

Magnolia tapichalacaensis (Magnoliaceae), a new species from the Andean foothills of Zamora Chinchipe, Ecuador

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Introduction

The number of new species of Ecuadorian *Magnolia* Linnaeus (1753: 535) continues to increase as exploration of the Andes progresses. Currently, 24 species of *Magnolia* are recorded for Ecuador (Vázquez-García *et al.* 2012, 2013, 2015a, 2015b, 2016, 2017, 2018, Arroyo *et al.* 2013a, 2013b, 2019, Pérez *et al.* 2016, 2023), which belong to *M.* sect. *Splendentes* Dandy in Vázquez (1994: 4) and *Talauma* Baillon (1866: 3) (Wang *et al.* 2020), the former consisting of six species, including the new species described here, and the latter 19 species. There are 17 endemic species in Ecuador, three of which also occur in Colombia, and five in Peru. Zamora Chinchipe Province has the highest diversity of magnolias, with nine species, followed by Morona Santiago (6) and Pastaza (5). The conservation status of the Ecuadorian magnolias is critical; seven species are listed as critically endangered (CR), 11 species are endangered (EN), and three species are vulnerable (VU), representing 84% of Ecuadorian diversity (Table 1).

Here, we provide a taxonomic description of a *Magnolia* population from the eastern Andean foothills of Ecuador in Zamora Chinchipe. Fieldwork was conducted in September and October 2024 and March 2025 along montane forest remnants in Quebrada Honda-Palmeras, a lower elevation part of the Reserva Tapichalaca, owned and managed by the Jocotoco Foundation (<https://www.jocotoco.org.ec>). The map was designed in QGIS 3.34.15-Prizren using the coordinates from vouchers deposited at MO and QCA. We examined specimens at LOJA, QCA, QCNE and UTPL; acronyms follow Thiers (2024 [continually updated]). We also reviewed high-resolution images of type material (Tropicos database, <https://www.tropicos.org/> and the JSTOR Global Plants website, <http://plants.jstor.org>).

TABLE 1. Distribution of *Magnolia* species in Ecuador and their conservation status, as classified by the International Union for Conservation of Nature (IUCN). In addition, the table lists species present in Colombia (COL) and Peru (PER). CAR= Carchi, COT= Cotopaxi, EOR= El Oro, ESM= Esmeraldas, IMB= Imbabura, MOR= Morona-Santiago, NAP= Napo, ORE= Orellana, PAS= Pastaza, PIC= Pichincha, SUC= Sucumbios, TUN= Tungurahua, ZAM= Zamora-Chinchi, END= Endemic, SPL= Splendentes, TAL= *Talauma*

	COAST				ANDES				AMAZONIA											
	ESM	STD	ORO	CAR	IMB	PIC	COT	TUN	SUC	ORE	NAP	PAS	MOR	ZAM	COL	PER	END	IUCN	SPL	TAL
<i>M. arroyoana</i>														X			X	CR		X
<i>M. bankardiorum</i>														X		X		VU	X	
<i>M. buenaventurensis</i>			X														X	CR		X
<i>M. canandeana</i>	X																X	CR		X
<i>M. chiguila</i>		X			X												X	CR		X
<i>M. dixonii</i>	X																X	CR		X
<i>M. equatorialis</i>									X	X		X				X		LC		X
<i>M. jaenensis</i>														X		X		EN	X	
<i>M. kichuana</i>											X	X	X	X			X	EN		X
<i>M. llanganatensis</i>								X									X	EN		X
<i>M. lozanoii</i>													X	X			X	CR	X	
<i>M. mashpi</i>																	X	LC		X
<i>M. mercedesiarum</i>									X		X						X	EN		X
<i>M. mindoensis</i>		X			X	X	X								X			VU		X
<i>M. napoensis</i>											X	X	X			X		EN		X
<i>M. neillii</i>															X			EN		X
<i>M. palandana</i>														X				EN		X
<i>M. pastazaensis</i>											X	X					X	EN		X
<i>M. rimachii</i>										X		X				X		LC		X
<i>M. shuarorum</i>													X				X	EN	X	
<i>M. striatifolia</i>	X														X			EN		X
<i>M. tapichalacaensis</i>														X			X	CR	X	
<i>M. vargasiana</i>								X					X				X	VU		X
<i>M. yantzazana</i>														X			X	EN	X	
<i>M. zamorana</i>													X	X			X	DD		X

