



Duguetia rolimii (Annonaceae), a new large tree species from the Atlantic Forest of Espírito Santo, Brazil

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ABSTRACT

A new species of *Duguetia* from Reserva Natural Vale, in the Atlantic Forest of the Brazilian state of Espírito Santo, is described and illustrated, and an updated key to the *Duguetia* species from this state is presented. *Duguetia rolimii* is known only from two large trees, restricted to the municipality of Linhares. It resembles *D. sooretamae* in having young twigs densely covered with stellate scales, narrow and shiny leaves with similar dimensions, and fruits with more than 200 fertile monocarps. Nevertheless, these two species can be distinguished from each other mainly by the type of vegetation where they occur, plant size, the density of stellate scales at the lower side of the leaves, the angle between the primary and secondary leaf veins, the shape of the flower buds, length of the upper bract, the shape of the fertile monocarps and indument of the areoles. Comments on distribution, conservation status and field photos of the new species, and comparisons with other related species are provided.

Keywords: Annonoideae, Duguetieae, Espírito Santo, Neotropical flora, Tabuleiro forest, taxonomy.

Introduction

Neotropical forests are particularly rich in plant species and endemism (Antonelli & Sanmartín 2011), and much of this diversity is in the Atlantic Forest, which is the second-largest rainforest in South America (Sobral-Souza & Lima-Ribeiro 2017). This domain is a biodiversity hotspot, as only 12.4% of the original forest remains (Myers *et al.* 2000; Fundação SOS Mata Atlântica & INPE 2023) and

comprises a mosaic of different vegetation types mainly along the Brazilian coast (Ribeiro *et al.* 2009). More than 15,600 species of angiosperms are recorded in the Atlantic Forest, of which 7,580 (48.5%) are endemic (Flora e Funga do Brasil 2023).

The plant family Annonaceae comprises ca. 110 genera and over 2400 species of trees, shrubs and lianas, with a pantropical distribution and great diversity in Neotropical forests (Chatrou *et al.* 2012; 2018; Guo *et al.* 2017). In Brazil,

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the Atlantic Forest is the second center of diversity for this family (Lobão *et al.* 2020), as well as for *Duguetia* A.St.-Hil. (Lobão & Bazante 2023), a monophyletic genus within the family (Guo *et al.* 2017; Xue *et al.* 2020).

Duguetia belongs to the subfamily Annonoideae, tribe Duguetieae (Chatrou *et al.* 2012), and can be distinguished from other Annonaceae genera by the indument of scaly and/or stellate hairs, and by the fruit usually formed by numerous, tightly-appressed sessile monocarps, with sterile monocarps connate at the base into a collar (Maas *et al.* 2003). Species of *Duguetia* are distributed throughout the Neotropics and tropical West Africa, occurring predominantly in non-flooded lowland rainforests. Few species occur in drier and nutrient-poor soils such as *Duguetia dicholepidota* Mart. (1841: 22) and *D. furfuracea* (A.St.-Hil.) Saff. (1914: 61) (Maas *et al.* 2003). Ninety-five species are recognized in this genus (Maas *et al.* 2003; Maas & Westra 2010; Bazante & Alves 2017; Bazante *et al.* 2023), and 18 have been reported to occur in the Atlantic Forest domain, including the recently described *D. leucotricha* M. L. Bazante & Maas (2023: 2), endemic to Bahia (Lobão & Bazante 2023).

The states of Bahia and Espírito Santo have the greatest richness of tree species in the Brazilian Atlantic Forest, including the Annonaceae family with 62 and 55 species, respectively (Rolim *et al.* 2016; Lobão *et al.* 2020). Furthermore, the portion along southern Bahia and northern Espírito Santo represents a center of endemism in the Atlantic Forest (Silva & Casteleti 2003; Thomas *et al.* 2003) and one of the richest spots for tree species in the world (Martini *et al.* 2007; Ostroski *et al.* 2018). Despite intense forest suppression in the northern portion of Espírito Santo, this region contains the largest remnant of Tabuleiro forest in southeastern Brazil (Germano Filho *et al.* 2000) and harbors high floristic diversity, especially among woody plants with ca. 930 species (Saiter *et al.* 2016). A particular remnant in this region is the Reserva Natural Vale (RNV, “Vale Natural Reserve”), which records half of the Annonaceae species for Espírito Santo, including three species of *Duguetia* (Fig. 4, 5), *D. chrysocarpa* Maas (1999: 471), *D. sessilis* (Vell.) Maas (1993: 38) and *D. sooretamae* Maas (1999: 486) (Lobão *et al.* 2010; Lopes & Mello-Silva 2014). The RNV is an important center of angiosperm diversity in the Neotropics, with a high richness of endemic and threatened species (Rolim *et al.* 2016). From there several novelties in different plant families have been newly reported (Lopes *et al.* 2013; 2014; Lewis *et al.* 2017; Rossetto & Ferraz 2020; Gaem *et al.* 2021).

