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Anthurium idimae—a new species of Araceae from Southeastern Brazil

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Abstract

Anthurium idimae is described from Espírito Santo and Rio de Janeiro states, in Southeastern Brazil. During the floristic survey of Araceae family in the Atlantic Forest, we found an unknown species with an intriguing combination of intermediate characteristics among *A. cleistanthum*, *A. truncatum*, *A. molle,* and *A. cachoeirense*. We described and illustrated the new species, including a comparative analysis of characters that distinguishes it from similar species, and also provide comments about its ecology, distribution and conservation.

Key words: Atlantic Forest fragments, deforestation, *Anthurium* section *Urospadix*, conservation

Introduction

Anthurium Schott (1829: 838) (Araceae) is a genus of 950 described species, and possibly up to 2000 species based on current estimates of undescribed taxa (Boyce & Croat 2016), that occurs in a wide variety of environments, including forests, rocky areas and wetlands. In Brazil, the genus comprises about 133 species distributed throughout all phytogeographic domains. In the states of Rio de Janeiro and Espírito Santo, ca. 100 and 90 species are recognized, respectively (Flora do Brasil 2020 in construction 2017).

These states, located in Southeastern Brazil, are part of the Atlantic Forest domain, having forest remnants of 18.8% in Rio de Janeiro and 10.5% in Espírito Santo, with continuous forest loss (SOS Mata Atlântica & INPE 2016). Despite extensive deforestation in the Atlantic Forest, these two states hold small forest fragments (<1 ha) with different levels of regeneration that still support species unknown to science (e.g. Valadares & Sakuragui 2015). Both states have taken the initiative to inventory its regional flora in the last decade, achieving well-documented descriptions of several new species, including several new *Anthurium* (e.g. Gonçalves 2012, Temponi & Coelho 2014). The new *Anthurium* species described here also reinforces the need for further studies in areas with underestimated floristic richness. In this study, we compare the affinities of this new species with its congeners and discuss its distribution and conservation status.

Materials and methods

We analyzed herbarium material from Museu de Biologia Mello Leitão (MBML), Jardim Botânico do Rio de Janeiro (RB) and Universidade Federal do Espírito Santo (VIES) collections (abbreviations follow Index Herbariorum, Thiers 2017 onwards), in addition to holotype images and specialized bibliography. Morphological studies were performed using a stereoscopic microscope Olympus SZ40. The coloration of vegetative and reproductive structures was observed from the sampled and cultivated material, and then presented in a general way, avoiding terminology conflict due to a great variation in tonality. The floral and vegetative character description follows Croat & Bunting (1979), Stearn (1993), Mantovani *et al.* (2009) and Poli *et al.* (2012).

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Taxonomy

Anthurium idimae Theófilo & Nadruz, *sp. nov.* (Fig. 1)

Anthurium idimae is most similar to Anthurium cachoeirense Theófilo & Sakuragui (2015: 81), but differs by having prophylls and cataphylls deciduous at the stem base and peduncle 0.5 times to 0.8 times shorter than petiole.

Type:—BRAZIL. Espírito Santo: Serra, Área de Proteção Ambiental Mestre Álvaro, 20º09'15"S, 40º18'44'W, 320 m, 10 August 2014, *R.T. Valadares 1255* (holotype: RB!).

FIGURE 1. *Anthurium idimae* Theófilo & Nadruz *sp. nov.* A. Habitat. B. Habit. C. Stem. D. Inflorescence at anthesis. E. Inflorescence post-anthesis. F. Peduncle in fruit. G. Geniculum in peduncle (arrow). H. Infructescence. I. Berries.

