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Ditassa scholaris, a new species of Apocynaceae from Bahia (Brazil), in honour of a distinguished scholar of "Asclepiadaceae"

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Summary. As part of ongoing taxonomic studies on Brazilian Apocynaceae and floristic inventories in the state of Bahia, Brazil, we describe and illustrate a new species of Asclepiadoideae. *Ditassa scholaris* Rapini & Giul. sp. nov. is named in honour of Jorge Fontella Pereira, who dedicated most of his life to studying the "Asclepiadaceae" (now Apocynaceae, subfamily Asclepiadoideae), and described over 90 new species, made 95 new combinations and even more synonyms within the group. The new species is known only from the type specimen within the Caatinga dominion, collected in a northern fragment of the Espinhaço range with an Extent of Occurrence of no more than 10,000 km^2. It is threatened by anthropogenic pressure and climate changes and is provisionally assessed as Vulnerable [VU B1ab(i,ii,iii) + D2]. *Ditassa scholaris* is vegetatively similar to *Metastelma giuliettianum* Fontella, mainly because of the ovate leaves and the hirsute indumentum covering branches and leaves. Its flowers resemble those of *Ditassa glaziovii* E.Fourn., particularly due to its double corona, with lobes fused at the base and an internally digitiform segment. However, the erect habit of *D. scholaris* differentiates it from these twining species. Erect growth has evolved independently in several lineages within the Metastelmatinae core group, predominantly comprising twining plants. We provide a key to distinguish *D. scholaris* from the other erect species of Metastelmatinae in the Caatinga dominion.

Key Words. Asclepiadoideae, Caatinga, Carrasco, Fontella, Metastelmatinae, taxonomy.

Introduction

The Apocynaceae are one of the larger families of angiosperms. The number of species within this group is neither precise nor stable. Depending on the taxonomic source, the count can vary by up to 30% (Liede-Schumann 2024). However, most counts exceed the approximately 5,750 species obtained by Liede-Schumann (2024), a figure based on Endress *et al.*'s (2018) estimate of "about 5,350", which she cites as "approximately 5,290". For example, the latest classification (Snapshot – December 2024) in the World Flora Online (WFO 2025), for Apocynaceae, records 6,506 species (accepted names), along with 1,499 species with unplaced names, some of which may become accepted. Approximately 460 new species of Apocynaceae were described between 2018 – 2023, averaging 92 per year, 85% of which are in Asclepiadoideae (Liede-Schumann 2024). These data indicate that the number of species in Apocynaceae, especially in Asclepiadoideae, has likely been underestimated (Meve 2002). The rate of new species discovery is either stable or on the rise, while the impact of new synonyms has diminished (for a discussion on the evolution of the Asclepiadoideae species number in Brazil, refer to Rapini *et al.* 2005). For example, the revision of *Ruehssia* H.Karst. in Brazil revealed only one new synonym (Espírito-Santo *et al.* 2019) but led to the discovery of 11 new species in the genus (Espírito-Santo *et al.* 2018a, 2018b, 2018c; Morais *et al.* 2021; Oliveira *et al.* 2023).

There are 2,665 species of Apocynaceae in the Americas (Ulloa Ulloa *et al.* 2018 onwards), with 1,874 of these in South America, more than in Africa, which has 1,787 species, and Tropical Asia, which has 1,504 (WFO 2025). Brazil is renowned for its exuberant flora and is the most species-rich country on the planet (Forzza *et al.* 2012). With 830 native species (Flora e Funga do Brasil 2025), Brazil is likely the country with the highest number of Apocynaceae too, it is home to more than 12% of the family's species and almost half of those in South America.

The distribution of species richness in Apocynaceae is closely correlated with that of angiosperms generally, in Brazil, making the family an indicator of plant diversity in the country (Pugliese & Rapini 2015). The state of Bahia is one of the richest in Brazil for both angiosperms and Apocynaceae, second only to the exceptionally rich Minas Gerais (Fig. 1; Electronic Supplementary Material S1). Bahia has also seen more novelties in Apocynaceae since 2003, when the "Flora da Bahia" project started, than any other state. Of the

