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Magnolia yuuklava (Magnoliaceae), a new species from the Sierra Mixe, Oaxaca, Mexico

Magnolia yuuklava (Magnoliaceae), una nueva especie de la Sierra Mixe, Oaxaca, México

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Abstract:

Background and Aims: The genus *Magnolia* (Magnoliaceae) contains about 400 species worldwide, of which 36 occur in Mexico, most of which are threatened by habitat loss. The recent description of many new species from the Neotropics with little reference to morphologically and geographically related species has hampered the delimitation and conservation of endangered species. Although the discovery of additional new species in this genus in unexplored regions is expected, it is important to adequately describe and compare them to reduce confusion. This work aims to describe a new species for the genus, discovered during an extensive exploration in the Sierra Norte of Oaxaca, Mexico.

Methods: Fieldwork was conducted in the Sierra Mixe, Oaxaca, to define the distribution area of the new species. Individuals from seven populations were recorded and collected. The material was compared with two morphologically and geographically close species belonging to *Magnolia* sect. *Magnolia*. Its conservation status was determined according to IUCN Red List criteria.

Key results: *Magnolia yuuklava* is described as a new species of *Magnolia* sect. *Magnolia*, and is compared with *M. schiedeana* and *M. oaxacensis*. Due to its very restricted distribution and several threats, it must be considered Critically Endangered (CR).

Conclusions: The addition of this species increases the number of *Magnolia* species in Mexico to 37. *Magnolia yuuklava* is morphologically similar to *M. schiedeana* and *M. oaxacensis*, differing primarily in leaf shape, floral diameter, fruit size and seed length. Due to its restricted distribution and threatened status, an urgent conservation action plan is required.

Key words: ayuuk, endangered species, morphology, Sierra Norte de Oaxaca.

Resumen:

Antecedentes y Objetivos: El género *Magnolia* (Magnoliaceae) tiene alrededor de 400 especies en el mundo, de las cuales 36 ocurren en México, la mayoría de ellas amenazadas por la pérdida de su hábitat. La reciente descripción de muchas especies nuevas en el Neotrópico con poca referencia a especies morfológica y geográficamente cercanas ha dificultado la delimitación y conservación de especies en peligro. Aunque se espera el descubrimiento de nuevas especies adicionales de este género en regiones aún no exploradas, es importante describir y compararlas adecuadamente para ir disminuyendo la confusión. Este trabajo tiene como objetivo describir una nueva especie para el género, descubierta durante una exploración extensa en la Sierra Norte de Oaxaca, México.

Métodos: Se realizó trabajo de campo en la Sierra Mixe, Oaxaca, para definir el área de distribución de la nueva especie. Se registraron y colectaron individuos de siete poblaciones. Se comparó el material con dos especies morfológica y geográficamente cercanas y pertenecientes a la sección *Magnolia*. Su estado de conservación se determinó según los criterios de la Lista Roja de la UICN.

Resultados clave: Se describe a *Magnolia yuuklava* como una nueva especie de *Magnolia* sect. *Magnolia*, y se compara con *M. schiedeana* y *M. oaxacensis*. Debido a su distribución muy restringida y varias amenazas se debe de considerar como Críticamente Amenazada (CR).

Conclusiones: La adición de esta especie incrementó el número de especies de *Magnolia* en México a 37. *Magnolia yuuklava* se parece morfológicamente a *M. schiedeana* y *M. oaxacensis*, se diferencia principalmente en la forma de las hojas, diámetro floral, tamaño del fruto y longitud de las semillas. Debido a su distribución restringida y estado de amenaza, se requiere un plan de acción urgente para su conservación.

Palabras clave: ayuuk, especies amenazadas, morfología, Sierra Norte de Oaxaca.

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Introduction

The genus *Magnolia* L. contains approximately 400 species, with disjunct distribution in America and Asia (Aldaba Núñez, 2025). They are trees and shrubs recognized for their large, showy, and aromatic flowers (Fan et al., 2020). Additionally, their ethnobotanical importance is based on the use of their flowers for symptoms related to heart problems and the use of their wood for construction and furniture (Vázquez-García et al., 2015; Fan et al., 2020; Aldaba Núñez, 2025).

