



# *Anthurium alegrense* (Araceae), a new species of *Anthurium* Schott, with an internally purplish stem from Southeastern Brazil

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**Summary.** In the Atlantic Forest, only a few species of *Anthurium* have internally reddish or purplish stems. During a floristic survey of Araceae species in the Atlantic Forest from Espírito Santo State, southeastern Brazil, we found an intriguing *Anthurium* species with purplish stems. Here, we describe and illustrate the new species, *Anthurium alegrense*, and also provide comments on its ecology and conservation.

**Key Words.** Boulders, conservation, inselbergs, section *Urospadix*, taxonomy.

## Introduction

The genus *Anthurium* Schott (Araceae) comprises c. 950 species and is restricted to the Neotropics (Boyce & Croat 2011 onwards). It includes terrestrial and epiphytic representatives and can be found in extreme environments, like rocky outcrops and swamps (Coelho *et al.* 2009). In Brazil, the genus is a conspicuous element of the Atlantic Forest, with 96 species recorded up to now (BFG 2018).

Composed of an extremely fragmented landscape (Ribeiro *et al.* 2009), the Atlantic Forest still has significant wealth in particular areas that constitute permanent preservation areas (APP) and legal reserves (RL). This scenario is most alarming in Espírito Santo State, a refuge for 12 endemic *Anthurium* species. An interesting example includes the southern part of Espírito Santo state, consisting of inselbergs surrounded by very small forest fragments. In these fragments, the amount of boulders has prevented the removal of forest for livestock, ensuring the preservation of species described only recently (e.g. Machado & Vianna-Filho 2012; Ferreira *et al.* 2013; Kollmann & Peixoto 2013; Fraga *et al.* 2017).

In this region, some *Anthurium* species have been described in fragments of forest outside the protected area (Valadares & Sakuragui 2015; Coelho & Valadares 2019), and it is premature to say that the region was efficiently inventoried. Here we describe a new species of *Anthurium* with a purplish stem internally. Most species of *Anthurium* from the Atlantic Forest have a greenish or rarely reddish stem in cross-

section (e.g. Camelo *et al.* 2018a, 2018b). A peculiarity of this study includes the easy identification of this character after drying, which was never previously documented for the genus. Aspects of its morphology, ecology and conservation of its populations are also presented.

## Materials & Methods

This study includes material collected in the Alegre municipality, Espírito Santo state, as well as analysis of materials from MBML, RB and VIES herbaria (acronyms according to Thiers 2020, continuously updated). Morphological analysis was performed using a stereoscope. Colours of vegetative and reproductive structures were recorded from naked eye observations in the field and are presented according to Coelho *et al.* (2009). We carried out cross-sections on the stem of fertile and sterile specimens to verify and evaluate the plasticity of colour. The floral and vegetative character description follows Croat & Bunting (1979), Stearn (1993), and Mantovani *et al.* (2009). The ratios between the reproductive and vegetative structures were always obtained from fertile branches, following the recommendations of Coelho & Valadares (2019).

## Taxonomic Treatment

***Anthurium alegrense* Theófilo, Manhães & D.R.Couto sp. nov.** Type: Brazil. Espírito Santo State: Alegre, Sítio

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Água Limpa - Prop. Carlos Vimercati, 10 Dec. 2015, V. C. Manhães 560 (holotype VIES!; isotype RB!).

<http://www.ipni.org/urn:lsid:ipni.org:names:77216868-1>

*Rupicolous*. Roots internally purplish. Stem < 5 cm long, erect, internally purplish, internodes short (< 0.5 cm long); prophylls and cataphylls 1.6 – 3 cm long, greenish when young, chestnut to brownish when old, drying chestnut, entire to decomposed at the stem apex, decomposed in fibres at the stem base. Leaf not peltate; sheath c. 0.5 cm long, not ligulate, petiole 3.7 – 15.3 × 0.4 – 0.5 cm, spreading, greenish, glossy, covered with raphide cells, without glandular-punctate markings, U-shaped or D-shaped, flattened to sulcate with obtuse to acute margins adaxially, rounded abaxially; geniculum 0.2 – 0.4 cm long, clear matte green when fresh, drying blacker than the rest of the petiole, flattened to sulcate with obtuse to acute margins adaxially, rounded abaxially, without glandular-punctate markings; leaf blade 19.6 – 34 × 3 – 6.6 cm, spreading, elliptic, lanceolate or ovate, convex in cross section, aplanate margin, chartaceous when fresh or dry, apex acute, base obtuse, acute or truncate, discolourous, upper surface greenish glossy, with greenish border, drying grey-greenish, lower surface pale green, drying chestnut, without glandular-punctate markings, raphide cells inconspicuous; midrib greenish on both surfaces or greenish and lighter than the blade abaxially, obtuse at the base, acute and prominent at the apex adaxially, prominent and rounded or l-acute abaxially; primary lateral veins obscure in both faces or slightly sunken adaxially when fresh, 14 – 29 on both sides, arched; collective vein arising from the base, 0.3 – 0.55 cm from margin. Inflorescence with peduncle erect, 1.5 – 6.5 × 0.3 – 0.4 cm, terete, greenish to green-purplish, internally purplish or greenish, glandular-punctate markings absent, covered with raphide cells, geniculum absent, peduncle:petiole ratio 0.27 – 0.62:1; spathe 2.5 – 4 × 1 – 1.5 cm, length:breadth ratio 2.5 – 2.6:1, spathe:peduncle ratio 0.6 – 1.6:1, chartaceous when fresh, naviculate, chartaceous when dry, greenish to green-purplish, ovate, decurrent at base for 0.2 – 0.3 cm, acuminate at apex, deflexed at anthesis forming acute angle with the peduncle, pustules absent from both surfaces, densely covered with white speckles; spadix 2 – 4 × 0.5 – 0.6 cm, length:breadth ratio 4 – 6.6:1, spadix:peduncle ratio 0.6 – 1.3:1, sessile, cylindrical to tapered, grey-greenish, greenish to chestnut at anthesis, 5 – 7 flowers visible per principal spiral, 7 – 8 visible per secondary spiral; flowers rhombic; tepals grey-greenish, greenish to chestnut at the apex, greenish to purplish towards the base when fresh, dorsally acute, internally convex; lateral tepals 1.31 – 1.36 × 1.24 – 1.25 mm; tepals

