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Two new species of *Eperua* (Leguminosae, Detarioideae, Detarieae) from the Amazon and Cerrado Biomes discovered in a botanical garden and a backyard

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Abstract

In this study, we describe two new species of *Eperua*, *E. cerradoensis* and *E. manausensis*. *Eperua cerradoensis* is the first species of the genus described from the Cerrado Biome (Brazil); all other 16 species, including the other new species described here *E. manausensis*, are endemic to the Amazon region (Amazon basin and the Guiana Shield). Both species have short and erect inflorescences. *Eperua cerradoensis* has a non-tubular corolla, white petals, and exerted stamens, and is most similar to *E. duckeana* and *E. schomburgkiana*, from which it differs by the bracteole size and phenology, flower indumentum, besides other vegetative characteristics. *Eperua manausensis* has a tubular corolla, pink to purple petals, and inserted stamens, and it is most similar to *E. grandiflora* subsp. *guyanensis*, but differs from it by the bracteole position and phenology and flower indumentum. The type localities of both species are very unusual: a backyard (*E. cerradoensis*) and a botanical garden (*E. manausensis*). The two species have been collected in the last five years. These discoveries show that new undescribed species can be found even in more disturbed areas and that comprehensive knowledge of the flora requires new collections and more taxonomists.

Key words: Fabaceae, *Eperua s.l.* clade, Neotropical flora, species description, taxonomy

Introduction

The Neotropical genus *Eperua* Aublet (1775: 369) is a typical genus of the family Leguminosae or Fabaceae that has a single superior carpel with one locule, marginal placentation in two alternating rows on a single placenta (Lewis *et al.* 2009), besides the common pod without any dispersal modifications, compound and alternate leaves with stipules and pulvinus, racemose inflorescences, and showy, dichlamydeous, pentamerous flowers (Barroso *et al.* 1991). The genus belongs to the subfamily Detarioideae, tribe Detarieae (LPWG 2017, Estrella *et al.* 2018). In the tribe Detarieae, it is closely related to three African genera, *Eurypetalum* Harms (1910: 293), *Augouardia* Pellegrin (1924: 309), and *Stemonocoleus* Harms (1905: 76), which together comprise the *Eperua s.l.* clade (Bruneau *et al.* 2001, 2008, Estrella *et al.* 2018, Fougère-Danezan *et al.* 2007, 2010, LPWG, 2017). *Eperua* shares with *Eurypetalum* (sister genus) flowers with one big adaxial petal and other four very small petals and ten basally connate stamens (Fougère-Danezan *et al.* 2010, Obiang-Mbomio & Breteler 2007).

Eperua is known for its endemism to the Amazon region in Central and Eastern Amazonia and the Guiana Shield (Cowan 1975, 1985, Romero-González & Aymard 2019). Most of the species occur in the Guiana Shield and, in the Amazon basin, the species occur mainly above the Amazon and Negro rivers (Cowan 1975, 1985, Romero-González & Aymard 2019). *Eperua* species inhabit floodplains (“várzea” and “igapó”) and upland (“terra firme”) forests, and some species are restricted to white sand forests (Cowan 1975, 1985, Romero-González & Aymard 2019).

The species within *Eperua* have contrasting morphology concerning the inflorescence arrangement and floral architecture. The inflorescence is always a raceme or a panicle, but it can be short (around 10 cm long) and erect (Fig. 1—A–E, I) or long (more or less between 100–300 cm long) and pendent (Fig. 1—F–G). As for the floral