Terrestrial to rupicolous herb; *stem* elongated, erect; internodes 0.7–1.5 cm long; *prophylls* and cataphylls greenish when young, brownish to chestnut when old, persistent and entire at the apex, deciduous at the stem base, 5.8–13.0 × 3.0–3.5 cm; *sheath* 2.0–2.4 cm long; petiole erect, greenish, flat with obtuse margins toward the base and slightly sulcate with acute margins toward the apex, rounded abaxially, 16.0–20.5 × 0.7–0.9 cm; geniculum greenish, thicker

than the petiole, flattened with acute margins adaxially, rounded abaxially, 1.2–1.6 cm long; *leaf blade* erect, elliptic, lanceolate to ovate, chartaceous when fresh, coriaceous when dry, apex acute to mucronate, base truncate to cordate, with strongly contrasting colors on the two surfaces, upper surface dark-green and semiglossy, lower surface light green and matte, 54.0–58.7 × 16.0–18.3 cm; anterior lobe 33.3–42.8 cm long; posterior lobes 1.5–2.8 cm long, rounded at apex, the sinus parabolic to hippocrepiform; midrib greenish and lighter than the blade adaxially, flattened at the base, rounded and prominent at the apex adaxially, rounded and prominent abaxially; basal vein 1; primary lateral veins obscured adaxially when fresh, obscured to darker than the blade abaxially when fresh, very differentiated from the finer veins when dried, 18–38 on both sides, arched, forming an angle of 10–40° with the midrib at the leaf base, 8–30° in the middle, 15–45° at the apex; infra-marginal collective vein starting from the leaf base or, more rarely 5.8 cm above it, 0.6–1.5 cm from margin. *Inflorescences* erect, peduncle terete to slight 1-ribbed, greenish, geniculum present or absent at the apex, 9.0–16.1 cm long, 0.6–0.7 cm diam., 0.5 times to 0.8 times shorter than petiole; spathe membranaceous, greenish, ovate to lanceolate, erect or inserted at 45–50° angle, frequently damage by herbivores post-anthesis, 8.2–10.2 × 3.1–4.0 cm, forming an acute angle with the peduncle, decurrent 1.0–1.1 cm long; spadix sessile to stipitate, 9.7–12.3 cm long, 0.8–0.9 cm diam., tapered, yellowish in pre-anthesis, purplish at anthesis, brownish up to fruiting, stipe 0.1–0.2 cm long; 6–9 flowers visible in the principal spiral and 5–7 visible in the alternate spiral; tepals purplish until anthesis, brownish at the apex, becoming whitish towards the base post-anthesis and in fruit, dorsally acute, internally convex; lateral tepals 1.8–2.5 × 0.80–1.1 mm; tepals anterior/posterior 1.7–2.3 × 0.80–1.0 mm; filaments flattened, striated, 1.5–2.0 × 0.8–1.0 mm; anthers dorsifixed, extrorse, 0.70–0.75 × 0.50–0.55 mm; pistils whitish, cylindrical, mesophyll with raphid cells; sessile stigma, unicellular secretory trichomes extending up to the stylar canal; ovary bilocular 2.0–2.2 × 0.80–1.0 mm; one ovule per locule, axial placentation, glabrous funicle. *Immature berries* greenish at the apex, whitish on the base; mature berries greenish at the apex, densely whitish speckled, becoming white translucent at the base. *Seeds* not seen.

Eponymy:—The specific epithet honors Idimá Gonçalves, an important collector and expert in forests of the North and Northwest of the Rio de Janeiro state, and who discovered the species in Rio de Janeiro.

Habitat and distribution:—*Anthurium idimae* is known only from Atlantic Forest fragments present in Espírito Santo and Rio de Janeiro states (Fig. 2). In Espírito Santo state it occurs in the Área de Proteção Ambiental do Mestre Álvaro, where Valadares & Sakuragui (2014) also described *A. angustifolium* Theófilo & Sakuragui in Valadares & Sakuragui (2014: 31). In the region, populations of the new species occur in Submontane Dense Ombrophilous Forest (Veloso *et al*. 1991). In Rio de Janeiro, it is known only from Cardoso Moreira municipality (in secondary forest and rocky outcrops) in Lower Montane Semideciduous Forest. Extensive field work in the greater surrounding area has failed to locate further populations of this species. The species inhabits Atlantic Forest fragments under regeneration, i.e. semideciduous secondary forest surrounded by pastures intended for livestock farming. It lies south of the municipality of Cardoso Moreira, North of Rio de Janeiro state, at Santa Rita farm, in Serra da Bandeira.

