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BIODIVERSITY AND CONSERVATION | ORIGINAL ARTICLE

A new *Jacquemontia* Choisy (Convolvulaceae) species from the Brazilian Amazon forest

Deibson Pereira BELO[1,2*], Maria Teresa BURIL[2], Emília ARRUDA[1], Rafael Batista LOUZADA[1]

[1] Universidade Federal de Pernambuco. Centro de Biociências, Departamento de Botânica, Programa de Pós-graduação em Biologia Vegetal, Laboratório de Morfo-Taxonomia Vegetal, Av. Professor Moraes Rego, s/n, Cidade Universitária, Recife, PE, Brazil

[2] Universidade Federal Rural de Pernambuco, Departamento de Biologia, Programa de Pós-graduação em Biodiversidade, Laboratório de Sistemática Integrativa, Rua Dom Manuel de Medeiros, s/n, Dois Irmãos, Recife, PE, Brazil

* Corresponding author: deibson.belo@gmail.com; https://orcid.org/0000-0001-6618-3223

ABSTRACT

A new species of *Jacquemontia* found in Carajás National Forest, Brazil, *Jacquemontia ferricola* sp. nov., is described for an area with a unique flora threatened by mining. We provide a diagnosis of the new species, morphological and anatomical descriptions, illustrations, scanning electron microscopy images, with comments on its distribution and conservation status. The new species was compared with the Brazilian Amazonian *Jacquemontia* species and an identification key is provided.

KEYWORDS: biodiversity, Brazilian flora, Carajás National Forest, ironstone savannas, taxonomy

Uma nova espécie de *Jacquemontia* Choisy (Convolvulaceae) para a floresta amazônica brasileira

RESUMO

Uma nova espécie de *Jacquemontia* encontrada na Floresta Nacional dos Carajás, Brasil, *Jacquemontia ferricola* sp. nov., é descrita para uma área com flora única, ameaçada pela mineração. Apresentamos a nova espécie com descrições macromorfológicas e anatômicas, comentários de distribuição e conservação, ilustrações e imagens de microscopia eletrônica de varredura. A nova espécie foi comparada com outras espécies intimamente próximas e uma chave de identificação é fornecida.

PALAVRAS-CHAVE: biodiversidade, flora brasileira, Floresta Nacional de Carajás, campos ferruginosos, taxonomia

INTRODUCTION

Jacquemontia Choisy is one of the most diverse genera of Convolvulaceae Juss., comprising approximately 120 species (Staples and Brummit 2007; Buril 2013). It is morphologically characterized by having a climbing or shrubby habit, simple leaves, stellate or glandular trichomes, blue or white corolla, single style with two oval, flattened, or filiform stigmatic lobes, pantocolpate pollen with three to 15 colpi, and capsules with eight valves (Meisner 1869; Buril 2013; Nepomuceno *et al*. 2022; Belo *et al*. 2023a). More than 60 species are currently known to Brazil, of which 41 are endemic (Pastore *et al.* 2023). One of the most comprehensive taxonomic treatments of *Jacquemontia* for Brazil was conducted by Meisner (1869) in *Flora Brasiliensis*, which recognized 33 species and described three sections based on inflorescence structure. Buril (2013) later considered 50 as the number of species occurring in Brazil. The *Jacquemontia* species are most frequent in dry areas, and the center of diversity and endemism of the genus in Brazil is located in the Espinhaço Range, in central-eastern Brazil, characterized mostly by rocky grassland/savanna (*campos rupestres*), where herbs and shrubs predominate (Rapini *et al*. 2008; Buril *et al.* 2015).

Numerous floristic and taxonomic studies and descriptions of new *Jacquemontia* species have been published in the last decade, contributing to our knowledge of the genus in South America (Krapovickas 2009; Buril and Alves 2011, 2012a, 2012b, 2013; Buril *et al.* 2012; Pastore and Simão-Bianchini 2015, 2016; Nepomuceno *et al.* 2022). Various studies focusing on the diversity of Convolvulaceae have been undertaken in the Amazon region, either in terms of describing new taxa or floristic surveys (Falcão 1971; Austin 1981; Simão-Bianchini *et al.* 2016). For the Amazon, Austin and Cavalcante (1982) cited 10 species of *Jacquemontia*. However, as has been discussed by other authors, the taxonomy of the genus is not well known, mainly due to overlapping morphological characters that make species delimitation very difficult (Meisner 1869; Buril *et al*. 2012; Buril 2013; Belo *et al*. 2023a).