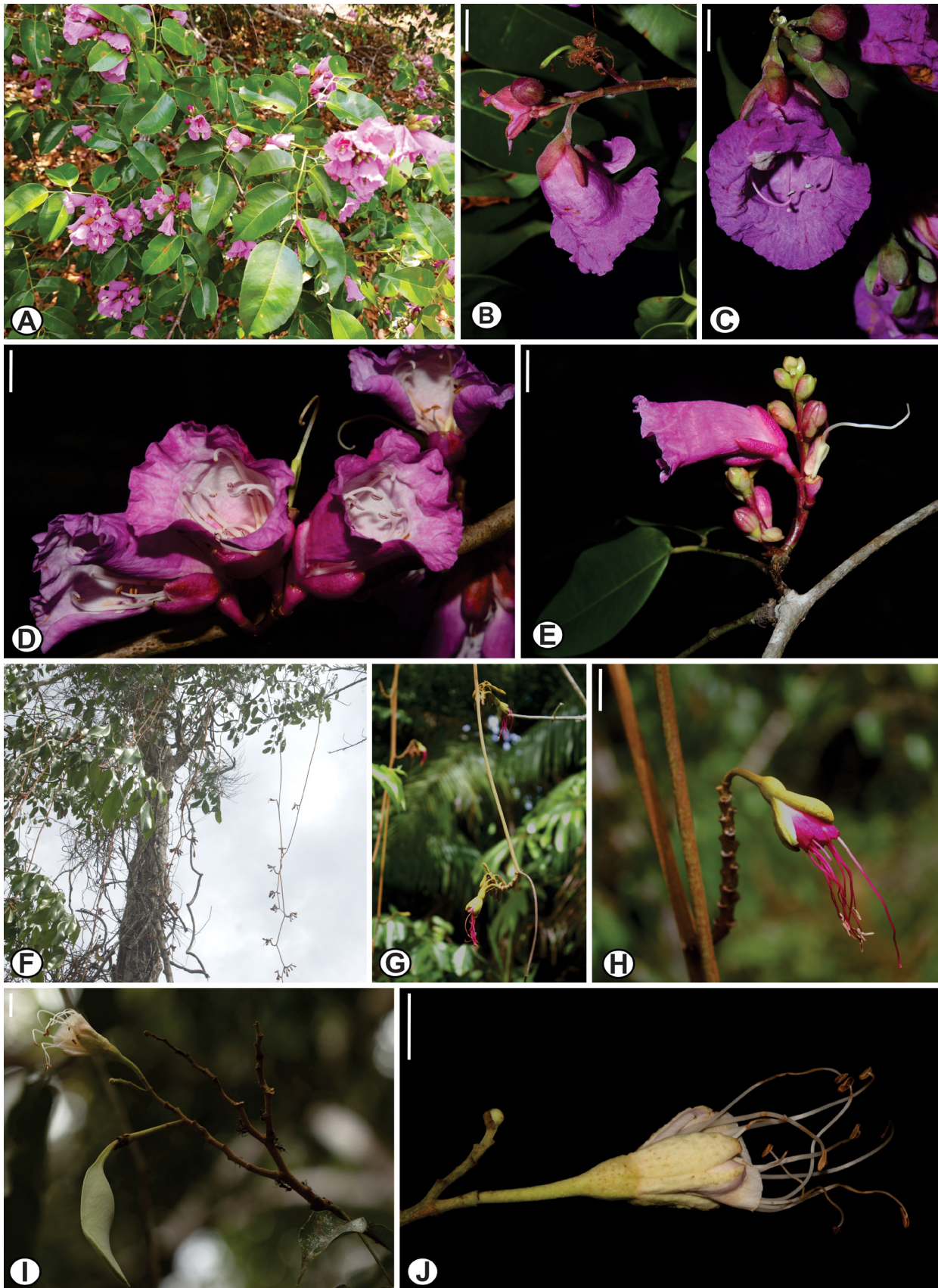


FIGURE 1. Different inflorescence arrangements and flower architectures in the genus *Eperua*. A–E. Short and erect inflorescence, flower with tubular corolla and inserted stamens; F–H. Long and pendulous inflorescence, flower with non-tubular corolla and exserted stamens; I–J. Short and erect inflorescence, flower with non-tubular corolla and exserted stamens. Bar 1 cm; A–C. *E. oleifera*; D–E. *E. glabriflora*; F–H. *E. rubiginosa* Miquel (1851: 12) var. *rubiginosa*; I–J. *E. duckeana*. Photos A–C: F. Farroñay; D: D.B. Cardoso; E–H: E.A. Fortes; I–J: T.C. Monteiro.

architecture, there are two groups: non-tubular corolla and exerted stamens (Fig. 1—H–J) and tubular corolla and inserted stamens (Fig. 1—B–E). The tubular corolla is formed only by the adaxial petal whose rolled inwardly margins overlap forming a tube. In contrast, in the non-tubular corolla, the margins do not overlap completely and no tube is formed. Species with tubular corollas always have inserted stamens and those with non-tubular corollas always have exerted stamens. Species with short and erect inflorescences have both floral architectures while those with long and pendulous inflorescences have only non-tubular corollas and exerted stamens (Cowan 1975).

According to the last and most complete taxonomic revision of the genus (Cowan 1975), the inflorescence arrangement and floral architecture drive the entire taxonomy of the genus but the species are delimited generally based on inflorescence and flower indumentum and bracteole phenology and position on the pedicels (see Table 1 and 2). The genus comprises 16 species, four subspecies, and four varieties (Cowan 1975, Cowan 1985, Romero-González & Aymard 2019). The two last published species—*Eperua praesagata* and *E. banaensis*—were described by Cowan (1985: 293) and Romero-González & Aymard (2019: 341), respectively. After analyzing Cowan’s taxonomy framework, two additional new species came along based on specimens that do not fit the description of any other currently accepted species (see Tables 1 and 2). Thus, in this study, we present morphological descriptions, ecological information, field photographs, and illustrations for the two new species named here *Eperua manausensis* E.A. Fortes & Mansano *sp. nov.* and *Eperua cerradoensis* E.A. Fortes, G.S. da Silva & Mansano *sp. nov.*

TABLE 1. Morphological differences between *E. cerradoensis* and its most morphologically similar species *E. duckeana* R.S. Cowan, and *E. schomburgkiana* Benth.

Characters	<i>E. cerradoensis</i>	<i>E. duckeana</i>	<i>E. schomburgkiana</i>
Stipules conation	Joined	Free	Free
Pellucid-punctate blades	Epunctate to inconspicuous pellucid-punctate	Pellucid punctate	Pellucid punctate
Leaflet margin	Revolute	Entire	Entire
Main vein on the adaxial surface	Depressed	Prominent	Prominent
Bracteole size	Larger: 9.8–12.7 × 6.5–9.8 mm	Smaller: 1.9–5.0 × 2.3–4.2 mm	Smaller: 4.9–6.3 × 3.7–5.0 mm
Bracteole phenology	Persistent	Caducous	Caducous
Stamens conation	Joined basally in a tube	Diadelphous sheath 9+1	Diadelphous sheath 9+1
Sheath/tube indumentum	Glabrous	Tomentose	Tomentose
Ovary indumentum	Tomentose	Tomentose	Glabrous
Fruit indumentum	Tomentose	Tomentulose	Glabrous
Fruit margin	Dorsal margin alate	Entire	Entire

TABLE 2. Morphological differences between the new species *E. manausensis* and *E. banaensis* G.A. Romero & Aymard, *E. bijuga* Benth (1870: 226), *E. grandiflora* subsp. *grandiflora*, *E. grandiflora* subsp. *guyanensis*, *E. jenmanii* Oliver (1891: 20), *E. obtusata* R.S. Cowan (1975: 33), *E. oleifera* Ducke (1932: 728), and *E. purpurea* Benth (1870: 226), which *E. manausensis* shares short and erect inflorescences, tubular corollas, and inserted stamens. The indumentum is considered scarce when it is puberulous (*E. bijuga*, *E. jenmanii*) or strigulose (*E. banaensis*, *E. obtusata*), and dense when it is tomentose (*E. manausensis*, *E. grandiflora* subsp. *grandiflora*, *E. oleifera*), pubescent (*E. grandiflora* subsp. *guyanensis*, *E. grandiflora* subsp. *grandiflora*), or strigose (*E. oleifera*).

