PIPERACEAE Giseke OF THE TOCA DOS URUBUS, BAEPENDI, MINAS GERAIS, BRAZIL

PIPERACEAE Giseke DA TOCA DOS URUBUS, BAEPENDI, MINAS GERAIS, BRASIL

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ABSTRACT

The Atlantic Forest has 7-11% of its original coverage, and studies of its remnants are needed. In the present study, a taxonomic treatment for Piperaceae in an Atlantic Forest remants, the Toca dos Urubus, is presented. Two species were found, distributed in two genera: *Peperomia oreophila* and *Piper gaudichaudianum*. For these species, morphological descriptions, habitats information and geographical distribution comments are provided.

Keywords: Mantiqueira Range. *Peperomia*. *Piper*.

RESUMO

A Floresta Atlântica possui 7-11% de sua cobertura original, e estudos de seus remanescentes se fazem necessários. No presente estudo, apresenta-se um tratamento taxonômico para Piperaceae em um remanescente de Floresta Atlântica, a Toca dos Urubus. Foram encontradas duas espécies, distribuídas em dois gêneros: *Peperomia oreophila* e *Piper gaudichaudianum*. Para

estas espécies são fornecidas descrições morfológicas, informações dos habitats e comentários sobre a distribuição geográfica.

Palavras-chaves: *Peperomia*. *Piper*. Serra da Mantiqueira.

Brazil is among the most diverse countries in the world (GIULIETTI *et al.*, 2005); although there are still many sites to be studied and many environments are in continuous deforestation for agribusiness or agriculture (MARTINELLI & MORAES, 2013). The Atlantic Forest is among the most important and megadiverse rainforests in the world and is considered to be one of the biodiversity hotspots (MYERS *et al*., 2000). Currently, only 7-11% of its original size remains, with anthropogenic action being the main cause of its reduction (FIALHO & ANDRADE, 2011)(RIBEIRO *et al.*, 2009).

Mantiqueira Range is located in the Atlantic Forest (RADAM BRASIL, 1983), and can be divided into the Mantiqueira Meridional (Plateau of Campos do Jordão and Itatiaia) and the Northern Mantiqueira (Patamares escalonados of Sul Capixaba, Maciço do Caparaó and Serranias of Minas Gerais Zona da Mata) (MACHADO FILHO *et al.*, 1983). It is distributed by the states of Minas Gerais, São Paulo, Espírito Santo and Rio de Janeiro, comprising 221 municipalities (TAVARES-SILVA, 2016).

Toca dos Urubus is located in the Meridional Mantiqueira Range, and has no conservation unit and is surrounded by private farms (FERREIRA & FORZZA, 2009). The area includes a mosaic of phytophysiognomies dominated by the Cerrado and the “Campos Rupestres”, as well as seasonal forest patches where there is higher humidity due to the convergence of drainage basins from the top of the mountain range. There are 403 species of vascular plants registered in the area (FERREIRA & FORZZA, 2009).

The knowledge of the biodiversity of an area is an important step for future actions to protect it, and the Toca dos Urubus conservation policy actions are still limited. Therefore, the

present study aims to contribute to the knowledge of the Piperaceae family in the state of Minas Gerais, inventorying the species occurring in Toca dos Urubus, elaborating morphological descriptions, data on habitats and comments about geographical distribution.

The floristic composition of the area was extensively studied by Ferreira & Forzza (2009), who carried out field campaigns between 2002 and 2006, depositing the materials in the collections CESJ, HUEFS, R and RB (THIERS, 2017). The morphological analyzes were carried out based on the herbarium material from this work already carried out and deposited in the CESJ herbarium. Additional material of other places for the analysis of the fruits were provided. The morphological terminology used in the species descriptions was based on Radford (1986), Harris & Harris (2003) and Gonçalves & Lorenzi (2007).

Piperaceae is widely distributed in tropical and subtropical regions, with about 3700 species, of which 450 occur in Brazil. Its characterized by shrub or herbaceous, terrestrial, rupicolous or epiphytes; branches with prominent nodes and leaves petiolate or subsessile; inflorescences in spikes or racemes, solitary or arranged in panicles or umbels of spikes (SARNAGLIA JUNIOR *et al.*, 2014). For the Toca dos Urubus, two species were recorded: *Peperomia oreophila* Henschen e *Piper gaudichaudianum* Kunth.

