



Erythroxyllum sobraleanum (Erythroxyllaceae): A new species from Southeastern Brazil

MARIA IRACEMA BEZERRA LOIOLA & LUCIANA SILVA CORDEIRO

Herbário EAC, Departamento de Biologia, Universidade Federal do Ceará, Campus do Pici, 60440-900, Fortaleza, Ceará, Brazil.
E-mail: iloiola@ufc.br

Abstract

Erythroxyllum sobraleanum (Erythroxyllaceae) is described and illustrated as a new species from Minas Gerais, Southeastern Brazil, and positioned in *Erythroxyllum* sect. *Archerythroxyllum*. This species grows in the Seasonal semi-deciduous montane forest, on the Serra da Mantiqueira. It is recognized by the long-triangular stipules, non-striate, membranaceous, 3-setulose, with fimbriolate to entire margin, leaves membranaceous, flowers at the apex of short shoots, and styles connate 2/3 its length in dolichostylous flowers. Affinity relationships with other species of *Erythroxyllum* are presented and discussed.

Key words: Taxonomy, Minas Gerais, Seasonal forest, Neotropics

Introduction

The genus *Erythroxyllum* Browne (1756: 278), counts 240 species of pantropical distribution (Daly 2004), is represented in the Neotropics by approximately 190 species (Plowman & Hensold 2004) belonging to nine sections (Schulz 1907).

Taxonomic studies of *Erythroxyllum* in Brazil have revealed surprising richness, especially in the Northeast and Southeast regions of the country. In the latter region, that comprises four states (São Paulo, Minas Gerais, Espírito Santo and Rio de Janeiro) 51 species were recorded (Loiola & Costa-Lima 2014). According to these authors, 31 species of *Erythroxyllum* occur in Minas Gerais, in different types of vegetation; *E. bicolor* O. E. Schulz (1907: 107), *E. oxypetalum* O. E. Schulz (1907: 100) and *E. strobilaceum* Peyritsch (1878: 140) are restricted to that state.

During a taxonomic revision of South American *Erythroxyllum*, a new species was recognized from the state of Minas Gerais. This new taxon is described and illustrated here, and positioned in *Erythroxyllum* sect. *Archerythroxyllum* O.E. Schulz (1907: 69). This section includes about 60 species (most of which are found in Brazil), with non-striate stipules and cataphylls, calyx with valvate aestivation, and lobes generally triangular.

Erythroxyllum sobraleanum Loiola & L.S. Cordeiro, *sp. nov.* (Figs. 1, 2)

A new species characterized by stipules long-triangular, non-striate, membranaceous, 3-setulose, with margin fimbriolate to entire, leaves membranaceous, flowers at the apex of short shoots, and styles connate 2/3 its length in dolichostylous flowers.

Type:—BRAZIL. Minas Gerais: Bom Jardim de Minas, 1226 m, 02 October 2011, (fl), *M. Sobral 14248* (holotype HUFJSJ, isotype EAC).

Shrubs to small trees, 1–2 m tall, sparsely branched. Bark grayish, dotted with small elliptical and yellowish lenticels. Branches more or less distant, spreading, flexuous, strongly differentiated into long and short shoots, these somewhat compressed toward apex, greenish to reddish when young, dotted abundantly with minute lenticels. Cataphylls persistent, distichous (branches or base short shoots) or congested at apex of short shoots (the inferior shorter than superior), similar to foliar stipules when young, but smaller and turning blackish with age, non-striate. Foliar stipules persistent, long-triangular, 6–9 mm long, rounded apex, non-striate, membranaceous, 3–setulose, keels sub-alate, margin markedly fimbriolate (when young) to entire with age; setae deciduous, lateral setae 0.6–0.8 mm long, presenting colleters, medial setae a little longer. Leaves persistent, short-petiolate; petioles subterete, 2–3 mm long,

Distribution and habitat:—*Erythroxylum sobraleatum* was observed in only two municipalities of south Minas Gerais, near the border with Rio de Janeiro state (Fig. 3). This species grows in the Seasonal semi-deciduous montane forest (IBGE 2012), at 1226 m elevation, on the Serra da Mantiqueira, with predominantly plutonic rocks (granite) and high grade metamorphics (migmatites, gneiss). This mountain range is extremely important in a geo-environmental sense. Several water sheds that feed important urban centers of southeastern Brazil occur there, as well as important Atlantic Forest fragments (Benites *et al.* 2007) which are hotspots of biodiversity (Myers *et al.* 2000). The two collections, both with flowers, were gathered in October. The characteristics of the fruits (drupes) are unknown.

Conservation status:—Considering that only two samples were collected in the area and that few individuals of *Erythroxylum sobraleatum* has been observed, this species is considered rare. However, based on IUCN (2001) criteria, the conservation status of this species is Data Deficient (DD).