The Carajás highlands (Serra dos Carajás) are located in the Brazilian Amazon, being characterized as an area rich

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in mineral resources (Silva 2006). The vegetation in the highlands varies from dense (ombrophilous) forests to open field vegetation growing on ferruginous rocks (known locally as *cangas*) within a landscape with elevations of between 500 and 700 m.a.s.l. (Braga 1979; Rizzini 1979; Secco and Mesquita 1983; Viana *et al.* 2016). In areas of *cangas*, the high concentration of iron ore, low water retention capacity and scarcity of nutrients are highly critical factors for natural selection processes, restricting plant diversity and promoting endemism (Silva *et al.* 1996). There are 34 species and nine genera of Convolvulaceae cited for the region of Serra dos Carajás (Simão-Bianchini *et al.* 2016). The genus *Ipomoea* L. is the most diverse (21 species), followed by *Evolvulus* L. (4) and *Maripa* Aubl. (3), while the genera *Aniseia* Choisy, *Camonea* Raf., *Cuscuta* L., *Distimake* Raf., *Jacquemontia* Choisy, and *Operculina* Silva Manso are represented by one species each (Simão-Bianchini *et al.* 2016). Some species of Convolvulaceae have been described only for Serra dos Carajás, such as *Ipomoea cavalcantei* D. Austin, *Ipomoea carajasensis* D. Austin (Austin 1981), and *Ipomoea marabaensis* D. Austin & R. Secco (Austin and Secco 1988), reflecting the high endemism known for that region. At the same time, due to the high ore content of the bedrock, the *cangas* region and its unique flora is threatened by mining activities.

Anatomical studies have been very relevant in the classification and delimitation of angiosperm species (Gomes *et al.* 2005; Farias *et al.* 2016; Lopes-Silva *et al.* 2021). Among anatomical characters, several authors have indicated the shape of the petiole and midrib, the presence and types of stomata, as well as the morphology of the epidermis as taxonomically relevant characters (Rashid and Parnell 2017; Song and Hong 2018; Alencar *et al.* 2022; Belo *et al.* 2023a). Recent studies that used plant anatomy as a tool to subsidize taxonomy, indicate that anatomical characters are relevant to delimit species within *Jacquemontia*, e.g. *Jacquemontia confusa* Meisn. and *J. nodiflora* (Desr.) G. Don. (Belo *et al.* 2023a), *Jacquemontia evolvuloides* (Moric.) Meisn. (Belo *et al.* 2023b), as well as other Convolvulaceae, such as *Daustinia montana* (Moric.) Buril & A.R. Simões (Alencar *et al.* 2022), and new taxa descriptions (Santos *et al.* 2020).

Here, we describe a new species of the genus *Jacquemontia* found in the Carajás National Forest. We also provide an identification key and morphological comparisons of the new species with the Amazonian species of *Jacquemontia*.

MATERIAL AND METHODS

The description of the new species was based on one specimen collected in Carajás National Forest (Figure 1), a conservation unit in Serra dos Carajás, in Pará state, Brazil, between June and July 2022. Specimens of morphologically closely related species were analyzed in the following herbaria: ALCB, HUEFS, IAN, INPA, IPA, K, MBM, MG, MO, NY, P, PEUFR, SPF, and UFP (acronyms according to Thiers, continuously updated, 2023). We also carefully examined the type material of each related species available at JSTOR (https://plants.jstor.org/). The taxonomic description and terminology follow Meisner (1869), Harris and Harris (2001), and Buril (2013). A preliminary conservation status

