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Eugenia bonita (Myrtaceae), a new species with edible fruits from the Cerrado of northern Minas Gerais, Brazil

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Abstract

Eugenia bonita, a new species from the Cerrado of northern Minas Gerais, Brazil, is described and illustrated. The species is assigned to *Eugenia* sect. *Pseudeugenia* and differs from morphologically similar species, especially *E. dysenterica*, by its fissured rhytidome with acute ridges, fibrous inner bark, leaves frequently bearing oblong galls, larger cataphylls with a yellowish base and ferruginous apex, larger spatulate bracts, larger bracteoles remaining persistent until the beginning of anthesis, calyx lobes with sparsely ciliate margins and orange to deep yellow fruits when mature. The new species occurs in cerrado sensu stricto on sandy soils associated with the Urucuia Formation and is apparently endemic to this region. Data on distribution, phenology, conservation status, and traditional uses are provided. Based on its restricted distribution, small number of locations, and ongoing habitat degradation, the species is assessed as Endangered (EN).

Key words: Extractivism, non-timber forest products, *Pseudeugenia*

Introduction

Eugenia P.Micheli ex Linnaeus (1753: 470) is widely recognized for the use of different plant parts in traditional medicine (Souza *et al.* 2018) and for the consumption of its fruits and derived products (Carvalho 2007; Araújo *et al.* 2019; Jacob & Albuquerque 2020; Silva *et al.* 2021). Several species are economically important as edible fruits and non-timber forest products, particularly in the Cerrado biome (Mazine *et al.* 2016; Godinho 2020; Farias *et al.* 2023). The genus has a pantropical distribution and comprises approximately 1,250 species (POWO 2026), with greatest diversity in the Neotropics (Mazine *et al.* 2018). In Brazil, it is the richest genus in terms of fruit-bearing species (BFG 2015), with 423 native species distributed across all biomes, including 84 species in the Cerrado, of which 30 are endemic (Flora e Funga do Brasil 2026). Over the last decade, approximately 100 new species of *Eugenia* have been described in Brazil (IPNI 2025), including new records for the Cerrado (Flora e Funga do Brasil 2026).

Eugenia can be recognized by the presence of tetramerous flowers, calyx lobes free in the flower bud, a 2–4-locular ovary with 2–many ovules per locule, and fruits containing 1–4 seeds (Landrum & Kawasaki 1997; Mazine *et al.* 2016). Species delimitation within the genus is often difficult due to its high diversity, morphological similarity, and the limited number of taxonomic studies across different vegetation types (Landrum & Kawasaki 1997; Mazine *et al.* 2016; Giaretta *et al.* 2018).

Eugenia subgenus *Pseudeugenia* Mazine & Faria (Mazine *et al.* 2018), the earliest-diverging clade within the genus, includes the only section *Pseudeugenia*, comprising approximately 25 species exclusively found in South America (Valdemarin *et al.* 2020; Mazine *et al.* 2018). This subgenus comprises species with inflorescences arranged in auxotelic racemes, rarely dichasia or botryoids, tetramerous and often velutinous flowers, linear caducous bracteoles,

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2–4-locular ovaries with variable ovule number per locule, and large, yellow, pyriform fruits, whose seeds exhibit partial to complete cotyledon fusion (Mazine *et al.* 2016, 2018).

During fieldwork in the Rio Pandeiros Environmental Protection Area, municipality of Bonito de Minas, Minas Gerais, Brazil, individuals morphologically similar to *Eugenia dysenterica* (Martius [*in* Martius & Spix 1828: 571]) de Candolle (1828: 268) were observed but differing in their phenology. Morphological evidence supports the recognition of these populations as a distinct species, here described as a new taxon, an edible-fruited species from the cerrado *sensu stricto* of northern Minas Gerais. A detailed morphological description, illustrations, distribution map, conservation assessment, and notes on traditional use are provided.

Materials and methods

Collection site. The study was conducted in the Rio Pandeiros Environmental Protection Area (APA Pandeiros), the largest sustainable-use protected area in Minas Gerais, Brazil, covering 393,060 ha (Nunes *et al.* 2009). The area protects the Pandeiros River basin, an important tributary and fish nursery of the São Francisco River and is predominantly covered by cerrado *sensu stricto* on sandy plains and plateaus (Nunes *et al.* 2009, Arruda *et al.* 2015). The climate is seasonal, with a wet season from November to January and a dry season from May to September, mean annual temperatures of 21–26°C, and annual precipitation of 900–1,200 mm (Azevedo *et al.* 2014, INMET 2018).

Bonito de Minas, within APA Pandeiros, has approximately 10,951 inhabitants, with 62% living in rural areas (IBGE 2022a, 2023), and is characterized by high poverty rates (Caon *et al.* 2012). Rural communities rely substantially on non-timber forest products, particularly native fruits harvested from veredas and cerrado *sensu stricto* for local consumption and commercialization (IGA 2006, FUNATURA 2008). The main species harvested include *Caryocar brasiliense* Cambessèdes - Caryocaraceae (in Cambessèdes 1828: 322), *Mauritia flexuosa* Linnaeus filius - Arecaceae (in Linnaeus filius 1782: 454), *Eugenia dysenterica*, *Hancornia speciosa* Gomes - Apocynaceae (in Gomes 1812: 53), *Anacardium humile* A.Saint-Hilaire - Anacardiaceae (in Saint-Hilaire 1831: 272), and *Dimorphandra mollis* Bentham - Fabaceae (in Bentham 1840: 102) (IGA 2006). Despite the ecological and socioeconomic importance of its native vegetation, the municipality remains relatively poorly sampled botanically. Bonito de Minas covers 3,936.455 km² (IBGE 2022b), with 867 botanical collections recorded (CRIA 2026), resulting in 0.22 collections per km², less than one-quarter of the one collection per km² proposed by Campbell (1989) for tropical environments. More than 70% of these collections are deposited in the regional herbarium MCCA (herbarium acronyms according to Thiers 2026).

