Rodriguésia 73: e01792020. 2022
http://rodriguesia.jbrj.gov.br
DOI: http://dx.doi.org/10.1590/2175-7860202273014

Flora of Espírito Santo, Brazil

Flora of Espírito Santo: Ulmaceae

Luana S. B. Calazans[1,2,5], *Julia Cristina Guarnier*[1,3] & *Hiago Lourenço da Silva*[1,4]

Abstract

This study provides a taxonomic treatment for Ulmaceae in the state of Espírito Santo, Southeastern Brazil. Two species were recorded: *Ampelocera glabra* and *Phyllostylon brasiliense*, the latter recorded for the state for the first time. Descriptions, an identification key, and comments on its distribution and conservation are provided.

Key words: *Ampelocera*, Atlantic Forest, *Phyllostylon*, Rosales, Urticalean rosids.

Resumo

Este estudo apresenta um tratamento taxonômico para as espécies de Ulmaceae encontradas no estado do Espírito Santo, Sudeste do Brasil. Duas espécies foram registradas: *Ampelocera glabra* e *Phyllostylon brasiliense*, esta última aqui registrada para o estado pela primeira vez. São fornecidos descrições, uma chave de identificação e comentários sobre a distribuição e conservação destas espécies.

Palavras-chave: *Ampelocera*, Floresta Atlântica, *Phyllostylon*, Rosales, clado Urticóide.

Introduction

Ulmaceae is a family of Eudicots placed in the order Rosales, Urticalean rosids (APG IV 2016), with seven genera and 35–40 species (Stevens 2001 onwards). The circumscription currently adopted (*i.e.*, APG IV 2016) is well supported by molecular phylogenies and retains Cannabaceae and Ulmaceae as distinct families. Members of Ulmaceae occur in tropical and northern temperate zones, but are more widely distributed throughout the northern temperate zone (Stevens 2001 onwards). In Brazil, two genera (*Ampelocera* and *Phyllostylon*) and six species are known to occur (BFG 2018).

We present a taxonomic treatment for the family in the state of Espírito Santo, Southeastern Brazil, as a contribution to the "Flora of Espírito Santo" project.

Material and Methods

All the descriptions, phenological data, and vernacular names are based on herbarium specimens, complemented with data from literature (Todzia 1989, 1992) when necessary. Specimens from the following herbaria were analyzed: CEPEC, CVRD, MBML, NY, RB, and VIES (acronyms according to Thiers, continuously updated). The vegetation types follow IBGE (2012) and Garbin *et al.* (2017). The descriptive terminology follows Stearn (2004). The map was made using software QGis, version 2.18.25 (QGIS Development Team 2016), using shapefiles from IBGE (2020), and geographic coordinates from the analyzed specimens labels. Specimens without original georeferencing had their coordinates estimated using the geoLoc tool on SpeciesLink (2020).

[1] Universidade Federal do Espírito Santo, Centro de Ciências Humanas e Naturais, Depto. Ciências Biológicas, Lab. Taxonomia de Fanerógamas, Goiabeiras, Vitória, ES, Brasil.

[2] ORCID: <https://orcid.org/0000-0002-3308-3725>.

[3] ORCID: <https://orcid.org/0000-0003-3486-8265>.

[4] ORCID: <https://orcid.org/0000-0003-1330-9085>.

[5] Author for correspondence: luanasbcalazans@gmail.com

Results and Discussion

In the state of Espírito Santo, Ulmaceae is represented by two species: *Ampelocera glabra* Kuhlmann (1925: 351) and *Phyllostylon brasiliense* Capan. *ex* Bentham & Hooker f. (1880: 352). These two species are also the only occurring in the state of Rio de Janeiro (Pederneiras & Machado 2017) and in the Atlantic Forest as a whole (BFG 2018). The genus *Phyllostylon* and the species *P. brasiliense* are here cited for the first time for the state of Espírito Santo (see comments on the species for further details).

Ulmaceae Mirb.

Trees or shrubs, monoecious or dioecious, unarmed. Stipules free, persistent or deciduous. Leaves simple, alternate, margin entire or dentate to serrate. Inflorescence solitary, axillary, cymose, fasciculate. Flowers bisexual or functionally unisexual; actinomorphic, monochlamydeous, 4–5 sepals; androecium iso- to polystemonous, stamens 5–10, opposite to tepals, free, anthers opening longitudinally; ovary superior, unilocular, uniovular, placentation pendulous, styles 2. Fruit a nutlet or samara.