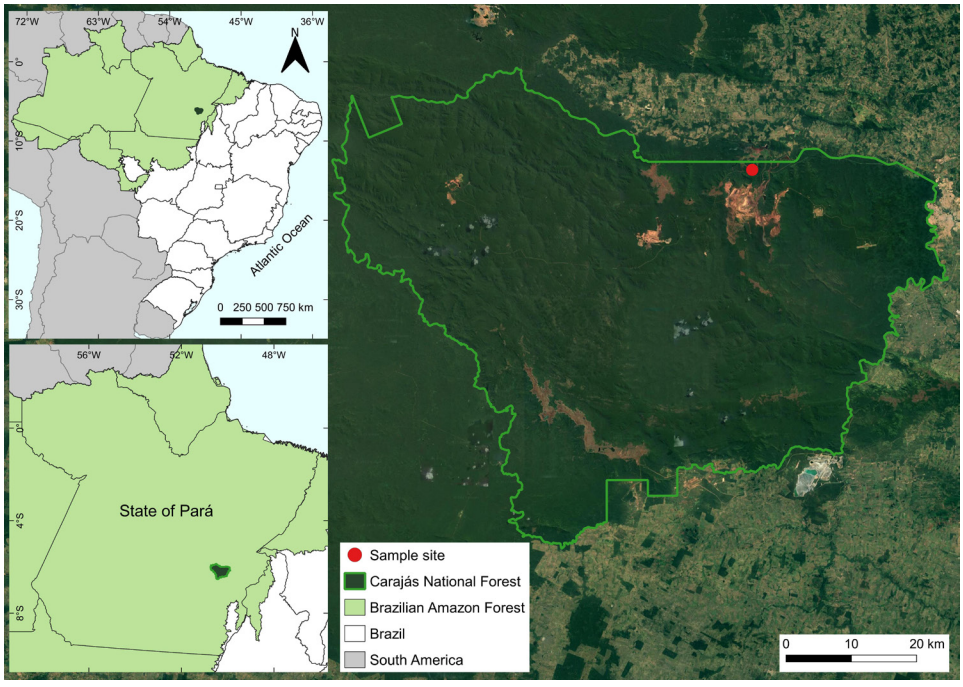

Figure 1. Collection site (red dot) of *Jacquemontia ferricola* **sp. nov.** in Carajás National Forest, Pará state, Brazil. The brown areas below the collection site (red dot) indicate a mining zone. This figure is in color in the electronic version.

assessment was performed according to the IUCN Red List Categories and Criteria (IUCN 2012). A distribution map for the new species was constructed using QGIS Software 3.22 (QGIS.org 2022).

For the anatomical analysis of taxonomically relevant morphological structures, three leaves from the third node of the stem were obtained from the specimen collected in the field and fixed in FAA 50 (formaldehyde, acetic acid, and 50% ethanol) for 48 hours (Johansen 1940) and then stored in 70% ethanol. Freehand sections were made in the median region of the leaf blade, petiole, and stem, cleared by 50% sodium hypochlorite treatment, and stained with Safranin-astra blue (Bukatsch 1972). Slides were prepared according to the protocols of Kraus and Arduin (1997), analyzed under a Leica DM500 microscope, and subsequently deposited in the Plant Anatomy Laboratory at Universidade Federal de Pernambuco, Brazil. Dehydrated samples of the leaves close to the leaf margins and from the median portions of the petioles were prepared for scanning electron microscopy (SEM) analysis by attaching to aluminum supports (stubs) using double adhesive tape. The samples were then photomicrographed using a Hitachi SEM, model TM4000 Plus. The SEM images were processed using CorelDRAW® 2021 software.

RESULTS

Jacquemontia ferricola Belo, Buril & Louzada, **sp. nov.**

Type: Brazil. Pará. Parauapebas, Serra dos Carajás, Floresta Nacional de Carajás, Serra Norte, 280m, 6°00'42"S, 50°09'36"W, *E. Barbier and D. Belo 6*, 2 Jul 2022 (holotype: UFP 90248; isotype: IAN 202800).

Diagnosis: *Jacquemontia ferricola* is morphologically similar to *J. acuminata* Rusby, *J. cataractae* Krapov., and *J. glabrescens* (Meisn.) M. Pastore & Sim.-Bianch., sharing inflorescence dichasium, outer bracteoles at the base of the pedicel, and style inserted. It can be distinguished by the cordate base shape of its leaves (vs. rounded base in *J. acuminata*; subcordate to truncate base in *J. cataractae*; rounded base in *J. glabrescens*). In addition to the leaf base, *J. ferricola* is distinguished by linear outer bracteoles, glabrous (vs. lanceolate, tomentose in *J. acuminata*; lanceolate, glabrous in *J. cataractae*; lanceolate, velutinous in *J. glabrescens*), the glabrescent with sessile peltate glandular trichomes outer sepals, and sinuate margin (vs. tomentose in *J. acuminata* with scarious margin; glabrous with ciliate margin in *J. cataractae*; glabrescent without sessile peltate glandular trichomes with ciliate margin in *J. glabrescens*). Corolla color in *J. ferricola* is white (vs. purple in *J. acuminata*; blue in *J. cataractae*; blue in *J. glabrescens*) (Table 1).

Table 1. Comparison among *Jacquemontia ferricola* **sp. nov.** (Convolvulaceae) and seven morphologically similar congeneric species.