Approximately 50% of the species have been reported in the Americas, with Mexico being home to 36 (Aldaba Núñez, 2025; Aldaba Núñez et al., 2026). In the Neotropical region, four *Magnolia* sections are present: *Magnolia* sect. *Cubenses* (Imkhan.) F.A.Aldaba, E.Martínez & Sainain, *Magnolia* sect. *Talauma* (Juss.) Baill., *Magnolia* sect. *Macrophylla* Figlar & Noot. (Figlar and Nootboom, 2004) and *Magnolia* sect. *Magnolia* (Aldaba Núñez, 2025; Aldaba Núñez et al., 2026).

The section *Magnolia* has 44 species, of which 17 have been reported from Mexico (Aldaba Núñez et al., 2026; Ordorica-Velarde et al., 2026). This section is morphologically characterized by evergreen, elliptical or lanceolate leaves less than 20 cm long, with a cuneate base, follicles with longitudinal dehiscence, petioles with a cymbiform scar at the base, and usually straight or curved stylar branches (Aldaba Núñez, 2025). The species belonging to this section mainly occur in temperate forests and tropical cloud forests (Aldaba Núñez et al., 2026).

Approximately two thirds of the 178 Neotropical *Magnolia* species are threatened, because of habitat destruction and fragmentation, while about 10% of them are Data Deficient because of taxonomic issues and/or unknown distribution areas (IUCN, 2025). Inadequate or insufficient comparison with morphologically and geographically close species in the descriptions of new taxa, in addition to identification keys with altered characters in specific cases, has resulted in complicated species delimitations in Neotropical species (Aldaba Núñez, 2020; own observations). This has a direct negative impact on the organization of conservation actions, specifically in regions with several species of the same section. In contrast,

in previously unexplored regions new *Magnolias* can be found, both new records and new species. The objective of the present study is to formally describe a *Magnolia* species new to science that has been discovered during exploration in the Sierra Mixe in northern Oaxaca, Mexico. The species is illustrated and compared with morphologically and geographically close species and its conservation status is assessed.

Materials and Methods

The Sierra Norte of Oaxaca includes the Sierra Juárez and the Sierra Mixe, characterized by metamorphic rocks, as well as La Chinantla and the Sierra Mazateca, characterized by limestone rocks (Ferrusquia-Villafranca, 1993; García-Mendoza, 2004). It is home to a high level of biodiversity, with distinct ecosystems that respond to its elevational variation (García-Mendoza, 2004). The Sierra Norte of Oaxaca is part of a Priority Terrestrial Region RTP-130 “Sierras del Norte de Oaxaca-Mixe” established by the Comisión Nacional para el Conocimiento y Uso de la Biodiversidad (Arriaga et al., 2000).

The plant diversity in the Sierra Mixe has been little explored up to now. The 19th century botanists Frederick Michael Liebmann and Henri Guillaume Galeotti have collected in the area (E. Martínez Salas, comm. pers.). Between 1985 and 1995, José Rivera Reyes and Gary Martin made approximately 4000 plant collections, according to the labels all located in Totontepec Villa de Morelos, of which approximately 2200 have been deposited in the National Herbarium of Mexico (MEXU) and 800 in the herbarium of the Missouri Botanical Garden (MO) (E. Martínez Salas, comm. pers.); herbarium acronyms follow Thiers (2025, continuously updated).

This new *Magnolia* species was discovered during a preliminary exploration of the forests of the Sierra Mixe to characterize the habitat of the Central American tapir (Bottello et al., 2014). In February-March 2025, we pretended to explore the whole area to define its distribution, but only obtained permission to explore and collect in the Areas Voluntarily Designated for Conservation (ADVC), owned by the community of Santiago Tepitongo, municipality Totontepec Villa de Morelos, in the upper portion of Sierra Mixe (Fig. 1).