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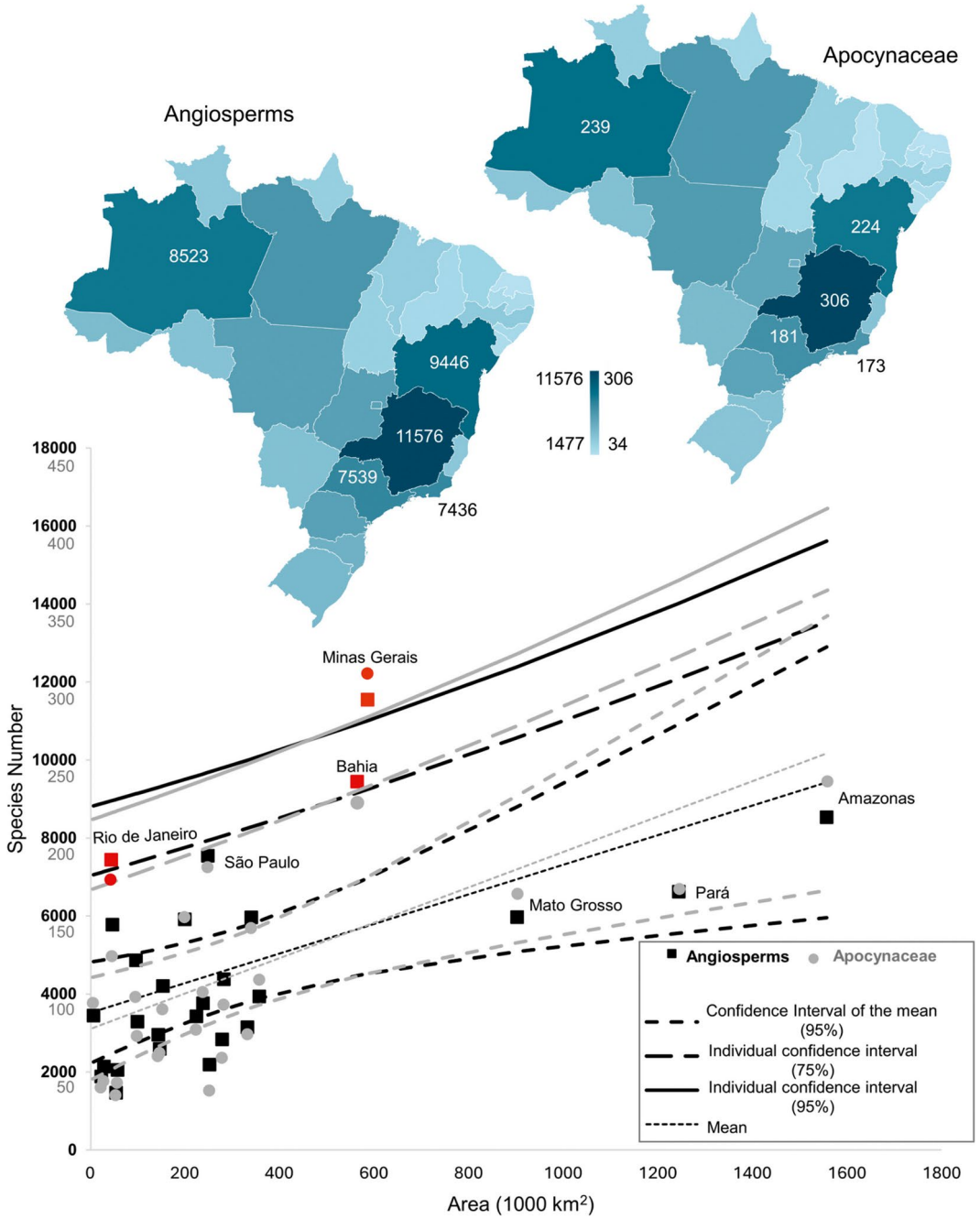


Fig. 1. Patterns of species richness and area-species relationships in Brazil for angiosperms and Apocynaceae. **Map** illustrates the number of native species of angiosperms and Apocynaceae per state (Flora e Funga do Brasil 2025; Electronic Supplementary Material S1) in Brazil. Species richness is represented by a gradient of blue intensity, with darker shades indicating higher richness. The highest species numbers are labelled on the maps. The colour intensity distribution is consistent across both maps, highlighting the strong correlation between the richness of distributions of angiosperms and Apocynaceae. Maps were created using Microsoft Bing Map with OpenStreetMap (https://www.bing.com/maps). **Scatter Plot** shows the relationship between the number of species and the area of each Brazilian state for angiosperms (black squares) and Apocynaceae (grey circles). States with the highest species richness and the largest areas are labelled. A regression line, representing the mean predicted number of species for a given state area, is fitted to the data for each group (y = 0.0038x + 3523.4, R2 = 0.31 for angiosperms; y = 0,0001x + 77,38, R2 = 0.389 for Apocynaceae), accompanied by confidence intervals for the regression. States exceeding the individual 75% confidence limits (Bahia [angiosperms only], Rio de Janeiro, highlighted in dark red) are disproportionately species-rich relative to their area, whereas states surpassing the individual 95% confidence limits (Minas Gerais, highlighted in light red) represent outliers, exhibiting exceptional high species-area ratios.

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98 new Brazilian species of Apocynaceae (including 52 Asclepiadoideae) described in the last two decades, nine were based on plants from Bahia (Electronic Supplementary Material S1). Our aim here is to describe another new species of Apocynaceae from Bahia in honour of Professor Jorge Fontella Pereira, the most outstanding "Asclepiadaceae" (now Asclepiadoideae subfamily) specialist in Brazil, who recently passed away.