Taxonomic treatment

Magnolia tapichalacaensis Á.J.Pérez & E.Rea, *sp. nov.* (Figs 1–3)

Type:—ECUADOR. Zamora Chinchipe: Cantón Palanda, Parroquia Valladolid, Reserva Tapichalaca, sector Quebrada Honda-Palmeras, bosque montano sobre suelo con arenisca, 2200–2500 m, 12 Sep 2024, *Pérez, Hidalgo & Ramón 12198* (holotype: QCA-254427 (fl in alcohol, fl bud, young fr); isotypes G-G01094193 (fl bud), LOJA (fl bud), QCNE (fl bud), UTPL (fl bud)).

Magnolia tapichalacaensis is like *Magnolia bankardiorum* Dillon & Sánchez Vega (2009: 7) and *Magnolia lozanoi* Vázquez & Castro-Arce in Vázquez-García *et al.* (2012: 114), but differs from these in several morphological features (Table 2).

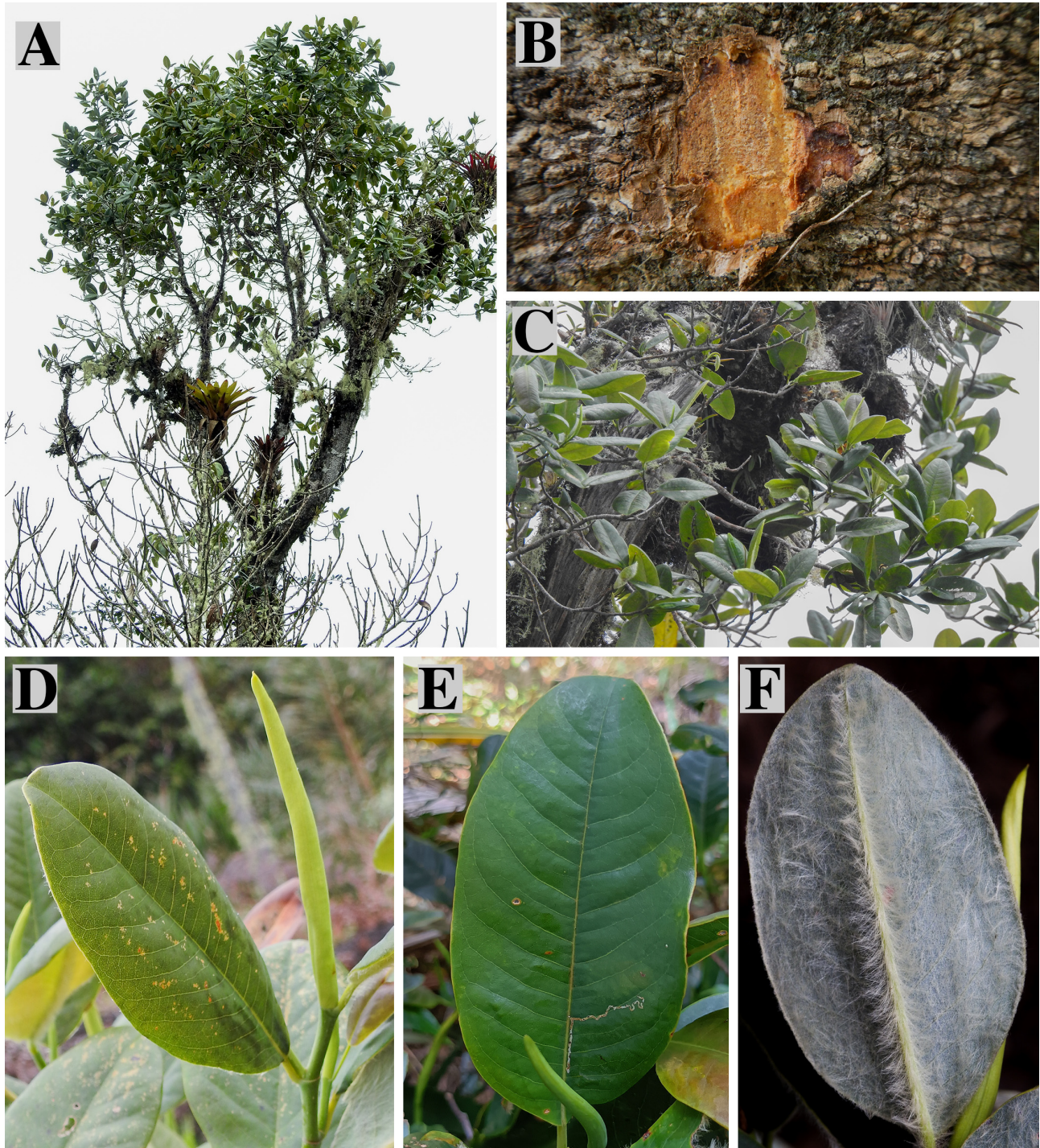


FIGURE 1. *Magnolia tapichalacaensis*. A. Habit. B. Bark. C. Branches. D. Young branch showing the stipule and the annular stipular scar. E. Leaf and lateral veins. F. Underside of leaf showing the tomentose indumentum. A–D from *Pérez et al. 12679*; E from *Pérez et al. 12183*; F from *Pérez et al. 12684*. Photographs by Álvaro J. Pérez.