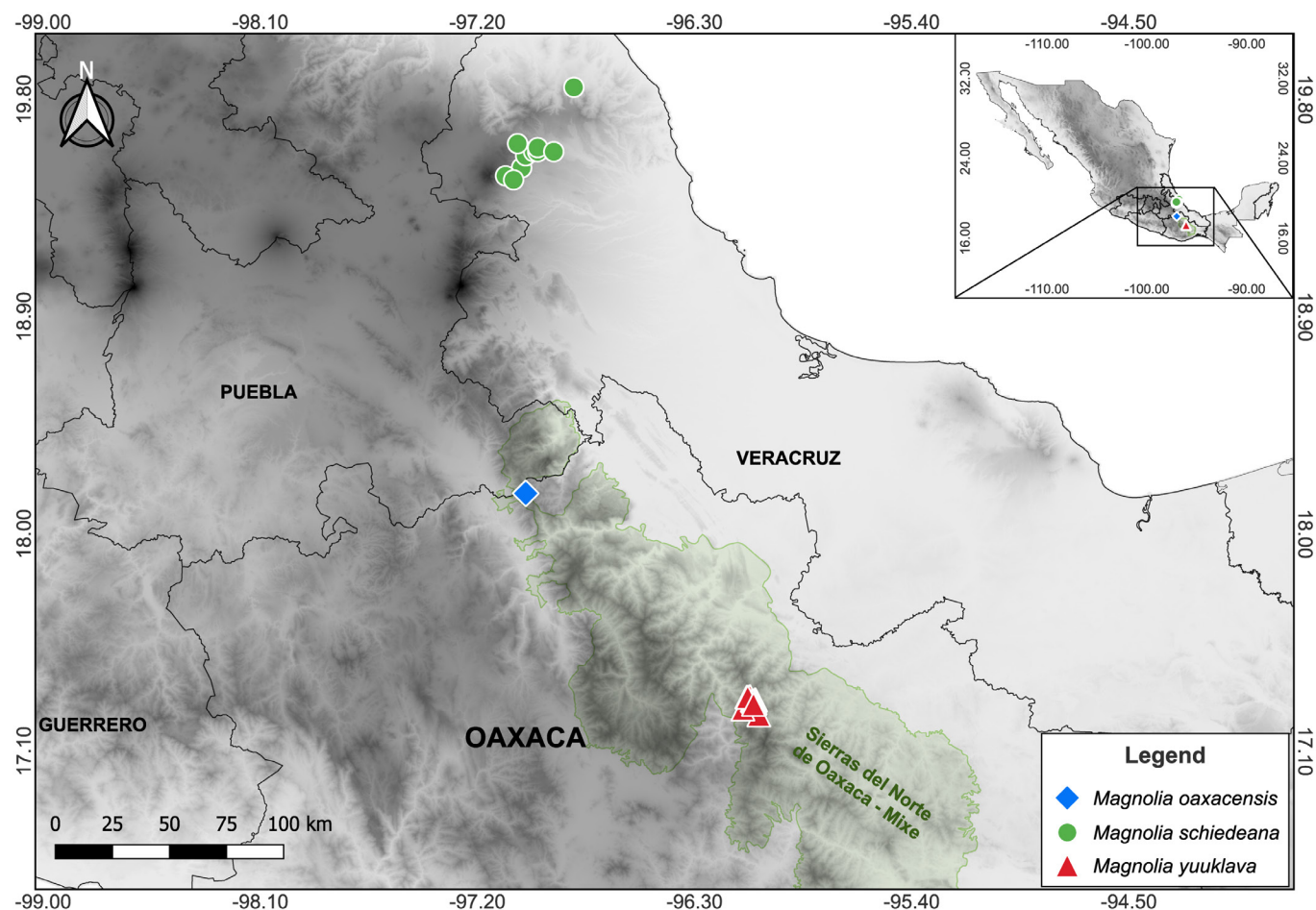


Figure 1: Distribution map of close species of *Magnolia yuuklava* Vicuña, E.Martínez & Samain, sp. nov. The green shaded area marks the region known as Sierras del Norte de Oaxaca-Mixe, established by the Comisión Nacional para el Conocimiento y Uso de la Biodiversidad (Arriaga et al., 2000).

A total of seven populations were identified, with more than 30 individuals in each population. Only one population had six individuals, resulting in a total of 203 juvenile trees and 22 adults identified. One to three specimens were collected from each population, generally specimens with flowers, flower buds, fruits, and seeds, which will be deposited in the herbaria EBUM, IEB, K, MEXU, MO and XAL.