Ecology:—*Anthurium idimae* occurs preferentially on shaded rocky outcrops. Direct observations estimate a population size of ca. 300 individuals, either scattered or forming small groups. Isolated individuals can be found in secondary vegetation and interspersed between clusters of *Anthurium polynervium* Temponi & Nadruz (2011: 316), *Philodendron pedatum* (Hooker 1827: 206) Kunth (1841: 49), *Syngonium vellozianum* Schott (1854: 418) and rupiculous species of Bromeliaceae and Marantaceae.

Discussion:—*Anthurium idimae* is tentatively placed in *Anthurium* section *Urospadix* subsection *Obscureviridia* Engler (1898: 393) due to the presence of chartaceous to coriaceous leaf blade and obscure to barely visible primary lateral veins.

Anthurium idimae is morphologically similar to *A. molle* Gonçalves & Jardim (2009: 715), a restricted species of Serra do Teimoso, Bahia, which has short stem and an elliptical spathe (Table 1). It can also be confused with *A. cleistanthum* Barroso (1957: 97), *A. truncatum* Gonçalves (2011: 115) and *A. cachoeirense* Theófilo & Sakuragui in Valadares & Sakuragui (2015: 81), being easily distinguished by the characters presented in Table 1. *Anthurium cleistanthum* occurs in inselbergs in Espírito Santo and Minas Gerais states and sediment coastal plain of the Espírito Santo state (Valadares *et al*. 2010, BFG 2015), *A. truncatum* is restricted to inselbergs in the northwest Espírito Santo up to altitudes between 700–900 m (Gonçalves 2011) and *A. cachoeirense* is restricted to the southern Espírito Santo state on boulders within semideciduous forest (Valadares & Sakuragui 2015).

Conservation status:—Data available for the new species are still sparse and insufficient to assess its conservation status. The species is considered as Data Deficient (IUCN 2001) until more information becomes available.
Continuous observations in the coastal mountains of both states highlight the idea that large boulders, currently present inside the forest, probably continue to host rupicolous species after deforestation, functioning as refuges. After the abandonment of the land and following forest regeneration, currently in advanced stages of regeneration, these

species could potentially bounce back to reconstitute the herbaceous layer of the forest from sources including isolated boulders over the pastures of the region. Genetic studies may help settle this question in the future. The description of this species meets the priority actions proposed by IPEMA (2011) that includes floristic inventories to increase conservation actions in the Espírito Santo state.

Additional specimens examined (paratypes):—BRAZIL. Espírito Santo: Serra, Área de Proteção Ambiental Mestre Álvaro, 22 November 2009, *Gomes 3677* (VIES!); Rio de Janeiro: Cardoso Moreira, Serra da Bandeira, 21°32'59"S, 41°33'19"W, 78 m, 12 December 2013, *M. Nadruz & I.G. Costa 2805* (RB!).