Discussion:—*Erythroxylum sobraleatum* superficially resembles *E. oxypetalum*, a rare species also of sect. *Archerythroxylum*, in its general branching appearance and leaf morphology. However, this species differs by the length of stipule (6–9 mm long in *E. sobraleatum* vs. 2.5–4.2 mm in *E. oxypetalum*), short shoots (present vs. absent); margin of young stipule (markedly fimbriolate vs. entire) and length of pedicels (3–4.5 vs. 2–2.5 mm). *E. oxypetalum* is registered from central and northeastern Minas Gerais (Plowman 1987, Loiola & Costa-Lima 2014), and the two species are allopatric. The new species is also similar in general branching appearance to *E. caatingae* Plowman (1987: 5) also of sect. *Archerythroxylum*, differing by the branchlets (flexuous in *E. sobraleatum* vs. rigid in *E. caatingae*), leaf texture (membranaceous vs. firmly chartaceous, subcoriaceous) and calyx lobe shape (triangular vs. ovate to lanceolate). *E. caatinga* grows in caatinga vegetation (Plowman 1987, Loiola & Costa-Lima 2014) in northeast Brazil (Bahia, Ceará, Paraíba, Pernambuco, Piauí, Rio Grande do Norte, Sergipe). Other morphological differences between these three species are listed in Table 1.

TABLE 1. Morphological comparison of *Erythroxylum sobraleatum* Loiola & L.S. Cordeiro, *E. oxypetalum* O.E. Schulz, and *E. caatingae* Plowman.

Character	<i>E. sobraleatum</i>	<i>E. oxypetalum</i>	<i>E. caatingae</i>
Short shoots	Present	Absent	Present
Branchlets	Flexuous	Flexuous	Rigid
Stipular setae	3	2	2
Stipule length (mm)	6–9	2.5–4.2	2.5–4
Stipule vs. petiole	Longer	Shorter	Shorter
Leaf texture	Membranaceous	Membranaceous	Firmly chartaceous to subcoriaceous
Calyx lobes shape	Triangular	Triangular	Ovate to lanceolate
Pedicel length (mm)	3–4.5	2–2.5	1–1.5

Acknowledgements

We thank the support from the Brazilian agency Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) for the research grant; Instituto Herbário Virtual da Flora e dos Fungos do Brasil; Rede Integrada em Taxonomia e Fungos (SISBIOTA Brasil); Francisco Átila Leles Magalhães for the illustrations; and Catherine Ingram for reviewing the English.

References

- Benites, V.M., Schaefer, C.E.G.R., Simas, F.N.B. & Santos, H.G. (2007) Soils associated with rock outcrops in the Brazilian Mountain ranges Mantiqueira and Espinhaço. *Revista Brasileira de Botânica* 30: 569–577.
<http://dx.doi.org/10.1590/s0100-84042007000400003>
- Browne, P. (1756) *Civil and Natural History of Jamaica*. T. Osborne & J. Shipton, London, pp. 278.
- Daly, D. (2004) Erythroxylaceae. In: Smith, N., Mori, S.A., Henderson, A., Stevenson, D.W. & Heald, S.V. (Eds.) *Flowering Plants of Neotropics*. The New York Botanical Garden. Princeton University Press, pp. 143–145.
- IBGE. (2012) *Manual técnico da vegetação brasileira*. Ed. 2. Available from: ftp://geofp.ibge.gov.br/documentos/recursos_naturais/manuais_tecnicos/manual_tecnico_vegetacao_brasileira.pdf. (accessed: 19 December 2013).

- IUCN (2001) *The IUCN Red List categories and criteria*, version 3.1. IUCN Species Survival Commission. Gland, Switzerland and Cambridge, U.K. Available from: <http://www.iucnredlist.org/technical-documents/categories-and-criteria/2001-categories-criteria> (accessed 15 January 2014).
- Loiola, M.I.B. & Costa-Lima, J.L. (2014) Erythroxyloaceae. In: Forzza, R.C., Stehmann, J.R. & Nadruz, M. (Eds.) *Lista de espécies da flora do Brasil*. Jardim Botânico do Rio de Janeiro. Available from: <http://floradobrasil.jbrj.gov.br/2012/FB000111> (accessed: 12 January 2014).
- Myers, N., Mittermeier, R.A., Mittermeier, C.G., Fonseca, G.A.B. & Kent, J. (2000) Biodiversity hotspots for conservation priorities. *Nature* 403: 853–858.
- Peyritsch, J. (1878) Erythroxyloaceae. In: Martius, C.F.P. (Ed.) *Flora brasiliensis* 12(1): 125–180.
- Plowman, T.C. (1987) Ten new species of *Erythroxyllum* (Erythroxyloaceae) from Bahia, Brazil. *Fieldiana, Botany* 19: 1–41. <http://dx.doi.org/10.5962/bhl.title.2652>
- Plowman, T.C. & Hensold, N. (2004) Names, types and distribution of neotropical species of *Erythroxyllum* (Erythroxyloaceae). *Brittonia* 56: 1–53.
- Schulz, O.E. (1907) Erythroxyloaceae. In: Engler, A. (Ed.) *Das Pflanzenreich: regni vegetabilis conspectus*. Verlag von H. R. Engelmann, Weinheim, pp. 176.