Recently revising the collections made after the last treatment of Annonaceae for the RNV (Lopes & Mello-Silva 2014), we found an undescribed species of *Duguetia*, here described. We also provide illustrations and the preliminary conservation status of the new species, as well as comparisons with closely related species, a distribution map and an identification key to all *Duguetia* species in the state of Espírito Santo.

Material and methods

Morphological studies and distribution data were based on specimens deposited at CVRD, HASSI, RB, SPF and WAG (acronyms according to Thiers 2023, continually updated), digital images respectively available through REFLORA – Herbário Virtual (2023) and SpeciesLink (2023) platforms, and field observations by the authors. The barcode numbers of the examined specimens are cited within square brackets when presented. External structures were analyzed with a stereomicroscope LEICA EZ4. Bark morphology follows Junikka (1994). Hair types, density of the indument and the description of flowers and fruits follow Maas *et al.* (2003). Plant height, phenology and colors of reproductive parts were derived from specimen labels and photographs of live plants. Vegetative parts were measured from dried specimens, rehydrated flowers and fleshy fruits preserved in spirit (*Folli 7004*, CVRD014298). General morphology follows the Systematics Association Committee for Descriptive Biological Terminology (1962) and Beentje (2010). Preliminary conservation status follows IUCN Red List Categories and Criteria (2012; 2022). The distribution map was prepared using ArcGIS Desktop v.10.8 (ESRI 2020) and based on geospatial data present on specimen labels.

Results

Taxonomic treatment

Duguetia rolimii M.L.Bazante, G.S.Siqueira & Maas, sp. nov. (Figs. 1, 2, 3A–E, 4; Table 1)

Type: BRAZIL. Espírito Santo: Linhares, Reserva Natural Vale, 70 m, 2 January 2013 (fr), D.A. *Folli 7004* (Holotype: CVRD [CVRD014298]; Isotypes: HASSI, SPF [SPF00228241], WAG [WAG1973530]).

Duguetia rolimii is most similar to *D. sooretamae*, but *D. sooretamae* has leaves totally to densely covered with stellate scales 0.3–0.5 mm in diam. below, secondary veins at an angle more than 70° with the primary vein and indistinct at the lower side of the leaves, cauliflory present, upper bract ca. 1 mm long, flower buds broadly to very broadly ovoid with three slightly to absent ridges and an obtuse and not apiculate apex, petals broadly ovate with more than 12 mm wide, stamens 3–4 mm long with apex of connective not umbonate, fruit with fertile monocarps ovoid and with areoles narrowly pyramidal, totally covered with persistent stellate scales, whereas *D. rolimii* has leaves rather densely to sparsely covered with stellate scales 0.1–0.2 mm in diam. below, secondary veins at an angle up to 65° with the primary vein and distinct at the lower side of the leaves, cauliflory absent, upper bract 6–8 mm long, flower buds triangular-ovoid with three prominent ridges and an acute and apiculate apex, petals narrowly panduriform-elliptic to narrowly elliptic up to 12 mm wide, stamens up to 1.5 mm long with apex of connective umbonate, fruit



Figure 1. *Duguetia rolimii*. **A.** Branch with flower buds. **B.** Leaf, lower side. **C.** Detail of the indument on the lower side of leaf. **D.** Flower bud, side view. **E.** Flower at anthesis, side view with one inner petal removed. **F.** Longitudinal section of androecium and gynoecium. **G.** Sepal, inner view. **H.** Outer petal, inner view. **I.** Inner petal, inner view. **J.** Stamen, outer view. **K.** Carpel, side view. **L.** Fruit, side view. **M.** Fertile monocarp, side view. **N.** Seed, side view. **A–D** from *Folli* 7567 b [CVRD15760]; **E–K** from *Siqueira* 1198 [CVRD15811]; **L–N** from *Folli* 7004 [CVRD014298, holotype]. Illustration by Klei Sousa.