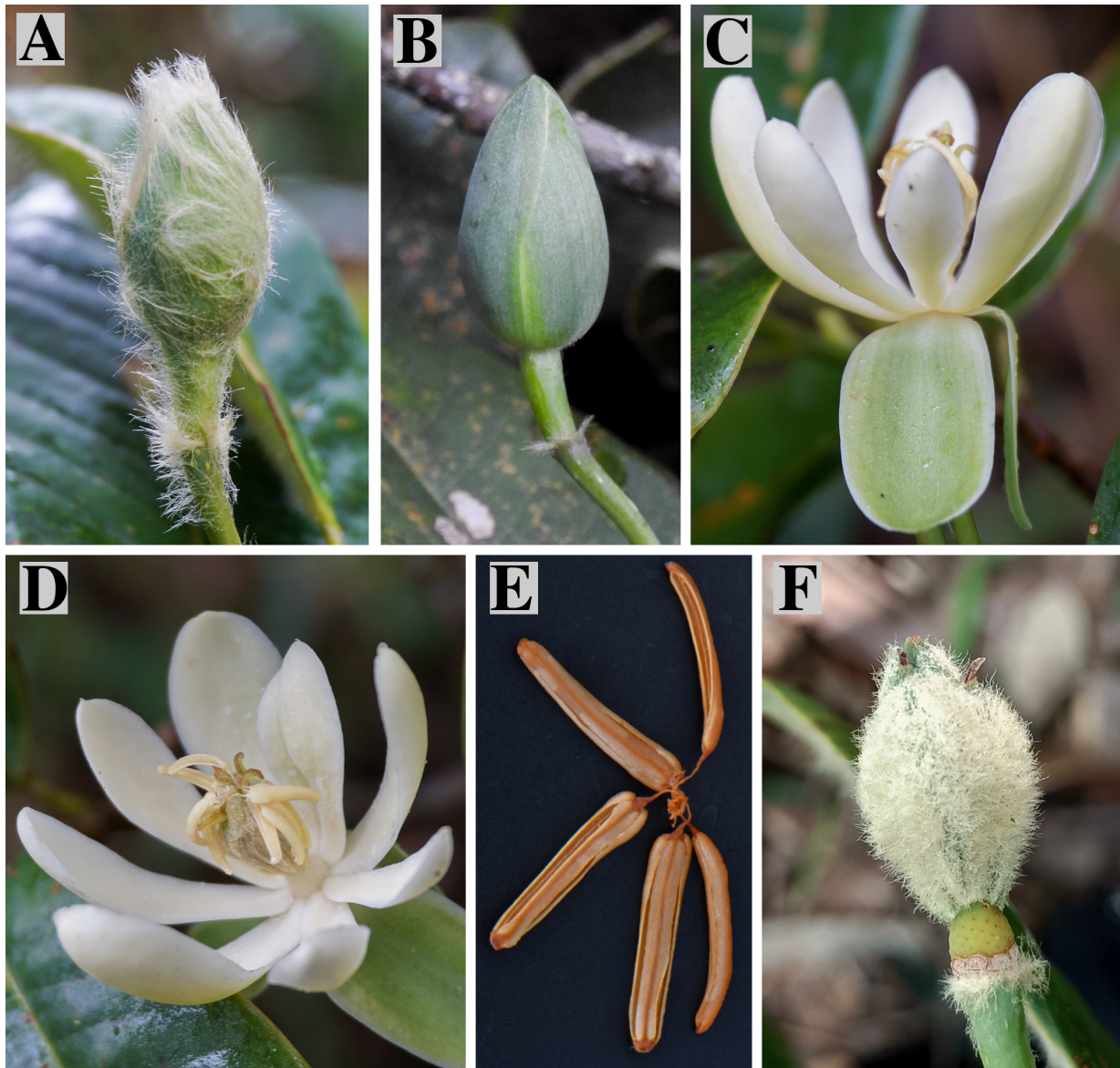


FIGURE 2. *Magnolia tapichalacaensis*. A. Hypsophyll. B. Flower bud without hypsophyll. C. Flower lateral view. D. Flower in male phase. E. Stamens with connectives. F. Immature fruit. A, C–E from Jaramillo & Mendoza 3098; B from Pérez *et al.* 12684; F from Pérez *et al.* 12198. Photographs by Nelson Jaramillo (A, C–E) and Álvaro J. Pérez (B, F).

Trees 15–25 m tall; 20–45 cm dbh. Outer bark rugose with short longitudinal fissures, brown with grey spots; inner bark granulate, yellowish brown, fragrant. Twig internodes 3.5–7.1 × 0.3–0.5 cm in juveniles, 0.8–2.5 × 0.3–0.5 cm in adults, with oblong lenticels. Petiole without stipular scar, terete to subterete, 1.1–1.9 × 0.12–0.2 cm in juveniles, 0.6–1.6 × 0.15–0.2 cm in adults, glabrous in juveniles, glabrescent to glabrous in adults, and sometimes with a bunch of trichomes in the petiole axil and along the annular scar on the branch. Leaves elliptic, 15.3–21.1 × 6.9–10.0 cm, pale green on both sides, glabrous to tomentose only along the midrib in juveniles, 5.4–13.6 × 2.5–6.4 cm, green above, pale green below, abaxially tomentose