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Aristolochia assisii, a new neotenic species of Aristolochiaceae from Espírito Santo and Bahia, Brazil

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Abstract

We describe and illustrate *Aristolochia assisii*, a new species assigned to subseries *Anthocaulicae*. This subseries is characterized by the presence of extremely short and ramiflorous racemes in which each flower is subtended by a small bract. The inflorescences and the flowers of the new species are morphologically similar to those found in three woody climbers of this subseries (*A. bahiensis, A. disticha* and *A. subglobosa*); however, it clearly differs by the herbaceous condition, a trait extremely rare in cauliflorous species that suggests neoteny, and the possession of a long, cylindrical rhizome and a tapered rostrum to 1.2 cm long in the capsule. So far, *A. assisii* is the third species of the subseries *Anthocaulicae* known to occur in the Atlantic Forest of Brazil.

Resumo

Neste trabalho é descrita e ilustrada *Aristolochia assisii*, uma nova espécie pertencente à subsérie *Anthocaulicae*. A subsérie é caracterizada pela presença de racemos ramifloros a caulifloros extremamente curtos e com folhas reduzidas a pequenas brácteas. As inflorescências e flores da nova espécie são morfologicamente semelhantes às encontradas em três trepadeiras lenhosas desta subsérie (*A. bahiensis*, *A. disticha* e *A. subglobosa*), no entanto, difere claramente pela condição herbácea, uma característica extremamente rara em espécies caulifloras, o que sugere neotenia, além de possuir um longo rizoma cilíndrico e um rostro de 1,2 cm de comprimento na cápsula. Até agora, *A. assisii* é a terceira espécie das subséries *Anthocaulicae* conhecida para a Mata Atlântica do Brasil.

Introduction

With approximately 550 species, *Aristolochia* is the largest genus of the family Aristolochiaceae (González, 2012). *Aristolochia* is widely distributed in all continents, but ca. 75% of the genus is found in the neotropics. Brazil, with ca. 89 species, (Barros & Araújo, 2014; Freitas *et al*. 2013A) is one of the hotspots for the diversification of the genus. Approximately 25 species of neotropical *Aristolochia* possess ramiflorous to cauliflorous racemes with extremely short internodes and flowers subtended by reduced bracts (González, 1990, 1991, 1997, 1998). These species conform the subser. *Anthocaulicae* F. González (1990: 128). Although molecular-based (Neinhuis *et al*., 2005; Ohi-Toma *et al*., 2006) and combined molecular and morphological (Wanke *et al*., 2006) phylogenetic analyses suggest that this subseries is not monophyletic, the typical shortened racemes with reduced bracts provide a clear-cut field trait to unequivocally distinguish these species from the remaining (ca. 280) neotropical species of *Aristolochia*. These traits were critical in describing two new Brazilian species of this subseries, *A. bahiensis* F. González (1998:8) and *A. subglobosa* Freitas *et al.* 2013A (2013:56).

Here we describe and illustrate *Aristolochia assisii* and compared it with those three species of subseries *Anthocaulicae* present in eastern Brazil, *A. bahiensis* and *A. subglobosa,* and *A. disticha* Masters (1875:110). Additionally, we compare the new species with *A. holostylis* F. González (González, 2012; formerly *Holostylis reniformis* Duchartre 1854:33), which has similar habit and leaf morphology.

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Conservation status:—Tentatively, the species may be considered Endangered (B1, B2a, B2b(iii), and D) according to the IUCN Red List (IUCN, 2011) and the Geospatial Conservation Assessment Tool (GeoCat) (Bachman *et al*., 2011), due to the small area of occurrence (<5,000 km²), small area of occupancy (<500 km²), with just 3 places of occurrence and 3 populations; fragmentation and decline in the quality of habitat and few mature individuals known (<50).

Etymology:—The specific epithet honors the Brazilian botanist André Moreira de Assis, mentor of many biologist in the country and one of the collectors of the new species.

Comments:—The floral morphology of *Aristolochia assisii* resembles that found in *A. disticha* Mast., from Venezuela (Alto Orinoco), Brazil (Amazonas and Pará), French Guiana (Saint Laurent), and Peru (Brako & Zarucchi 1993; Feuillet & Poncy, 1998; Funk et al., 2007; Barros & Araújo, 2014), and in *A. bahiensis* and *A. subglobosa* (the latter two sympatric with the new species). However, *A. assisii* possesses a unique herbaceous habit and a relatively rapid flowering, which might indicate the occurrence of neoteny in this species. All the remaining species of subseries *Anthocaulicae* are woody climbers and the flowering occurs after many years of vegetative growth. The presence of racemose inflorescences in a herbaceous *Aristolochia* occurs in *A. holostylis* (González, 2012), but in this species the internodes of the raceme are not shortened and the subtending leaves are not as reduced as in *A. assisii*. In Table I we compare in detail the habit as well as the morphology and size of the perianth and the capsule of these five species.

In the new species, the young perianth is almost linear in relation to the utricle (Figure 3 B(a)), but the curvature between the utricle and the tube gradually reaches an angle of 60º by the time of anthesis (Figure 3-B(b)). By post-anthesis, the limb curves inwards (Figure 3-C). Gradual changes often occur during perianth development and growth. The variation observed in the contour of the perianth during flower development and growth is observed also in many species of *Aristolochia* (Costa & Hime, 1981; González & Stevenson 2000, Freitas *et al*. 2013B).

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