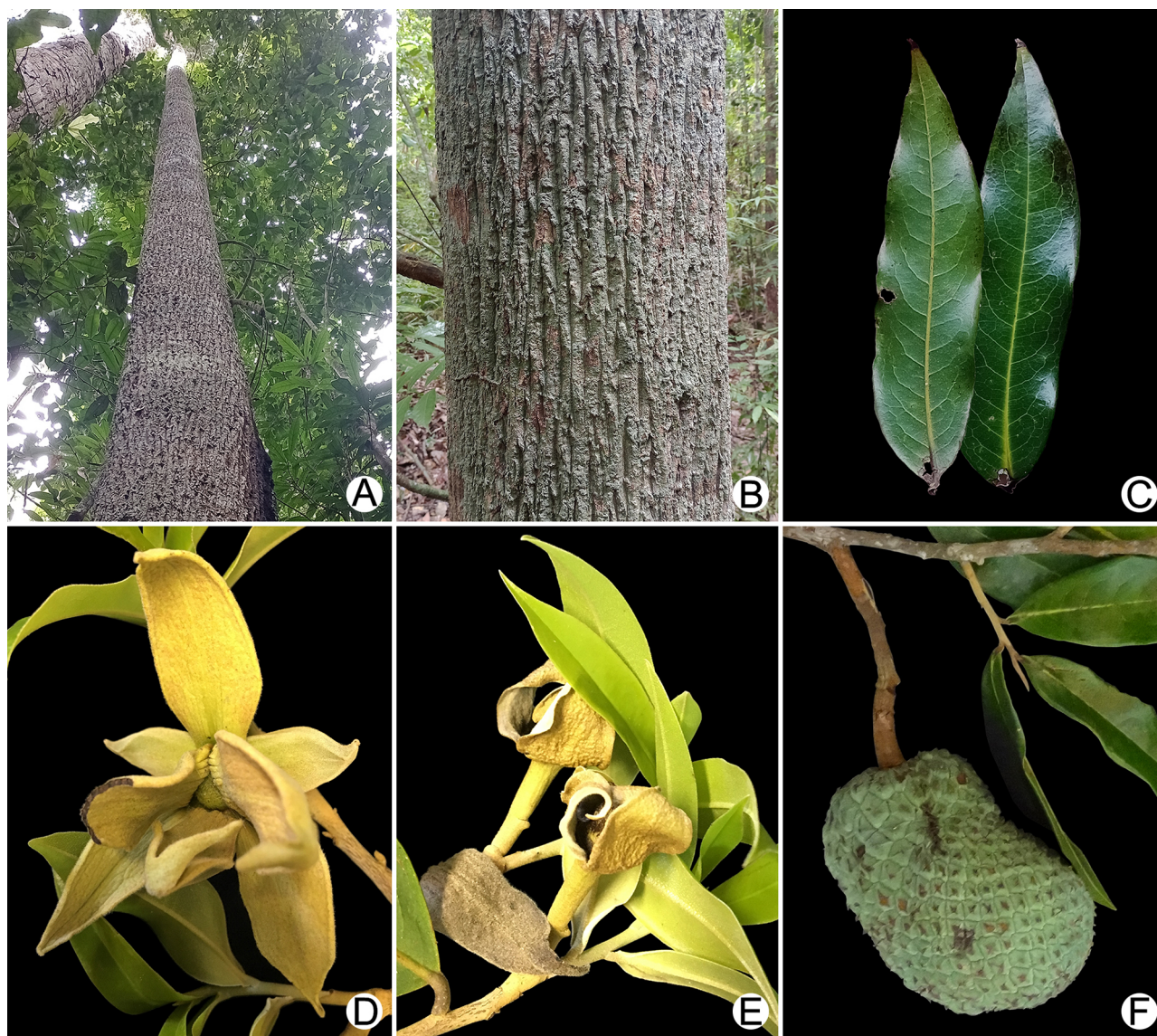


Figure 2. *Duguetia rolimii*. **A.** Tree canopy. **B.** Trunk, note the fissures and ridges of the outer bark. **C.** Leaves, lower and upper side view. **D.** Flower at anthesis, top view. **E.** Flowers after the petals fall. **F.** Fruit. Photos: **A–C** by Márcio L. Bazante; **D–F** by Geovane S. Siqueira.

with fertile monocarps obovate to oblongoid and with areoles shallowly ovoid-pyramidal, glabrous or sparsely covered with stellate hairs towards the apicule (Fig. 3).