In each population, data on phenology, height and diameter at breast height were recorded for all adults and juveniles. Data were also collected to define conservation status, including habitat status, population size, threats,

and community use when climate and topographic conditions allowed to do so. Geographic coordinates are not shared in this work, as it concerns a rare and threatened species, but they are available for scientific studies upon request to the corresponding authors.

The new species was compared with *Magnolia* specimens from the National Herbarium of Mexico (MEXU) and the herbarium XAL of the Instituto de Ecología, A.C. in Xalapa, Veracruz, Mexico. A complete morphological description was prepared following the general characters mentioned for the section *Magnolia* (Aldaba Nuñez, 2025; Aldaba Nuñez et al., 2026). This description was based



on all specimens collected, as well as comparisons with geographically and morphologically close species such as *Magnolia schiedeana* Schltdl. and *Magnolia oaxacensis* A.Vázquez from the section *Magnolia* (Vázquez-García, 1994; Vázquez-García et al., 2012). The botanical terms used were according to Moreno (1984) and the classification of the vegetation type of the new species' habitat was determined according to Miranda (1947) and Miranda and Hernández X. (1963).

The conservation status of the new species was defined based on the IUCN Red List criteria (IUCN, 2024) and the GeoCAT geospatial tool (Geospatial Conservation Assessment Tool; Bachman et al., 2011), using the data obtained in the field.

Results

Taxonomy

Magnolia yuuklava Vicuña, E.Martínez & Samain, sp. nov.
Figs. 2, 3.

TYPE: MEXICO. Oaxaca, municipio Totontepec Villa de Morelos, 2 km desde la Agencia Municipal Santiago Tepitongo, 2062 m, 02.III.2025, W. W. Vicuña et al. 8 (holotype: MEXU!, isotypes: EBUM!, IEB!, K!, MO!, XAL!).

Magnolia yuuklava is morphologically similar to *M. schiedeana* in ovate leaf shape and absent polyfollicle pubescence, but differs in leaf texture (coriaceous vs. chartaceous), seed length (6-11 vs. 5-6 mm) and fruit shape (ovoid vs. elongated). It is similar to *M. oaxacensis* because of the ovoid fruit shape, but differs in seed length (6-11 vs. 1 mm) and polyfollicle pubescence (absent vs. yellow pubescent).

Evergreen trees, 5-40 m tall, diameter at breast height maximum 50 cm; light brown or grayish-brown bark with reticulate fissures; terminal branches cylindrical, light to dark green, 0.5-0.7 cm diameter, smooth with lenticels; internodes cylindrical, 0.8-1.9 cm long, smooth with lenticels; terminal stipules buds 25-75 × 3.5-7 mm, glabrous to pubescent; stipules adnate to the petiole, cone-shaped,

green, brown to black when dry, glabrous, deciduous; petioles cylindrical, 1.5-3.4 cm long, glabrous, pulvinulate, grooved with prominent edges on the upper surface; leaves simple, blades ovate to lanceolate, 5.1-28 cm long, 2-10.1 cm wide, coriaceous, lustrous green, glabrous, base acute or obtuse, apex acute or acuminate, margin conspicuous evolute; main vein prominent and sometimes reddish at the base of the lower surface; secondary venation brochidodromous, vein pairs 10-12, glabrous, tertiary venation reticulate; flowers solitary, terminal, aromatic; flower bud ovoid, dark green, 1-3.5 cm long, 0.2-0.4 cm wide, glabrous, floral diameter 5.4-7 cm; bracts 2, 4.5-4.9 cm long, 3.8-4.5 cm wide, cream, pubescent, deciduous; whorls of tepals, outer whorl with 3 sepal-like tepals, lanceolate, light to dark green, 2.2-3.1 cm long, 1.4-2 cm wide, glabrous; base truncate; apex acute; 2 inner whorls with each 3 petal-like tepals, white or cream-colored and basally white to purple, spatulate, apex acute, base truncate; 3 outer ones larger, 3.2-4 cm long, 1.2-1.7 cm wide; 3 inner ones smaller, 1.9-3.5 cm long, 0.7-1.5 cm wide; stamens laminar, cymbiform, white, 0.9-1.1 cm long, 0.1-0.15 cm wide; base truncate; apex acuminate; thecae 2, introrse, dehiscence longitudinal; gynoecium strobiliform, ovoid, white, 1.2-1.8 cm long, 0.7-0.8 cm wide, 21-28 carpels; cylindrical peduncles, 1.1-2 cm long, 0.3-0.5 cm diameter; scars annular, pubescent; fruits polyfollicles, ovoid, glabrous, brown, 4.1-5.8 cm long, 2.3-3 cm wide; longitudinal dehiscence along the dorsal suture; follicle 1-1.5 cm long; seeds 2 per carpel, obloid, 0.6-1.1 cm long, 0.7-1 cm wide, orange.