Material and Methods

The Flora of Bahia project began in 2003, significantly increasing the collections from the State, most of which are housed at HUEFS (Herbarium acronyms follow Thiers 2025, continuously updated). The floristic efforts in Bahia have been complemented by concurrent taxonomic studies in Asclepiadoideae, involving the examination of collections at the following herbaria in Brazil: ALCB, ASE, BHCB, CEN, CEPEC, CGMS, EAC, ESA, FLOR, HAS, HB, HDJF, HUEFS, IAN, IBGE, ICN, INPA, IPA, JPB, MAC, MBM, MBML, MG, MOSS, OUPR, PACA, RB, R, SP, SPF, TEPB, UB, UEC, UFG, UFP, UFRN, VIC and VIES); and in Europe: B, BM, BR, C, G, K, LE, M, P, S, W, WU and Z), and United States (F, MO and NY), as well as digital images available in online databases (JSTOR Global Plants, https://plants.jstor.org and CRIA, https://specieslink.net/search). The specimens were examined and illustrated using a binocular stereoscope with a camera lucida attached. We adopted the taxonomic species concept (Rapini 2004) and the description follows the established terminology for the group.

Taxonomic Treatment

Ditassa scholaris *Rapini & Giul.* **sp. nov.** Type: Brazil, Bahia, Umburanas, c. 4 km do rio Murim, após o Poço d'Água, na estrada para Minas do Mimoso, 10°27'22"S 41°21'34"W, 19 Feb. 2014, *R. Harley & A. M. Giulietti* 57032 (holotype HUEFS!; isotype K). Figs 2A – D, F – L and 3A – C.

http://www.ipni.org//urn:lsid:ipni.org:names:77368916-1

Shrub, c. 50 cm high, hirsute with white trichomes 0.25 – 0.5 mm long, lactescent with white latex; *branches* erect, green and hirsute to brown and glabrescent with age; internodes 2 – 4 cm long. *Leaves* decussate, obliquely ascending to almost patent, subsessile; petiole up to 2 mm long, hirsute; lamina 1.7 – 2.3 × 1 – 1.5 cm, ovate to broadly elliptic, slightly reniform at the base, revolute at the margins, mucronate at the apex, glaucous, slightly discoloured, adaxially dark green, abaxially light green, with veins cream on both sides; colleters c. 0.5 mm long, digitiform, at the petiolar axil and adaxially at the base of the lamina. *Inflorescences* 2- or 3-flowered, short-pedunculate, peduncle c. 1 mm long; bracts and bracteoles 2 – 2.5 × 1 – 1.3 mm, lanceolate, abaxially hirsute; pedicel 2 – 3 mm long. *Flowers* with *calyx* green, adaxially hirsute; sepals 3 – 3.8 × 1.5 – 1.8 mm, lanceolate. *Corolla* campanulate to almost rotate, with a burgundy band in the centre of the lobes towards the corolla base, green along the lobe margins, abaxially glabrous, adaxially minutely papillose, tube 1.5 – 1.7 mm long; lobes 5.7 – 6 × 2.25 – 3.7 mm, lanceolate to elliptic. *Corona* 5-lobed, cream or white; lobes opposite to the anthers, externally c. 2.5 × 1.5 – 2 mm, almost as long as the gynostegium, oblong, slightly narrower to the base, incurved at the apex, fleshy in the centre, externally fused to each other at the base, internally attached to the anther by a digitiform falcate fold. *Anthers* with triangular lateral wings, longer than the central dorsum; apical membranous appendix depressed ovate; corpusculum 0.35 – 0.4 × 0.3 – 0.35 mm, ellipsoid, slightly trullate; caudicles 0.2 – 0.3 mm long, slightly ascending, with a hyaline membrane; pollinia 0.6 – 0.65 × 0.25 – 0.35 mm, ellipsoid. *Style head* apically mamillate to umbonate, slightly bilobate, light green. *Fruits* not seen.

RECOGNITION. Vegetatively, *Ditassa scholaris* is similar to *Metastelma giuliettianum* Fontella, due to the hirsute indumentum uniformly covering branches and leaves, ovate leaves with a mucronate apex and marked veins and shortly pedunculate inflorescences. However, it can be easily distinguished by its erect habit (vs climbing in *M. giuliettianum*); leaves with a shorter petiole, up to 2 mm long (vs more than 3 mm long); inflorescences with fewer flowers, up to 3 (vs more than 5 flowers); corolla abaxially glabrous (vs hirsute) and adaxially papillose (vs villous) and corona with oblong (vs linear) lobes, almost as long as (vs longer than) gynostegium, fused (vs free) at the base, with an internal digitiform fold forming a double corona (vs simple corona lobes, i.e. corona lobes without an internal fold). The flowers are similar to those of *D. glaziovii* E.Fourn. (Figs 2E, 3D) due to the corolla lobes burgundy inside and a double corona with external, oblong, segments, fused at the base and to an internal digitiform segment. However, the new species is an erect shrub (vs twining plants in *D. glaziovii*) with subsessile (vs petiolate), ovate to broadly elliptic (vs usually elliptic) leaves; leaves uniformly hirsute (vs sparsely hirsute to pubescent) and larger flowers, corolla more than 7 mm long (vs less than 5 mm long; Fig. 2D, E).