Taxonomic studies. The description of the new species is based on observations of natural populations in the municipality of Bonito de Minas, Minas Gerais, Brazil. Field expeditions were conducted in cerrado *sensu stricto* areas between January 2019 and July 2020, allowing the collection of botanical material and the documentation of phenological and morphological variation of the new species. Characters used in the taxonomic notes and comparative table of related species were based on observations of specimens in the field and herbarium collections, as well as on published descriptions. Comparative morphological data for *Eugenia dysenterica* were obtained from field observations, herbarium specimens deposited at MCCA, and reproductive structures preserved in 70% ethanol. General morphological terminology follows Hickey (1973) and Gonçalves & Lorenzi (2011), while bark and inner bark descriptions follow Ribeiro *et al.* (1999). Terminology specific to Myrtaceae follows Faria (2010), Sobral (2011), Oliveira (2018), Lourenço *et al.* (2019), and Valdemarin *et al.* (2020). The conservation status of the new species was assessed using GeoCAT (Bachman *et al.* 2011) and the IUCN Red List Categories and Criteria, following the guidelines for their application (IUCN 2024).

Uses and local recognition of the species. Interviews were conducted including questions about vernacular names, uses, collection sites/occurrence, and morphological, phenological, and sensory characteristics used by local people to distinguish the new species from *E. dysenterica*. A total of 32 women and 25 men, aged between 18 and 85 years, were interviewed. All participants belonged to extractivist families living in rural communities that supply fruits to the agroindustry of the Água Doce rural community, Bonito de Minas, the closest to the populations of the new species. This research was approved by the Research Ethics Committee of the Universidade Estadual de Montes Claros (protocol no. 3.037.358), and participants' consent was recorded through a Free and Informed Consent Form (ICF).

Taxonomy

Eugenia bonita R.S.Fonseca & D.T.Iglesias, *sp. nov.* (Figures 1–4)

Type:—BRAZIL. Minas Gerais: Bonito de Minas, Rio Pandeiros Environmental Protection Area, margin of highway LMG-604, connecting Januária to Bonito de Minas, 8.31 km from the municipal center of Bonito de Minas, 15°20′26.00″ S, 44°41′38.00″ W, 682 m, 1 November 2019 (fl.), *R.S. Fonseca* & *D. Arruda 1277* (holotype: MCCA 4387!; isotypes RB!, UB!).

Diagnosis:—*Eugenia bonita* is morphologically most similar to *E. dysenterica*, but differs in having fissured rhytidome with acute ridges (*versus* flat ridges), fibrous inner bark (*vs*. farinaceous inner bark), leaf flushing and young leaves brown (*vs.* red to vinaceous), leaves frequently bearing oblong galls (*vs*. rarely with ellipsoid galls), inflorescence cataphylls 3.2–9 mm long (*vs*. 1–2.9 mm long) with a yellowish base and ferruginous apex (*vs*. entirely ferruginous), glabrous or with a sparsely white-ciliate margin (*vs*. cataphylls red-tomentose at least along the margin), bracts spatulate, 6–15 mm long (*vs*. linear, 2–6 mm long), bracteoles 3.6–6 mm long (*vs*. 0.9–3.2 mm long), calyx lobes with a sparsely ciliate margin (*vs*. glabrous or puberulous with a tomentose apex), bracteoles persistent until the beginning of anthesis (*vs*. caducous before anthesis), ovary 2–3-locular (*vs.* 2-locular), and fruits orange or deep yellow when mature (*vs*. citrine yellow).

Description:—*Shrub* or small tree 0.5–3 m tall. *Stem* with greyish rhytidome, fissured with acute ridges, corky, fibrous; sapwood yellowish. *Young twigs* bearing euriform colleters at the base of young leaves; vegetative buds rounded to ovate; cataphylls 0.5–6.2 mm long, concave, imbricate, base yellowish, apex ferruginous, glabrous or with sparsely ciliate margins, trichomes whitish. Leaf flushing and young leaves brown. *Leaves* opposite, glabrous; petiole 3–11.7 mm long; blades 2.7–8.5 × 1.9–6.9 cm, ovate to elliptic, base decurrent, cuneate, rounded, sometimes slightly cordate or truncate, apex acute, acuminate, rarely obtuse, coriaceous; midvein finely raised adaxially, raised abaxially; secondary veins 7–10 on each side; marginal vein absent; glands brownish, inconspicuous adaxially, conspicuous abaxially; leaf blades frequently bearing oblong galls. *Inflorescences* auxotelic, fasciculiform or shortly racemiform, 4-flowered; euriform colleters present at the base; cataphylls 3.2–9 mm long; bracts 6–15 mm long, spatulate, margins sparsely ciliate, trichomes whitish, rarely amber; glands prominent, brown to ferruginous or blackened; pedicels 8.7–37.3 mm long, terete, with prominent blackened glands; bracteoles free, 3.6–6 mm long, linear to filiform, glabrous or sparsely ciliate, caducous during anthesis, with euriform colleters at the base; *flower buds* 3.5–5 × 5.1–7.9 mm, obovate; *flowers* with hypanthium sparsely pubescent at base, glabrous distally, glands prominent; calyx lobes 4, free, equal or unequal in size, smaller lobes 3–5.2 × 4–6.4 mm, larger lobes 5–6.1 × 3–5.3 mm, ovate to deltoid, apex obtuse to rounded, margins sparsely ciliate, glands prominent abaxially; petals 4, white, 8–14.2 × 3.4–8.2 mm, obovate, apex rounded to obtuse, margins ciliate, trichomes whitish, glands sparse; stamens 84–105; filaments 3.5–9.7 mm long; anthers 0.4–0.6 mm long, elliptic, longitudinally dehiscent; staminal ring subquadrate, 2.8–3.1 mm long, glabrous; style 7–9.4 mm long, glabrous; stigma punctiform, papillose; ovary 2–3-locular, with 2–3 ovules per locule, locules internally glabrous. *Fruit* 16.8–27.7 × 17.6–29.9 mm, orange when mature, globose or sometimes pyriform, glabrous, glands prominent and blackened; seeds 1–2, ellipsoid, 9.6–16.2 × 8.4–18 mm, cotyledons fused.