***Peperomia* Ruiz & Pav.**

Peperomia is represented in Brazil by about 170 species that inhabit mainly ombrophilous forests and, less frequently, dry forests, rocky fields and wetlands. They are herbs with generally fleshy leaves, alternating, opposite or verticillate, with inflorescences in spikes or racemes and flowers with two stamens (YUNCKER, 1974). Many species of *Peperomia* are cultivated as ornamental, whose beauty lies mainly in their foliage, while others are used in the feeding (GUIMARÃES & MONTEIRO, 2006).

***Peperomia oreophila* Henschen**, Nova Acta Regiae Soc. Sci. Upsal., ser. 3 (8): 28. 1873. Figure 1.

Herbs ca. 0,8 m tall; hirsute branches, trichomes 1,1-1,7 mm length. Leaf 0,85-1,15 cm length and 0,4-1 cm width, 3-4-verticillate, fleshy, large-elliptic to orbicular, apex acute-rounded, revolute margin, entire, rounded basis, adaxial surface sparsely hirsute, not adpressed trichomes, 0,5-0,9 mm length, brown glands present, abaxial surface hirsute, not adpressed trichomes, ca. 0,6 mm length, brown glands present; vein pattern acrodomous, 3 secondary veins; petiole 0,5-1 mm length. Spikes 11,4-16,05 mm length and 1,85-2,6 mm width, erect; peduncle 3,6-4,5 mm length, hirsute, rachis foveolate; bract rounded-peltate. Fruit ovoid, acute apex, brown.

Material examined: Baependi. Toca dos Urubus: 19.XII.1970, fl., *L. Krieger CESJ9720* (CESJ); 23.VI.2002, fl., *F.M. Ferreira 166* (CESJ, ESA, BM, RB).

Additional material: MINAS GERAIS. Lima Duarte. Serra de Ibitipoca: 2.XI.1973, fl., fr., *L. Krieger s.n.* (CESJ13193).