anterior/posterior 1.43 – 1.47 × 0.77 – 0.87 mm; stamens emerging in scattered manner, lateral first followed quickly by alternates; filaments 1.42 – 1.5 × 0.34 – 0.41 mm, translucent, flattened, striated; anthers 0.54 – 0.58 × 0.24 – 0.3 mm, dorsifixed, extrorse, reddish-pink when dry; pistils 1.88 – 1.91 × 0.68 – 0.85 mm, greenish at apex, greenish to purplish towards the base when fresh, oblong, emergent, mesophyll with raphide cells, stigma sessile, rounded, ovary bilocular, one ovule per locule, axial placentation, funicle with trichomes. *Infructescence* not seen. Fig. 1.

**RECOGNITION.** *Anthurium alegrense* Theófilo, Manhães & D.R.Couto differs from *A. martinellii* Nadrusz & Theófilo in having a stem internally purplish (vs greenish internally), peduncle terete (vs compressed laterally), spadix cylindrical to tapered (vs conical), grey-greenish, greenish or chestnut (vs salmon) and anthers purplish in rusty (vs cream-colour cream-colour to chestnut in rusty).

**DISTRIBUTION.** Brazil, endemic to southern region of the Espírito Santo state (Map 1).

**SPECIMENS EXAMINED.** BRAZIL. Espírito Santo: Alegre, Sítio Água Limpa - Prop. Carlos Vimercati, 10 Dec. 2015, V. C. Manhães 560 (VIES, RB); Alegre, Estrada para Roseira, (fragmento Serra da Roseira), 30 Aug. 2014, V. C., Manhães 513 (VIES); Muqui, Retiro, Fazenda Sabiá, Mata do Constantino, 6 Oct. 2009, D. R. Couto 1274 (RB, VIES).

**HABITAT.** *Anthurium alegrense* is rupicolous, growing in the understory of semideciduous seasonal forests on granite rock boulders, at elevations below 700 m, in the southern region of the Espírito Santo state (Map 1).

**CONSERVATION STATUS.** The species is considered as Data Deficient according to the International Union for Conservation of Nature criteria (IUCN 2012) until more information becomes available. The seasonal forests of this region are located mainly in private areas and are extremely fragmented and mostly surrounded by extensive beef cattle livestock, coffee plantations (*Coffea canephora* Pierre ex A.Froehner), eucalyptus and mining activities (Couto *et al.* 2016). However, this mosaic of forest areas is home to an important sample of Capixaba vascular flora, with high richness and the presence of endemic and endangered species (Martinelli & Forzza 2006; Versieux & Wanderley 2007; Leme *et al.* 2009; Couto *et al.* 2013; Chautems *et al.* 2015; Couto *et al.* 2019) and conservation actions, such as the creation of new protected areas, should be encouraged by environmental agencies.

**ETYMOLOGY.** The specific epithet “alegrense” is given in honour of the Alegre municipality, where the species was found.