in adults, apex acute to obtuse, base cuneate to obtuse, margin entire, secondary veins 10–20 on each side of the midrib, midrib canaliculate above, raised beneath, reticulate tertiary venation; stipules 3.5–10 cm long in juveniles, glabrous, 2–7 cm long in adults, glabrous to villous. Flowers 5.6–7.5 cm in diam., terminal, solitary, fragrant; hypsophylls 1, abaxially tomentose, adaxially glabrous, embracing, 2.6–3.0 × 1.6–1.4 cm, broadly ellipsoid, pale green; flower buds ellipsoid; peduncle 1.5–3.5 cm long, glabrescent; sepals 3, pale green, oblong to obovate, 3.1–3.7 × 1.4–1.8 cm, abaxially villous to pilose, adaxially glabrous, base truncate, apex rounded; petals 9–10, creamy white, navicular, oblanceolate, the three outer ones 3.7–4.2 × 1.5–2.0 cm, concave in the upper third, the inner ones 3.2–3.9 × 0.8–1.5 cm, gradually narrower basally; stamens 54–63, 1.0–1.3 × 0.1–0.2 cm, the connective 0.5 cm long, brittle and entangled; gynoecium ellipsoid, 1.4–1.7 × 0.6–1.0 cm, densely tomentose, stigma 0.4 cm long, pale green, deciduous, glabrous; carpels 4–5. Fruit immature, ellipsoid, densely tomentose; seeds not seen.