Distribution and ecology: the new species is found in the municipalities San Andrés Yaá, Santo Domingo Roayaga and Totontepec Villa de Morelos, state of Oaxaca, southern Mexico. In the latter municipality, it has been observed extensively in Voluntary Designated Conservation Areas (ADVC). The vegetation corresponds to cloud forest ("bosque mesófilo de montaña", according to Miranda (1947), "selva mediana perennifolia" and "selva baja perennifolia", according to Miranda and Hernández X. (1963)), at elevations of 1900-2275 m, and individuals grow primarily in steep areas or on steep slopes.



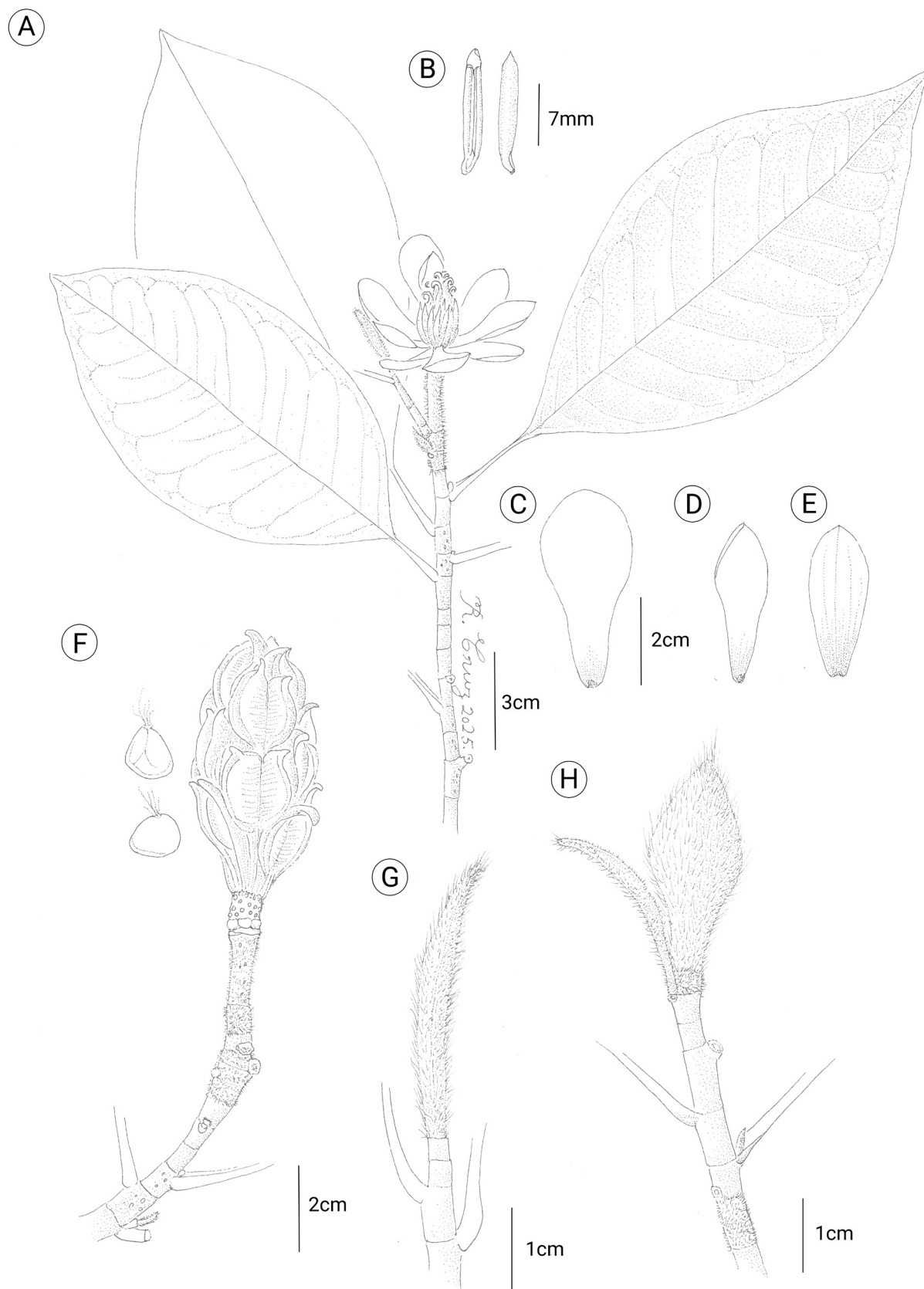


Figure 2: *Magnolia yuuklava* Vicuña, E.Martínez & Samain, sp. nov. A. branch with alternate leaves and terminal flower; B. dorsal view of the anther; C. sepaloid tepal; D. inner petaloid tepal; E. outer petaloid tepal; F. lateral view of the fruit (left) and seeds (right)seed; G. stipules of winter; H. pubescent bract. Illustrated by Ramiro Cruz Durán based on Vicuña et al. 8 (EBUM, IEB, K, MEXU, MO, XAL).