In the state of Espírito Santo, the family can be found in rainforests and seasonally dry forests (Fig. 1). Overall, the family is poorly sampled in Espírito Santo, as well as in the states of Rio de Janeiro (Pederneiras *et al.* 2011, 2014; Pederneiras & Machado 2017) and São Paulo (Torres & Luca 2005). In Rio de Janeiro, the scarcity of specimens represented in herbaria and nature is well discussed by Pederneiras *et al.* (2011, 2014), which seems to be the same case in Espírito Santo. This perhaps makes Ulmaceae and the other Urticalean rosids an interesting target group for future conservation studies.

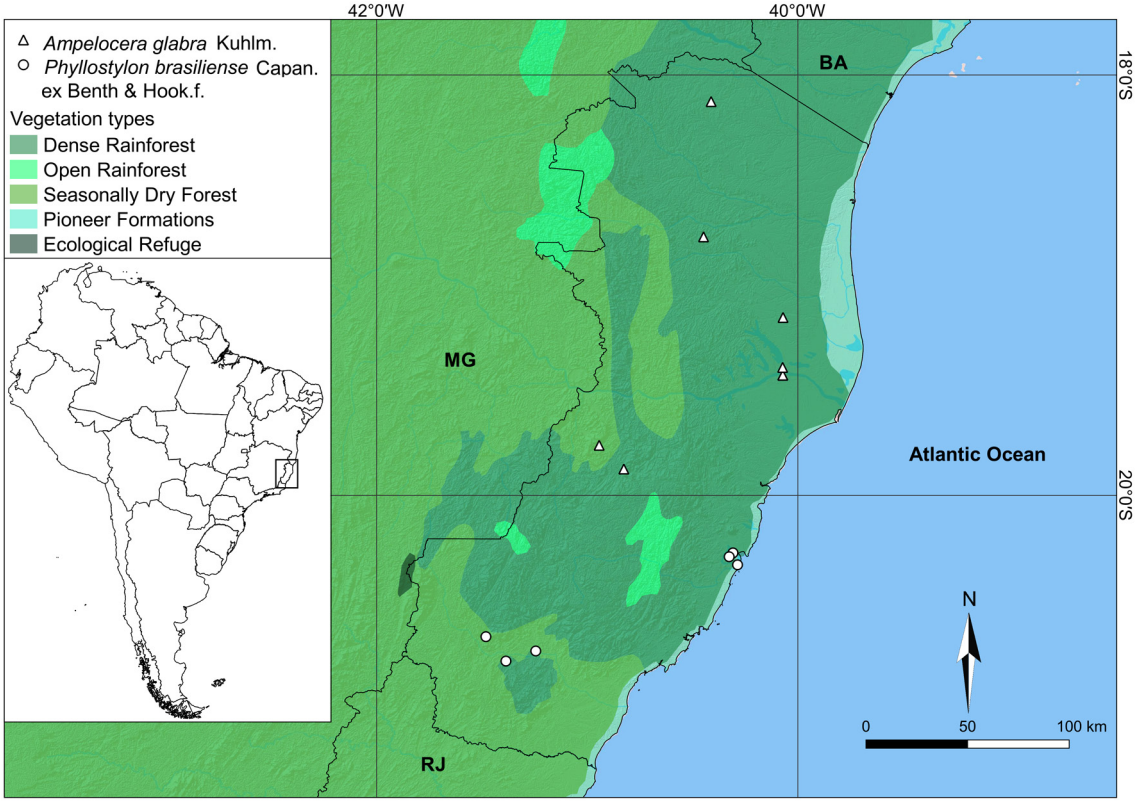

Figure 1 – Geographical distribution map of Ulmaceae species in the state of Espírito Santo. Vegetation types following IBGE (2012).

Key to Ulmaceae species in the state of Espírito Santo

1. Trees, branches glabrous, leaf margin entire to dentate, flowers with 10 stamens, fruit an asymmetric nutlet ..... 1. *Ampelocera glabra*
1'. Trees or shrubs, branches pubescent, leaf margin serrate, flowers with 5 stamens, fruit a laterally compressed samara ..... 2. *Phyllostylon brasiliense*

1. *Ampelocera glabra* Kuhlm., Archivos do Jardim Botânico do Rio de Janeiro 4: 351. 1925.

