

SCIENTIFIC NOTE

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First record of *Ilex taubertiana* (Aquifoliaceae) in Espírito Santo state, Brazil

Primeiro registro de Ilex taubertiana (Aquifoliaceae) para o Espírito Santo, Brasil

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PALAVRAS-CHAVE

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ABSTRACT: Conservationist strategies for flora species are more robust and well-defined if the floristic knowledge of a particular taxonomic group is more elucidated. This paper reports the first record of *Ilex taubertiana* (Aquifoliaceae) in Espírito Santo state, as well as the expansion of its geographical distribution. We present a brief diagnosis, the ecological characteristics, comments, and a geographical distribution map of the species in question.

RESUMO: Estratégias conservacionistas para espécies da flora são mais robustas e bem definidas se o conhecimento florístico de determinado grupo taxonômico é mais elucidado. Neste trabalho, é relatado o primeiro registro de *Ilex taubertiana* (Aquifoliaceae) para o Estado do Espírito Santo, bem como a ampliação da sua distribuição geográfica. Apresentamos breve diagnose, características ecológicas, comentários e mapa de distribuição geográfica da espécie tratada.

1 Introduction

The high species richness, high levels of endemism, and the limited extent of remaining forest fragments led Myers et al. (2000) to classify the Atlantic Forest as one of the global biodiversity hotspots, which are priority to conservation. However, Joly et al. (2014) showed that conservation units protect only 9% of the remaining of the considered biome.

The existence of several gaps in the floristic knowledge of the Atlantic Forest and scarce floristic material collections for some regions of Espírito Santo state (Giaretta et al., 2015; Zorzanelli et al., 2015) indicate that progress must be made to fill these flora gaps in order to refine the development of conservation policies.

Some universities and other education and research institutions have used monographs of state floras, such as the projects ‘Flora of Espírito Santo State’, ‘Phanerogamic Flora of São Paulo State’, and ‘Flora of Sergipe State’, as tools to develop conservation strategies. This network of information, which covers, among other activities, botanical material collections of specific taxonomic groups, is described by Thomas et al. (2012) as essential to systematic studies on a large scale. The premise of these local and regional flora monographs and continued collections is the development of more efficient strategies for the conservation of species and broader knowledge of the flora.

Some botanical families, such as Aquifoliaceae, are represented by few studies at regional and national scale. This family includes only the *Ilex* genus in Brazil, with at least 50 known species and occurrence in various types of vegetation such as “Restingas” (sandbank vegetation), tropical rain forest, mixed ombrophilous forest, and “Campo de Altitude” (highland field) (Groppo Junior & Pirani, 2005; Groppo Junior, 2007). The occurrence of only six species of *Ilex* (Groppo Junior, 2015) has been reported in Espírito Santo state.

Therefore, as a contribution to the knowledge of the Aquifoliaceae family, this paper reports the first record of *Ilex taubertiana* Loes. (Aquifoliaceae) in Espírito Santo state, as well as the expansion of the geographic distribution of this species typical of the “Serra do Mar” region.

2 Materials and Methods

We conducted this study based on the botanical collections by J.P.F. Zorzanelli from ‘Serra do Valentim’, municipality of Iúna, Espírito Santo state, between 2011 and 2015, and consulted the database SpeciesLink (2014) and “Lista de Espécies da Flora do Brasil” (Flora do Brasil 2020, 2015) to attest the veracity of the first record of *I. taubertiana*, as well as confirming with the taxonomist in the *Ilex* genus.

We developed the taxonomic treatment of the species in question with the material deposited in the herbaria VIES (Universidade Federal do Espírito Santo) and SPFR (Universidade de São Paulo – Ribeirão Preto), and used the work of Brotto et al. (2007) and the description by Loizeau & Barriera (2007) to assist in the diagnosis and characterization of these samples. Acronyms of the cited botanical collections are according to those by Thiers (2014).

We prepared the mapping of geographic distribution of *I. taubertiana* using points of geographic coordinates obtained in the database SpeciesLink (2014). We discarded the coordinates which we judged inconsistent for not locating the exact reference of the collect.

We also provide additional information on diagnostic characters, ecology, and comments on *I. taubertiana*.

3 Results and Discussion

Ilex taubertiana Loes., in Loes., Monogr. Aquifoliacearum, Halle, 78: 1-567. 1901 (Figures 1a, b).