Distribution and habitat:—*Eugenia bonita* occurs in cerrado *sensu stricto*, together with economically important native fruit species harvested by local communities. This vegetation is open and of low stature, with exposed soil, occurring on sandstone tablelands of the Urucuia Formation (Arruda *et al.* 2015) within the Rio Pandeiros Environmental Protection Area. The mapped individuals are located 8–26 km from the urban center of the municipality of Bonito de Minas, at 642–698 m elev. (Figure 5). *Eugenia bonita* appears to be endemic to the cerrado *sensu stricto* associated with the Urucuia Formation.

Phenology:—Seasonal species, deciduous at the end of the dry season, in September; flowering and leaf flushing occur in October and November. Flower opening is highly synchronous within the population, with rapid and massive flowering in early November. Fruiting occurs in November and December, during the rainy season. Fruit maturation takes place in December, with a rapid and abundant production of ripe fruits. During fieldwork, differences were observed in the appearance of leaf flushing and young leaves: in *Eugenia bonita* they are brown, whereas in *E. dysenterica* they are red to vinaceous. *Eugenia bonita* also differs from *E. dysenterica* in its reproductive phenology, with flowering and fruiting occurring later in the season.

Etymology:—The specific epithet "bonita" honors the municipality of Bonito de Minas, where the species was discovered. In this locality, the species is recognized and used by rural communities. Additionally, the word "bonita" means "beautiful".



FIGURE 1. Holotype of *Eugenia bonita*.



FIGURE 2. *Eugenia bonita*. A. Habitat. B–C. Mature individuals on sandy soil. D. Branches with mature leaves. E. Fissured rhytidome with acute ridges.

Vernacular Name:—Known in the municipality of Bonito de Minas as **"**cagaita-da-moda", "cagaitinha-da-moda", "cagaita-da-China", "cagaita-da-Índia", "cagaitinha", "laranjinha-do-campo" and "cagaitinha-da-campina".

Conservation status:—*Eugenia bonita* appears to be restricted to cerrado *sensu stricto* on sandstone tablelands of the Urucuia Formation. The species is known from few locations, with an aggregated distribution. Based on the geographic range of these population clusters, the extent of occurrence (EOO) was estimated at 395.844 km² and the area of occupancy (AOO) at 20 km². Local impact factors have threatened habitat quality, with an inferred populational decline. Despite being within a protected area, the natural vegetation of the Rio Pandeiros Environmental Protection Area has been affected by cattle grazing, deforestation for charcoal production, extensive fires (Nunes *et al.* 2009), and drying of *veredas* (Neves 2011). According to residents, episodes of mass mortality in population clusters of *E. bonita* have been observed. During the study period, two reproductive seasons were recorded. In the largest population cluster (>100 individuals), no fruit production was recorded in either year, whereas the second largest cluster (ca. 50 individuals), which fruited abundantly in the first year, showed no fruiting in the second year due to arson fires in the preceding months. Further studies on the reproductive strategies and genetic variability of these populations are recommended to support the conservation of this new Brazilian fruit species. Based on the available data and the criteria B1ab(iii)+B2ab(iii), *Eugenia bonita* is here assessed as Endangered (EN), following IUCN (2024).



FIGURE 3. *Eugenia bonita*. A. Flowering branches in natural habitat. B. Unripe fruit on the plant. C. Oblong galls on young leaves. D. Longitudinal section of fruit showing pulp and seed. E. Flower in lateral view. F. Fruit development stages. G. Ripe fruit. H. Flowering branch with open flowers. I. Branch with vegetative buds.

Paratypes:—BRAZIL. Minas Gerais: Bonito de Minas, Área de Proteção Ambiental do Rio Pandeiros, 15°13′35.66″S, 44°54′58.24″W, 656 m, 17 November 2018, *J.E. Silveira & R.S. Fonseca s.n.* (MCCA 2891!); *ibidem*, 15°15′09.24″S, 44°53′55.10″W, 698 m, 11 November 2018, *J.E. Silveira & R.S. Fonseca s.n.* (MCCA 2892!, RB!); *ibidem*, 15°13′56.20″S, 44°55′00.20″W, 653 m, 15 July 2019, *R.S. Fonseca, E.B. Rangel & D.I. Tavares 1261* (MCCA 4397!); *ibidem*, 15°13′05.87″S, 44°54′09.36″W, 653 m, 15 July 2019, *R.S. Fonseca, E.B. Rangel & D.I. Tavares 1265* (MCCA 4401!); *ibidem*, 15°13′05.97″S, 44°54′09.58″W, 653 m, 15 July 2019, *R.S. Fonseca, E.B. Rangel & D.I. Tavares 1262* (MCCA 4398!); *ibidem*, 15°13′05.92″S, 44°54′09.49″W, 653 m, 15 July 2019, *R.S. Fonseca, E.B. Rangel & D.I. Tavares 1263* (MCCA 4399!); *ibidem*, 15 July 2019, *R.S. Fonseca, E.B. Rangel & D.I. Tavares 1264* (MCCA 4400!); *ibidem*, 15 July 2019, *R.S. Fonseca, E.B. Rangel & D.I. Tavares 1260* (MCCA 4396!); *ibidem*, 27 October 2019 (fl.), *E.B. Rangel 20* (MCCA 4402!); *ibidem*, 15°20′25.72″S, 44°41′37.86″W, 682 m, 1 November 2019 (fl.), *R.S. Fonseca & D. Arruda 1276* (MCCA 4386!); *ibidem*, 1 November 2019 (fl.), *R.S. Fonseca & D. Arruda s.n.* (MCCA 4388!); *ibidem*, 1 November 2019 (fl.), *R.S. Fonseca & D. Arruda s.n.* (MCCA 4389!); *ibidem*, 1 November 2019 (fl.), *R.S. Fonseca & D. Arruda 1278* (MCCA 4390!); *ibidem*, 15°13′31.53″S, 44°54′59.38″W, 653 m, 5 November 2019