DISTRIBUTION AND HABITAT. *Ditassa scholaris* was found in a scrubland ("carrasco") on brown, sandy soils at 1,019 m a.s.l., flowering in February. The species is known only from the Umburanas-Sento Sé border, between the Angelim and Escurial mountain ranges, southeast of the Sobradinho reservoir in northern

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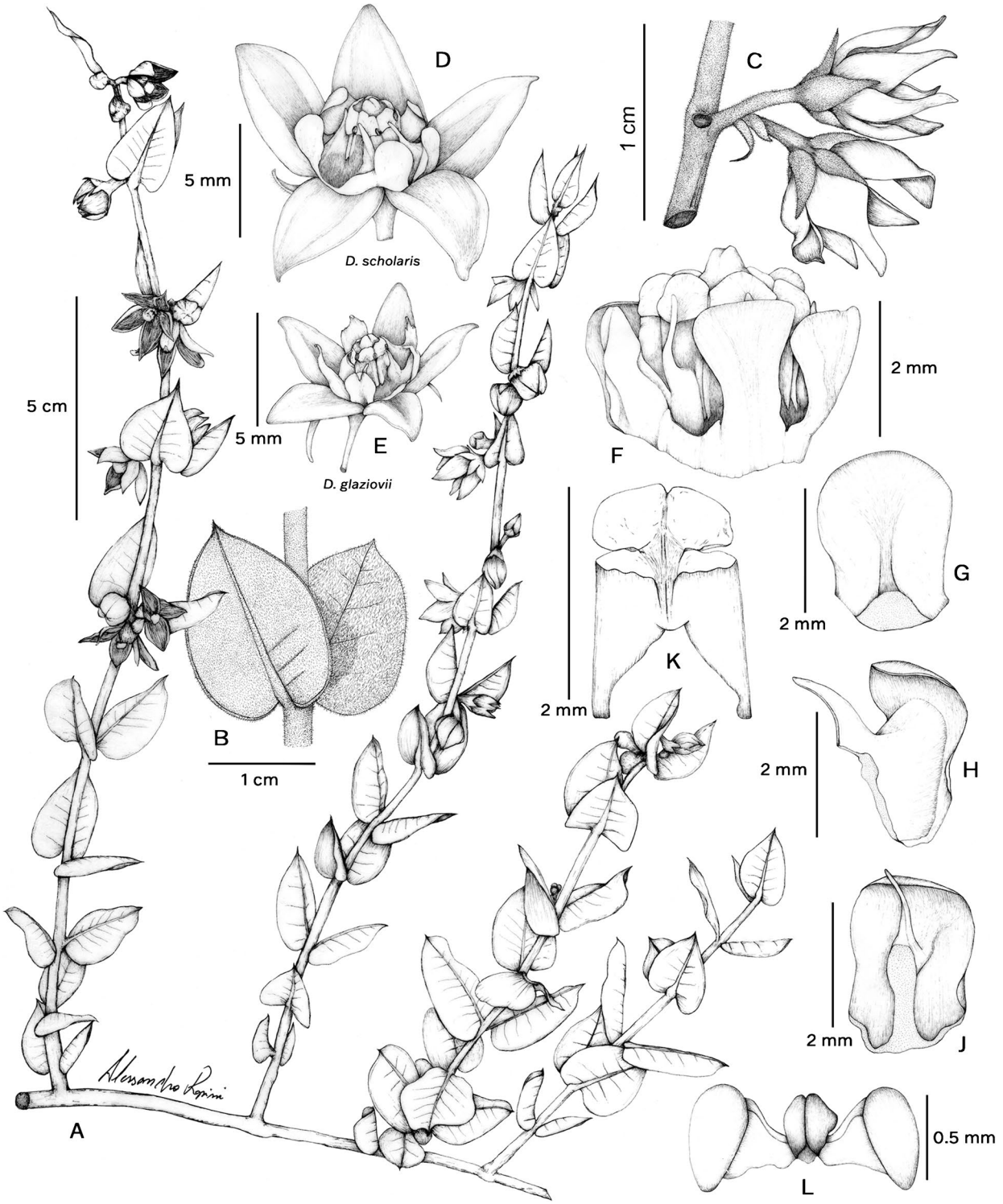


