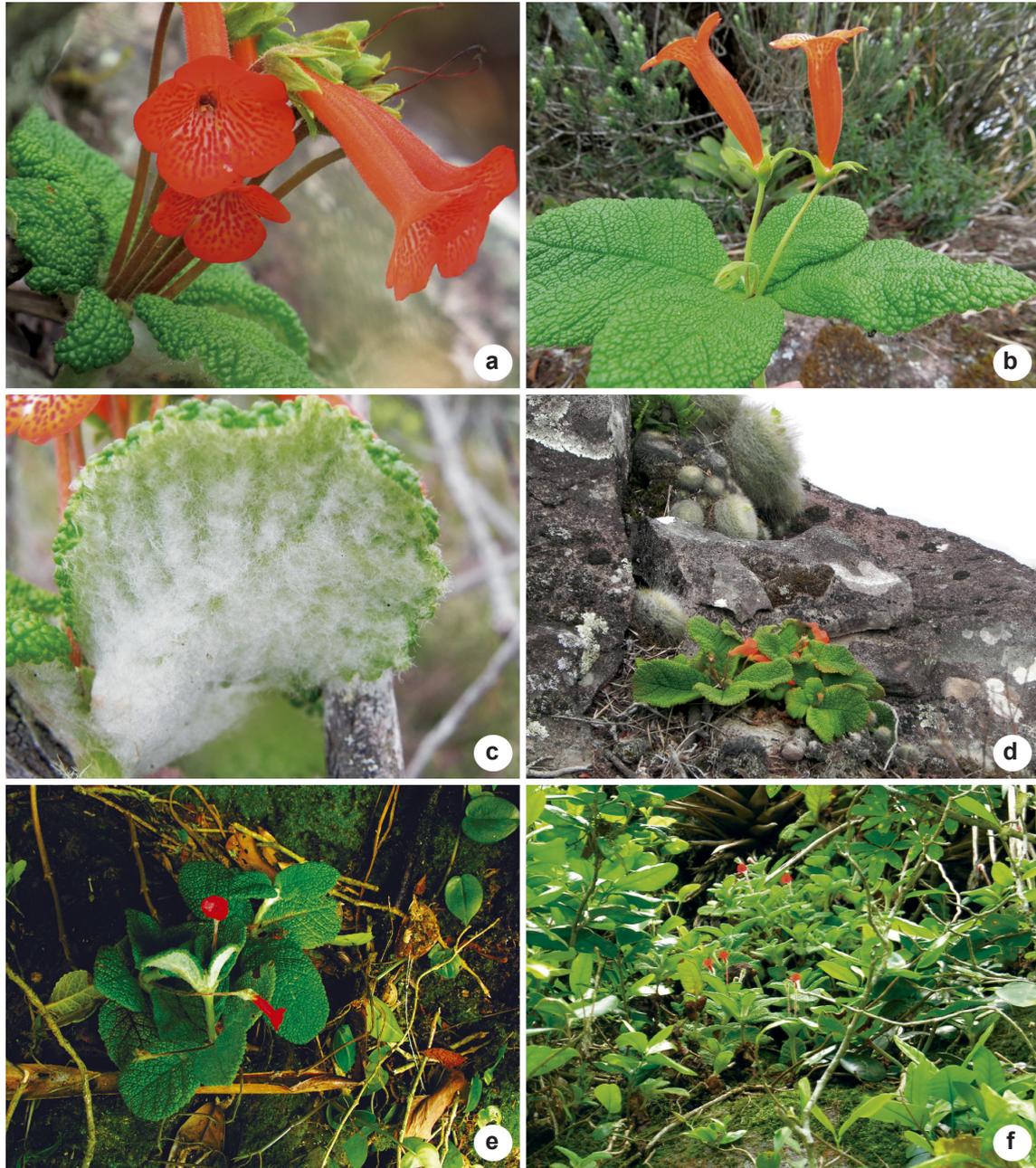


Figure 2 – a-f. *Sinningia bullata* Chautems & M. Peixoto – a. detail of flowers; b. leaves and inflorescence; c. detail of the abaxial side of a young leaf; d. general view of the species' habitat; e. habit of single plant in the type locality; f. habitat of the species in the type locality (a-d G.E. Ferreira *et al.* 238; e-f A. Reis. & *al.* 5040. Photo a-b, by S.C. Pesamosca, c-d by G.E. Ferreira, and e-f, by A. Chautems).