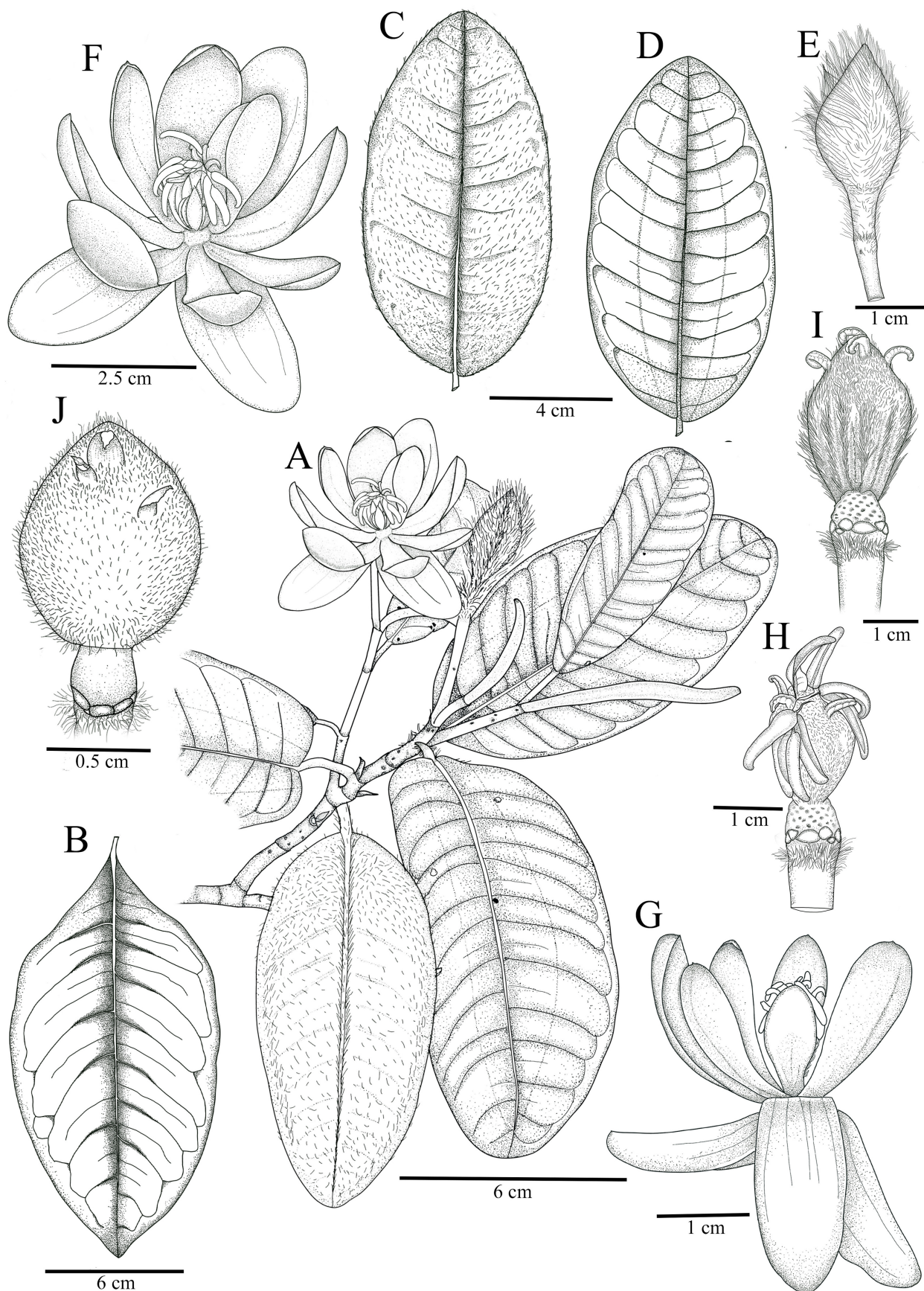


FIGURE 3. *Magnolia tapichalacaensis*. A. Fertile branch. B. Leaf from the adaxial side of a juvenile individual. C. Mature leaf from adaxial side. D. Young leaf from adaxial side and venation. E. Flower bud covered by a tomentose hypsophyll. F. Flower in male phase. G. Flower lateral view. H. Gynoecium with attached stamens. I. Gynoecium with persistent stigmas. J. Immature fruit. Illustration by Abigail Yela.

Etymology:—Named after the type locality, a ca. 5700-ha reserve owned and managed by the Jocotoco Foundation.

Distribution, habitat and ecology:—Known thus far only from the type locality, a montane forest remnant at Quebrada Honda, between 2200–2600 m, in Zamora Chinchipe Province (Fig. 4). According to the Ministerio del Ambiente del Ecuador 2013, this area is montane evergreen forest of the southeastern Andean Cordillera (BsMn02; Fig. 5). Field observations indicate that *M. tapichalacaensis* co-occurs with the following tree species: *Handroanthus* cf. *chrysanthus* (Bignoniaceae), *Ceroxylon echinulatum*, *C. amazonicum* and *Bactris* sp. (all Arecaceae), *Inga rubella* (Fabaceae) and *Byrsonima homeieri* (Malpighiaceae). The adjacent Parque Nacional Podocarpus is close to the type locality (5 km by air). As such, it seems likely that the new species described here may also occur there. Additionally, some recently described species from northern Peru (e.g., *Inga rubella* and *Agouticarpa spinosa*) have been recorded in Quebrada Honda during the explorations described here, indicating that *M. tapichalacaensis* may also occur in northern Peru (Amazonas and Cajamarca Departments).