Tree, 20–22 m tall, 120–130 cm in diam.; outer bark hard, rough, pale greenish brown; fissures parallel, deep, elongated; ridges rounded or V-shaped. Young twigs, leaf buds and petioles totally to densely covered with yellowish stellate scales 0.1–0.2 mm in diam. Petioles shallowly canaliculate, 2.5–5 mm long, 1–2 mm in diam. Leaves narrowly elliptic, 6–17 cm long, 1.5–5 cm wide, leaf index 2.2–4.6, coriaceous to chartaceous, smooth, dark green *in vivo* to yellowish brown *in sicco* above, paler green *in vivo* to yellowish brown *in sicco* below, distinctly shiny and glabrous above, slightly shiny and rather densely to sparsely covered with yellowish stellate scales 0.1–0.2 mm in diam. below, base acute, apex

long-acute, margin slightly undulate; primary vein slightly impressed to flat above, secondary veins curved, 9–20 on either side of primary vein, raised and distinct on both sides, but strongly so below, angles with primary vein 55–65°, loops distinct, smallest distance between loops and margin 1–8 mm, tertiary veins reticulate, slightly raised and distinct on both sides. Inflorescences among leaves, axillary, leaf-opposed or terminal, sometimes terminal on short axillary shoots, a single rhipidium; rhipidia 1–2-flowered; indument: peduncles, pedicels, outer side of bracts and sepals totally covered with brownish yellow stellate scales 0.1–0.2 mm in diam., inner side of bracts and sepals and both sides of petals totally covered with pale yellow, furcate and stellate hairs to 1 mm long, almost glabrous towards the base. Peduncle 1–4 mm long, ca. 2 mm in diam. Pedicels 6–18 mm long, 2–3 mm



Figure 3. Comparison between *Duguetia rolimii* (A–F) and *D. sooretamae* (G–L). **A.** Leaf, upper side. **B.** Leaf, lower side. **C.** Detail of the indument on the lower side of the leaf. **D.** Flower bud. **E.** Fruit. **F.** Fertile monocarp. **G.** Leaf, upper side. **H.** Leaf, lower side. **I.** Detail of the indument on the lower side of the leaf. **J.** Flower bud. **K.** Fruit. **L.** Fertile monocarp. **A–D** from *Siqueira 1172* [CVRD15753]; **E–F** from *Folli 7004* [CVRD014298, holotype]; **G–I** from *Maas et al. 8827* [CVRD006115]; **J–L** from *Tressmann et al. 60* [SAM08092].

in diam., fruiting pedicels to 25 mm long, 5–8 mm in diam. Upper bract at the basal third to just below the middle of the pedicel, ovate to broadly so, 6–8 mm long, 5–7 mm wide, recurved, soon falling off. Flower buds triangular-ovoid, 10–14 mm long, 8–10 mm in diam., apex acute, apiculate

(apicule curved, 1–2 mm long), prominently 3-ridged by recurved edges of the sepals. Flowers pale green to yellowish *in vivo*. Sepals 10–15% connate at the base, 14–20 mm long, 9–15 mm wide, triangular-ovate, apex acute to acuminate (acumen ca. 2 mm long), soon falling off. Petals subequal,