Character	*J. ferricola* sp.nov.	*J. acuminata*	*J. bifida*	*J. bracteosa*	*J. cataractae*	*J. glabrescens*	*J. guyanensis*	*J. pentanthos*
Leaf apex	Acuminate to caudate	Atenuate to acute	Acute to acuminate	Retuse to obtuse, mucronate	Acute	Acuminate	Obtuse to acute, mucronate	Apiculate, acute or obtuse, mucronate
Leaf indumentum	Glabrescent to pubescent	Tomentose to velutinous	Pubescent	Velutinous	Glabrescent to pubescent	Velutinous	Lanate, ferrugineous when dried	Pubescent to tomentose
Outer bracteoles	Linear, 4.3–8.1 × 0.5–1.5 mm, glabrescent	Lanceolate, 15–20 × 2–3 mm, tomentose	Absent	Absent	Lanceolate, 14–20 × 2–4 mm, glabrous	Lanceolate, 17–20 × 2–3 mm, velutinous	Absent	Absent
Bracteoles	Linear, 3.6–5 × 0.4–0.5 mm, glabrous	Linear, 3–4 × 0.5 mm, tomentose	Linear, 3–7 × 0.5 mm, pubescent	Lanceolate, 10×5 mm	Linear, 8×1.5 mm, glabrous	Lanceolate, 7–8 × 1 mm, pubescent	Linear, 8×1 mm, pubescent	Rhombic to elliptic, 10–24 × 1–2 mm, pubescent
Outer sepal shape and size	Rhombic, 7.9–8 × 4.2–4.7 mm	Oval, 8×3 mm	Ovate to rotund, 5–14 × 4–12 mm	Lanceolate to ovate, 7–8 × 3–5 mm	Lanceolate, 6×2.5 mm	Rhombic to ovate, 9–11 × 5–6 mm	Rhombic, 5–8 × 2–2.5 mm	Ovate to lanceolate, 4.5–9 × 2–5 mm
Outer sepal base	Truncate	Rounded	Cordate	Rounded	Rounded	Rounded	Truncate	Cuneate to rounded
Outer sepal apex	Acuminate to caudate	Acuminate	Acute to acuminate	Caudate	Acute	Acute to acuminate	Acute to acuminate	Acute
Outer sepal indumentum	Glabrescent with sessile peltate glandular trichomes	Tomentose	Trichomes in the medium region	Velutinous	Glabrous	Glabrescent without sessile peltate glandular trichomes	Lanate	Pubescent
Margin of outer sepals	Sinuate	Scarious	Entire	Sinuate	Ciliate	Ciliate	Scarious	Entire
Corolla color, length	White, ca. 10 mm	Purple, ca. 15 mm	Blue, 10–15 mm	White, 22–31 mm	Blue, ca. 20 mm	Blue, 16–20 mm	White, 15–18 mm	White or blue, 15–20 mm
Distribution	Brazil: Pará state (Amazon Forest)	Endemic Bolivia	Brazil to Argentina	Endemic Brazil	Argentina, south Brazil	South and southeast Brazil	Guianas, Venezuela, Brazil, on the borders of the Amazon forest	Mexico to Argentina

Macromorphological description (Figures 2-4): Climbing plant, cylindrical stem, much branched, glabrescent, rarely pubescent, striate; stellate trichomes, 3-armed with equal arms, glandular trichomes absent. Internodes 40.5–78.1 mm long. Leaf blades 37–64 × 22–48.5 mm, membranaceous, margin entire, cordate, base cordate, apex acuminate to caudate, usually glabrescent to pubescent, stellate trichomes, 3-armed, and sessile peltate glandular trichomes; petiole 35–45 mm long, pubescent, striate. Dichasium compound, 4–12-flowered; peduncles 10–85 mm long, tomentose, stellate trichomes, 3-armed; outer bracteoles on the terminal portion of the peduncle, 4.3–8.1 × 0.5–1.5 mm, linear, glabrescent, inner bracteoles at the base of the pedicel, 3.6–5 × 0.4–0.5 mm, linear, glabrous; pedicels 1.2–2 mm long, pubescent, stellate trichomes, 3-armed. Sepals unequal, the two outer 7.9–8 × 4.2–4.7 mm, rhombic, base truncate, apex acuminate to caudate, glabrescent with sessile peltate glandular trichomes, margin sinuate, the intermediate 7.2 × 2.7 mm long, rhombic, base truncate, apex caudate, glabrous, sinuate margin, the two inner 3.7–4 × 2.1–2.3 mm long, ovate, base truncate to rounded, apex acuminate to caudate, glabrous, margin entire. Corolla 10–12 mm, white, glabrous. Filaments 3.8–5 mm long, glandular trichomes at the base, anthers ovate 1–1.1 mm long, white, glabrous. Ovary 1.2–1.3 × 1 –1.1 mm long, globose, glabrous; style 5.8–6 mm long, stigmatic lobes 0.9–1 mm long, oval-triangular, inserted. Capsules 2–3 mm long, globose; seeds ca. 1 mm long, black, glabrous.