Species	Inflorescence indumentum	Bracteole insertion on the pedicel	Bracteole phenology	Stamen indumentum	Ovary indumentum
<i>E. manausensis</i>	Dense indumentum	Lower middle portion	Caducous	Tomentose	Tomentose to villous
<i>E. grandiflora</i> subsp. <i>guyanensis</i>	Dense indumentum	At the base of the hypanthium	Persistent	Pubescent to puberulous	Sericeous
<i>E. grandiflora</i> subsp. <i>grandiflora</i>	Dense indumentum	Higher portion	Persistent	Irregularly tomentose	Glabrous
<i>E. oleifera</i>	Dense indumentum	Higher portion or at the base of the hypanthium	Persistent	Villous	Glabrous
<i>E. jenmanii</i>	Scarce indumentum or glabrous	Lower middle portion	Persistent	Villous, pubescent to puberulous	Glabrous
<i>E. banaensis</i>	Scarce indumentum	Lower middle portion	Caducous	Glabrous	Sericeous
<i>E. obtusata</i>	Scarce indumentum	Lower portion	Caducous	Glabrous	Sericeous
<i>E. glabriflora</i>	Glabrous	Lower middle portion	Caducous	Tomentose, pubescent to puberulous	Glabrous
<i>E. bijuga</i>	Scarce indumentum	Lower middle portion	Persistent	Puberulous	Glabrous
<i>E. purpurea</i>	Glabrous	Middle portion	Persistent	Villous	Glabrous

Besides their peculiar morphology, these new species have unexpected type localities and distribution. The type locality of *E. cerradoensis* is a backyard in an area of Cerrado in the Eastern region of the state of Maranhão (Brazil), where the species was first registered flowering and fruiting in 2020. It is a common tree in the region, which is characterized by Cerrado physiognomies such as “cerradão” (tall savannah forest), “campo sujo” (grassy vegetation with interspersed small shrubs), typical Cerrado (savannah), “veredas” or “buritizais” (palm swamps), and riparian forest (Spinelli-Araujo *et al.* 2016). This is a remarkable discovery for *Eperua* because it expands the distribution of the genus, formerly thought to be endemic to the Amazon Biome.

In turn, *E. manausensis* occurs in sympatry with *Eperua duckeana* R.S. Cowan (1975: 30) and *E. glabriflora* (Ducke 1940: 27) R.S. Cowan (1975: 30) in “terra firme” forest (uplands) in the Amazon Biome. This species is known from a single specimen (first time collected in 2017) in the Museu da Amazônia (Musa), a botanical garden located in Manaus (Brazil, Amazonas) and associated with the Adolpho Ducke Forest Reserve. Thus, our discoveries provide evidence that undescribed species may be found even in more disturbed areas and that comprehensive knowledge of the flora requires new collections and more taxonomists.

Material & methods

To describe the new species, specimens from the IAN, INPA, RB, UB (image) herbaria (acronyms follow Thiers, 2023) and collected in the field were examined. To compare the new species with other species of the genus, we analyzed representative collections of all *Eperua* species in the RB, INPA, and US herbaria and the last taxonomic revision of *Eperua* (Cowan 1975). Information on distribution, habitat, phenology, and vernacular names was extracted from the exsiccate labels. Distribution maps were prepared using the geographic coordinates provided by the collectors. The coordinate reference system is longitude/latitude and the WGS84 datum. Plant organ and character state terminology follow Beentje (2010); by petalodia we mean the four reduced petals (Cowan 1975).

Results and discussion

Eperua cerradoensis E.A. Fortes, G.S. da Silva & Mansano *sp. nov.* (Figs. 2–5)

Type:—BRAZIL. Maranhão, Caxias, Povoado Morro Agudo, Segundo Distrito, rio Itapecuru, área rural, 4°32'18"S 43°03'46"W, 24 March 2022, *Gonçalves A.S. 02* (holotype RB[01458708]!, isotypes INPA!, UEC!, US!)

Diagnosis:—*Eperua cerradoensis* has short and erect inflorescences, non-tubular corollas, and exerted stamens. It differs from species with the same type of inflorescence, corolla and stamen by the combination (see Table 1): joined stipules, inconspicuous pellucid-punctate to epunctate leaflets, revolute margins, main vein depressed on the adaxial surface, larger and persistent bracteoles, short and erect inflorescences, stamens joined basally in a tube, glabrous sheath, tomentose ovary, tomentose fruits with alate dorsal margins.

Tree or treelet (1.6–)3.5–11.5 m tall. **Trunk** 10.0–15.7 cm in diameter, bark grayish to brownish, smooth to striate, lenticellate. **Stipules** 15.1–40.9 × 11.8–22.7 mm, joined, foliaceous, semiobicular, persistent. **Leaves** (4–)5–7jugate, glabrous; **petioles** 2.0–3.8 cm long; **rachis** 15.0–24.0 cm long; **petiolules** 5.3–8.4 mm long; **blades** 7.5–14.1 × 3.5–5.2 cm, coriaceous, glabrous, inconspicuous pellucid-punctate to epunctate, not discoloured, equilateral, lower pair ovate, middle pair ovate to elliptic, upper pair elliptic, apex attenuate to acuminate, mucronate, base asymmetrical, lower pair base rounded, middle pair base rounded to obtuse, upper pair base rounded to obtuse, margin revolute, secondary venation with two intramarginal veins, vein closer to the margin not continuous, main vein straight, depressed on the adaxial surface, tertiary veins slightly conspicuous. **Inflorescences** terminal, raceme, erect, tomentose, whitish, 10.0–20.0 cm long; **bracts** 8.4 × 4.8 mm, ovate, cucullate, apex gland absent, tomentose, whitish, caducous; **bracteoles** 9.8–12.7 × 6.5–9.8 mm, ovate, cucullate, apex gland absent, tomentose externally and within, whitish, persistent, attached to the lower portion of the pedicels; **pedicel** 18.0–24.4 mm long, 3.0–4.8 mm in diameter, not twisted, tomentose, whitish; **buds** 1.3–1.5 cm long, 1.0 cm in diameter, tomentose, whitish. **Flowers:** **hypanthium** 5.5–7.8 mm long, 7.7–10.6 mm in diameter, cup-shaped, equilateral, tomentose, whitish; **sepal** 2.3–2.9 × 1.3–1.7 cm, elliptic, unequal, the outer ones larger, cucullate, apex gland absent, greenish-white, tomentose, inner sepals scarious marginally, whitish; **adaxial petal** 2.3–3.3 × 5.5–6.5 cm, oblate, non-tubular, apex rounded, base truncate, white, glabrous; **petalodia**