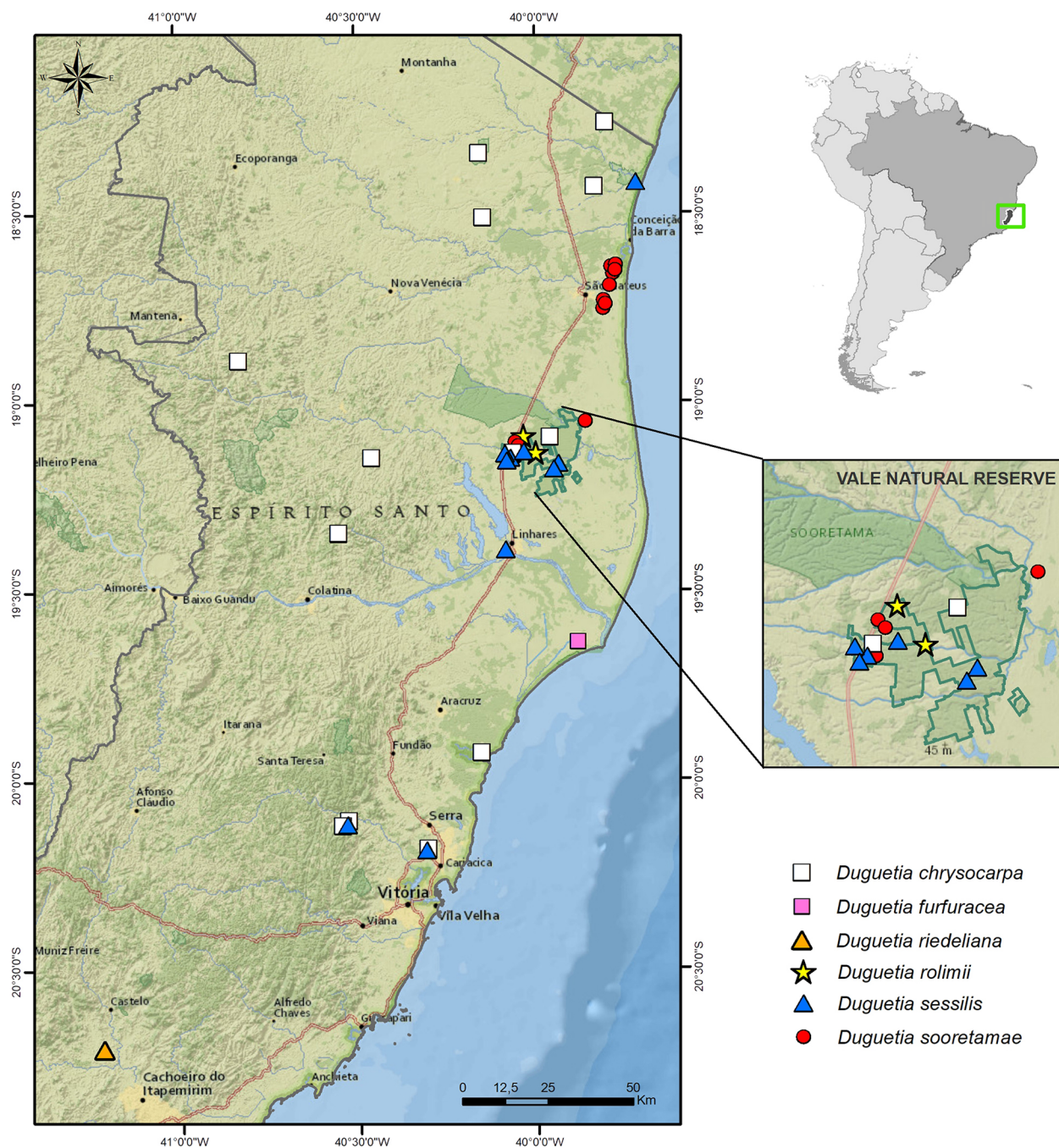


Figure 4. Distribution of *Duguetia* species in the state of Espírito Santo, Brazil.

narrowly panduriform-elliptic to narrowly elliptic, 33–45 mm long, 9–12 mm wide, apex acuminate, inner base of inner petals concave, callose, distinctly grooved. Stamens numerous, 0.8–1.5 mm long, yellowish brown, apex of connective depressed ovoid, umbonate, ca. 0.4 mm long, 0.7–0.8 mm wide, papillate. Carpels numerous, 2–2.5 mm long, base of ovary glabrous, rest of ovary densely to totally covered with furcate and stellate hairs up to 0.3 mm long, stigma sparsely so to glabrous. Immature fruit pale green *in vivo*, globose to broadly ellipsoid, 3–10 cm long, 3–7 cm

in diam., basal collar composed of 16–20 connate, sterile monocarps, 10–15 in diam., not protruding below the fruit, fertile monocarps > 200, obtrulloid to oblongoid, free, 8.5–20 mm long, 5.5–11 mm in diam., areoles shallowly ovoid-pyramidal, 3–5 mm high, obtuse, abruptly apiculate (apicule curved, 1–2 mm high), sharp-pointed, slightly verrucose, 4–7-ribbed, glabrous except for a few yellowish stellate hairs towards the apicule. Seeds obovoid to ellipsoid, 10–16 mm long, 6–9 mm in diam., apex acute to obtuse, slightly apiculate (apicule ≤ 1 mm long), brownish, shiny.