Trees 10–18 m tall; branches glabrous; stipules 2–3 mm long, deciduous, pilose. Petioles 2–6 mm long, glabrous; leaf blade elliptic, 5.1–14.6 × 2.5–5.9 cm, base obtuse to rounded, margin entire to dentate with 2–4 teeth at apex, apex acuminate, glabrous, lateral veins 5–7 pairs. Flowers green; bracts ca. 2 mm long; sepals 5, united at the base, sparsely pilose; stamens 10; ovary sparsely puberulent. Fruit a nutlet, globose, asymmetric, 1.1–1.3 × 1.0–1.3 cm, glabrous, yellowish-green, drying dark, style branches persistent; seeds tranversely obovoid, 0.4 mm long.

Examined material: Itaguaçu, 13.XII.2001, fr., *A.A. Luz 38* (CVRD). Linhares, Flona de Goytacazes, 20.X.2010, fl. and fr., *J.M.L. Gomes 3822* (RB, VIES); 24.X.2010, fr., *J.M.L. Gomes 3848* (RB, VIES). Goytacazes, Rio Doce, 15.XI.1943, fr., *J.G. Kuhlmann 6429* (RB); Reserva Florestal da CVRD, estrada Gávea, ant. X-2, km 20.790, 20.VIII.1979, fl., *D.A. Folli 98* (CVRD, NY); montanha, próximo ao aceiro da mata, 9.I.1991, fr., *D.A. Folli 1259* (CVRD). Nova Venécia, Área de Proteção Ambiental da Pedra do Elefante, Serra de Baixo, 14.I.2009, fr., *A.P. Fontana et al. 5782* (RB).

The species is found in rainforests in the state. In the regional red list (Fraga *et al.* 2019), it was assessed as Data Deficient (DD) due to the few records and lack of ecological information.

Vernacular name: mentira.

2. *Phyllostylon brasiliense* Capan. *ex* Benth. & Hook.f., Genera Plantarum 3: 352. 1880.

Trees or shrubs, 6–8 m; branches pubescent; stipules 2–4 mm long, deciduous, puberulent. Petioles 1–3 mm long, puberulent; leaf blade narrowly ovate to lanceolate, 1.7–5.4 × 0.7–1.9 cm, base rounded, margin serrate, apex acuminate, sparsely puberulent, lateral veins 3–5 pairs. Flowers whitish-green; sepals 5, sparsely puberulent; stamens 5; ovary sessile, laterally compressed. Fruit a samara, laterally compressed, 2–3.7 × 0.6–1.0 cm, puberulent, green to pale yellow; seeds piriform, 0.5–1.5 cm long.

Examined material: Alegre, rodovia para Muniz Freire, 25.X.2011, fl., *H.M. Dias 807* (VIES). Cachoeiro de Itapemirim, estrada para Fazenda Cafundó, 3.X.2007, fr. *D.A. Folli 5723* (CVRD). Jerônimo Monteiro, atrás da prefeitura, 5.X.2012, fr., *H.M. Dias 859* (VIES). Vila Velha, Convento da Penha, 10.X.2007, fr., *D.A. Folli 5740* (CVRD). Vitória, 29.VII.1992, fr., *M.L.L. Martins 193* (VIES); campus da UFES, Goiabeiras, 1.XI.1990, fr., *O.J. Pereira 2265* (VIES); Fazenda Maruhype, 23.X.1930, fr., *J.G. Kuhlmann 485* (RB).

Although the oldest record for this species in the state of Espírito Santo dates from 1930 (*i.e.*, *J.G. Kuhlmann 485*) and eight additional records are known, the genus was not mentioned for the state in taxonomic works. We could find only an ecological study that cited *P. brasiliense* for a fragment of seasonally dry forest in the municipality of Alegre (Silva *et al.* 2017). Thus ours is the first taxonomic or floristic study to report this genus and species for the state of Espírito Santo, where it can be found in seasonally dry forests and rainforests. Since this species was not previously listed for the State, it was not evaluated in the regional red list (Fraga *et al.* 2019). However, due to the scarce records, even in well-sampled areas, we suggest this species should be treated as threatened for the state.

Vernacular name: gurigica, vareteira.