2.7–8.8 × 1.1–3.0 mm; **stamens** exerted, joined basally in a tube, longer filaments 6.0 cm long, shorter filaments 5.1 cm long, tube equilateral, 2.8–3.4 mm long, glabrous, anthers 10.8–12.4 × 2.6–2.9 mm, rectangular; **ovary** 9.6–13.0 × 3.3–3.7 mm, oblanceolate, tomentose, greenish, stipe 5.8–10.5 mm long, tomentose, style 2.7–4.9 cm long, glabrous, stigma capitate. **Legumes** 22.0 × 7.0 cm, stipe 2.6 cm long, elliptic-falcate, apex obtuse, apiculate, dorsal margin alate, yellowish-green, veins absent, tomentose, yellowish. **Seeds** 4 per fruit, 3.2 × 2.0 cm (immature), obovate, whitish-brown.

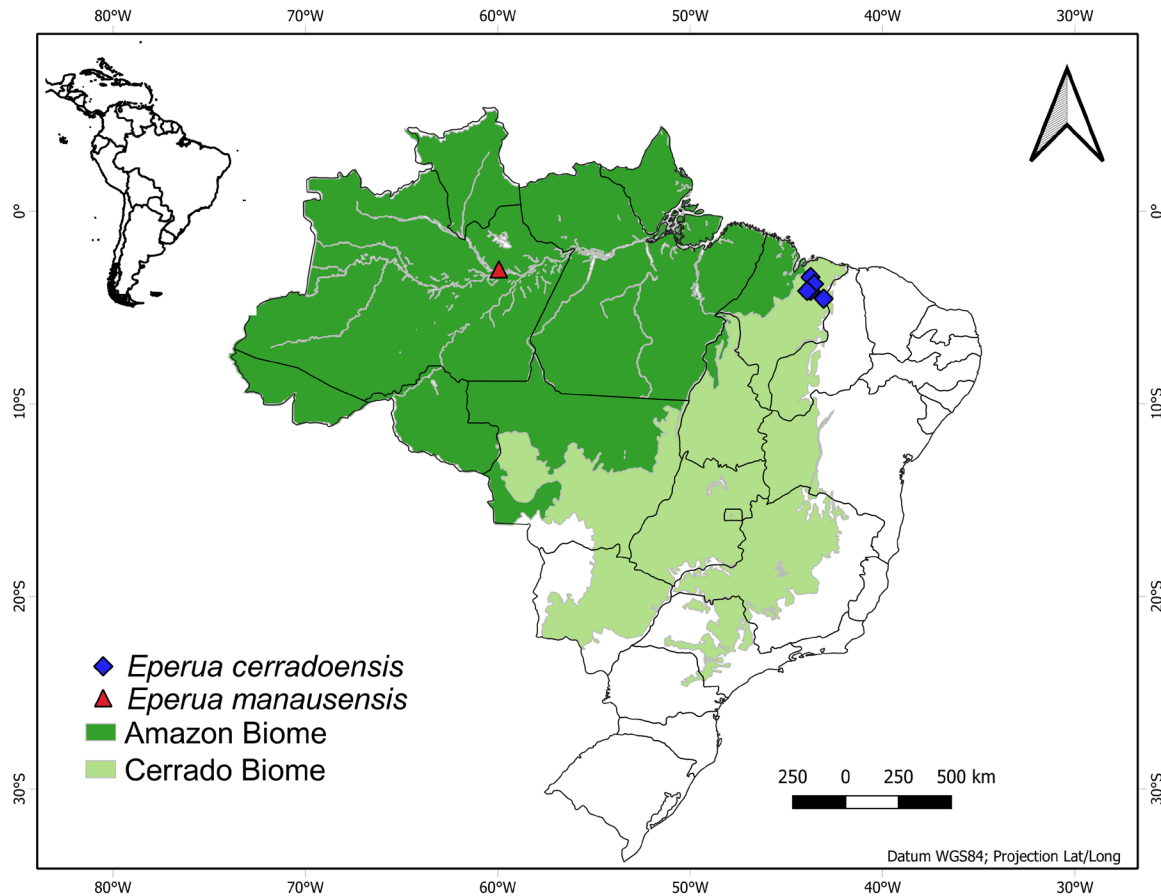


FIGURE 2. Geographic distribution of *Eperua cerradoensis* and *Eperua manausensis*. Biome shape from IBGE (2019).

Phenology:—Flowers in March and September; fruits in September. Flowering probably starts in the rainy season (February–March) and end at the beginning of the dry season (September). The fruits collected in September were not completely mature and, thus, mature fruits are expected by the end of the dry season (October–November).

Distribution:—It has a disjoint distribution in the Eastern region of the state of Maranhão (Brazil) in the Itapecuru and Munin Basins, which are separated from the Amazon Basin by many other basins.

Habitat:—It is the only species that does not occur in the Amazon Biome. *Eperua cerradoensis* was collected in the Cerrado Biome, in the phytofisiognomies of “cerradão”, secondary forest, ombrophilous lowland forest with a predominance of palm trees, and in open ombrophilous forest, on stony clayey soil, from 57 to 91 m elev. *Eperua cerradoensis* is a common tree on its area of occurrence.

Occurrence in protected areas:—Unknown.

Etymology:—The specific epithet alludes to its occurrence in the Cerrado Biome.

Vernacular names:—Embira de sapo (Almeida A.B. 134), imbirá de sapo (Almeida A.B. 152), pitu (Oliveira D. 66), pracateira (Marinho M.A.O. 606, 629, Santos R.S. 296).

