

POLYGALA PETRICOLA (POLYGALACEAE), A NEW SPECIES FROM BRAZIL

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Polygala petricola, a new species from Brazil, is described. It belongs to the subgenus *Polygala*, sect. *Timutua*, ser. *Ericoideae*. The diagnostic characters distinguishing it from its closest relatives are described and discussed. Its conservation status is assessed, and a distribution map and illustrations are provided.

Keywords. Brazilian flora, endemic, new species, sect. *Timutua*, ser. *Ericoideae*, subgen. *Polygala*, taxonomy.

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Introduction

Polygala L., the most diverse genus in the family Polygalaceae, with c.580 species of herbs to subshrubs (Pastore, 2018), is represented in Brazil by 107 species (of the sections *Clinclinia* DC. and *Timutua* DC.) occurring in all its biomes but mostly in the savanna regions. Most species of *Polygala* in Brazil belong to the section *Timutua*, which is divided into a number of series. Although it has recently been shown that most of these series are not monophyletic (Pastore et al., 2019), a new taxonomic treatment has yet to be proposed. Nonetheless, the series *Ericoideae* Chodat of sect. *Timutua* is monophyletic and easily recognised by its morphology (Marques, 1988; Pastore et al., 2019). Members are characterised by the usual presence of xylopodia, short racemes, small yellow spots on the floral parts, and an erect style (Marques, 1988).

During extensive fieldwork and analyses of herbarium specimens, we found an undescribed species of ser. *Ericoideae* from the region of the Serra da Moeda (Minas Gerais state, Brazil). This new species is here described and illustrated by photographs, including of details of the floral parts, accompanied by comparisons with allied species.

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Taxonomic treatment

Polygala L. sect. *Timutua* DC. ser. *Ericoideae* Chodat, Mém. Soc. Phys. Genève 31(2, 2): 126 (and 239) (1893).

The series *Ericoideae* consists of 17 species, all endemic to Brazil except for *Polygala obovata* A.St.-Hil. & Moq. and *P. regnellii* Chodat, which are additionally found in Paraguay and Bolivia, respectively. They occur in rocky to savanic vegetation, and are often adapted to seasonal fires.

Polygala petricola J.F.B.Pastore, sp. nov.

Resembling *Polygala rigida* A.St.-Hil. & Moq. in its yellowish flowers in short racemes and linear leaves, but easily distinguished from that species by its chartaceous leaves (versus leather-like), flower parts that are generally smaller and differently shaped (Figure 1), bracts that are a little longer than the bracteoles (versus more than twice as long), internal sepals having a number of yellow spots close to the central nerve (versus without yellow spots), the base of the style being almost 1/2 the length of the style (versus a very short base, less than 1/5 of the style length), a keel with a few yellow spots close to the central vein dorsally and with short crest lobes, the central lobe c.1 mm long (versus a keel with several yellow spots close to the central vein dorsally and long crest lobes, the central lobe c.2 mm long). – Type: Brazil, Minas Gerais, Brumadinho, Fazenda Cachoeira, 1158 m altitude, 20°05'49"S, 44°01'19"W, 29 i 2018, Paiva, J.A.M., Souza, J.A.M. & Silva, S.H.A. 1632 (holotype CTBS, isotype BHCB). Figures 2, 3.

Erect subshrub, 20–35 cm tall, roots rigid, few to many stems arising from the base, stem sparsely branched at the apex, cylindrical, striated, densely puberulous, trichomes short-clavate, stems green, without yellowish glands forming spots. Leaves all alternate, sessile, chartaceous, lamina (8–)11–14 × (0.8–)1.1–1.9 mm, linear to linear-elliptical, apex acute, margin revolute, base acute, densely covered by short glandular trichomes. Racemes congested 0.8–1.2 × 0.9–1.1 cm, 4.5 cm counting the part of the floral stem with the scars of the fruits fallen; bracts c.1 × 0.7 mm, lanceolate, apex acute, ciliate, trichomes glandular, with one or two yellowish spots at the base, deciduous before opening of flowers, c.1.1 times longer than bracteoles; bracteoles lanceolate, ciliate, trichomes glandular; pedicel 3.3–3.4 mm, puberulous, trichomes glandular. Flowers yellowish, 4.4–5.1 mm long (without pedicel); outer sepals ciliate, trichomes glandular, with yellow spots along the central vein; lower outer sepals 1.7–1.8 × 0.8 mm, ovate, apex acute; upper outer sepals 2.2 × 1.1 mm, elliptic, apex acute; inner sepals (wings) 3.6 × 1.7 mm, elliptic, apex acute, margins sparsely ciliate at base, longer than mature fruits, with yellow spots along the central vein; lateral petals 3.1 × 1 mm, with one yellow spot; keel c.3.4–3.6 mm long, cristate, with yellow spots around the dorsal central vein, persistent in mature fruits; crest 4- to 6-lobed; central lobes c.1 mm, not lobed to apex; style c.1 mm, inclined, terminated by an oblique