Acknowledgments

We are grateful to Rodrigo Theófilo Valadares, for his valuable comments on an earlier version; and to Henrique Borges Zamengo and Anderson Ferreira Pinto Machado, for their valuable comments as reviewers.

References

Bentham G & Hooker JD (1880) Genera Plantarum. Vol. 3. Part. 1. Reeve & Co., London. 459p.

BFG - The Brazil Flora Group (2018) Brazilian Flora 2020: innovation and collaboration to meet Target 1 of the Global Strategy for Plant Conservation (GSPC). Rodriguésia 69: 1513-1527.

APG IV - Angiosperm Phylogeny Group (2016) An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG IV. Botanical Journal of the Linnean Society 181: 1-20.

Fraga CN, Formigoni MH & Chaves FG (2019) Fauna e flora ameaçadas de extinção no estado do Espírito Santo. Instituto Nacional da Mata Atlântica, Santa Teresa. 432p.

Garbin ML, Saiter FZ, Carrijo TT & Peixoto AL (2017) Brief history and classification of capixaba vegetation. Rodriguésia 68: 1883-1894. <http://dx.doi.org/10.1590/2175-7860201768521>

IBGE (2012) Manual técnico da vegetação brasileira: sistema fitogeográfico, inventário das formações florestais e campestres, técnicas e manejo de coleções botânicas e procedimentos para mapeamentos. 2nd ed. IBGE, Rio de Janeiro. 272p.

IBGE (2020) IBGE Downloads. Available at <https://downloads.ibge.gov.br/index.htm>. Access on 29 September 2020.

Kuhlmann JG (1925) Contribuição para o conhecimento de algumas plantas novas, contendo também um trabalho de crítica e novas combinações. Archivos do Jardim Botânico do Rio de Janeiro 4: 347-365.

Pederneiras LC & Machado AFP (2017) Flora of the state of Rio de Janeiro: Ulmaceae. Rodriguésia 68: 541-543. <https://doi.org/10.1590/2175-7860201768216>

Pederneiras LC, Costa AF, Araujo DSD & Carauta JPP (2011) Ulmaceae, Cannabaceae and Urticaceae of restingas of the state of Rio de Janeiro. Rodriguésia 62: 299-313. <http://dx.doi.org/10.1590/2175-7860201162207>

Pederneiras LC, Costa AF, Carauta JPP & Neto SR (2014) Assessment of extinction risk of Urticineae from sandy coastal plains of the state of Rio de Janeiro. Rodriguésia 65: 261-273. <https://doi.org/10.1590/S2175-78602014000100019>

QGIS Development Team (2016) QGIS Geographic Information System. Open Source Geospatial Foundation Project. Available at <http://qgis.osgeo.org>. Access on 29 September 2020.

Silva WM, Zorzanelli JPF, Moreau JS, Abreu KMP & Kunz SH (2017) Structure and ecological succession of an urban forest community in the south of the Espírito Santo. Rodriguésia 68: 301-314. <https://doi.org/10.1590/2175-7860201768202>

SpeciesLink (2020) Sistema de informação distribuído para coleções biológicas. Centro de Referência em Informação Ambiental. Available at <http://www.splink.org.br>. Access on 3 September 2020.

Stearn WT (2004) Botanical Latin. Timber Press, Portland. 546p.

Stevens PF (2001 onwards) Angiosperm Phylogeny Website. Version 14, July 2017 [and more or less continuously updated since]. Available at <http://www.mobot.org/MOBOT/research/APweb/>. Access on 29 September 2020.

Thiers B [continuously updated] Index Herbariorum: a global directory of public herbaria and associated staff. New York Botanical Garden's Virtual Herbarium. Available at <http://sweetgum.nybg.org/science/ih/>. Access on 29 September 2020.

Todzia CA (1989) A revision of *Ampelocera* (Ulmaceae). Annals of the Missouri Botanical Garden 76: 1087-1102.

Todzia CA (1992) A reevaluation of the genus *Phyllostylon* (Ulmaceae). Sida 15: 263-270.

Torres RB & Luca AQ (2005) Ulmaceae (Mirb.). *In*: Wanderley MGL (ed.) Flora fanerogâmica do estado de São Paulo. Instituto de Botânica, São Paulo. Vol. 4, pp. 361-370.

Area Editor: Dr. Anderson Alves-Araújo
Received in October 02, 2020. Accepted in January 07, 2021.