Uses:—In the type locality, Povoado Morro Agudo, it is mainly used to make charcoal and fences, and eventually in house construction but this is not a common usage because the local population reported that the plant is very favorable to wood-dwelling termites.

Taxonomic notes:—Besides the collections in the type locality, other sterile collections were found at UB. They match the diagnostic characteristics of *E. cerradoensis* by the foliaceous and joined stipules, (4–)5-jugate leaves, and equilateral leaflets ranging from ovate (lower and middle pairs) to elliptic (middle and upper pairs) in shape with attenuate to acuminate apex and main vein depressed on the adaxial surface.

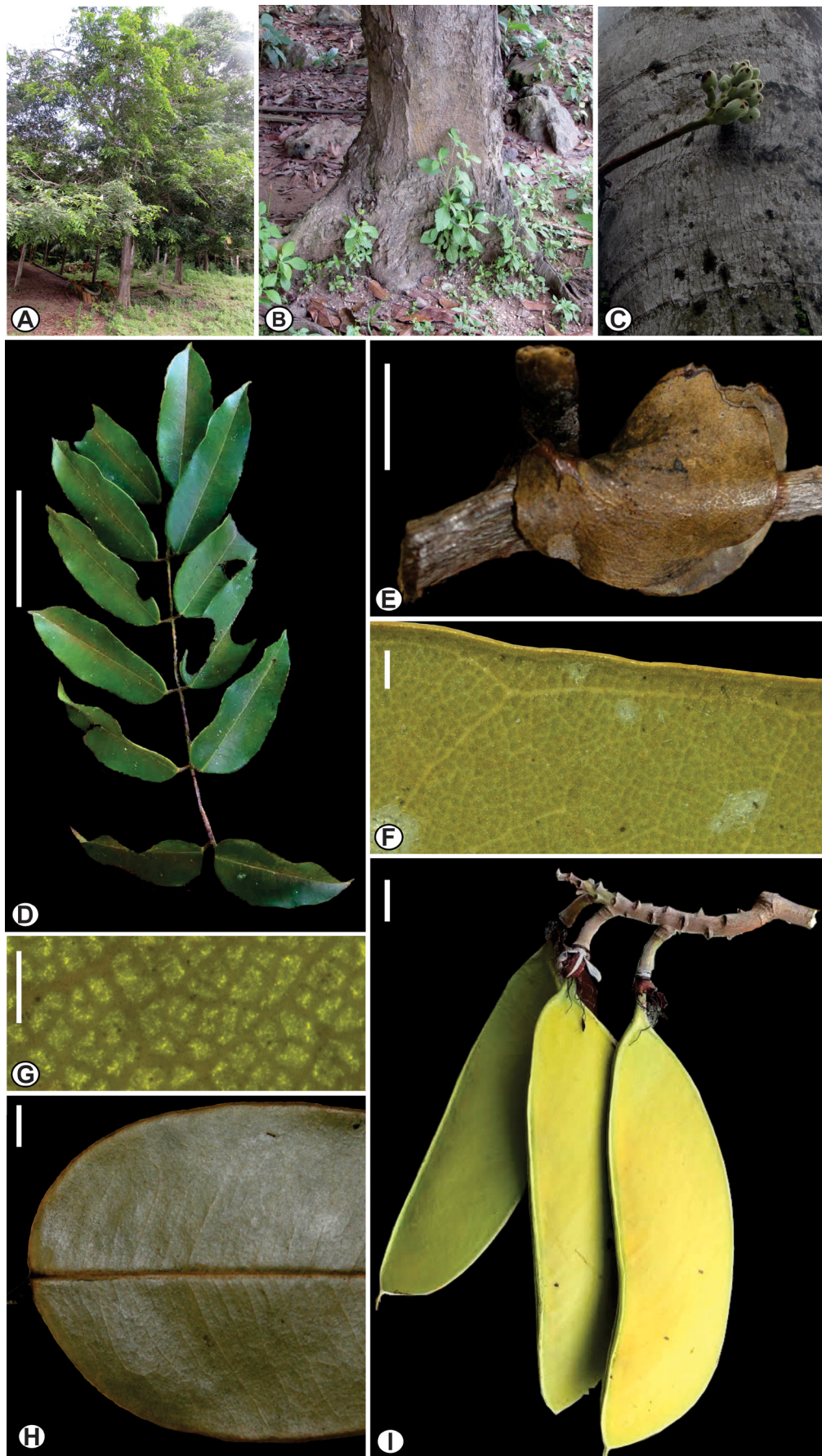


FIGURE 3. *Eperua cerradoensis*: A. habit; B. trunk base; C. bark as a background for a photo of the inflorescence in bud; D. leaf, bar 3 cm; E. stipules, bar 1 cm; F. intramarginal vein, bar 1 mm; G. epunctate leaflet, bar 1 mm; H. adaxial surface of leaflet, bar 1 cm; I. fruits, bar 3 cm. Photos, A–D, I: A.S. Gonçalves; E–H: E.A. Fortes.