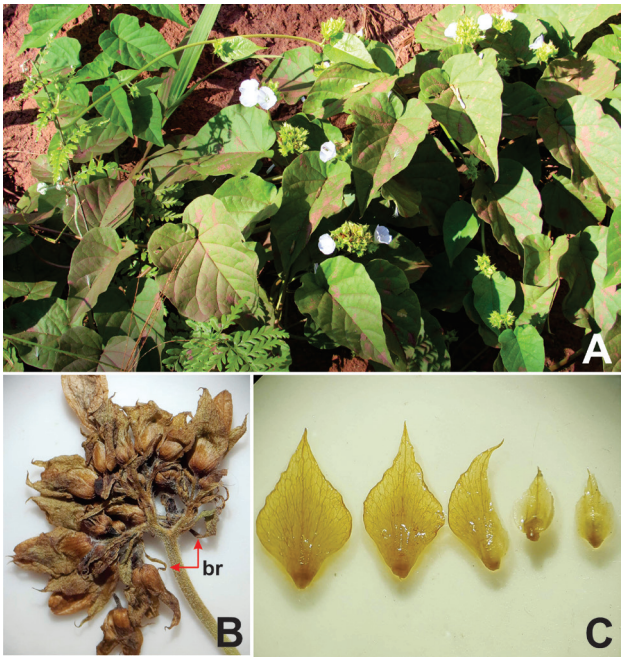

Figure 2. *Jacquemontia ferricola* **sp. nov.** A – habit and color of flowers; B – inflorescence and outer bracteoles; C – sepals. Abbreviations: br = bracteoles. Credits: Eder Barbier and Deibson Belo. This figure is in color in the electronic version.

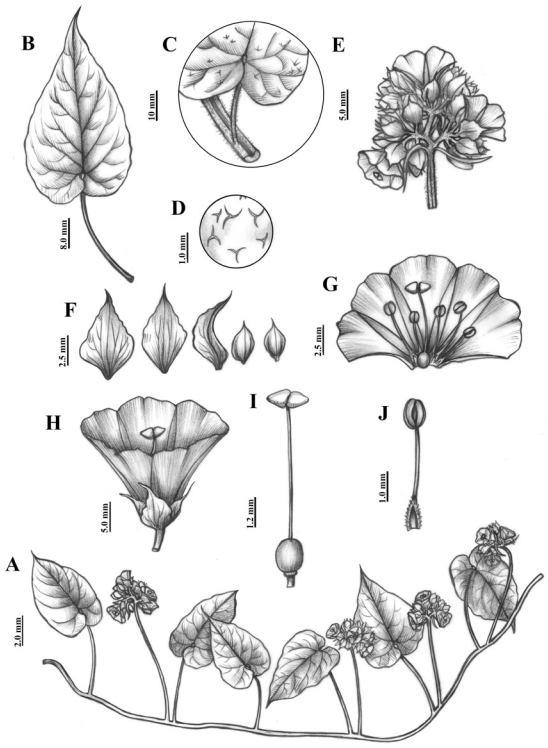

Figure 3. *Jacquemontia ferricola* **sp. nov.** A – branch with inflorescence; B – leaf and petiole; C – detail of trichomes on adaxial leaf surface and petiole; D – trichomes 3-armed; E – inflorescence and outer bracteoles; F – sepals; G – corolla inner surface; H – flower, lateral view; I – gynoecium; J – stamen. Illustrations by Regina Carvalho. This figure is in color in the electronic version.