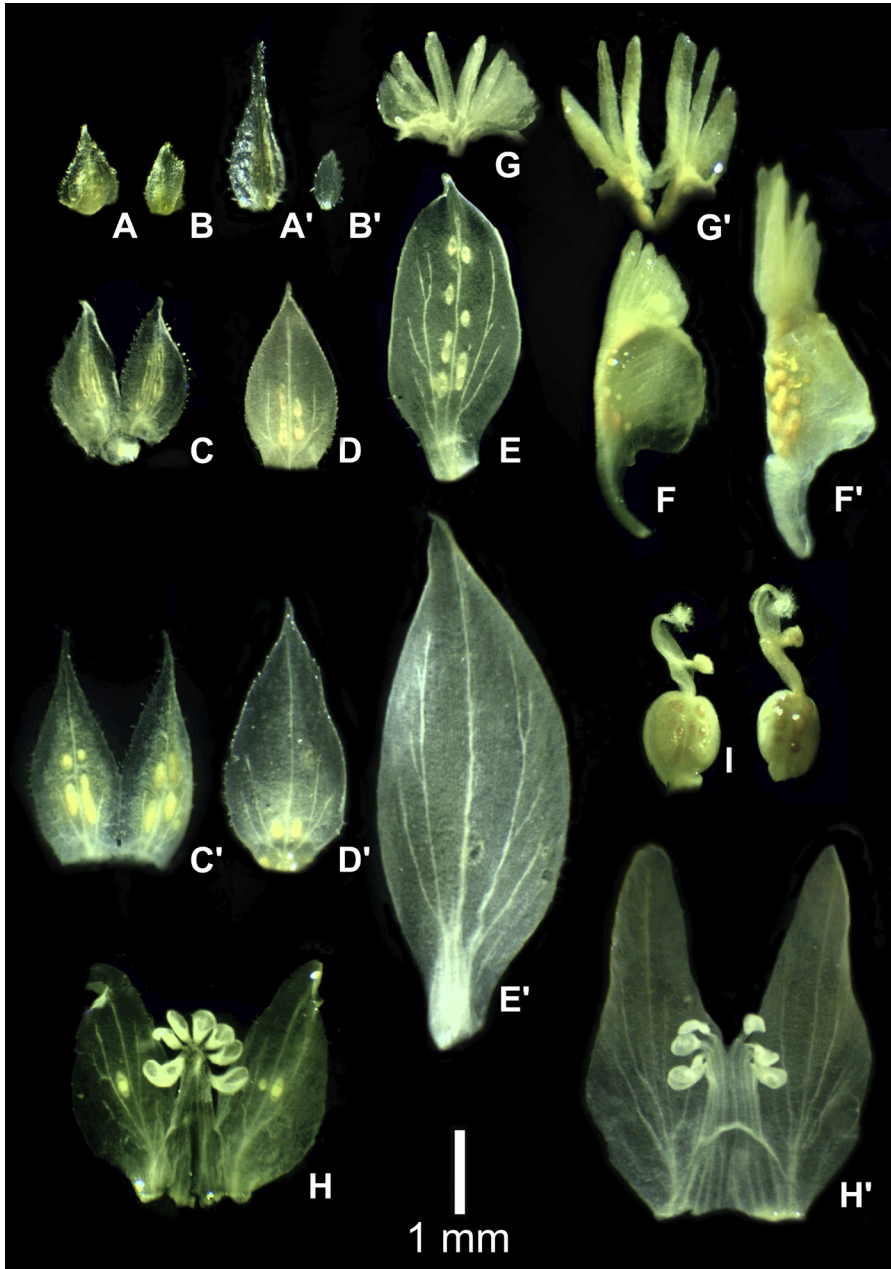


Figure 1. Comparison of the floral details of *Polygala petricola* J.F.B.Pastore, sp. nov., and *P. rigida* A.St.-Hil. & Moq. A and A', Bract; B and B', bracteole; C and C', two superior outer sepals; D and D', inferior outer sepal; E and E', one of the two inner sepals (wings); F and F', keel; G and G', opened crest; H and H', androecium and lateral petals; I and I', gynoecium. A–I, *Polygala petricola* (Paiva *et al.* 1632, CTBS). A'–I', *Polygala rigida* (Oliveira *et al.* 6161, CTBS). Photographs by J. F. B. Pastore.