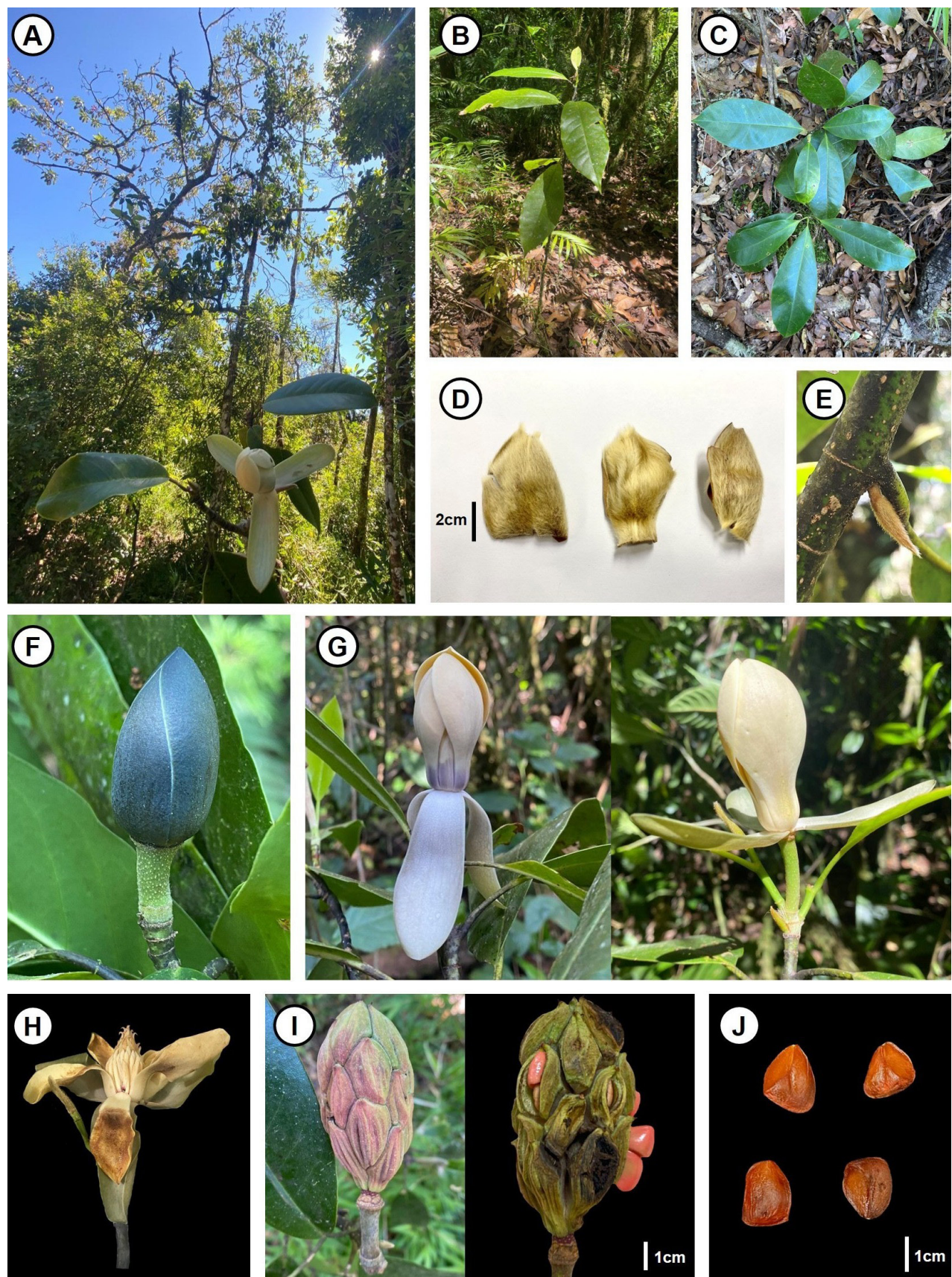


Figure 3: *Magnolia yuuklava* Vicuña, E.Martínez & Samain, sp. nov. A. plant habit and habitat; B. young individual; C. young leaves; D. pubescent bract; E. winter stipules; F. flower bud; G. lateral view of the flowers; H. open flower; I. lateral view of the immature fruit (left) and dry fruit (right); J. dry seeds. Photos by Whinny Wensly Vicuña Zevallos.

Phenology: flowering occurs from March to May, fruiting begins in June and mature fruit in December.

Etymology: the name of the species refers to its name in the Mixe language in the community of Santiago Tepitongo; “yuukla’ava” means mountain sapote (zapote in Spanish).

Uses: the wood of this species is used in construction and for firewood.

Additional material examined: MEXICO. Oaxaca, municipality San Andrés Yaá, 2190 m, 22.IV.2025, *E. Martínez S. M-49120* (MEXU). Municipality Santo Domingo Roayaga, 2049 m, 23.IV.2025, *E. Martínez S. M-49121* (MEXU). Municipality Totontepec Villa de Morelos, Totontepec, 1900 m, 17.IV.1990, *J. Rivera Reyes JR1445* (MEXU); Tsa teek aak, tuk jovi, 8.VI.1991, *J. Rivera Reyes JR2697* (MEXU); Xitsp, too nikxm, 5.VI.1991, *J. Rivera Reyes JR1901* (MEXU); a 3.3 km al WNW de Santiago Tepitongo, 2275 m, 2017, *C. Vázquez Camacho s.n.