(fl.), *E.R. Martins & V.F. Oliveira s.n.* (MCCA 4391!); *ibidem*, 5 November 2019 (fl.), *E.R. Martins & V.F. Oliveira s.n.* (MCCA 4392!); *ibidem*, 5 November 2019 (fl.), *E.R. Martins & V.F. Oliveira s.n.* (MCCA 4393!); *ibidem*, 5 November 2019 (fl.), *E.R. Martins & V.F. Oliveira s.n.* (MCCA 4394!, BHCB!); *ibidem*, 5 November 2019 (fl.), *E.R. Martins & V.F. Oliveira s.n*. (MCCA 4395!, UB!).

Taxonomic discussion:—According to the circumscription of *Eugenia* subg. *Pseudeugenia* (Mazine & Faria) Mazine & Faria as presented in Mazine *et al.* (2016, 2018), *Eugenia bonita* is assigned to *Eugenia* sect. *Pseudeugenia* due to auxotelic inflorescences; flowers 4-merous; bracteoles caducous during anthesis; calyx with lobes free in bud and persistent in fruit; ovary 2–3-locular, locules internally glabrous; and large fruits (16.8–27.7 × 17.6–29.9 mm), globose or pyriform, edible, and orange when mature.

Eugenia bonita morphologically resembles *Eugenia dysenterica*, which also belongs to *Eugenia* sect. *Pseudeugenia*. Both species occur in cerrado *sensu stricto* and share a phenological pattern of leaf fall followed by flowering, coriaceous, ovate, glossy leaves, auxotelic racemes, linear, caducous bracteoles, ovate to deltoid sepals, a glabrous, bilocular ovary with 2–3 ovules per locule, and large, glabrous, pyriform or globose, fleshy, edible fruits. These similarities may have contributed to the misidentification of the two species in previous studies in the region. However, they can be readily distinguished by rhytidome features, cataphyll morphology, mature fruit color, bract size and shape, bracteole size and persistence, and calyx lobe indumentum (Table 1).

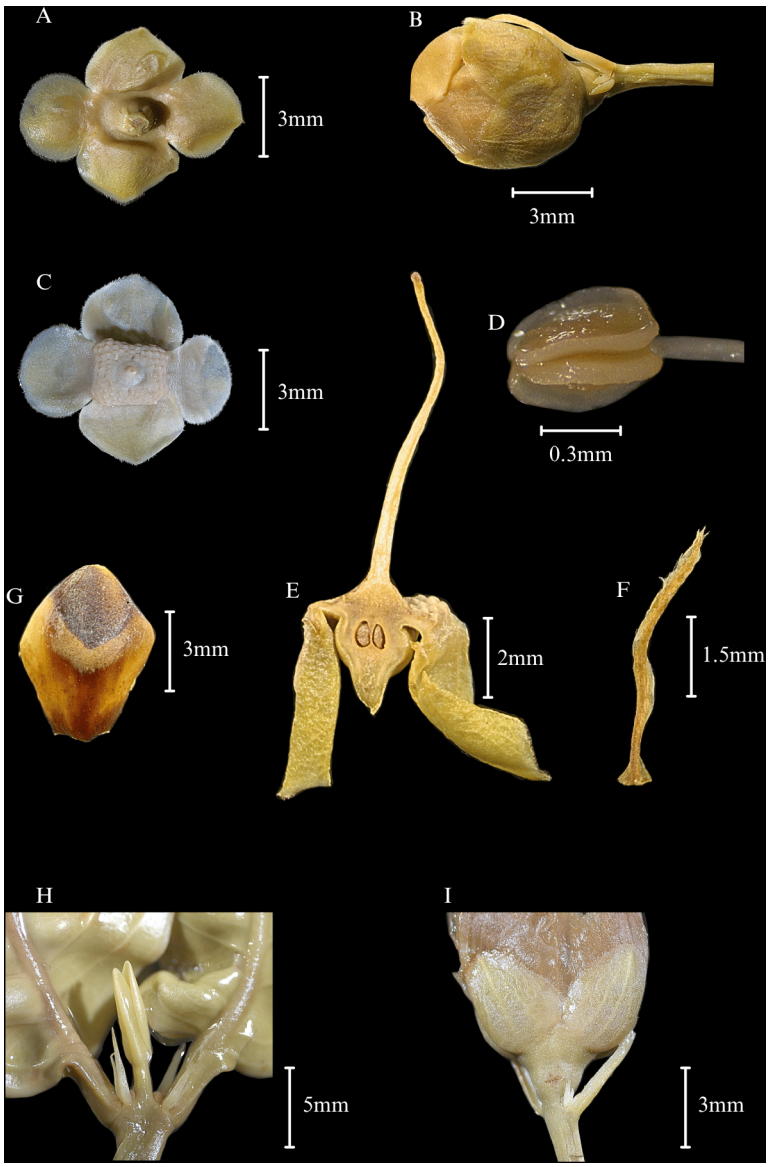


FIGURE 4. *Eugenia bonita*. A. Abaxial surface of the calyx. B. Flower bud. C. Staminal disc. D. Anther. E. Longitudinal section of the ovary. F. Bracteole. G. Cataphyll. H. Young twigs with euriform colleters. I. Hypanthium and bracteoles.