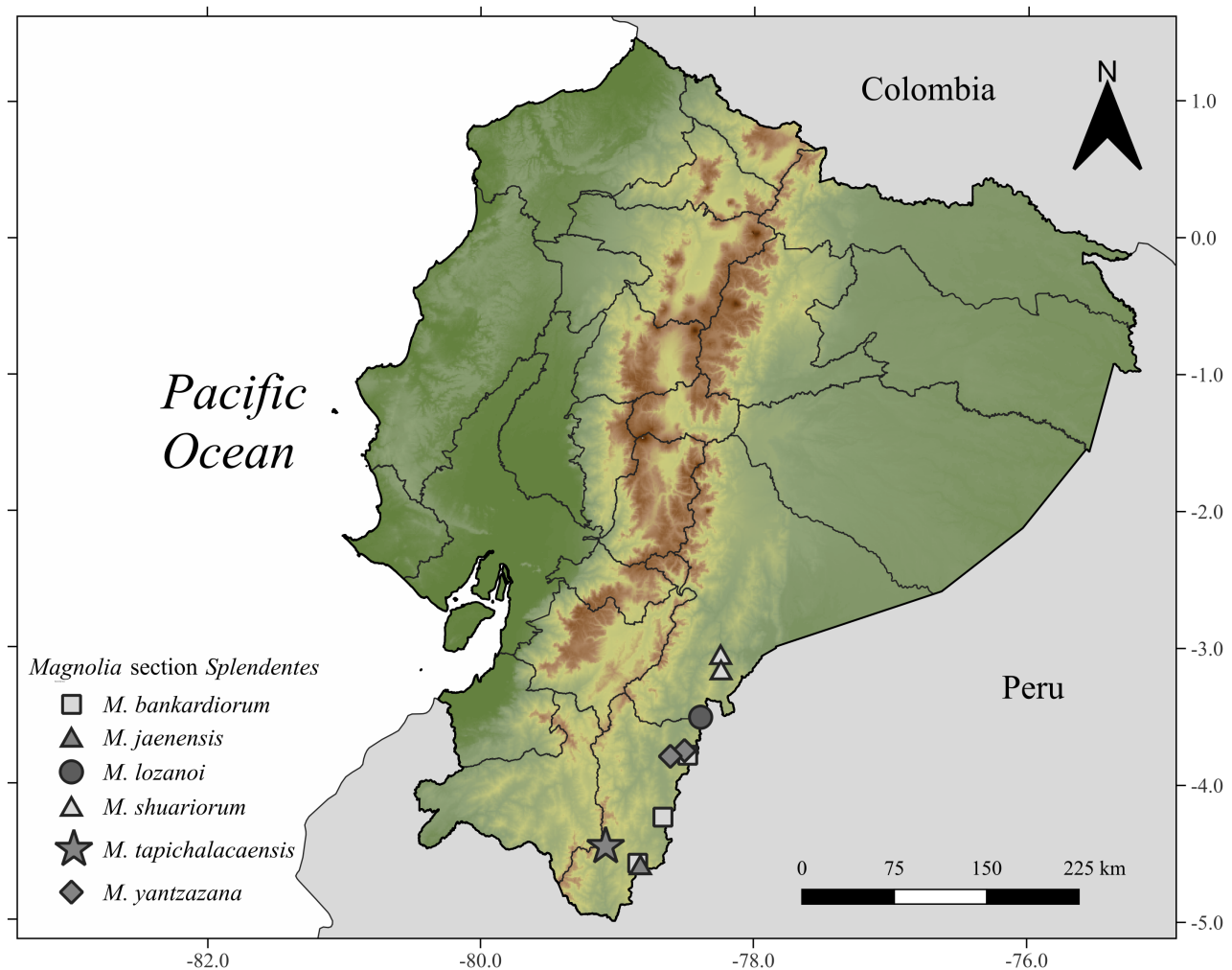


FIGURE 4. The distribution of *Magnolia tapichalacaensis* and the other species of *M. sect. Splendentes* in Ecuador.

Phenology:—Flowering and fruiting throughout the year.

Conservation status:—Known only from a single population of eight adult individuals and ten juveniles in the forest remnants at Quebrada Honda, covering an area of less than 4 km². Given the narrow distribution of the species, the constant threats to its habitat (e.g., cattle pasture expansion) and limited private conservation efforts, the species should be considered critically endangered (CR B2ab(iii)) (IUCN 2024). *In situ* and *ex-situ* conservation and restoration programs are urgently needed.

Additional specimens examined:—ECUADOR. Zamora Chinchipe: Cantón Palanda, Parroquia Valladolid, Reserva Tapichalaca, Fundación Jocotoco, sector Quebrada Honda-Las Palmeras, 2200–2500 m, 11 Sep 2024 (sterile), Pérez et al. 12182 (LOJA, QCA); ibid., 11 Sep 2024 (sterile), Pérez et al. 12183 (LOJA, QCA, QCNE, UTPL); ibid., 12 Mar 2025 (fl bud), Pérez et al. 12679 (QCA, QCNE); ibid., 12 Mar 2025 (fl bud), Pérez et al. 12684 (LOJA, QCA,

QCNE, UTPL); *ibid.*, 27 Oct 2024 (fl, fl bud), *Jaramillo & Mendoza 3098* (GUAY (fl bud), LOJA (fl in alcohol), QCA (fl in alcohol), QCNE (fl in alcohol)).