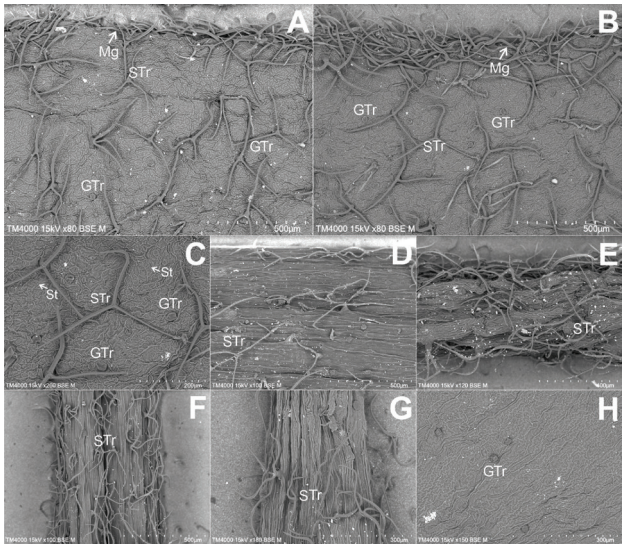

Figure 4. *Jacquemontia ferricola* **sp. nov.** view by scanning electron microscopy. A – adaxial surface and leaf margin with stellate trichomes, 3-armed, and sessile peltate glandular trichomes; B – abaxial surface and leaf margin with stellate trichomes, 3-armed, and sessile peltate glandular trichomes; C – trichomes stellate, 3-armed, and sessile peltate glandular trichomes, and anisocytic stomata in adaxial surface; D – striate stem with stellate trichomes, 3-armed; E – striate petiole with stellate trichomes, 3-armed; F – peduncle with stellate trichomes 3-armed; G – pedicel with stellate trichomes, 3-armed; H – sepals glabrescent with sessile peltate glandular trichomes. Abbreviations: Mg = leaf margin; St = stomata; STr = stellate trichome; GTr = sessile peltate glandular trichome. Credits: Hianna Fagundes.

Anatomical description (Figure 5): Leaf blade epidermis composed of cells with sinuous anticline walls on the adaxial and abaxial surfaces (in frontal view). Leaf amphistomatic, with anisocytic stomata (Figure 5a,b). Petiole with uniseriate epidermis and 3-armed stellate trichomes in cross-section (Figure 5c), and flat-convex contour (Figure 5d). Cortical region comprised of parenchyma and collenchyma, and collateral vascular system; the main vascular bundle arched (Figure 5e), and two accessory bundles facing the adaxial region (Figure 5d); main petiolar vascular bundle 1.2–1.3 mm long. Secondary stem with circular shape and uniseriate epidermis. Cortical region adjacent to the epidermis consisting of 3–4 layers of collenchyma, followed by 3–5 layers of parenchyma. Internally to the cortical region, sclerenchyma fibers were observed surrounding the phloem. Vascular system in a single growth ring, xylem forming a continuous ring with xylematic elements. Pith composed of fundamental parenchyma with cells larger in central region and smaller near the xylem (Figure 5f).

Etymology: The specific epithet refers to the soil of the *canga* vegetation of the type locality, which is iron.

Ecology and proposed conservation status: *Jacquemontia ferricola* is so far known as being endemic to Brazil (Pará state), occurring in the Brazilian Amazon forest domain (Figure 1). The new species was found along a road in the Carajás National Forest, within ombrophilous forest vegetation, close to a mining area. According to IUCN criteria, despite occurring in an anthropically impacted area, *J. ferricola* is Data Deficient (DD), as it is known from only a single specimen.

Key to species of *Jacquemontia* in the Brazilian Amazon

1. Glandular trichomes present on the branches, petioles, peduncles, pedicels, and sepals.....2

2. Dichasium, 3–12 flowers .... *J. sphaerostigma* (Cav.) Rusby

2'. Monochasium, 1–4 flowers .... *J. evolvuloides* (Moric.) Meisn.

1'. Glandular trichomes absent throughout the plant, do not present any evidence when viewed under stereomicroscope .. 3