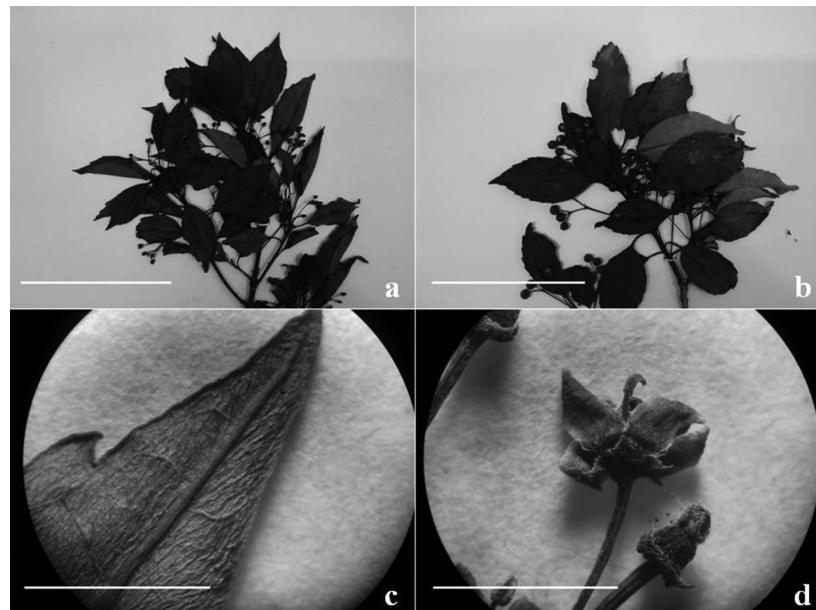


Figure 1. Flower sample (a), fruit sample (b), structures showing apex acuminate (c) and staminate flower (d) of *Ilex taubertiana* Loes.. Scale bar: (a) and (b) 10 cm, (c) 2 cm and (d) 1 cm.

Figure 1. Exemplar em flores (a), exemplar em frutos (b), estrutura mostrando ápice acuminado (c) e flor estaminada (d) de *Ilex taubertiana* Loes.. Escala: (a) e (b) 10 cm, (c) 2 cm e (d) 1 cm.

DIAGNOSIS: Shrub evergreen. Leaves with petiole glabrous; blade glabrous, ovate to elliptic, with margin dentate, and apex acuminate to cuspidate. Inflorescences axillary, cymes, thyrses, or at dichasium. Male flowers 4-merous, floral whorl with margin entire, calyx greenish, and corolla alb. Fruits berry green, ovoid, or rounded.

ECOLOGY: The species shows berry fruits and zoothorous dispersion. In the ‘Serra do Valentim’, *I. taubertiana* was found only in “Campo de Altitude”, near Cloud Forest, at elevations above 1,400 m.

NOTES: *I. taubertiana* occurs with exclusivity in the Brazilian Atlantic Forest (Groppi Junior, 2015). According to this author, the species was known only in the states of Minas Gerais, Paraná, Rio de Janeiro, Rio Grande do Sul and São Paulo. *I. taubertiana* presents morphological similarity with *I. microdonta* Reissek, differing from the latter by presenting multiflora inflorescence (*versus* pauciflora inflorescence) and apex leaf blade acuminate (*versus* apex obtuse).

MATERIALS EXAMINED: BRASIL. Espírito Santo: Iúna, Serra do Valentim, 20°22'51"S, 41°27'59"W, 1413 m a.s.l.,

01.XII.2013, fl., J.P.F.Zorzanelli 892 (VIES, SPFR); Espírito Santo: Iúna, Serra do Valentim, 20°22'51"S, 41°27'57"W, 1413 m a.s.l., 02.III.2015, fr., J.P.F.Zorzanelli 1217 (VIES).

Although there are few studies involving *I. taubertiana*, the distribution pattern of this species can be observed along the ‘Serra do Mar’ region (Figure 2), between the states of Santa Catarina and Rio de Janeiro, in addition to some projections occurring outside these limits. Reginato & Goldenberg (2007) considered it as typical of Montane Tropical Rain Forests, whereas Bertoncello et al. (2011) stated that this species has a preference for Cloud Forests.

The preference of this species for cloud and montane forests is an alert to its vulnerability, because it inhabits ecosystems sensitive to climate change and which are among the most threatened globally (Toledo-Aceves et al., 2011). In addition, the expansion of knowledge on the geographic distribution of *I. taubertiana*, as well as other species typical of forest formations in mountains, suggest greater commitment of public policies for the conservation and protection of these environments.