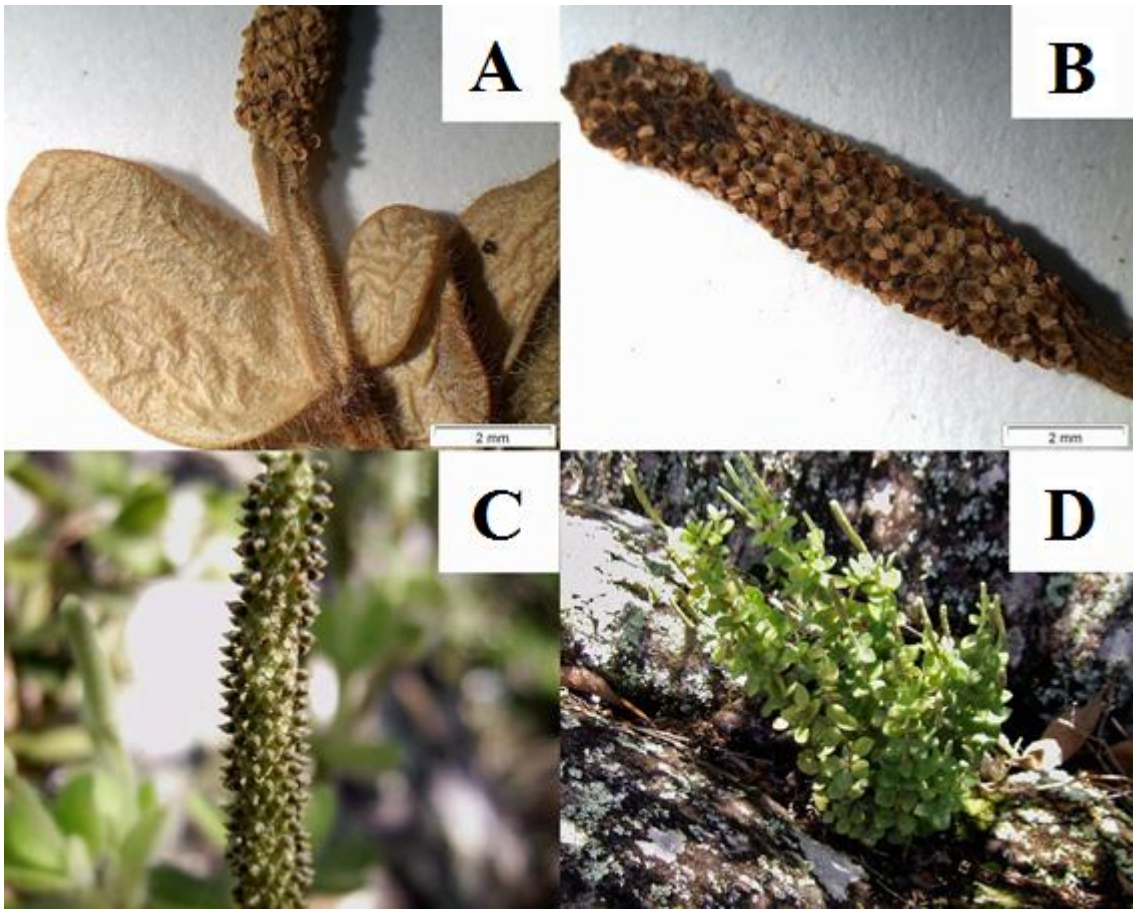

Figure 1. *Peperomia oreophila*. A- Detail of leaves and peduncle of inflorescence (F.M. Ferreira 166) B- Detail of inflorescence (F.M. Ferreira 166). C- Detail of infructescence. D- Habit. Photos C,D: Fabrício Moreira Ferreira.

Peperomia oreophila is endemic to Brazil, occurring in the Central-West (Goiás and Mato Grosso do Sul), Northeast (Bahia) and Southeastern (Minas Gerais and São Paulo) regions, in the Phytogeographical Domains of Caatinga, Cerrado and Atlantic Forest (BFG, 2015).

***Piper* L.**

Piper is one of the ten largest genera among Neotropical Magnoliidae, and is the largest within the family (JARAMILLO & MANOS, 2001). *Piper* comprises sub-shrubs, shrubs or sub-trees, with alternate leaves, inflorescences in racemes, terminal or axillary spikes, and flowers generally possessing four stamens and three or four stigmas (BORNSTEIN & COE, 2007)(CALLEJAS, 2001). It is very studied under the chemical point of view, it can be cited *Piper nigrum* L. (Pimenta-do-Reino) widely used in cooking, and *Piper betel* L. (Betel), used in

traditional eastern and western medicine. In addition, many studies were able to isolate several classes of active phytochemical compounds as alkaloids (SPEROTTO, 2012).

***Piper gaudichaudianum* Kunth**, Linnaea 13: 639. 1840. Figure 2.

Shrubs ca. 2 m tall; hispid-pubescent branch, trichomes 0,5-0,8 mm length. Leaf 6,5-15,3 cm length and 1,5-3,5 cm width, alternates, chartaceous, thin-elliptic to lanceolate, apex acute, flat margin, entire, asymmetric base, 2-3 mm shorter than the other, adaxial surface glabrescent, indumentum more dense in veins, trichomes adpressed, 0,45-0,6 mm length, absent glands, abaxial surface hispid-pubescent, densely in midvein, trichomes adpressed, 0,5-0,6 mm length, absent glands; vein pattern eucamptodromous, 5-6 pair of secondary veins; petiole 3-7,9 mm length., hispid-pubescent. Spike 73,9-85,5 mm length. and 3,1-3,3 mm width, curved; peduncle 6,2-11,13 mm length, pubescent, rachis pubescent; bract triangular, pubescent-fimbriate. Fruit oblong, concave apex, black.

Material examined: Baependi. Toca dos Urubus: 1.XI.2003, fl., *F.M. Ferreira et al. 478* (CESJ, MBM, RB).

Additional material: MINAS GERAIS. Camanducaia, Monte Verde: 19.X.2002, fl., fr., *L.D. Meireles et al. 1180* (RB).