Table 1. Main characters distinguishing *Duguetia rolimii* and *D. sooretamae*.

| Characters | <i>Duguetia rolimii</i> | <i>Duguetia sooretamae</i> |
|---|--|--|
| Plant habit and height | Tree to 22 m tall | Shrub or tree to 6 m tall |
| Outer bark patterns | Fissures parallel, deep, elongated; ridges rounded or V-shaped | Fissures oblique or reticulate, shallow, short; ridges flattened |
| Density of stellate scales below the leaves | Rather densely to sparsely | Totally to densely |
| Diameter of stellate scales below the leaves (mm) | 0.1–0.2 | 0.3–0.5 |
| Secondary veins below the leaves | Distinct | Indistinct |
| Angle between the primary and secondary veins | 55–65° | 75–95° |
| Cauliflory | Absent | Present |
| Length (mm) and orientation of the upper bract | 6–8, recurved | ca. 1, appressed |
| Flower bud shape | Triangular-ovoid | Broadly to very broadly ovoid |
| Flower bud ridges | Prominently 3-ridged | Slightly 3-ridged to not ridged |
| Flower bud apex | Acute, apiculate (apicule curved) | Obtuse, not apiculate |
| Petals shape | Narrowly panduriform-elliptic to narrowly elliptic | Broadly ovate |
| Petals width (mm) | 9–12 | 13–37 |
| Stamens length (mm) | 0.8–1.5 | 3–4 |
| Connective appendage shape | Depressed ovoid, umbonate | Discoid, not umbonate |
| Fertile monocarp shape | Obtrulloid to oblongoid | Ovoid |
| Fruiting areoles shape | Shallowly ovoid-pyramidal | Narrowly pyramidal |
| Fruiting areoles indument | Glabrous except for a few stellate hairs towards the apicule | Totally covered with persistent stellate scales |
| Vegetation type | Mata alta forest | Muçununga forest |

Distribution and habitat: *Duguetia rolimii* is known only from the type locality, the Reserva Natural Vale (RNV), a protected area in the municipality of Linhares, northern part of Espírito Santo, Brazil. Two adult individuals were found in this forest remnant, at an elevation less than 100 m (50 to 70 m, Fig. 4), known as Tabuleiro forest (Rizzini 1997) or Lowland Tropical Ombrophilous Forest (IBGE 2012). It is found in *mata alta* (“tall forest”) formation, a vegetation type that comprises about 70% of the RNV (Jesus 1987; Peixoto *et al.* 2008). The *mata alta* has large trees up to 40 m tall, a dense canopy that shades the understory, clay or sandy-clay soils, and is dominated by species of Fabaceae and Myrtaceae (Peixoto *et al.* 2008; Rolim *et al.* 2016). Among the vegetation types of the RNV, *mata alta* presents the greatest diversity of species and is where most of the new species recently described come from (Rolim *et al.* 2016).

Phenology: Specimens with flower buds were gathered in August, with flowers in November, and with fruits in January.

Vernacular name in the RNV: Ariticum-gigante.

Etymology: The specific epithet honors the Brazilian researcher Dr. Samir G. Rolim, in recognition of his significant contributions to the biological knowledge of the Atlantic Forest, particularly of the Reserva Natural Vale. In 2016, Rolim and collaborators coordinated the remarkable book “Floresta Atlântica de Tabuleiro: diversidade e endemismos na Reserva Natural Vale”, which highlights the biodiversity and relevant research conducted in this protected area.