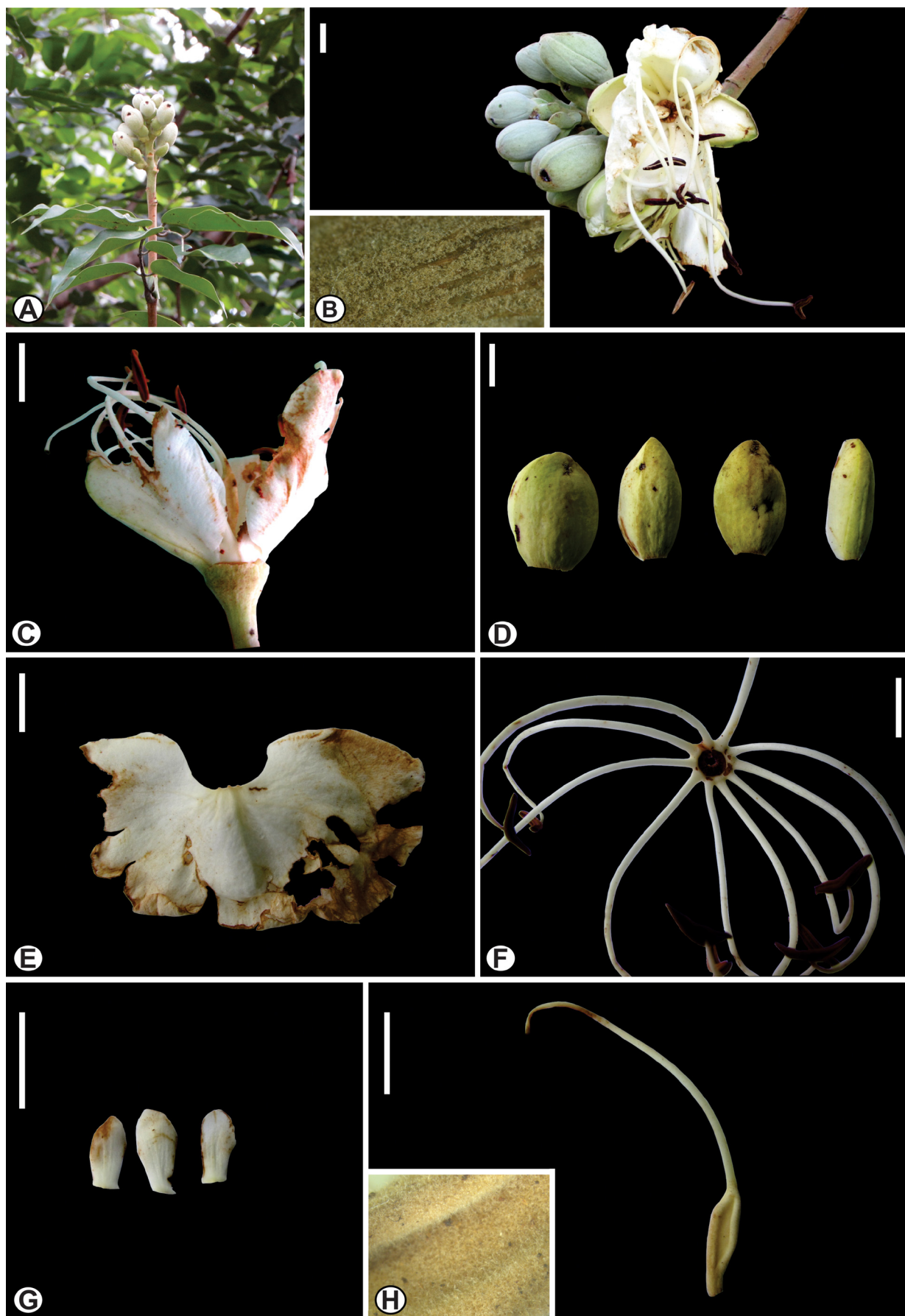


FIGURE 4. *Eperua cerradoensis*: A–B. inflorescence and detail of indumentum, bar 1cm; C. flower, bar 1 cm; D. sepals, bar 1 cm; E. adaxial petal, bar 1 cm; F. stamens, bar 1 cm; G. three of the four petalodia, bar 1 cm; H. carpel and detail of ovary indumentum, bar 1 cm. Photos, A.S. Gonçalves.



FIGURE 5. *Eperua cerradoensis*: A. leaf; B. detail of leaflet margin, abaxial side, showing the intramarginal vein; C. stipules; D. inflorescence; E. detail of the indumentum of the main axis of the inflorescence and the pedicel; F. flower, lateral view with pair of bracteoles and scar of the caducous bract; G. flower, polar vision; H. sepal; I. petal; J. four petalodia; K. detail of the stamen tube and petalodia (sepals and petals removed); L. detail of the glabrous stamen tube and intrastaminal nectaries; M. anther, side view; N. carpel; O. detail of the ovary indumentum; P. stigma; Q. fruit; R. detail of the fruit indumentum. Specimen: *Gonçalves A.S. 01 and 02*. Illustrated by Marcus Falcão.

Eperua cerradoensis, *E. duckeana* and *E. schomburgkiana* Benth (1870: 226) are a differentiated group in the genus, presenting short and erect inflorescences, non-tubular corollas, and exerted stamens. Besides that, *E. cerradoensis* shares white petals with the two species above and a tomentose ovary with *E. duckeana*. *Eperua cerradoensis* differs from the two species by many vegetative and floral characteristics summarized in Table 1.

Specimens examined (Paratypes):—BRAZIL. Maranhão, Caxias, Povoado Morro Agudo, Segundo Distrito, área rural, 4°32'18.2"S 43°03'45.5"W, 18 September 2020, *Gonçalves A.S. 01* (IAN [201061]!, HABIT [collection number 4283]!). Chapadinha, Cajazeiras, conglomerado MA-255, subunidade 1, subparcela 5, indivíduo 16, F6, 60 m elev., 3°46'48"S 43°33'36"W, 30 May 2018, *Marinho M.A.O. 606* (UB [0120836] image!); Cajazeiras, conglomerado MA-255, subunidade 3, subparcela 10, indivíduo 11, F8, 60 m elev., 3°46'48"S 43°33'36"W, 30 May 2018, *Marinho M.A.O. 629* (UB[0120833] image!). Nina Rodrigues, Mangueira, conglomerado MA-202, subunidade 1, subparcela 1, indivíduo 4, F6, 57 m elev., 3°25'12"S 43°44'24.1"W, 05 September 2018, *Almeida A.B. 134* (UB[0120838] image!); Mangueira, conglomerado MA-202, subunidade 3, subparcela 10, indivíduo 13, F8, 57 m elev., 3°25'12"S 43°44'24"W, 05 September 2018, *Almeida A.B. 152* (UB[0120837] image!). Timbiras, comunidade Morada Nova, conglomerado MA-305, subunidade 2, subparcela 1, indivíduo 10, F6, 94 m elev., 4°8'24"S 43°44'24"W, 02 May 2018, *Oliveira D. 66* (UB[0120834] image!); Bacabalzinho, conglomerado MA-304, subunidade 3, subparcela 1, indivíduo 10, F8, 91 m elev., 4°08'24"S 43°55'12"W, 28 March 2017, *Santos R.S. 296* (UB[0120835] image!).