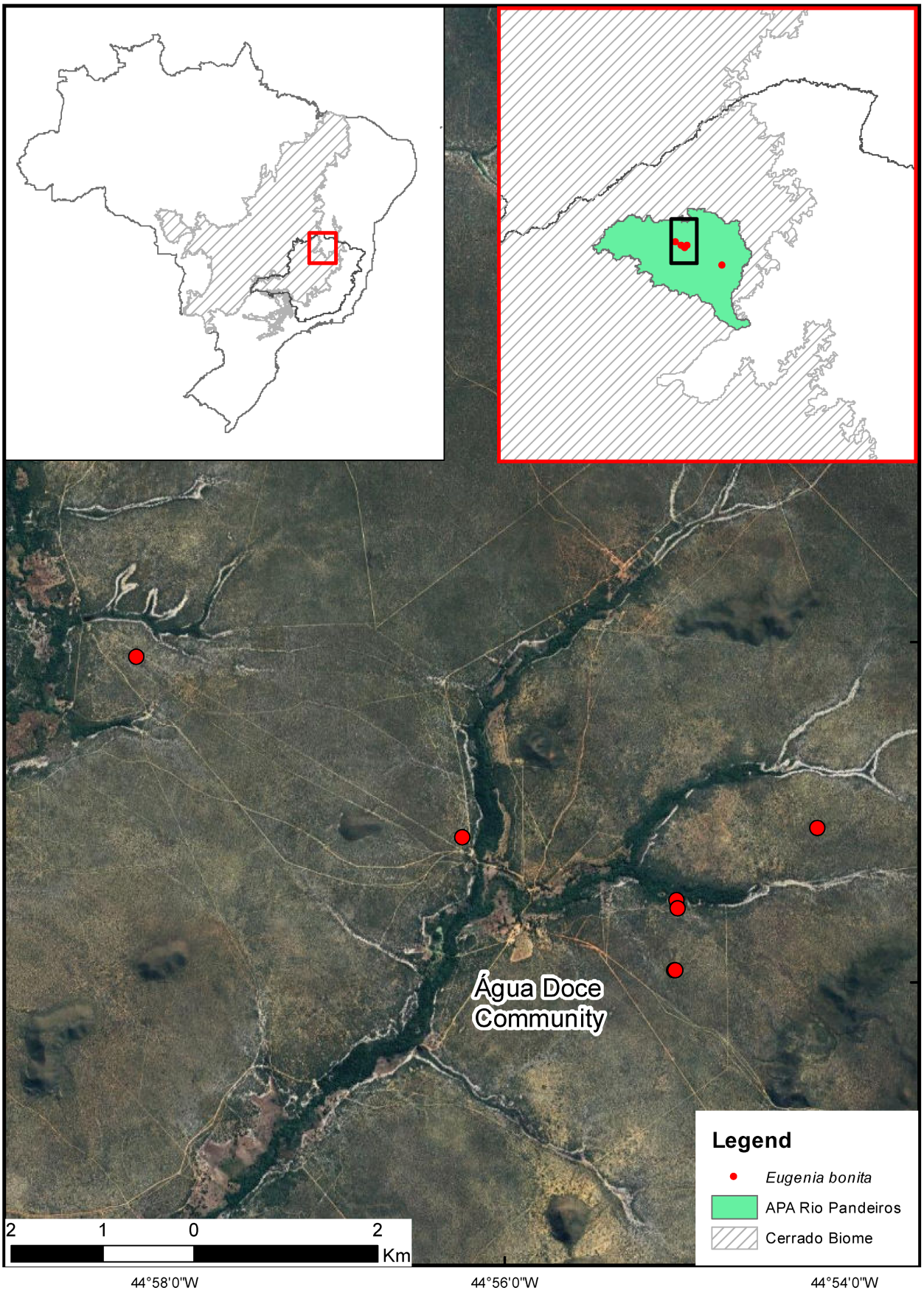


FIGURE 5. Geographic distribution and typical occurrence environments of *Eugenia bonita* in the Rio Pandeiros Environmental Protection Area, Bonito de Minas, Minas Gerais, Brazil. Red dots indicate occurrence records.

TABLE 1. Comparative diagnostic characters of *Eugenia bonita* and *Eugenia dysenterica*.

Characters	*Eugenia bonita*	*Eugenia dysenterica*
Marginal veins	Absent	Absent
Leaf galls	Oblong. Few to many. Rarely absent.	Ellipsoid. Rarely present.
Bract length (mm)	(6–)8(–15)	2.9–4.7
Bract shape	Spatulate	Linear
Bracteole length (mm)	3.6–6	0.9–3.2
Bracteole caducity	Caducous during anthesis	Caducous before anthesis
Calyx lobe indumentum	Glabrous, margin ciliate	Glabrous to puberulous, apex tomentose
Fruit color at maturity	Orange	Citrine yellow

Additionally, *Eugenia bonita* frequently bears oblong leaf galls, whereas those reported for *E. dysenterica* are ellipsoid (Rocha *et al.* 2020). Although gall morphology is not an intrinsic morphological character of the plant, it may provide complementary evidence for species recognition because of the high host specificity of many gall-inducing insects (Maia *et al.* 2005, Carneiro *et al.* 2009, Maia 2019).