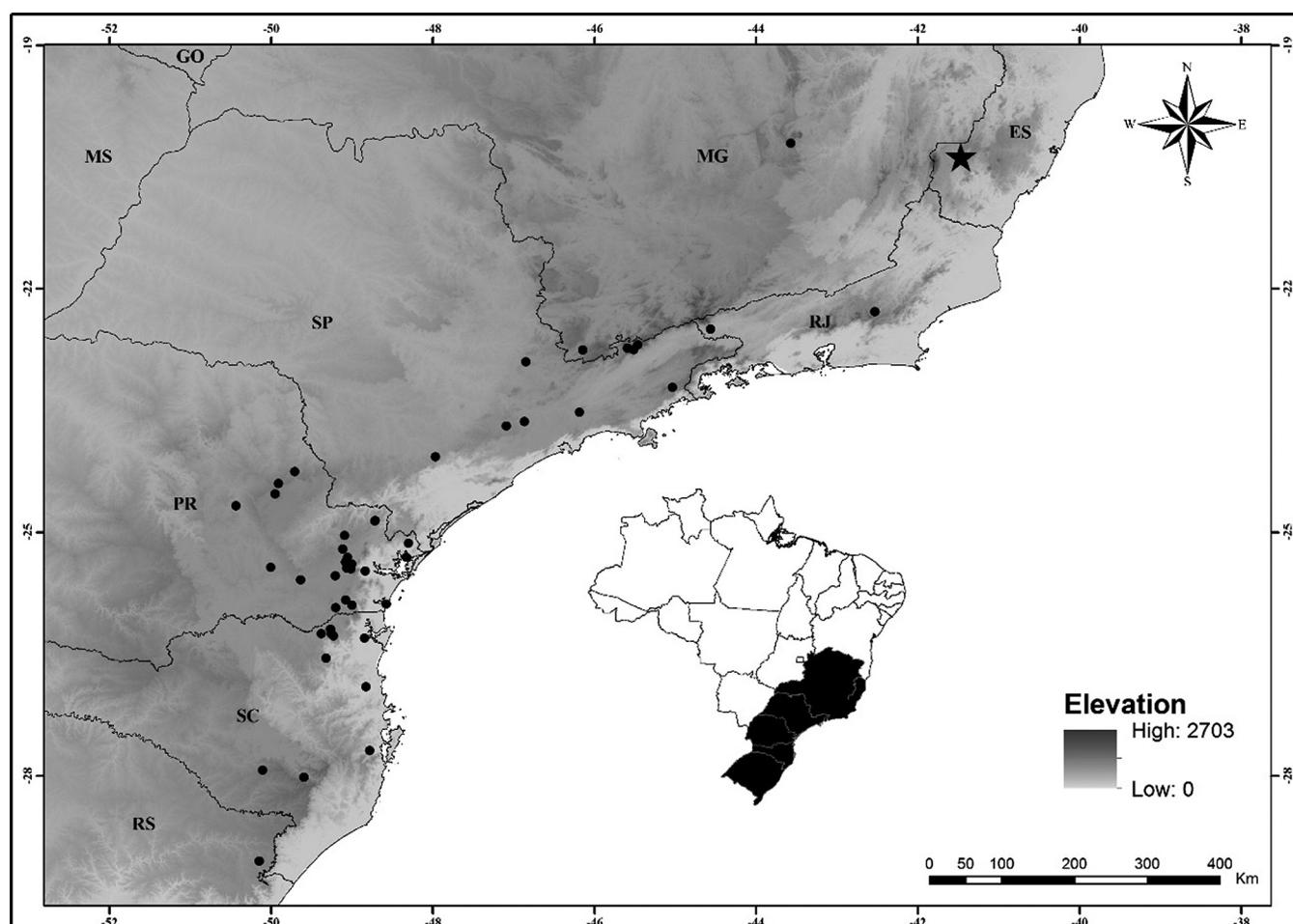


Figure 2. Geographic distribution of *Ilex taubertiana* Loes. along the Atlantic coast, wherein: dots represent the localities with known distribution; and the star shows the new record.

Figura 2. Distribuição geográfica de *Ilex taubertiana* Loes. ao longo da costa atlântica, onde: pontos representam localidades com distribuição conhecida; e estrela, o novo registro.

4 Conclusions

These results allow us to increase the number of species known in the flora of Espírito Santo state and demonstrate the existence of gaps of floristic knowledge for this state.

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Authors' contributions: João Paulo Fernandes Zorzanelli contributed to the writing of the manuscript, the description of the studied species and geographical distribution mapping; Raquel Fernandes Zorzanelli contributed to writing the manuscript and review; Letícia da Paschoa Manhães contributed to the writing of the manuscript; Sustanis Horn Kunz contributed to the review and discussion of the manuscript.

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