Eperua manausensis E.A. Fortes & Mansano *sp. nov.* (Figs. 2, 6, 7)

Type:—BRAZIL. Amazonas, Manaus, Reserva Florestal Adolpho Ducke, trilha do Jardim Botânico MUSA, planta marcada JBN 634, 08 June 2017, *Cabral F.N. et al. 1561* (holotype INPA[0284318]!, isotype RB[01459755]!).

Diagnosis:—*Eperua manausensis* has short and erect inflorescences, tubular corollas, and inserted stamens. It differs from species with the same type of inflorescence, corolla, and stamen by the combination: 2–3-jugate leaves, cordate to subcordate leaflet base, two intramarginal veins, vein closer to the margin continuous, tomentose inflorescences, caducous bracteoles attached to the lower middle portion of the pedicels, tomentose stamen sheath, densely tomentose to villous ovary, and puberulous fruit.

Tree 20.0 m tall. **Trunk** 38.0 cm in diameter, bark brownish, lenticellate. **Stipules** 1.8–1.9 × 0.8–1.4 mm, free, non-foliaceous, ovate to lanceolate, caducous. **Leaves** 2–3-jugate, glabrous; **petioles** 0.6–2.9 cm long; **rachis** 3.5–14.6 cm long; **petiolules** 6.2–9.1 mm long; **blades** 5.3–12.8 × 3.5–6.5 cm, coriaceous, glabrous, inconspicuous pellucid-punctate to pellucid-punctate, discolorous, equilateral, lower pair ovate, middle pair elliptic, upper pair elliptic, apex attenuate to acuminate, base symmetrical, lower pair base subcordate to cordate, middle pair base subcordate to rounded, upper pair base subcordate, rounded to obtuse, margin revolute to flat at the apex, secondary venation with two intramarginal veins, vein closer to the margin continuous, main vein straight, prominent only near the base on the adaxial surface, tertiary veins conspicuous. **Inflorescences** axillary, panicle, erect, tomentose, brownish-yellow, 4.6–8.9 cm long, lateral racemes 2.1–3.4 cm long, alternate and distichous; **bracts** not seen, caducous; **bracteoles** 4.9–5.0 × 3.0–3.2 mm, ovate, apex gland present, tomentose externally, pubescent to tomentose within, brownish-yellow, caducous, attached to the lower middle portion of the pedicel; **pedicel** 17.5–18.9 mm long, 1.0 mm in diameter, not twisted, tomentose, brownish-yellow; **buds** 0.7 cm long, 0.4 cm in diameter, tomentose, brownish-yellow. **Flowers:** **hypanthium** 3.8 mm long, 2.8 mm in diameter, cup-shaped, equilateral, tomentose, brownish-yellow; **sepal** 1.6 × 0.5 cm, oblong to elliptic, unequal, the dorsal one larger, cucullate, apex gland absent, pink, tomentose, scarious marginally, brownish-yellow; **adaxial petal** 3.8 × 4.7 cm, flabellate, tubular, apex rounded, base attenuate, pink to purple, glabrous; **petalodia** not seen; **stamens** inserted, joined basally in a diadelphous sheath, dorsal one free, longer filaments 3.1 cm long, shorter filaments 2.0 cm long, sheath inequilateral, shorter side 6.5 mm long, longer side 8.0 mm long, sheath tomentose, brownish-yellow, free filaments glabrous, anther 2.2 × 0.8 mm, rectangular; **ovary** 7.1 × 3.7 mm, obovate, densely tomentose to villous, brownish-yellow, stipe tomentose, style 4.0? cm long, glabrous, stigma capitate. **Legumes** 11.3–15.9 × 7.7–8.3 cm, stipe 0.9–1.4 mm long, obovate to irregularly elliptic, apex obtuse, apiculate, dorsal margin slightly thickened, brownish-red, with inconspicuous transversal veins, puberulous to puberulent, brownish. **Seeds** 1–2 per fruit.

Phenology:—Flowers in June; fruits in January and June.

Distribution:—It is known from only one specimen collected twice (2017 and 2022) in Musa. This botanical garden has trails, museums, and exhibitions for educational and recreational purposes, but scientific research is also conducted in the area because the garden encompasses native “terra firme” forest vegetation (100 hectares) of the Adolpho Ducke Forest Reserve.