Rambo (1956), and more recently included in a review by Iganci *et al.* (2011), the rupestrian sites near the edges of the escarpments were possibly overlooked by many botanists more concerned with forest, peat-bog or grassland vegetation. The recent

finding of *S. bullata* suggests that other interesting plants species may be found on the rocky outcrops near the Serra Geral escarpments, and that this species in particular may be found elsewhere in similar habitats.

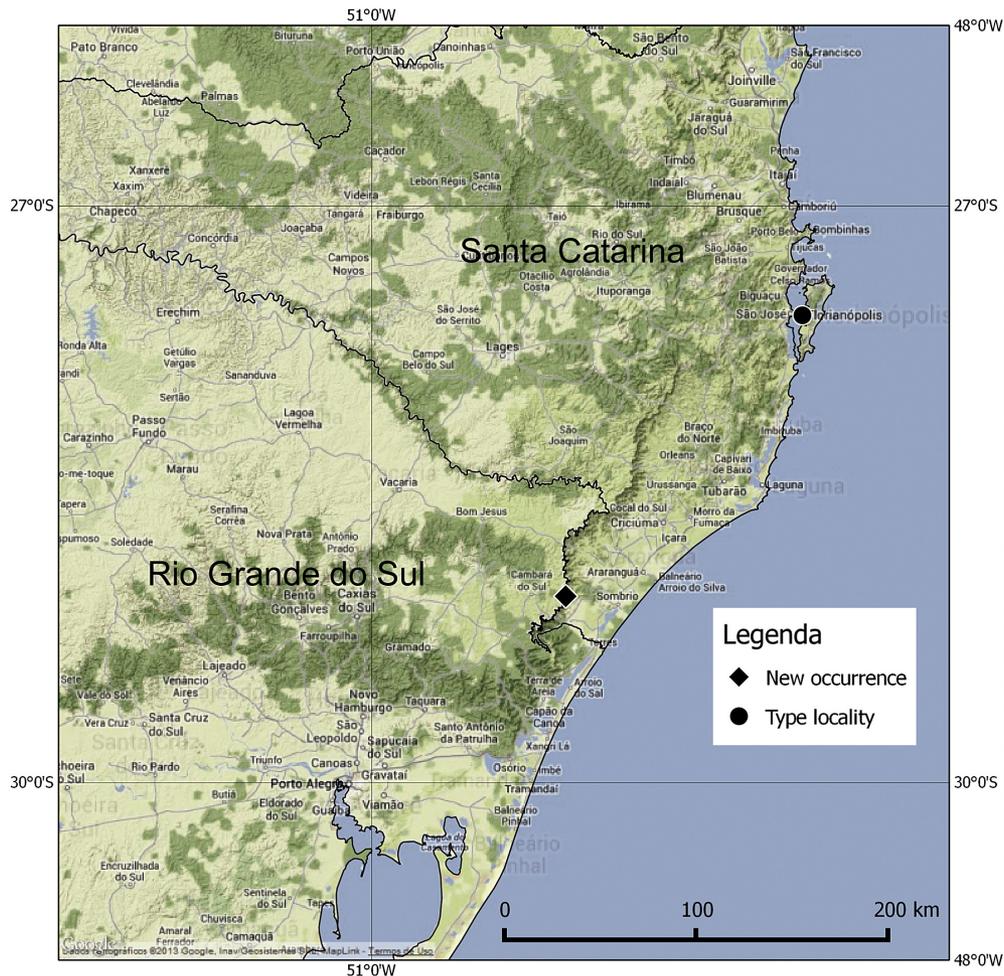


Figure 3 – Presently known distribution of *Sinningia bullata* Chautems & M. Peixoto in Southern Brazil.

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