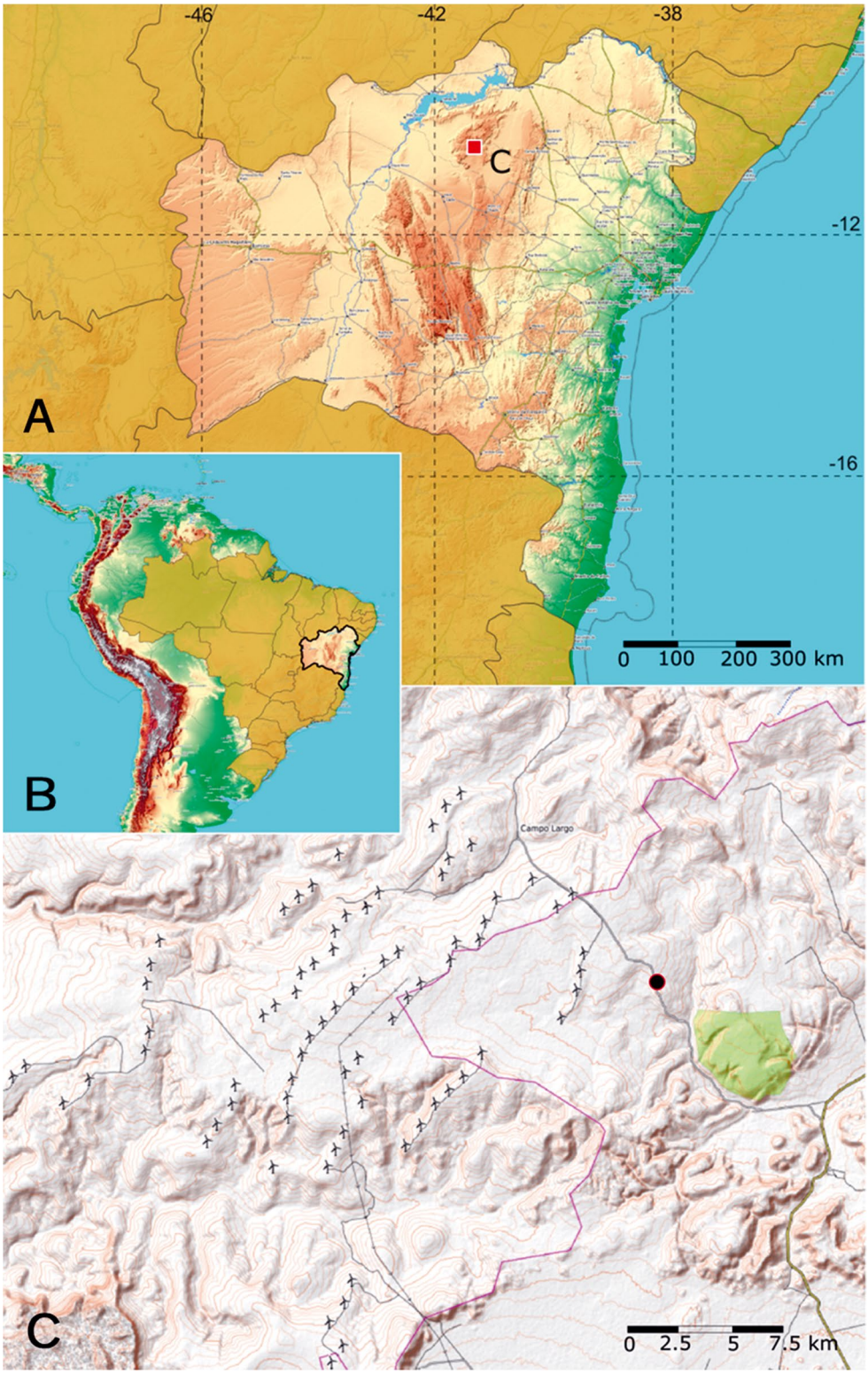
Fig. 2. *Ditassa scholaris* (**A – D**, **F – L**) and comparison with *D. glaziovii* (**E**). **A** branches with leaves, flowers and buds; **B** a pair of leaves showing the hirsute indumentum; **C** an inflorescence with two open flowers; **D**, **E** flowers of *Ditassa scholaris* (**D**) and *D. glaziovii* (**E**) shown at the same scale for direct comparison of size and morphology; **F** inner portion of the flower, with calyx and corolla removed, displaying the corona with double lobes positioned in front of the anthers and the apex of the style head in the centre; **G – J** corona lobe, viewed abaxially (**G**), laterally (**H**) and adaxially (**J**); **K** anther, abaxial view; **L** pollinarium. **A – D**, **F – L** from the holotype *Harley & Giulietti* 57032 (HUEFS), **E** from *Rapini et al.* 1315 (HUEFS). DRAWN BY A. RAPINI.

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Fig. 3. *Ditassa scholaris* (**A – C**) and comparison with *D. glaziovii* (**D**). *Ditassa scholaris*: **A** branches with leaves, flowers and buds; **B** portion of a branch showing a closer view of leaves and inflorescences; **C** close-up of a branch, highlighting the flowers, with lobes burgundy towards the corolla base transitioning to green along the lobe margins, white corona lobes and a greenish style head in the centre. *Ditassa glaziovii:* **D** inflorescence. **A** – **C** from the holotype *Harley & Giulietti* 57032, in Umburanas, State of Bahia, Brazil, **D** from *Rapini et al.* 1315, in Licínio de Almeida, State of Bahia, Brazil. PHOTOS: **A – C** R. M. HARLEY; **D** A. RAPINI.

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Map 1. Location of the single collection of *Ditassa scholaris*. **A** the State of Bahia with shaded relief from Google Maps Terrain (https://www.google.com/maps) and a red square in the northern section corresponding to the location; **B** an inset map of the Neotropics highlighting the state of Bahia in Brazil for geographic context; **C** view of the species' location (round dot), the windmills indicate the nearby wind farm that poses a threat to this newly identified species, map created using QGIS version 3.34.11 (https://qgis.org).

