

First record of *Pogoniopsis* Rchb. (Orchidaceae: Triphorinae) in Santa Catarina state, southern Brazil

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Abstract: *Pogoniopsis* is an endemic and myco-heterotrophic orchid genus with only two species in Brazil that can be found growing under dense canopy. *Pogoniopsis schenckii* is more widely distributed, with records in the states of Bahia, Minas Gerais, Paraná, Pernambuco, Rio de Janeiro, and São Paulo. Here we record *P. schenckii* for the first time in Santa Catarina state, southern Brazil, in a subtropical broadleaved forest, as well the genus *Pogoniopsis* itself, expanding its southern distribution limit. In addition, a description and a distribution map of the collected specimens are presented.

Key words: myco-heterotrophic; rare species; endemic species; Atlantic Forest

Pogoniopsis Rchb. is an orchid genus endemic to Brazil characterized by small, achlorophyllous, myco-heterotrophic, herbaceous plants with scale-like leaves and yellow and white flowers that can be found growing under dense canopy and fertile soils (Cogniaux 1893–1896; Reichenbach 1881; Hoehne 1949; Pabst and Dungs 1975; Pansarin et al. 2012). There are currently only two recognized species (BFG 2015): *Pogoniopsis nidus-avis* Rchb.f. & Warm., described in Reichenbach (1881), and *Pogoniopsis schenckii* Cogn., described in *Flora Brasiliensis* (Cogniaux 1893–1896), with little information about its morphology and a few descriptions in subsequent studies (Pabst and Dungs 1975; Abreu and Menini-Neto 2010; Pansarin et al. 2012).

The relationships of *Pogoniopsis* remain unclear, because morphological studies placed *Pogoniopsis* in subtribe Pogoniinae (Cameron and Chase 1999; Chase et al. 2003) or Triphorinae (Cameron 2003). In a morphological and molecular study, Pansarin et al. (2008) verified that *Pogoniopsis* shares many morphological traits with subtribe Galeolinae, but molecular data using ITS region suggest a basal position among tribe Pogonieae. Chase et al. (2015), however,

argued that taxon sampling and molecular analyses were not sufficiently robust in that study, and again placed the genus in subtribe Triphorinae, closely related to *Monophyllorchis* Schltr., *Psilochilus* Barb.Rodr. and *Triphora* Nutt.

Comparing the two species, *P. schenckii* has the largest range, with previous records from Bahia, Minas Gerais, Paraná, Pernambuco, Rio de Janeiro, and São Paulo states, while *P. nidus-avis* is currently recorded only from Minas Gerais and Rio de Janeiro states (Pabst and Dungs 1975; Cardoso and Queiroz 2008; BFG 2015). Currently *P. schenckii* is categorized as Least Concern (LC) in the Red List of the Brazilian Centre for the Conservation of the Flora following IUCN Red List criteria, due to its large distribution area, no ornamental appeal, and occurrence in conservation units of integral protection (Prieto and Messina 2012).

During recent surveys in the Parque Nacional da Serra do Itajaí, Santa Catarina state, southern Brazil (Figure 1), specimens of a terrestrial, achlorophyllous orchid were found growing on soil, under dense canopy (Figure 2A). The local vegetation is classified as subtropical lower hills broadleaved forest according to Oliveira-Filho (2015). Specimens were photographed, collected and deposited in the Herbarium FURB (abbreviation follows Thiers 2016). The species was identified as *P. schenckii* through illustrations provided by Hoehne (1949) and Pabst and Dungs (1975). So far, this genus was not recorded in Santa Catarina state by BFG (2015) as well as in the Orchidaceae revisions by Pabst (1951, 1952, 1953, 1954, 1956, 1957, 1959).

The plate was edited with GIMP 2.8 and CorelDRAW X7 17.1 softwares. The distribution map was made using ArcGIS 10 software (ESRI 2010). Morphological terminology follows Font Quer (1953).

Pogoniopsis schenckii Cogn., Fl. Bras. 3(4): 136. 1893.