**NOTES.** *Anthurium alegrense* belongs to section *Urospadix* subsect. *Obscureviridia* Engl. because of the

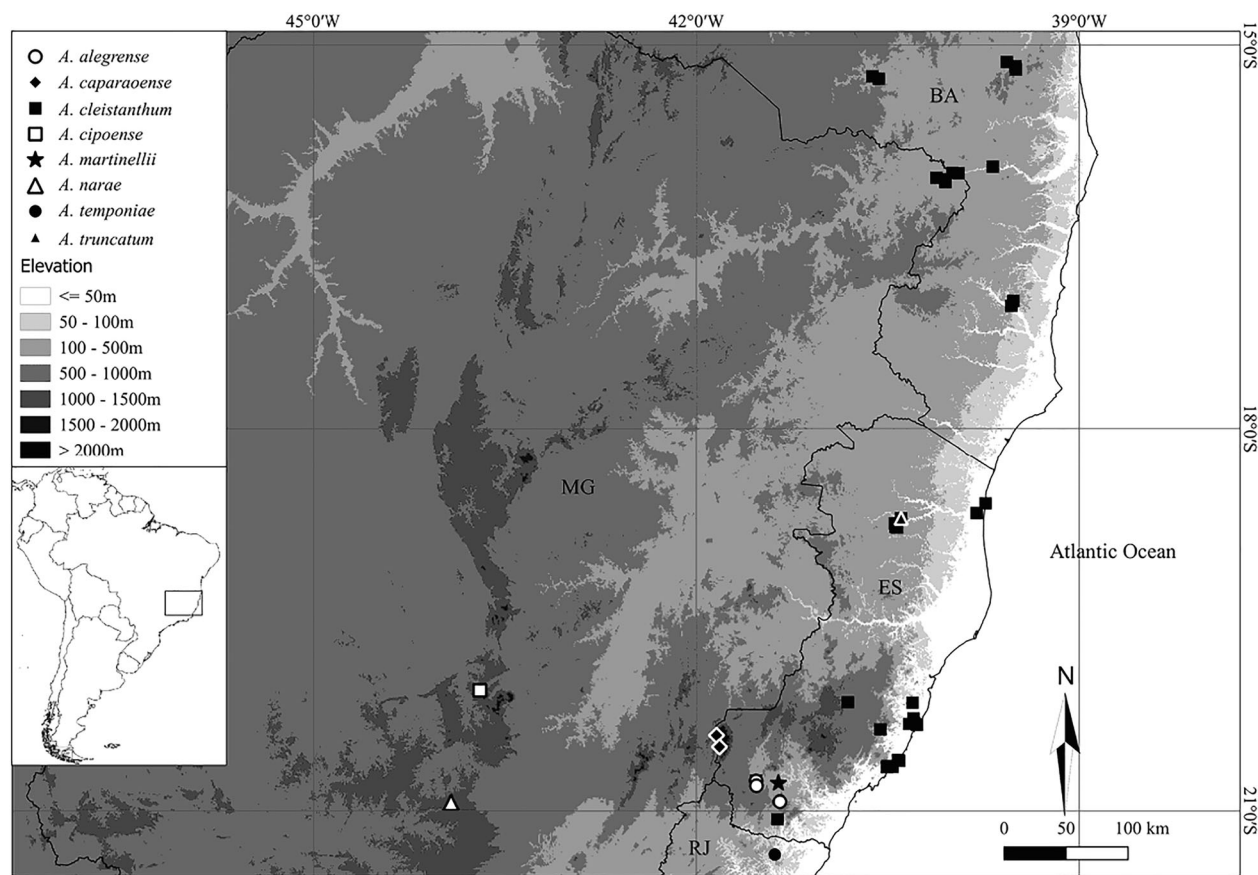




**Fig. 1.** *Anthurium alegrense* Theófilo, Manhães & D.R.Couto. **A** habit; **B** stem in cross section showing internally purplish stem when fresh; **C** stem in longitudinal section showing internally purplish stem when dry; **D** adaxial and abaxial views of leaf blade; **E** inflorescence at male anthesis; **F** detail of inflorescence at male anthesis; **G** detail of the reddish-pink anthers when dry; **H** inflorescence in cross section.

chartaceous leaf blade that is slightly discoloured to concolorous, with primary lateral veins hardly visible (Coelho *et al.* 2009). This species appears to be closely related to some species of the subsection that have a

peduncle often smaller than the petiole length. This group includes species such as *Anthurium cleistanthum* G.M.Barroso, *A. martinellii* Nadruz & Theófilo, *A. temponiae* Nadruz & Theófilo and *A. truncatum*



**Map 1.** Distribution of *Anthurium alegrense* Theófilo, Manhães & D.R.Couto and closely related taxa.

E.G.Gonç., distributed from northern Rio de Janeiro to southern Bahia (Map 1). None of these species have internally purplish stem, shiny leaf blade (except *A. martinellii*) and reddish-pink anthers when dry. A parallel interpretation can also be given for species that have internally reddish stem (*A. narae* Nadruz, Camelo & Temponi, *A. cipoense* Temponi and *A. caparaense* Temponi, Camelo & Nadruz) in the Atlantic Forest. These species are associated with the subsection *Insculptinervia* Engl., characterised by their erect leaves, coriaceous leaf blade and strongly adaxially inscribed primary lateral veins (Engler 1905; Hammes *et al.* 2020). Although our interpretation points to the presence of slightly adaxially sunken primary lateral veins, this character is rare and occurs in larger plants associated with litter accumulation on the rock.

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