Notes on uses, local recognition, and food potential:—*Eugenia bonita* has been consumed and recognized by local communities for at least 80 years. Interviewees reported that fruits are highly appreciated, especially by children, because of their sweet taste. The fruits are predominantly consumed fresh and, more rarely, processed into juice, while the wood is used as fuel.

Local communities distinguish *E. bonita* from *E. dysenterica* based on a combination of morphological, ecological, and phenological traits. The main characteristics used include smaller trees up to 3 m tall in *E. bonita* (*vs*. taller trees exceeding 3 m in *E. dysenterica*), lighter-colored and thinner bark (*vs*. darker and thicker bark), lighter-colored and harder wood (*vs*. darker and softer wood), leaf blades that are glossier, generally smaller, broader, and more rounded (*vs*. less glossy, generally longer and narrower leaf blades), larger petals (*vs*. smaller petals), and fruits that are smaller, sweeter, and orange when mature (*vs*. larger, yellow fruits with a sweet-acid taste), occurrence on "poor soils" and low and open cerrado (*vs*. "fertile soils" and taller cerrado). Regarding phenology, flowering and fruiting in *E. bonita* consistently occur after the reproductive period of *E. dysenterica*.

Vernacular names attributed to *E. bonita* reflect the differentiation from *E. dysenterica*, emphasizing contrasting morphological and ecological traits. The most commonly used name, "cagaita-da-moda", refers to the abundant flowering that dominates the landscape, making the species conspicuous; "cagaitinha" refers to its smaller stature; "cagaitinha-da-campina" and "laranjinha-do-campo" refer to its typical occurrence in low, open cerrado; and "cagaita-da-china" and "cagaita-da-índia" indicate that it is not the true "cagaita", which corresponds to *E. dysenterica*.

The recognition and characterization of *E. bonita* represent essential first steps toward its sustainable use and potential commercialization. Supporting this potential, physicochemical analyses of its fruits revealed high levels of vitamin C and phenolic compounds, highlighting their nutritional and functional value (Santos *et al.* 2025). Species long recognized and used by traditional communities have only recently been formally described by science (De La Fuente *et al.* 2024; Wilkin *et al.* 2017; Bolin *et al.* 2018), underscoring the importance of biocultural knowledge, local inventories, and small herbaria in documenting plant diversity in underexplored regions.

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References

Araújo, F.F., Neri-Numa, I.A., Farias, D.P., Cunha, G.R.M.C. & Pastore, G.M. (2019) Wild Brazilian *Eugenia* species. *Food Research International* 121: 57–72. https://doi.org/10.1016/j.foodres.2019.03.018

Arruda, D.M., Schaefer, C.E., Corrêa, G.R., Rodrigues, P.M., Duque-Brasil, R., Ferreira-Jr, W.G. & Oliveira-Filho, A.T. (2015) Landforms and soil attributes determine the vegetation structure in the Brazilian semiarid. *Folia Geobotanica* 50: 175–184. https://doi.org/10.1007/s12224-015-9219-6

Azevedo, I.F.P., Nunes, Y.R.F., Ávila, M.A., Silva, D.L., Fernandes, G.W. & Veloso, R.B. (2014) Phenology of riparian tree species in a transitional region in southeastern Brazil. *Brazilian Journal of Botany* 37: 47–59. https://doi.org/10.1007/s40415-014-0057-4

Bachman, S., Moat, J., Hill, A.W., de la Torre, J. & Scott, B. (2011) Supporting Red List threat assessments with GeoCAT. *ZooKeys* 150: 117–126. https://doi.org/10.3897/zookeys.150.2109

Bentham, G. (1840) Contributions towards a Flora of South America. *Journal of Botany (Hooker)* 2: 38–103.

BFG (Brazilian Flora Group) (2015) Growing knowledge: an overview of seed plant diversity in Brazil. *Rodriguésia* 66: 1085–1113. https://doi.org/10.1590/2175-786020156641

Bolin, J.F., Lupton, D. & Musselman, L.J. (2018) *Hydnora arabica*, a new species from the Arabian Peninsula. *Phytotaxa* 338: 99–108. https://doi.org/10.11646/phytotaxa.338.1.8

Cambessèdes, J. (1828) XVI. Rhizoboleae. DC. LXXVII. Caryocar. Linn. DC. *In*: Saint-Hilaire, A., Jussieu, A. & Cambessèdes, J. (Eds.) *Flora Brasiliae Meridionalis*. A. Belin, Paris, pp. 322–324.

Campbell, D.G. (1989) The importance of floristic inventory in the tropics. *In*: Campbell, D.G. & Hammond, D. (Eds.) *Floristic inventory of tropical countries: The status of plant systematics, collections, and vegetation, plus recommendations for the future*. New York Botanical Garden, New York, pp. 5–30.

Candolle, A.P. de (1828) *Prodromus Systematis Naturalis Regni Vegetabilis*. Trettel & Würtz, Paris, 268 pp.

Caon, A.R.V., Magalhães, M.R.A. & Moreira, M.C.R. (2012) Situação da pobreza em Minas Gerais. *Revista do Legislativo* 44: 22–42.