3. Branches, leaves and petiole glabrescent, pubescent or tomentose 4

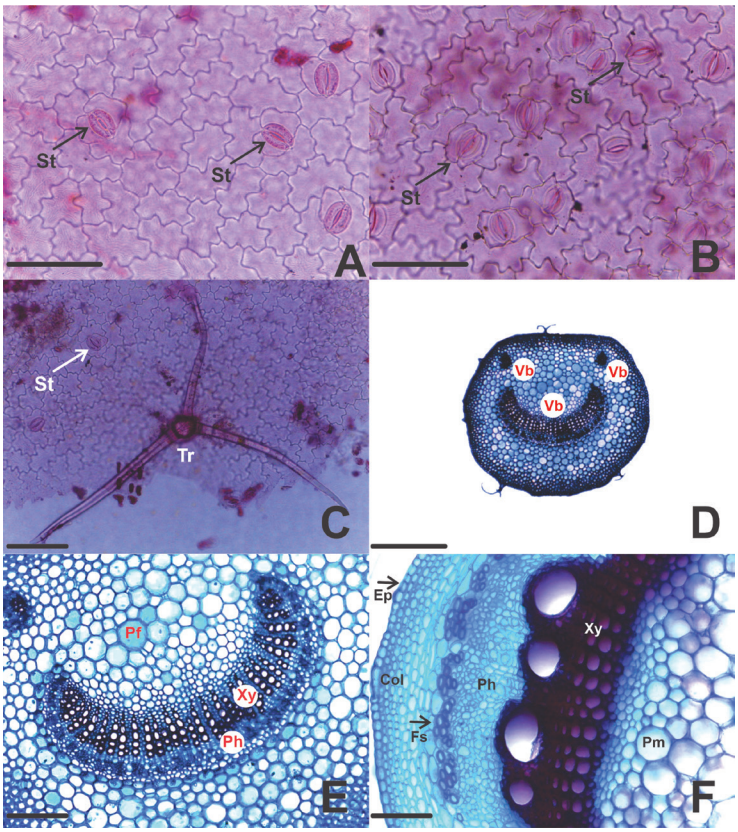

Figure 5. Paradermic and transverse sections of the leaves and stems of *Jacquemontia ferricola* **sp. nov.** A – adaxial epidermis with sinuous cell walls and anisocytic stomata; B – abaxial epidermis with sinuous cell walls and anisocytic stomata; C – stellate trichome, 3-armed in adaxial epidermis; D – petiole shape – flat-convex; E – main vascular bundles; F – stem in secondary growth presenting a circular shape with the uniseriate epidermis, sclerenchyma fibers involving the phloem, and xylem presenting vessel elements. Abbreviations: St = stomata; Tr = trichome stellate; Vb = vascular bundle; Pf = fundamental parenchyma; Xy = xylem; Ph = phloem; Ep = epidermis; Col = collenchyma; Fs = sclerenchyma fibers; Pm = medullary parenchyma. Scale bars: A, B = 50 µm; C = 100 µm; D = 500 µm; E, F = 100 µm. Credits: Deibson Belo. This figure is in color in the electronic version.

4. Leaves oblong; monochasium .... *J. gracillima* (Choisy) Hallier f.

4'. Leaves oval, ovate or cordate; dichasium 5

5. Inflorescences with outer bracteoles 6

6. Outer bracteoles foliaceus, densely hirsute; corolla blue .. .. *J. tamnifolia* (L.) Griseb.

6'. Outer bracteoles linear, glabrescent; corolla with .... *J. ferricola* Belo, Buril & Louzada, sp. nov.

5'. Inflorescences without outer bracteoles, do not present any evidence (scar) of deciduous bracteoles 7

7. Inner bracteoles linear or rhombic to elliptic 8

8. Bracteoles linear, but sometimes absent .... *J. gabrielii* (Choisy) Buril

8'. Bracteoles rhombic to elliptic .... *J. pentanthos* (Jacq.) G.Don

7'. Inner bracteoles obovate or lanceolate 9

9. Bracteoles obovate; sepals oblong, base truncate, apex rounded, glabrous ..... *J. blanchetii* Moric

9'. Bracteoles lanceolate; sepals ovate, base rounded, apex acuminate, glabrescent with a few trichomes on the apex .... *J. martii* Choisy

3'. Branches, leaves, and petiole lanate or velutinous 10

10. Branches, leaves, and petiole lanate; sepals rhombics .... *J. guyanensis* (Aubl.) Meisn.

10'. Branches, leaves, and petiole velutinous; sepals oblong, oval or ovate 11

11. Leaves with the base cuneate, apex apiculate or obtuse; sepals oblong, apex without a mucron .... *J. spiciflora* (Choisy) Hallier f.

11'. Leaves with the base rounded to cordate, apex acute; sepals ovate, apex with a mucron ..... *J. velutina* Choisy

DISCUSSION

Morphological characters such as the leaf apex, leaf indument type, as well as sepal shape, size, apex, and indument, have typically been used as taxonomic characters in species identification and delimitation in *Jacquemontia* (Buril and Alves 2011, 2012a, 2012b, 2013; Buril *et al*. 2012; Pastore and Simão-Bianchini 2015, 2016, 2017; Nepomuceno *et al*. 2022; Belo *et al.* 2023a). *Jacquemontia* has numerous species complexes formed by highly polymorphic species showing great morphological variability and thus being imprecisely described (Buril 2013), such as the *Jacquemontia pentanthos* (Jacq.) G.Don complex. Because it is a diverse group, many species that are included into the *J. pentanthos* group can be, in more superficial analyses, confused with *J. ferricola*.

Only one species of *Jacquemontia* had been recorded in Serra dos Carajás prior to the present study (*J. tamnifolia* L. Griseb.; Simão-Bianchini *et al.* 2016). Both *J. tamnifolia* and *J. ferricola* have outer bracteoles at the base of the inflorescence, however, *J. ferricola* differs from *J. tamnifolia* by having linear and glabrescent bracteoles, sepals glabrescent with sessile peltate glandular trichomes view by scanning electron microscopy, and a white corolla (vs. bracteoles foliaceous, densely hirsute, sepals hirsute, and blue corolla in *J. tamnifolia*).