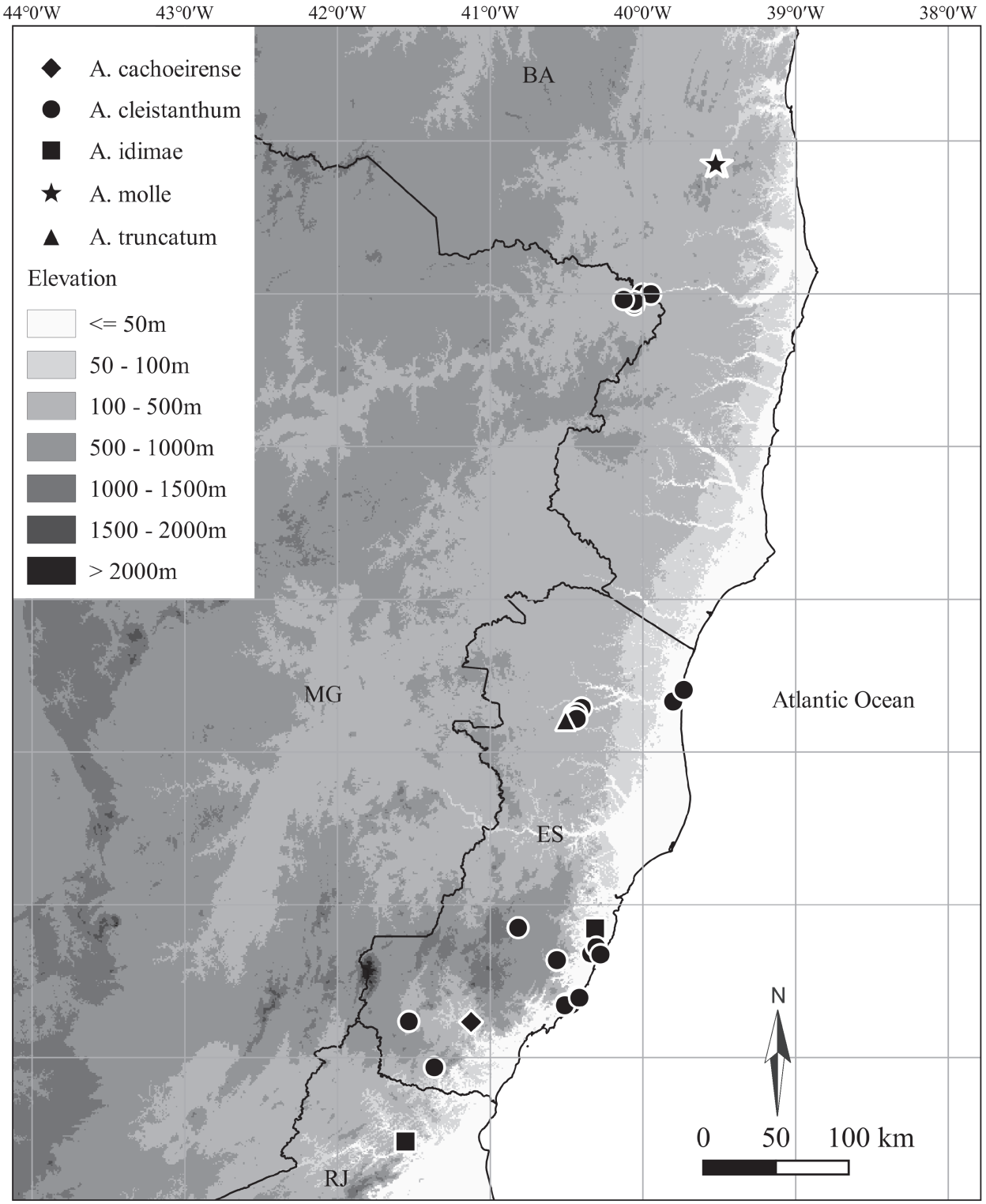

FIGURE 2. Distribution of *Anthurium idimae* Theófilo & Nadruz *sp. nov.* and closely related taxa.

TABLE 1. Key morphological traits in *Anthurium idimae* Theófilo & Nadruz *sp. nov.* and closely related taxa.

Character	*A. idimae*	*A. cleistanthum*	*A. truncatum*	*A.molle*	*A. cachoeirense*
Stem	Elongated	Short	Short	Elongated	Elongated
Prophylls and cataphylls	Deciduous at the stem base	Persisting as fibers at the stem base	Persisting as fibers at the stem base	Persisting as fibers at the stem base	Persisting as fibers at the stem base
Leaf color	Semiglossy	Matte	Matte	Semiglossy	Glossy
Spathe	Ovate to lanceolate	Ovate to lanceolate	Ovate	Elliptic	Ovate to lanceolate
Peduncle/petiole	0.5–0.8x	0.45x	0.56x	2.1–2.8x	3.0–3.8x

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