Plants terrestrial, herbaceous, achlorophyllous, myco-heterotrophic, 11.6–16.7 cm tall. Roots adventitious,

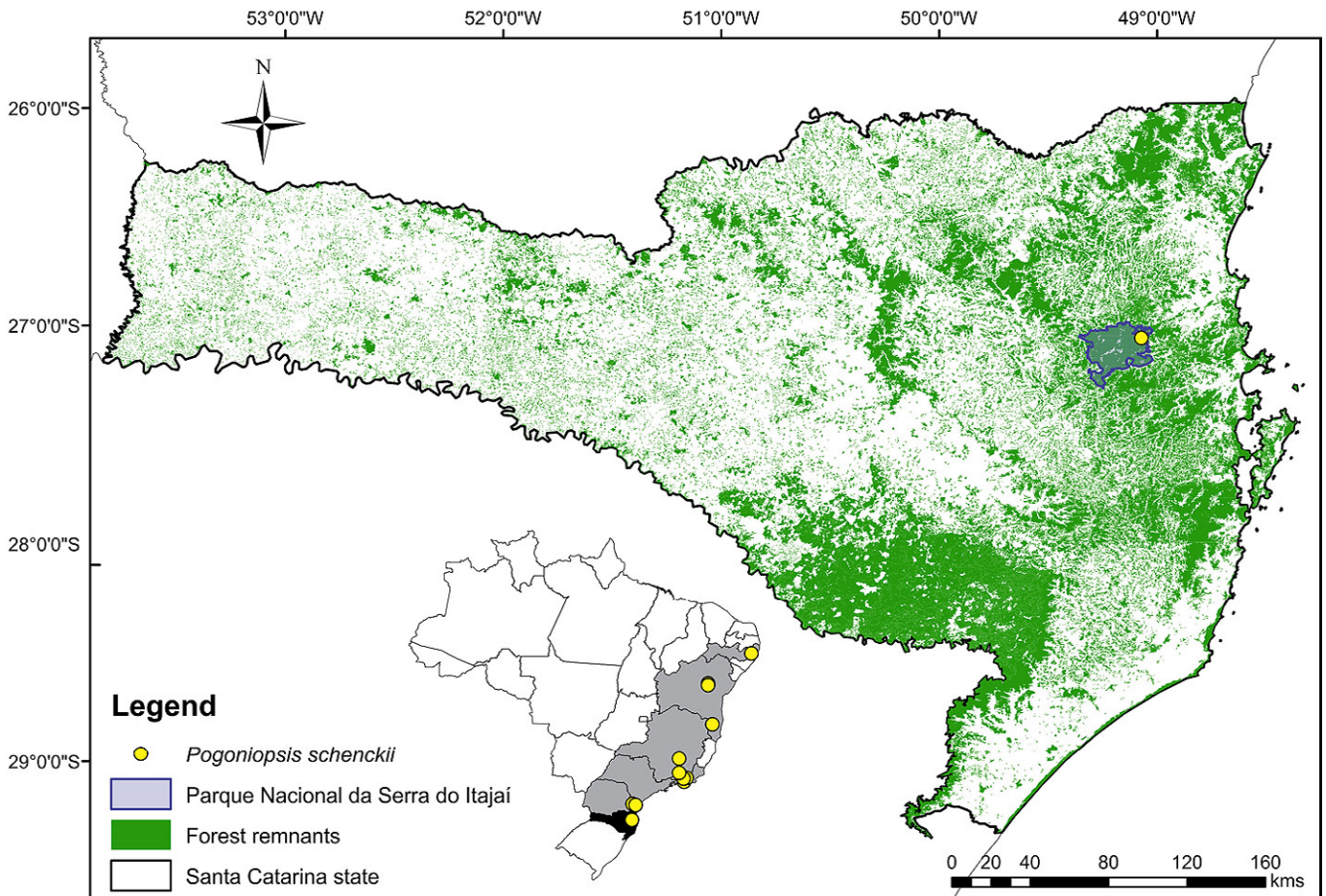


Figure 1. Location of the first record of *Pogoniopsis* in Santa Catarina state (black), southern Brazil and the current distribution of *Pogoniopsis schenckii* (gray).