Jacquemontia ferricola is morphologically similar to *J. acuminata*, *J. cataractae*, and *J. glabrescens*, mainly by sharing two outer bracteoles at the base of the pedicel and inner bracteoles at the base of the flowers, in addition to flowers organized in compound dichasia. Upon analyzing the type specimens in herbaria and the protologues of each taxon, the new species proposed here can be easily distinguished from *J. acuminata*, *J. cataractae* and *J. glabrescens* by the cordate shape of the base of its leaves (vs. rounded base in *J. acuminata* and *J. glabrescens*, and subcordate to truncate base in *J. cataractae*, and its linear and glabrescent outer bracteoles (vs. lanceolate and tomentose bracteoles in *J. acuminata*; lanceolate and glabrous in *J. cataractae*, and lanceolate and velutinous in *J. glabrescens*.

Stigmatic lobes can also be a taxonomically informative character in the differentiation of taxa in this group. The lobes of *J. ferricola* are oval-triangular, while those of *J. bifida* Hallier f., *J. bracteosa* Meisn., *J. guyanensis* (Aubl.) Meisn., and *J. pentanthos* are oval-flat (Buril 2013). Krapovickas (2009) described the stigmatic lobes of *J. cataractae* as oval with a concave base, as did Rusby (1896) in the description of *J. acuminata*.

Morphologically, *J. ferricola*, *J. bracteosa*, *J. guyanensis*, and sometimes *J. pentanthos* have similar habits, leaf shapes, inflorescence types, and corolla color (see Table 1). However, these species differ by the type of indumentum, the distribution of trichomes on their branches and leaves, and by anthers shapes. The branches and leaves of *J. ferricola* are glabrescent to pubescent, and anthers ovate (see macromorphological description). The other species have the following characteristics: *J. bracteosa* – indumentum velutinous, and anthers elliptic; *J. guyanensis* – indumentum lanate, ferruginous when dry (Buril 2013), and anthers sagittate; *J. pentanthos* – indumentum tomentose on branches and leaves, and anthers sagittate.

The stomata on the leaves of the analyzed individuals were of the anisocytic type. The most common stomata types among Convolvulaceae species are paracytic and anisocytic (Meltcalfe and Chalk 1979), which was also reported for *Jacquemontia* in a study on the anatomy of three species in Thailand (Kajornjit *et al*. 2017), and a recent study on two species in Brazil (Belo *et al.* 2023a). As observed in populations of *J. confusa* (Belo *et al.* 2023a), and in some populations of *J. evolvuloides* (Belo *et al.* 2023b), the flat-convex contour observed in the petiole of *J. ferricola* is one of the anatomical characters rarely observed in the genus, the concave-convex

contour being the most common (Kajornjit *et al*. 2017; Belo *et al.* 2023a,b).

Of the 10 species cited in the treatment for the Amazon region (Austin and Cavalcante 1982), three were synonymized. *Jacquemontia agrestis* (Choisy) Meisn. is currently a synonym of *Jacquemontia evolvuloides* (Moric.) Meisn., *Jacquemontia ciliata* Sandwith is synonym de *Jacquemontia gabrielii* (Choisy) Buril, and *Jacquemontia hirtiflora* (M. Martens & Galeotti) O'Donell, is a synonym of *Odonelia hirtiflora* (M. Martens & Galeotii) K.R. Robertson. Two others have no records for the Amazon region (*Jacquemontia linoides* (Choisy) Meisn. and *Jacquemontia parviflora* Choisy). The latter authors do not indicate which material they used to identify *J. linoides* and *J. parviflora*. We consulted the specific literature (Buril 2013; Pastore *et al.* 2023), online herbaria, as well as online databases (*SpeciesLink*, *Reflora*, *JABOT*) and did not detect any specimens of these two taxa for the Amazon region, only for the Brazilian phytogeographic domains of Caatinga, Cerrado, and Pantanal.

CONCLUSIONS

The new species of *Jacquemontia* described in here increases the number of endemic species of a biodiversity-rich, undersampled region in northern Brazil. Misidentifications and difficulty in species delimitation hinder a realistic assessment of plant diversity in the region, impacting its conservation. Therefore, we emphasize the importance of field expeditions and accurate morphological analyses. The presence of sessile peltate glandular trichomes in the new species, observed only through scanning electron microscopy, which are rare in *Jacquemontia*, indicates the value of this type of analysis. We highlight that the threat level of *J. ferricola* is worrying, as only one individual was located, from an area where iron extraction is continuously affecting the environment. Conservation measures will therefore be necessary to assure the continuity of this (and other) species still unknown to science.

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