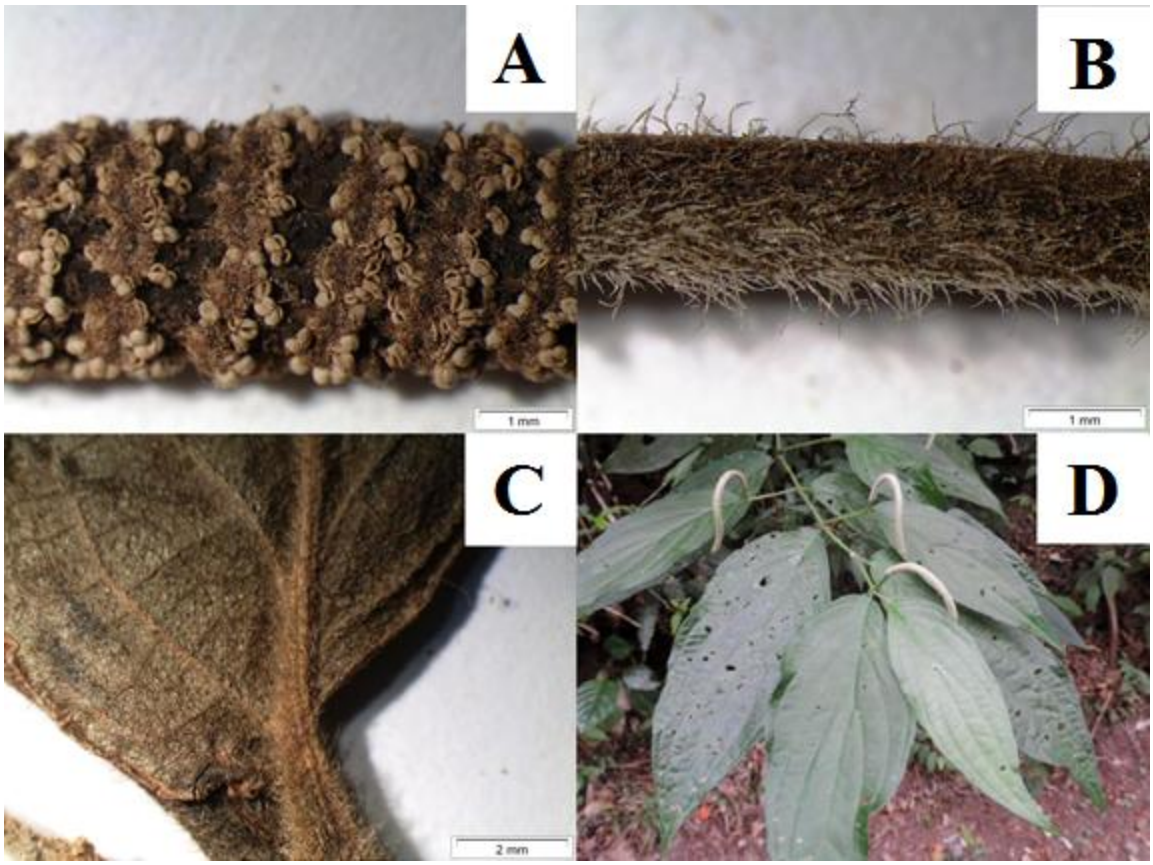

Figure 2. *Piper gaudichaudianum*. A- Detail of inflorescence (F.M. Ferreira *et al.* 478). B- Detail of branch indumentum (F.M. Ferreira *et al.* 478). C- Detail of leaf basis (F.M. Ferreira *et al.* 478). D- Habit. Photo D: George Azevedo de Queiroz.

Piper gaudichaudianum presents a wide distribution, occurring frequently in areas of the Brazilian Atlantic Rainforest, extending to Argentina and Paraguay (MEDEIROS & GUIMARÃES, 2007). In Brazil it occurs in all regions, in the states of the regions North (Pará), Northeast (Alagoas, Bahia, Ceará, Maranhão and Pernambuco), Central-West (Distrito Federal, Mato Grosso do Sul and Mato Grosso), Southeastern (Espírito Santo, Minas Gerais, Rio de Janeiro and São Paulo), South (Paraná, Rio Grande do Sul and Santa Catarina) in the Phytogeographical Domains of the Amazon, Cerrado and Atlantic Forest, can be found in anthropic, Cerrado (lato sensu), Ciliary or Gallery Forest, Semi-deciduous Forest, Ombrophilous Forest and Restinga (BFG, 2015).

The study carried out in the Toca dos Urubus, contributed to the expansion of the taxonomic knowledge for the species through the morphological analysis of them, and can be used in later taxonomic treatments, in view of *Peperomia oreophila* occur in five Brazilian States and three Phytogeographical Domains and *Piper gaudichaudianum* is widely distributed in Brazil.

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