* (MEXU); Santiago Tepitongo, 7.4 km desde la Agencia Municipal Santiago Tepitongo, 2201 m, 27.II.2025, *W. W. Vicuña et al. 3* (IEB, MEXU, XAL); Tonaguía, 4.3 km desde Tonaguía, 2005 m, 27.II.2025, *W. W. Vicuña et al. 6* (EBUM, IEB); 2 km desde la Agencia Municipal Santiago Tepitongo, 2219 m, 01.III.2025, *W. W. Vicuña et al. 7* (IEB); 2.7 km desde la Agencia Municipal Santiago Tepitongo, 2172 m, 28.II.2025, *W. W. Vicuña et al. 9* (EBUM, IEB, MEXU); 5 km desde Tonaguia, 2018 m, 03.III.2025, *W. W. Vicuña et al. 10* (EBUM, IEB, MEXU, XAL); 2.6 km desde la Agencia Municipal Santiago Tepitongo, 2157 m, 06.III.2025, *W. W. Vicuña et al. 11* (IEB, MEXU); 2.6 km desde la Agencia Municipal Santiago Tepitongo, 2163 m, 03.III.2025, *W. W. Vicuña et al. 12* (EBUM, IEB, MEXU, MO, XAL); 2.3 km hacia Santiago Tepitongo, 2203 m, 07.III.2025, *W. W. Vicuña et al. 13* (EBUM, IEB, MEXU).

Preliminary conservation status: the Extent of Occurrence (EOO) is 35.570 km² and the Area of Occupancy (AOO) is 28 km². The EOO and AOO are likely to increase once further exploration can be carried out, but very likely remaining below the thresholds of Critically Endangered or

Endangered. The main threats to this species are deforestation, drought because of climate change, and fires. It is here categorized as Critically Endangered (CR) according to the criteria B1ab(i,ii,iv) of the IUCN Red List (IUCN, 2024).