Carneiro, M.A.A., Branco, C.S.A., Braga, C.E.D., Almada, E.D., Costa, M.B.M., Maia, V.C. & Fernandes, G.W. (2009) Are gall midges host-plant specialists? *Revista Brasileira de Entomologia* 53: 365–378. https://doi.org/10.1590/S0085-56262009000300010

Carvalho, I.S.H. (2007) Potenciais e limitações do uso sustentável da biodiversidade do Cerrado: um estudo de caso sobre a Cooperativa Grande Sertão no Norte de Minas. *Revista Brasileira de Agroecologia* 2: 1449–1452.

CRIA (2026) *SpeciesLink*. Centro de Referência em Informação Ambiental, Brazil. Available from: www.splink.org.br (accessed 27 April 2026)

De la Fuente, J.I., Rosales-Rosales, W., Martínez-González, C.R., Martínez-Reyes, M., Elizondo-Salas, A.C. & Pérez-Moreno, J. (2024) *Tuber itzcuinzapotl sp. nov.* (Tuberaceae, Pezizomycetes), the first edible truffle reported from Mexico with traditional biocultural importance. *Phytotaxa* 635 (3): 206–216. https://doi.org/10.11646/phytotaxa.635.3.2

Faria, J.E.Q. (2010) *O Gênero Eugenia L. (Myrtaceae) nos estados de Goiás e Tocantins, Brasil*. Dissertação de Mestrado. Universidade de Brasília, Brasília, Distrito Federal, 266 pp.

Farias, T.R.B., Sanches, N.B. & Petrus, R.R. (2023) Native Brazilian fruits. *Critical Reviews in Food Science and Nutrition* 64: 9382–9399.

Flora e Funga do Brasil (2026) *Jardim Botânico do Rio de Janeiro*. Available from: http://floradobrasil.jbrj.gov.br/ (accessed 29 June 2026)

FUNATURA (Fundação Pró-Natureza) (2008) *Plano de desenvolvimento territorial de base conservacionista do Mosaico Sertão Veredas-Peruaçu*. FUNATURA, Brasília, 60 pp.

Giaretta, A., Lucas, E., Souza, M.D.C., Mazine, F.F. & Sano, P.T. (2018) Nomenclatural notes on *Eugenia* with closed calyces: *Calycorectes* O.Berg and *Mitranthes* O.Berg (Myrtaceae). *Phytotaxa* 362: 282–286. https://doi.org/10.11646/phytotaxa.362.3.4

Godinho, C.S. (2020) *Grande sertão: inovação social e promoção da sociobiodiversidade*. Tese de Doutorado. Universidade Federal de Minas Gerais, Belo Horizonte, 118 pp.

Gomes, B.A. (1812) Observationum botanico-medicarum. Pars II. *Memorias de Mathematica e Physica da Academia Real das Sciencias de Lisboa* 3: 51–56.

Gonçalves, E. & Lorenzi, H. (2011) *Morfologia vegetal*. 2 ed. Plantarum, São Paulo, 544 pp.

Hickey, L.J. (1973) Classification of the architecture of dicotyledoneous leaves. *American Journal of Botany* 60: 17–33.

IBGE - Instituto Brasileiro de Geografia e Estatística (2022a) *Sistema IBGE de Recuperação Automática (SIDRA)*. IBGE, Rio de Janeiro.