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Bahia, Brazil (Map 1). The region is within the Caatinga dominion, characterised by a semiarid climate with an average annual rainfall of 500 mm concentrated between November and January and an average annual temperature of approximately 22°C.

SPECIMENS EXAMINED. BRAZIL. Bahia: Umburanas, c. 4 km do Rio Murim, após o Poço d'Água, na estrada para Minas do Mimoso, 10°27'22"S 41°21'34"W, 19 Feb. 2014, *R. Harley & A. M. Giulietti* 57032 (holotype HUEFS!; isotype K).

CONSERVATION STATUS. *Ditassa scholaris* is known from a single location, in a northern fragment of the Espinhaço range with an area of 5,000 – 10,000 km^2 (based on areas above 900 m a.s.l., estimated using Google Earth, https://earth.google.com/) and comprising dry forests, scrublands, savannas and rupestrian grasslands. The fragment is situated roughly 20 km southeast of the Sobradinho reservoir, in the upper middle São Francisco River, and is embedded in anthropically disturbed vegetation within the Caatinga dominion. The Caatinga harbours the largest South American nucleus of seasonally dry forest and has historically faced significant human-induced pressures due to the combination of a dense population and limited economic development (Silva *et al.* 2017). Over 50% of its original vegetation has already been lost, less than 8% of its area is legally under protection and less than 1.5% is fully protected (L. P. Teixeira *et al.* 2021; M. G. Teixeira *et al.* 2021).

The Sobradinho reservoir is 320 km long and has a capacity of 34.1 billion m^3, making it the third-largest artificial lake in the world. It provides hydroelectricity and is the main source for regulating water resources in the semiarid region (https://www.chesf.com.br/SistemaChesf/Pages/SistemaGeracao/Sobradinho.aspx). The construction of its dam in the 1970s inundated an area of 4,214 km^2, displacing 70,000 people and covering the municipalities of Casa Nova, Sento Sé, Pilão Arcado and Remanso and the district of Sobradinho which then belonged to Juazeiro (Dantas 2005). Besides social consequences, the reservoir changed the region's climate and likely affected the continued survival of species narrowly restricted to its surroundings. *Ditassa dolichoglossa* Schltr., for instance, is known only by the type specimen collected by E. Ule (7154) near Remanso in 1906. The region is severely impacted by farming, mainly cattle breeding, fires during the dry season and exploitation of plant resources, primarily for firewood and charcoal. With irrigation, agricultural activities, including agribusiness in the São Francisco Valley, have also expanded.

In the Brazilian Electric Matrix, wind power is the second most important source (11.8%), following only hydroelectric power (63.8%), and has seen significant growth, particularly in Northeast Brazil (MME 2024). Between 2016 and 2018, a complex of 121 wind turbines was installed at the Campo Largo farm, 3 km south of the *Ditassa scholaris* location (Map 1C). This project required the destruction of approximately 691.5 hectares of vegetation, including in permanent preservation areas (APP – Áreas de Preservação Permanente) (Engie-Bioconsultoria 2017). Although the direct vegetation destruction caused by a wind farm is not substantial on a large scale, the network of roads to access the turbines and relay stations poses a threat to biodiversity, because they fragment the original cover and favour the introduction of invasive plants, thereby reducing habitat quantity and quality (Kuvlesky *et al.* 2007).

The flora of the Espinhaço Range is well known for its high number of narrowly distributed species (*e.g.*, Rapini *et al.* 2002, 2008, 2021; Conceição *et al.* 2016; Silveira *et al.* 2016; Silva *et al.* 2019). The northern portion of the Espinhaço, in Bahia, known as Chapada Diamantina, likely served as a long-term refuge during extended dry periods in the Caatinga lowlands (Ribeiro *et al.* 2014; Conceição *et al.* 2016) and, therefore worked as an Asclepiadoideae 'museum', a biogeographical refuge of ancient lineages (Bitencourt & Rapini 2013). The region harbours endemics that represent ancient, conservative lineages of the subfamily, which climate changes can highly threaten. For instance, the campos rupestres throughout the Espinhaço range are projected to be substantially reduced by the end of this century, with the northern portion in Bahia confined to less than 2% of its current distribution (Bitencourt *et al.* 2016).

Approximately 45% of angiosperms are estimated to be threatened, with those classified as Data Deficient (DD) likely to increase this number (Bachman *et al.* 2024). Additionally, roughly 75% of undescribed species are expected to be endangered (Brown *et al.* 2023): *Ditassa scholaris* appears to follow this general trend. Its recognisability and precise location are sufficient to warrant an assessment of its conservation status. The new species is represented only by the type collection made eleven years ago. A recent visit to the region in January 2025 by one of the authors (AR) found just a single individual, with a young branch resprouting at the location of the type collection. *Ditassa scholaris* has a single known location, an Extent of Occurrence estimated between 5,000 and 10,000 km^2 and is threatened by anthropogenic pressure and climate changes. Therefore, according to IUCN (2001, 2024) criteria, it is provisionally assessed as Vulnerable [VU B1ab(i,ii,iii) + D2].