pale brown, growing tip white, up to 28.3 mm long, 0.7–1.9 mm thick. Stalk erect, not branched, 2.6–6.3 mm thick. Leaves scale-like, sessile, covering stalk, broadly oblong to oblanceolate, apex acute, margin sometimes finely serrate to fimbriate, pale yellow to yellow, becoming black over time, 7.7–24.7 × 3.2–9.0 mm. Inflorescence a raceme, terminal. Floral bracts yellow to brownish yellow, broadly elliptic, apex acute, margin finely serrate to fimbriate, 11.6–15.8 × 5.6–9.3 mm. Flowers resupinate, odorless, perianth with a small pink portion at basis. Lateral sepals yellow, narrowly-oblanceolate, apex acute, 14.5 × 3.2 mm. Dorsal sepal broadly-oblanceolate, apex obtuse, yellow, white from middle to apex, 16.1 × 5.8 mm. Petals spathulate, apex obtuse, yellow, white from middle to apex, 15.3 × 2.6 mm. Labellum 3-lobed, white, 15.2 × 5.8 mm. Side lobes erect, embracing the column, falcate, obtuse. Median lobe lanceolate with three hairy yellow stripes near the basis, margin finely laciniate to fimbriate in the middle. Column erect, slightly widened near the apex, pinkish white, 5.0 × 2.0 mm. Ovary white, 7.9 × 3.6 mm. Figure 2.

Specimens examined: BRAZIL. Santa Catarina: Blumenau, Parque Nacional da Serra do Itajaí, 27°03'31.00" S, 049°04'41.00" W, elev. 340 m, 21/XI/2015, Bittencourt, F. and Schmitt, M.R. 635 (FURB 48809); *ibid.*, 27°03'29.00" S, 049°04'49.00" W, elev. 452 m, 28/XI/2015, Bittencourt, F. and Bittencourt, F. 680 (FURB 48810).

Taxonomic comments: The 3-lobed labellum, the finely laciniate to fimbriate margin in the middle lobe and the bigger size of the plants distinguish this species from otherwise similar *P. nidus-avis*. Other remarkable features are the three hairy stripes in the labellum and the small pinkish portion at basis of perianth. Also, the measures provided by Cogniaux (1893–1896) are slightly larger than the measurements obtained from the examined specimens. The circumscription of the two species needs to be revalued, because the illustration in Cogniaux (1893–1896) disagrees from the one provided by Pabst and Dungs (1975).

Although Santa Catarina has a great history of field surveys and a well-known flora, many new records were made in recent years (Gasper et al. 2013a, 2013b, 2014; Funez and Gasper 2014; Hassemer et al. 2015; Funez et al. 2016), mostly provided by a large inventory survey performed in Santa Catarina (Vibrans et al. 2010). This new record should encourage new field surveys, even in a region where, since the 1940s, botanical collection has been active (Reitz 1965). Not everything was collected and new records can be made, especially in rare, poorly collected, and neglected groups, as already stated for *Pogoniopsis* and its species (Cameron and Chase 1999; Menini-Neto et al. 2007; Pansarin and Barros 2008; Cameron 2009). In the Parque Nacional da Serra do