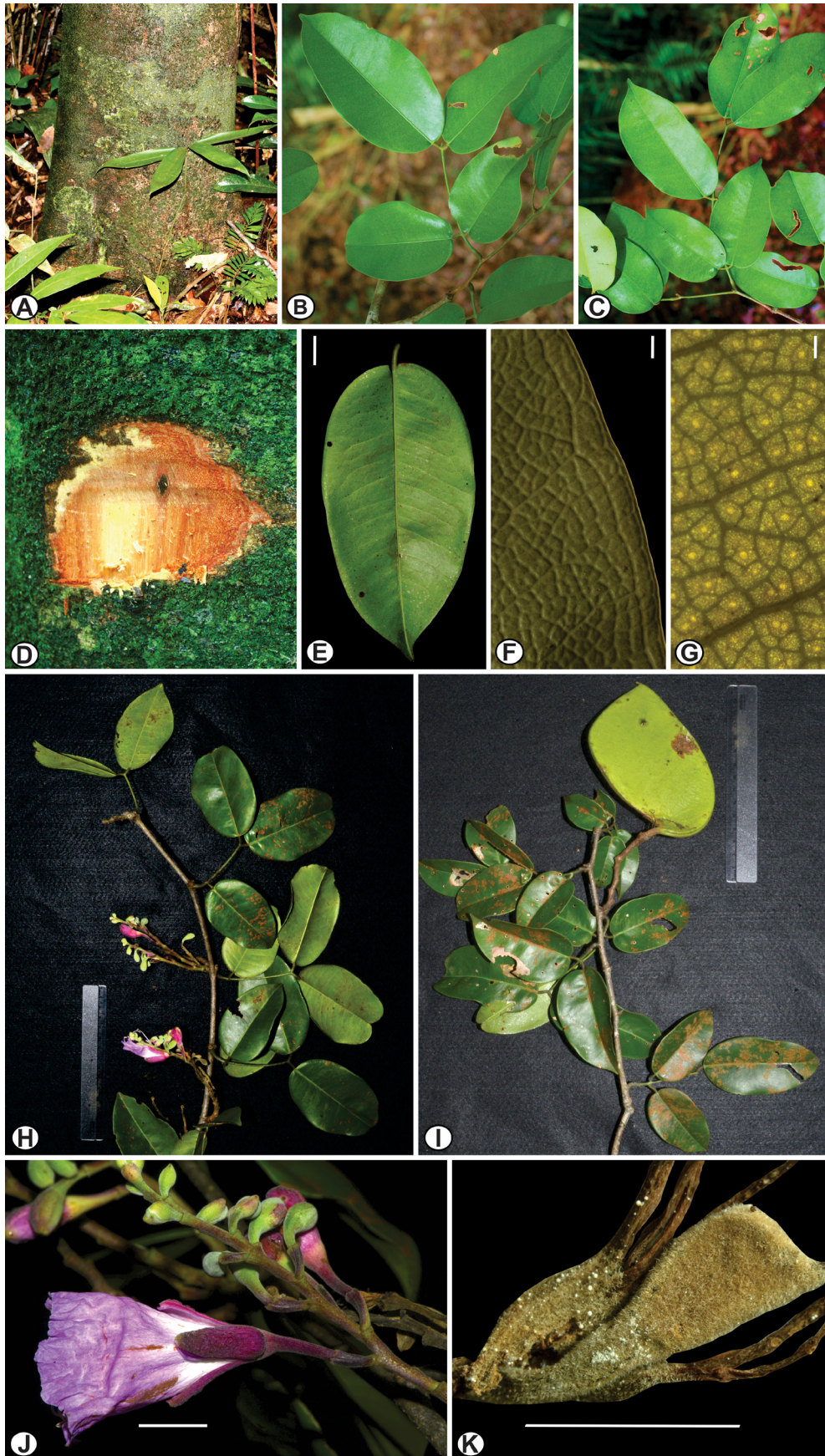


FIGURE 6. *Eperua manausensis*: A. trunk base; B–C. leaves; D. bark; E. leaflet abaxial surface, bar 1 cm; F. intramarginal vein, abaxial side, bar 1 mm; G. pellucid-punctate leaflet, bar 1 mm; H. flowering branch, ruler 15 cm; I. branch bearing a fruit, ruler 15 cm; J. inflorescence with a flower highlighted, bar 1 cm; K. ovary and stamens highlighting the indumentum, bar 1 cm. Photos, A–G, K: E.A. Fortes; H–J: F.N. Cabral.



FIGURE 7. *Eperua manausensis*: A. two-leaved branch showing the leaflet number variation; B. piece of branch showing the pair of stipules; C. detail of the leaflet base, abaxial side; D. detail of the abaxial margin of the leaflet showing the two intramarginal veins; E. inflorescence; F. flower; G. flower bud and bracteoles; H. detail of the indumentum of the inflorescence axis; I. sepal; J. stamen; K. detail of the indumentum at the base of the filament; L. carpel and stamen sheath; M. detail of carpel indumentum; N. fruit; O. detail of the fruit indumentum. A, C–D, O: specimen *Fortes E.A. & Viana G.P. 194b*; E–N: specimen *Cabral F.N. et al. 1561*. Illustrated by Marcus Falcão.

Habitat:—It was collected in “terra firme” forest at 114 m elev. The “terra firme” forest is located at the highest elevations of the Adolpho Ducke Forest Reserve, in well-drained clayey, nutrient-poor soils (Ribeiro *et al.* 1999). *Eperua manausensis* is sympatric with *E. duckeana* and *E. glabriflora*, which are very common in the type locality.

Occurrence in protected areas:—It occurs in the Adolpho Ducke Forest Reserve (Brazil, Amazonas).

Etymology:—The specific epithet alludes its discovery in Manaus (Brazil, Amazonas).

Vernacular names:—Unknown.

Uses:—Unknown.

Taxonomic notes:—*Eperua manausensis* is most similar to *E. grandiflora* (Aublet 1775: 757) Baillon (1870: 110) subsp. *guyanensis* R.S. Cowan (1975: 34), with which it shares the non-glabrous inflorescence, stamen sheath, and ovary; indeed, no other species with short and erect inflorescences share this combination (see Table 2). *Eperua manausensis* differs from *E. grandiflora* subsp. *guyanensis* mainly by the tomentose inflorescence (vs. pubescent, puberulous to glabrescent in *E. grandiflora* subsp. *guyanensis*), larger ($4.9\text{--}5.0 \times 3.0\text{--}3.2$ mm) and caducous bracteoles attached to the lower middle portion of the pedicel (vs. smaller $1.9\text{--}3.0 \times 1.5\text{--}3.4$ mm) and persistent, attached at the base of the hypanthium in *E. grandiflora* subsp. *guyanensis*), tomentose pedicel, hypanthium, and sheath (vs. pubescent, puberulous to glabrescent in *E. grandiflora* subsp. *guyanensis*), and densely tomentose to villous ovary (vs. sericeous in *E. grandiflora* subsp. *guyanensis*).

Specimens examined (Paratypes):—BRAZIL. Amazonas, Manaus, Reserva Florestal Adolpho Ducke, MUSA, planta marcada JBN 634 ao lado direito da Casa-Oficina, à 20 m da trilha Branca, 114 m elev., $3^{\circ}0'22.9''\text{S}$ $59^{\circ}56'22.7''\text{W}$, 27 January 2022, Fortes E.A. & Viana G.P. 194b (HUEFS!, IAN!, INPA!, MG!, NY!, RB [01458706]!, UEC!, US!).

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