ETYMOLOGY. The epithet "scholaris" honours Prof. Jorge Fontella Pereira (Fig. 4), who passed away on 26 August 2024. Fontella was the Brazilian botanist most dedicated to the study of the Asclepiadoideae. Between 1965 and 2014, he published 91 new species, two new subspecies, six new varieties, two genera

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(*Morilloa* Fontella, Goes & S.A.Cáceres and *Austrochthamalia* Morillo & Fontella) and 95 new combinations in Asclepiadoideae. Including his contributions to Gentianaceae, Loganiaceae, Moraceae, Trigoniaceae and Vochysiaceae, he authored 204 scientific names (IPNI 2025; Electronic Supplementary Material S1). He also identified hundreds of new synonyms in Asclepiadoideae and reversed the trend toward increasing the number of accepted species of Asclepiadoideae in Brazil. Although several new species were published in the last three decades of the 20th century, the number of accepted species names decreased during this period (Rapini *et al.* 2005). Widely respected for his taxonomic skills and loved for his kindness and humour, Fontella received several honours, including a genus name, *Fontellaea* Morillo, and 14 species names across various families, including Araceae, Bromeliaceae, Loganiaceae, Myrtaceae, Polygalaceae, Velloziaceae and Vochysiaceae but mainly in Apocynaceae with seven in Asclepiadoideae (see Electronic Supplementary Material S1).

NOTES. *Ditassa scholaris* was collected by two of the authors (RMH and AMG) and initially assigned to *Blepharodon* Decne. (in sched.). Based on pictures and comments, Fontella (2019, pers. comm.) questioned whether the plant might belong to *Barjonia* Decne., an essentially erect genus typically with brown to burgundy flowers. However, its double gynostegial corona, with lobes fused at the base, is characteristic of species traditionally classified under *Ditassa* R.Br. The flowers of the new species are more like those of *D. glaziovii*, a species found in the states of Bahia, Minas Gerais, Pernambuco and Ceará, primarily in seasonally dry vegetation, shrublands, savannas and rupestrian grasslands within the Caatinga and Cerrado dominions. The hirsute indumentum covering the branches and leaves resembles *Metastelma giuliettianum*, which is endemic to the campos rupestres of Chapada Diamantina.

Ditassa and *Metastelma* R.Br. belong to a complex of genera in the Metastelmatinae core group (Silva *et al.* 2012; Liede-Schumann *et al.* 2014). Despite significant advancements from phylogenetic studies over the past few decades, molecular data still only weakly supports many nomenclatural changes, contributing to ongoing taxonomic instability (Lesica & Lavin 2023). On the other hand, molecular phylogenies have revealed numerous instances of cryptic species, uncovering previously unrecognised biodiversity (Monro 2022). Recent discoveries within subtribe Metastelmatinae further exemplify this trend, demonstrating the



Fig. 4 Jorge Fontella Pereira in Bahia, Brazil. **A** posing in front of a waterfall in Chapada Diamantina; **B** examining flowers of *Macroscepis multiflora* (Mart. & Zucc.) Morillo (Apocynaceae) in the field. PHOTOS: A. RAPINI.

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intricate nature of cryptic species and their relationships (e.g., Bitencourt *et al.* 2020).

Rearrangements to the taxonomy of Metastelmatinae have been proposed, such as the establishment of *Minaria* T.U.P.Konno & Rapini, with species segregated from *Ditassa*, *Hemipogon* Decne. and *Metastelma* (Rapini *et al.* 2006; Konno *et al.* 2006), and the transfer of 20 species of *Blepharodon* to *Vailia* Rusby, reducing *Blepharodon* to only two species (Morillo 2022). Some changes in the classification of these ancient, taxonomically peripheral lineages have improved the systematics of Metastelmatinae, but other changes to the core group, such as the synonymisation of *Macroditassa* Malme under *Peplonia* Decne. (Rapini *et al.* 2004) and the segregation of part of *Hemipogon* to the recently created *Morilloa* Fontella, Goes & S.A.Cáceres (Fontella *et al.* 2014) have been palliative, with questionable advances to the overall generic classification.

To establish a more stable taxonomy for Metastelmatinae, a comprehensive taxon sampling is essential. However, previous studies based on multiple nuclear loci have shown discordance between gene trees and species trees, the causes of which remain unclear (CB, in prep.). Further research into processes like introgressive hybridisation and horizontal gene transfer could help to clarify phylogenetic relationships within this subtribe (Straub *et al.* 2013; Lesica & Lavin 2023). A better classification of the species in the Metastelmatinae core group will probably require a deep recircumscription of *Metastelma* and *Ditassa*, which may involve synonymisations, as well as the reinstatement of some names currently treated as synonyms (Liede-Schumann *et al.* 2014). However, the intricate generic classification of Metastelmatinae should not prevent new species, most of which are already threatened, from being scientifically recognised.