Notes:—*Magnolia tapichalacaensis* belongs to *M.* sect. *Splendentes*, which is characterised by species with stipules free from the petiole and a long connective appendage embedded in the gynoecium (Figlar & Nooteboom 2004, Wang *et al.* 2020). Although *M. tapichalacaensis* resembles *M. bankardiorum* and *M. lozanoi*, it can be easily differentiated from them by vegetative features, especially the long white-greyish tomentose trichomes along the underside of leaves and hypsophyll (vs. glabrous in *M. bankardiorum* and shorter pubescence in *M. lozanoi*). Differences in reproductive features are also present (Table 2).

TABLE 2. Differences between *Magnolia tapichalacaensis* and morphologically similar species.

	<i>M. tapichalacaensis</i>	<i>M. bankardiorum</i>	<i>M. lozanoi</i>
Tree (m, dbh)	Tree 15–25 m, 20–45 cm dbh	Tree up to 15 m, 30 cm dbh	Tree 3–12 m, up to 12 cm dbh
Leaf shape	Elliptic	Elliptic	Elliptic to obovate
Leaf pubescence	Tomentose beneath	Glabrous	Pubescent beneath
Secondary veins	10–20	11–16	15–18
Stipule (cm)	2–7	0.6–0.7	3–7
Stipule pubescence	Glabrous to villous	Glabrous	Pubescent
Flower diam (cm)	5.6–7.5	8.0–9.0 cm	5.0–6.0
Hypsophylls	1	2	3
Sepal pubescence	Abaxially villous to pilose, adaxially glabrous	Glabrous	Glabrous
Petals	9–10	7–8	6
Stamens	54–63	30–48	50–72
Gynoecium pubescence	Densely tomentose	Glabrous	Densely tomentose
Carpels	4–5	13–15	2–8
Fruit	Ellipsoid	Ellipsoid	Globose
Distribution	Southeastern Andean foothills	Cordillera del Cóndor	Cordillera del Cóndor



FIGURE 5. A. Habitat of *Magnolia tapichalacaensis* in the cloud forest remnants at the Quebrada Honda-Palmeras area, Tapichalaca Reserve, Jocotoco Foundation. B. Sandstone soil found along the forest remnants. Photographs by Álvaro J. Pérez.

In Ecuador, although all *Magnolia* species from *M. sect. Splendentes* are distributed in the south-eastern provinces of Morona Santiago and Zamora Chinchipe along the Cordillera del Cóndor (Pérez *et al.* 2020; Table 1); *M. tapichalacaensis* is found in the eastern Andean foothills of the Cerro Tapichalaca Mountain range. Furthermore, it is worth noting that, based on field observations, the habitat where this new species occurs also shares similar species and soil types with the Cordillera del Cóndor (Fig. 5B). Although there are relatively few genetic studies on the diversity, evolution, and biogeography of Neotropical Magnoliaceae (e.g., Guzmán-Díaz *et al.* 2022, 2025, Veltjen *et al.* 2022, Aldaba-Núñez *et al.* 2024), studies suggest that it is imperative to expand species sampling to disentangle their phylogenetic relationships and resolve infrageneric classification, which has been challenging. Thus, further exploration and sampling in Quebrada Honda–Palmeras are necessary to not only explore the evolutionary and ecological relationships associated with *Magnolia* diversity but also to underscore the importance of future conservation and restoration actions. Currently, the Jocotoco Foundation is monitoring seed production to initiate a propagation program while also implementing *in-situ* and *ex-situ* conservation actions.

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