Preliminary IUCN conservation assessment: Although *Duguetia rolimii* was collected in a relatively well-known protected area (Reserva Natural Vale), where field expeditions have taken place since the 1950s (Peixoto & Jesus 2016), only two individuals were identified in the field, probably due to the difficulty in recognizing and collecting its large trees, up to 22 m tall. Owing to insufficient information on abundance and distribution for a reliable conservation assessment, we suggest that *D. rolimii* be considered Data Deficient (DD) according to IUCN criteria (IUCN 2012, 2022). The available evidence indicates that the area surrounding its known occurrence is destroyed by cattle farming, pasture, eucalyptus forestry and the cultivation of coffee, papaya and cacao, or remains in very small and isolated fragments, suggesting the continued decline of its habitat (Rolim *et al.* 2005; Saiter *et al.* 2016).

Additional specimens examined (Paratypes) – BRAZIL.

Espírito Santo: Linhares, Reserva Natural Vale, Estrada Oiticica, 18 January 2018 (fr), G.S. Siqueira 1252 (CVRD [CVRD15869], HASSI); Estrada Louro, 28 November 2014 (fl), G.S. Siqueira 1039 (CVRD [CVRD15184], WAG [WAG1973537, WAG1973538]); *ibidem*, 7 August 2017 (fl), G.S. Siqueira 1172 (CVRD [CVRD15753], HASSI); *ibidem*, 7 August 2017 (fl), D.A. Folli 7567 b (CVRD [CVRD15760], HASSI); *ibidem*, 21 November 2017 (fl), D.A. Folli 7596 (CVRD [CVRD15809], HASSI, RB [RB01378923]); *ibidem*, 21 November 2017 (fl), G.S. Siqueira 1198 (CVRD [CVRD15811], HASSI, RB [RB01378928]).





Figure 5. Species of *Duguetia* previously recorded in the Reserva Natural Vale, Espírito Santo, Brazil. **A–C.** *Duguetia chrysocarpa*. **A.** Leaf, lower side. **B.** Flower bud. **C.** Fruits. **D–F.** *Duguetia sessilis*. **D.** Leaf, upper side. **E.** Inflorescence flagelliferous. **F.** Flower. **G–I.** *Duguetia sooretamae*. **G.** Inflorescence cauliflorous. **H.** Flower. **I.** Fruit. Photos: **A, B, D, E** by Diogo B. Kanouté; **C, F, G–I** by Geovane S. Siqueira.

Discussion

Duguetia rolimii, one of the largest trees in the genus *Duguetia*, is characterized by leaves that are rather densely to sparsely covered with stellate scales below, secondary veins at an angle of less than 70° with the primary vein, conspicuous on both leaf sides, large upper flower bract, triangular-ovoid flower buds with a curved apicule and three prominent ridges, stamens with an umbonate connective at the apex, fruit with more than 200 fertile monocarps and with areoles shallowly ovoid-pyramidal, glabrous or soon becoming glabrous (Figs. 1, 2, 3A–E).

The type collection of *Duguetia rolimii* was misidentified as *D. sooretamae* Maas or only identified to the genus level. Justifiably, *D. rolimii* and *D. sooretamae* are more closely allied morphologically because of similar trichomes, shape, size and shine of the leaves and their fruits with more than 200 fertile monocarps. Moreover, both species occur in the RNV and are restricted to Espírito Santo (Fig. 4) (Maas *et al.* 2003; Lopes & Mello-Silva 2014; Lobão & Bazante 2023). However, the height of the plants, outer bark pattern and diameter, angle and distinction of secondary veins and density of stellate scales at the lower side of the leaves, cauliflory, length of upper bract, shape of flower buds, width of petals, length of stamens, shape of apex of connective, shape of fertile monocarps and other features allow the distinction of these taxa (Fig. 3, 5G–I; Table 1). In addition to that, *D. rolimii* and *D. sooretamae* prefer different vegetation types within the RNV. The latter grows in the muçununga forest, whereas *D. rolimii* flourishes in the *mata alta*. The muçununga forest, which comprises about 8% of the RNV and forms enclaves within the *mata alta*, is a vegetation with lower trees up to 10 m tall, a more open canopy that allows

sunlight to reach ground level, sandy soils and a greater abundance of xerophytic species, lianas and bromeliads (Garay 2003; Simonelli *et al.* 2008).