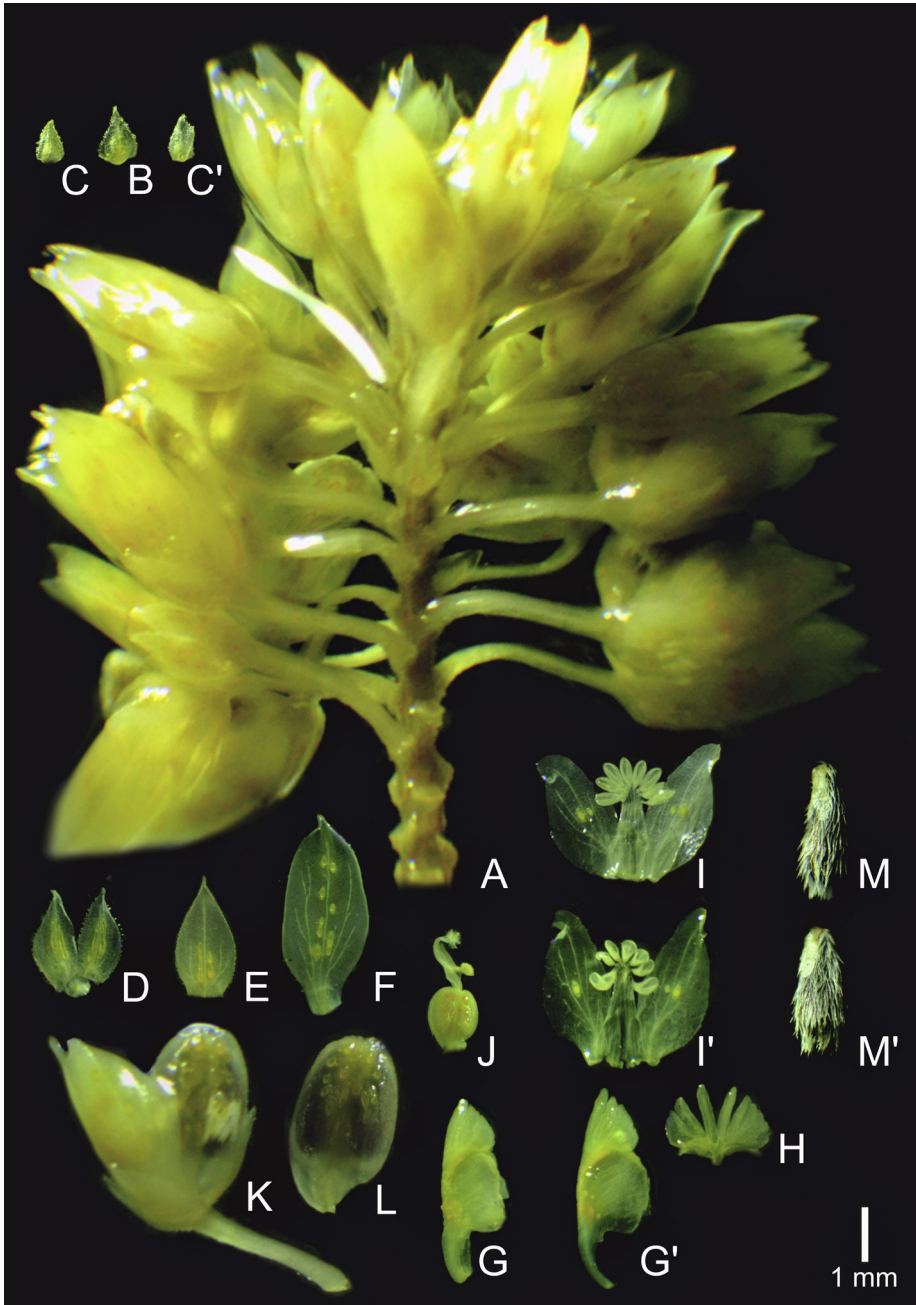


Figure 2. *Polygala petricola* J.F.B.Pastore, sp. nov. A, Raceme; B, bract; C and C', bracteoles; D, two superior outer sepals; E, inferior outer sepal; F, one of the two inner sepals (wings); G and G', keel; H, opened crest; I and I', androecium and lateral petals; J, gynoecium; K, fruiting calyx; L, capsule; M and M', seed (scale bar, 1 mm). All from Paiva et al. 1632 (CTBS). Photographs by J. F. B. Pastore.

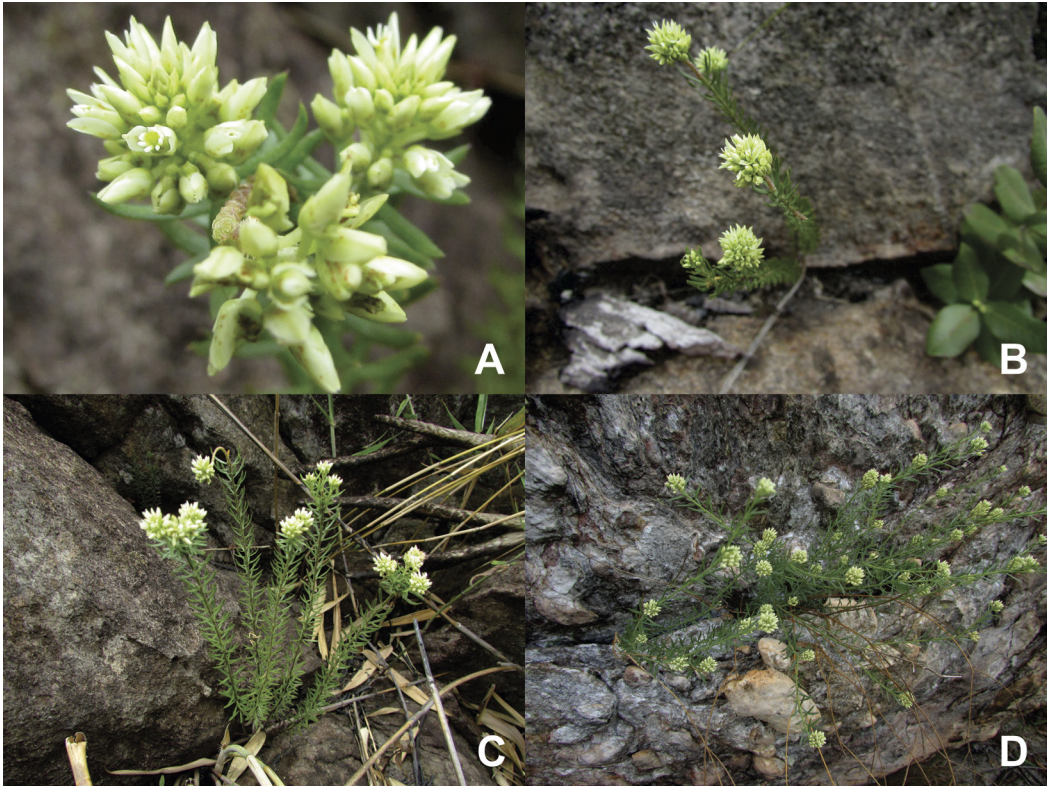


Figure 3. *Polygala petricola* J.F.B.Pastore, sp. nov. A, Flowers and racemes; B–D, plant and habitat. Photographs: A–C, Souza et al. 144 (CTBS); D, Paiva et al. 1632 (CTBS). Photographs: A–C. J. A. M. Souza and D. J. A. M. Paiva.

cymbiform prestigmatic cavity, posterior extremity with a conspicuously crested appendage with abundant trichomes and an anterior globose stigma. *Capsules* $3.2 \times 1.7\text{--}1.8$ mm, subelliptical, with several yellow spots close to the central nerve, style caducous in fruit; *seeds* $c.2.1\text{--}2.2 \times 0.8$ mm, subconical, pubescent, trichomes 0.3 mm, with caruncular appendages 1×0.3 mm to $c.1/3$ of the seed length.