Available from: https://sidra.ibge.gov.br/tabela/9923 (accessed 1 September 2026)
IBGE—Instituto Brasileiro de Geografia e Estatística (2022b) *Área territorial brasileira 2022*. IBGE, Rio de Janeiro. Available from: https://www.ibge.gov.br (accessed 27 August 2026)
IBGE—Instituto Brasileiro de Geografia e Estatística (2023) *Panorama do Censo 2022*. Available from: https://censo2022.ibge.gov.br (accessed 27 August 2026)
IGA (Instituto de Geociências Aplicadas) (2006) *Áreas de Proteção Ambiental no estado de Minas Gerais: demarcação e estudos para o pré-zoneamento ecológico: APA Bacia do Rio Pandeiros*. Governo do Estado de Minas Gerais, Belo Horizonte, 271 pp.
INMET (2018) *Normais climatológicas do Brasil 1981–2010*. Available from: https://portal.inmet.gov.br (accessed 27 April 2026)
IPNI (2025) *International Plant Names Index*. Available from: https://www.ipni.org (accessed 15 August 2025)
IUCN (2024) *Guidelines for using the IUCN Red List Categories*. Available from: http://www.iucnredlist.org (accessed 17 October 2024)
Jacob, M.C.M. & Albuquerque, U.P. (2020) Biodiverse food plants: Which gaps do we need to address to promote sustainable diets? *Ethnobiology and Conservation* 9: 1–6.
https://doi.org/10.15451/ec2020-04-9.09-1-6
Landrum, L.R. & Kawasaki, M.L. (1997) The genera of Myrtaceae in Brazil: an illustrated synoptic treatment and identification keys. *Brittonia* 49: 508–536.
https://doi.org/10.2307/2807742
Linnaeus, C. (1753) *Species Plantarum*. Impensis Laurentii Salvii, Stockholm, 471 pp.
Linnaeus, C. fil. (1782) *Supplementum Plantarum Systematis Vegetabilium*. Impensis Orphanotropheum, Brunsvigae, 468 pp.
Lourenço, A.R.D., Costa-Lima, J.L.D. & de Oliveira Chagas, E.C. (2019) *Eugenia caipora*, a new species of *Eugenia* sect. *Pseudeugenia* (Myrtaceae) from northeastern Brazil. *Phytotaxa* 408: 129–135.
https://doi.org/10.11646/phytotaxa.408.2.6
Maia, V.C. (2019) Insect galls on Myrtaceae: richness and distribution in brazilian restingas. *Biota Neotropica* 19: e20180526.
https://doi.org/10.1590/1676-0611-BN-2018-0526
Maia, V.C., Constantino, P.D.A.L. & Monteiro, R.F. (2005) New gall midges (Diptera, Cecidomyiidae) associated with two species of *Eugenia* (Myrtaceae). *Revista Brasileira de Entomologia* 49 (3): 347–352.
https://doi.org/10.1590/S0085-56262005000300004
Mazine, F.F., Bünger, M.O., de Faria, J.E.Q., Lucas, E. & Souza, V.C. (2016) Sections in *Eugenia* (Myrteae, Myrtaceae): nomenclatural notes and a key. *Phytotaxa* 289: 225–236.
https://doi.org/10.11646/phytotaxa.289.3.2
Mazine, F.F., Faria, J.E.Q., Giaretta, A., Vasconcelos, T., Forest, F. & Lucas, E. (2018) Phylogeny and biogeography of the hyper-diverse genus Eugenia (Myrtaceae: Myrteae), with emphasis on *E*. sect. *Umbellatae*, the most unmanageable clade. *Taxon* 67: 752–769.
https://doi.org/10.12705/674.5
Martius, C.F.P. von & Spix, J.B. von (1828) *Reise in Brasilien: auf Befehl Sr. Majestät Maximilian Joseph I., Königs von Baiern, in den Jahren 1817 bis 1820 gemacht und beschrieben*. Zweiter Teil, München, pp. 415–885.
Neves, W.V. (2011) *Avaliação da vazão em bacias hidrográficas com veredas, em diferentes estádios de conservação, na Apa do Rio Pandeiros MG*. Dissertação de Mestrado. Universidade Federal de Minas Gerais, Montes Claros, 58 pp.
Nunes, Y.R.F., Azevedo, I.F.P., Neves, W.V., Veloso, M.D.M., Souza, R.A. & Fernandes, G.W. (2009) Pandeiros: o Pantanal Mineiro. *MG BIOTA* 2: 4–17.
Oliveira, A.G.D. (2018) *Sistemática de Eugenia (Myrtaceae, Myrteae): evolução da flor e da inflorescência e implicações taxonômicas*. Tese de Doutorado. Universidade de São Paulo, São Paulo, 246 pp.
https://doi.org/10.11606/t.41.2018.tde-22082018-104201
POWO (2026) *Plants of the World Online*. Royal Botanic Gardens, Kew. Available from: http://powo.science.kew.org (accessed 6 May 2026)
Ribeiro, J.E.L.S., Hopkins, M.J.G, Vicentini, A., Sothers, C.A., Costa, M.A.S, Brito, J.M., Souza, M.A.D., Martins, L.H.P., Lohmann, L.G., Assunção, P.A.C.L., Pereira, E.C., Silva, C.F., Mesquita, M.R. & Procópio, L.C. (1999) *Flora da Reserva Ducke: Guia de identificação das plantas vasculares de uma floresta de terra-firme na Amazônia Central*. INPA, Manaus, 816 pp.
Rocha, C.B.S., Pereira, J.M., Silva, J.F., Peres, A.J.A. & Daud, R.D. (2020) Artropodofauna associada à cagaiteira (*Eugenia dysenterica* DC., Myrtaceae) em coleção de germoplasma ex situ em Goiás, Brasil. *Ciência Florestal* 30: 463–472.
https://doi.org/10.5902/1980509837139
Saint-Hilaire, A. de (1831) Observations sur le genre *Anacardium* et les nouvelles espèces qu'on doit y faire entrer. *Annales des Sciences Naturelles* 23: 268–274.
Santos, T.C., Calixto Fonseca, H., Durães, C.A.F., Fonseca, R.S. & de Lima, J.P. (2025) Physicochemical characterisation of a new Myrtaceae fruit native to Brazilian Cerrado. *New Zealand Journal of Crop and Horticultural Science* 53: 1496–1509.

https://doi.org/10.1080/01140671.2024.2373294
Silva, J.P.C., Gonçalves, P.H., Albuquerque, U.P., Silva, R.R.V. & Medeiros, P.M. (2021) Can medicinal use protect plant species from wood uses? Evidence from Northeastern Brazil. *Journal of Environmental Management* 279: 111800. https://doi.org/10.1016/j.jenvman.2020.111800
Sobral, M. (2011) *Eugenia (Myrtaceae) no Paraná*. Editora da Universidade Estadual de Londrina, Londrina, 234 pp.
Souza, A.M., de Oliveira, C.F., de Oliveira, V.B., Betim, F.C.M., Miguel, O.G. & Miguel, M.D. (2018) Traditional uses, Phytochemistry, and antimicrobial activities of Eugenia species–a review. *Planta medica* 84: 1232–1248.
Thiers, B. (2026) *Index Herbariorum*. Available from: http://sweetgum.nybg.org (accessed 27 April 2026)
Valdemarin, K.S., Faria, J.E.Q., Mazine, F.F. & Souza, V.C. (2020) A New Species of *Eugenia* subg. *Pseudeugenia* (Myrtaceae, Myrteae) from Brazilian Atlantic Forest. *Systematic Botany* 45: 537–543. https://doi.org/10.1600/036364420X15935294613518
Wilkin, P., Kennerley, J.A., Rajaonah, M.T., Huckël, G.M., Rakotoarison, F., Randriamboavonjy, T. & Cable, S. (2017) A new species of critically endangered edible yam endemic to northern Madagascar, *Dioscorea irodensis* (Dioscoreaceae) and its conservation. *Kew Bulletin* 72: 15. https://doi.org/10.1007/S12225-017-9677-6