The other two *Duguetia* species recorded in the RNV, *D. chrysocarpa* Maas and *D. sessilis* (Vell.) Maas (Lopes & Mello-Silva 2014), grow in the *mata alta* and flooded forests (Fig. 4, 5). These species have heights up to 10 m tall and fruits with around 50 fertile monocarps, totally to densely covered with persistent stellate hairs on the areoles, whereas *D. rolimii* has heights up to 22 m tall and fruits with more than 200 fertile monocarps, glabrous or with few stellate hairs at the apex of the areoles. *Duguetia chrysocarpa* also occurs in the states of Bahia and Minas Gerais, and *D. sessilis* in the state of Rio de Janeiro (Maas *et al.* 2003; Lobão & Bazante 2023).

Considering other Atlantic Forest species, *D. rolimii* resembles *D. gardneriana* Mart. (1841: 22) and *D. reticulata* Maas (1996: 212) because of its leaves sparsely covered with stellate scales below and fruits with more than 200 fertile monocarps (Maas *et al.* 2003; Lobão & Bazante 2023). Nevertheless, *D. gardneriana* has flower buds very broadly ovoid, obtuse, not apiculate, not 3-ridged and petals ovate to very broadly ovate, while the new species has flower buds triangular-ovoid, acute, apiculate, prominently 3-ridged and petals narrowly panduriform-elliptic to narrowly elliptic. *Duguetia reticulata* has leaves 5–8 cm wide, upper bract ca. 1 mm long and flowers pinkish *in vivo*, while *D. rolimii* has leaves 1.5–5 cm wide, upper bract 6–8 mm long and flowers pale green to yellowish *in vivo*. *Duguetia gardneriana* occurs in northeastern Brazil, from Rio Grande do Norte to Bahia, and *D. reticulata* is restricted to Bahia (Maas *et al.* 2003, Lobão & Bazante 2023).

Key to identify the *Duguetia* species present in the Espírito Santo

1. Young twigs, petioles, lower side of leaves, pedicels, bracts and sepals covered with stellate hairs (*Mata alta* and flooded forests, Figs. 4, 5A–C) *D. chrysocarpa*
- 1'. Young twigs, petioles, lower side of leaves, pedicels, bracts and sepals covered with entire scales and/or stellate scales 2
2. Upper side of leaves sparsely to densely covered with stellate hairs and stellate scales; fertile monocarps connate for 70–80% of their length (Flooded forests, Fig. 4) *D. furfuracea*
- 2'. Upper side of leaves glabrous; fertile monocarps free 3
3. Inflorescences flagelliflorous, i.e., inflorescence 8–14.5 cm long arising at the base of the main trunk; fruit ≤ 2 cm in diam., fertile monocarps ca. 8 (*Mata alta*, Figs. 4, 5D–F) *D. sessilis*
- 3'. Inflorescences among leaves or cauliflorous, rarely flagelliflorous; fruit ≥ 3 cm in diam., fertile monocarps ≥ 60 ... 4
4. Tree to 22 m tall; upper bract 6–8 mm long; flower buds prominently 3-ridged by recurved edges of the sepals, apex apiculate; fruiting areoles glabrous or soon becoming glabrous (*Mata alta*, Figs. 1, 2, 3A–F, 4) *D. rolimii*
- 4'. Shrub or tree to 6 m tall; upper bract 1–2 mm long; flower buds slightly 3-ridged by recurved edges of the sepals to not 3-ridged, apex not apiculate; fruiting areoles totally covered with persistent indument 5



5. Lower side of leaves sparsely covered with stellate scales; fertile monocarps ca. 90, areoles broadly pyramidal, totally covered with brownish indument of stellate to furcate hairs (*Mata alta*, Fig. 4) *D. riedeliana*
- 5'. Lower side of leaves totally to densely covered with stellate scales; fertile monocarps > 200, areoles narrowly pyramidal, totally covered with greyish indument of stellate scales (Muçununga forest, Figs. 3G-L, 4, 5G-I)
..... *D. sooretamae*

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Author's Contribution

Conceptualization, data curation, MLB and GSS; formal analysis, investigation, MLB, JGL and PJMM; funding acquisition, MLB, RGU and MRVB; software, MLB and GSS; supervision, writing – review & editing, GSS, PJMM, RGU and MRVB; writing – original draft, MLB. All authors have read and agreed to the published version of the manuscript.

Conflicts of interest

The authors declare no conflicts of interest.

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