Distribution. The new species was collected on Serra da Moeda in the municipality of Brumadinho, Minas Gerais, near the Casa Branca District in the western part of Brumadinho, close to the municipality of Nova Lima (Figure 4).

Habitat and ecology. Above 1100 m a.s.l., occurring in campo rupestre vegetation on sandy soils with rocks, on the southeast slopes of Serra da Moeda.

Flowering. The new species was collected with flowers and fruits in January, February, October and November.

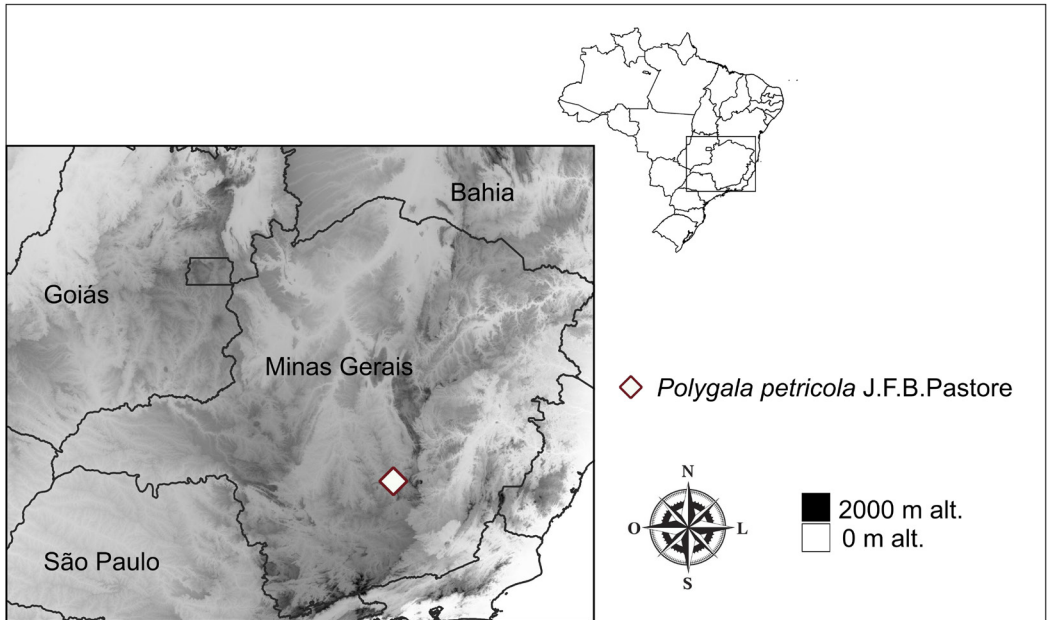


Figure 4. Distribution of *Polygala petricola* J.F.B.Pastore, sp. nov.

Etymology. The epithet of *Polygala petricola* refers to its preference for rocky habitats.

Provisional IUCN conservation assessment. The only known specimens were collected within or near the area of Serra da Moeda. Two of these were collected in a legal reserve area. The extent of occurrence (EOO) and area of occupancy (AOO) were calculated using the online software GeoCat (Bachman, 2011), resulting in 4 km² for the EOO and an AOO of 12 km². The IUCN assessment according to the criteria B: B1 and B2 a, b(iii) (IUCN, 2012) is Critically Endangered (CR). *Polygala petricola* also falls within the criterion b-III of the IUCN (2012), because the region is subjected to mining activity disturbances and urban sprawl.

Additional specimens examined. BRAZIL. **Minas Gerais:** Brumadinho, Serra da calçada, Retiro das Pedras, -20.093056 [20°05'35"S], -43.983611 [43°59'01"W], 11 x 2001, Viana, P.L. 304 (BHCB); Serra da Moeda, 20°06'54"S, 43°59'29"W, 1417 m alt., 7 xi 2107, Souza, J.A.M. et al. 144 (BHCB); ibid., Serra da Moeda, 20 ii 1990, Porto-Paula, L.M. & Grandi, T.S.M. 886 (BHZB, CTBS).

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