The final species tree of Apocynaceae presented by Fishbein *et al.* (2018) indicates that the interaction of wind-dispersed comose seeds, twining growth and pollinia possibly acts as a background synnovation (sensu Donoghue & Sanderson 2015), modulated by the long-term global decline of atmospheric CO_2, temperature and humidity since the Eocene-Oligocene climate transition. This combination triggered the high diversification rates of Asclepiadoideae within the Apocynaceae, especially in temperate and seasonally dry habitats (Bitencourt *et al.* 2021; see also Livshultz *et al.* 2011). While pollinia have been conserved and seeds without a coma are rare in the subfamily, independent reversions to the erect habit have been relatively common in Asclepiadoideae. The initial evolution of Metastelmatinae is not fully resolved, as phylogenetic alternatives placing *Petalostelma* E.Fourn. (twining) or *Barjonia* (erect) closest to the root are not significantly different (Santos *et al.* 2021). However, it is possible to infer that the Metastelmatinae core group, to which *Ditassa* and *Metastelma* belong, diversified from a twining ancestor, with few independent reversions to the erect habit (Silva *et al.* 2012). This lineage is more diverse than older ones, such as *Blepharodon*, *Petalostelma*, *Minaria, Vailia* and *Barjonia*: in the Caatinga dominion, there are 35 species of Metastelmatinae, 20 in its core group. Most erect species in the subtribe belong to genera that diverged in the initial evolution of the lineage: *Barjonia* (2 species) and *Minaria* (4). In the Metastelmatinae core group, only *Metastelma myrtifolium* Decne., and now *Ditassa scholaris*, are consistently erect, although a few species, such as *D. hastata* Decne., are shrubs that become voluble toward the apex. None of them seems to be closely related. Below, we provide a key to distinguish *D. scholaris* from the other erect species of Metastelmatinae in the Caatinga dominion.

Key to erect species of Metastelmatinae (Apocynaceae) in the Caatinga dominion

Species included are: *Barjonia chlorifolia* Decne., *B. erecta* K.Schum., *Ditassa hastata*, *D. scholaris* sp. nov., *Minaria harleyi* (Fontella & Marquete) Rapini & U.C.S.Silva, *M. acerosa* (Mart.) T.U.P.Konno & Rapini, *M. cordata* (Turcz.) T.U.P.Konno & Rapini, *M. decussata* (Mart.) T.U.P.Konno & Rapini and *Metastelma myrtifolium*.

1. Branches glabrous..... **2**
1'. Branches with indumentum, generally hirsute, sometimes sparsely so..... **5**
2. Shrubs to subshrubs, often prostrate, profusely branched; leaves membranous, petiolate (petiole > 9 mm long); flowers with rotate corolla, white …….. ……**Ditassa hastata**
2'. Herbs to erect subshrubs, single-stemmed or sparsely branched at the base; leaves coriaceous, subsessile (petiole up to 1 mm long); flowers with campanulate corolla, vinaceous, greenish or cream-coloured..... **3**
3. Leaves < 6 × 2 mm..... **Minaria harleyi**
3'. Leaves > 10 × 8 mm..... **4**
4. Leaves cordate, sub-amplexicaul; cymes 3- or 4-flowered; flowers with a double corona..... **Barjonia chlorifolia**
4'. Leaves truncate to slightly cordate; cymes (1-) 2-flowered; flowers with a simple corona…… **Barjonia erecta**
5. Herbs to subshrubs, single-stemmed; leaves glabrous to sparsely hirsute; inflorescences usually with > 10 flowers; flowers with glabrous or nearly glabrous calyx and simple corona..... **Metastelma myrtifolium**

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5'. Shrubs or tufted subshrubs; leaves with indumentum, generally hirsute; inflorescences up to 6-flowered; flowers with calyx abaxially hirsute to pilose and double corona..... **6**
6. Leaves > 1.6 cm long, broadly elliptical; flowers with corolla > 7 mm long, abaxially glabrous..... **Ditassa scholaris**
6'. Leaves < 1.6 cm long, cordiform, triangular, lanceolate, or oblong; flowers with corolla < 5 mm long, abaxially hirsute to pilose..... **7**
7. Leaves oblong, obtuse to cuneate at the base, opposite or whorled..... **Minaria acerosa**
7'. Leaves lanceolate, triangular or cordiform, subcordate at the base, opposite..... **8**
8. Flowers with yellow, yellow-green or cream corolla, adaxially glabrous in the central lobe region and corona lobes with narrowly oblong to linear segments of nearly equal length; pollinaria with articulated caudicles..... **Minaria decussata**
8'. Flowers with white, cream or greenish corolla, adaxially bearded in the central lobe region and corona lobes with ovate to lanceolate segments, the inner ones much smaller than the outer; pollinaria with straight caudicles..... **Minaria cordata**

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Declarations

Authors' contributions AR identified, described and illustrated the new species, compiled the data provided in the Electronic Supplementary Material, prepared the figures and drafted the initial version of the manuscript. CB created the map. AMG and RMH collected and photographed the type specimen in the field. All authors contributed to the text and revised the manuscript.

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Data availability The authors confirm that the data supporting the findings of this study are available within the herbarium material examined, the article and its supplementary materials.

Conflicts of interest The authors declare that they have no conflicts of interest in the publication.

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