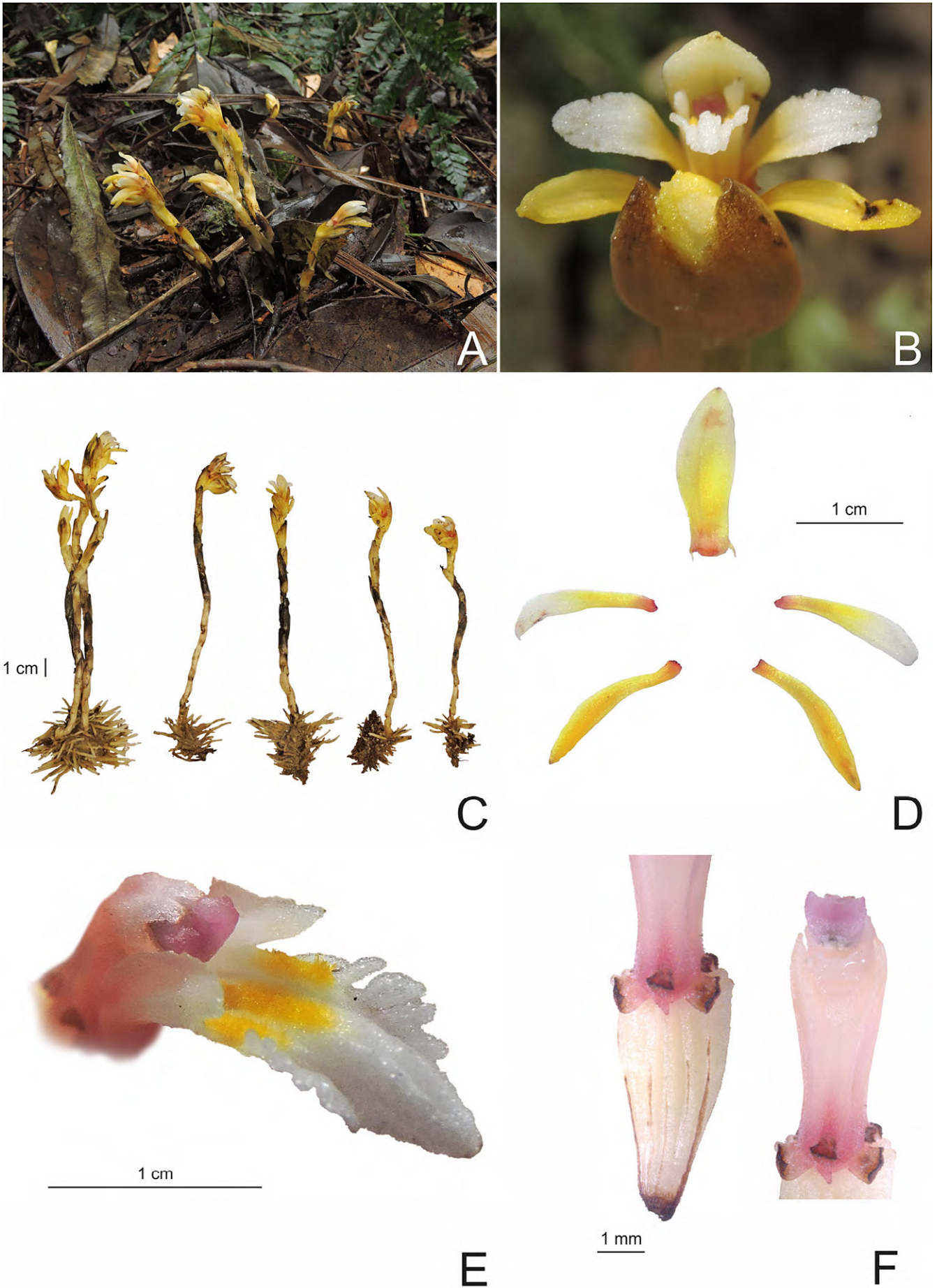


Figure 2. *Pogoniopsis schenckii*. **A.** General view of the plants and habitat. **B.** Detail of the flower. **C.** Habit, showing the adventitious root system. **D.** Dissected perianth, excluding the labellum. **E.** Detail of the labellum. **F.** Detail of the ovary and column.

Itajaí, previous floristic studies dealing with shrubs and herbs did not record the genus (Funez and Gasper 2014). The small and disjunct populations of *P. schenckii* are probably maintained by means of autogamy (self-pollination), as already stated by Pansarin et al. (2012) for *P. nidus-avis*.

Preliminary microscopic analyses (Kemmelmeyer pers. comm.) revealed septate fungal hyphae on the roots of the plants, not belonging to the Glomeromycota but to Ascomycota or Basidiomycota instead. However, there is no evidence that those hyphae belong to the mycobiont organism.

This is the first record of the genus for Santa Catarina state, as well as the southernmost record, as the previous southernmost record was in Paraná state (Pabst and Dungs 1975). As stated above, the species can be rare and with small populations, or have just being poorly collected, due to its short period of life. The record of the species in a protected area may mitigate threats that should not be dismissed until new records of this species are found.

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