Taxonomic notes: *Magnolia yuuklava* belongs to the section *Magnolia* based both on morphological data, such as e.g., longitudinal dehiscence of fruit, and molecular data (unpublished phylogenomic data). Table 1 shows a comparison between the new species and two geographically and morphologically close species.

Specimens examined of *Magnolia schiedeana*: MEXICO. Veracruz, municipality Acajete, 3 Plan de Cedeño, entrada a Plan de Sedeño, 1900 m, 30.IV.1994, *P. Zamora C. and J. López P. 3859* (MEXU, XAL); por el camino de Plan de Sedeño hacia Mesa de La Hierba, 2000 m, 10.II.2009, *D. Jiménez Sevilla DJS955* (MEXU); 1 km de la desviación hacia Mazatepec de la carretera Perote - Xalapa, 1820 m, 19.VII.1975, *M. E. Hernández C. 8* (MEXU); 1 km de la desviación hacia Mazatepec de la carretera Perote - Xalapa, 1820 m, 19.VII.1975, *M. E. Hernández C. 9* (MEXU, XAL); loc. cit., *M. E. Hernández C. 10* (MEXU). Municipality Acatlán, en los bordes del cráter de Acatlán, 1850 m, 23.IV.1978, *M. Cházaro 904* (XAL). Municipality Alto Lucero, Cerro de la Cima, entre La Sombra y Tierra Blanca, 1700 m, 10.IV.1981, *G. Castillo C. and F. Vázquez 1541* (XAL), 1570 (XAL). Municipality Banderilla, en los cerros del pueblo de Banderilla, 1090 m, *J. I. Calzada and C. Horvitz 2248* (XAL); Rancho La Martinica, 5 km al N del pueblo de Banderilla, 1500 m, 4.IV.1978, *J. I. Calzada 4331* (XAL); loc. cit., 6.V.1978, *J. I. Calzada 4390* (MEXU, XAL); W de Banderilla, 1600 m, 5.VI.1971, *J. Dorantes 183* (MEXU, XAL); en las afueras de La Martinica, cerca de la Loma del Colibrí, 1570 m, 18.VII.2022, *C. Gallardo-Hernández et al. 5396* (XAL); Piletas, carretera Perote - Xalapa, 1200 m, 01.V.1975, *M. E. Hernández 1* (MEXU); Piletas cerca de Banderilla, 1600 m, 11.I.1973, *R. Hernández M. and J. Dorantes 1770* (XAL); Área Natural Protegida "La Martinica", 1556 m, 21.V.2018, *R. L. López Álvarez s.n.* (XAL); loc. cit., 1230 m, 01.V.1975, *W. Márquez R. and R. Hernández M. 297* (MEXU, XAL); Rancho La Mesa, 2 km al NW de Banderilla, 1450 m, 22.VII.1981,



H. Narave F. and M. Cházaro B 54 (MEXU, XAL); Rancho La Mesa a 1 km aprox. de Banderilla, 1600 m, 26.V.1990, *I. Pérez G. and L. Mendizabal 340* (XAL); 1 km aproximado de Banderilla, 1600 m, 2.VIII.1990, *I. Pérez G. and L. Mendizabal 374* (MEXU, XAL); between San Salvador and Xalapa, 1800 m, *Schiede and Deppe 296* (P (lectotype)); Rancho La Mesa, 1300 m, 4.VII.1982, *F. Vázquez B. 615* (XAL); Martini-ca, 5 km north of Xalapa, 1400 m, without date, *K. Wilken-ing 50* (XAL); Piletas, 2 km antes de llegar a Banderilla, por la carretera Perote - Xalapa, 1580 m, 10.IV.1976, *M. G. Zola et al. 321* (XAL); 2 km al NO de Banderilla, Rancho La Mesa, 1450 m, 17.VII.1976, *M. G. Zola B. 522* (MEXU, XAL). Municipality Coatepec, Cuesta del Pino, 1800 m, 1.VIII.1985, *R. Arriaga 179* (XAL); entre Cinco Palos y Zapotal, 1800 m, 5.VII.1984, *M. Cházaro and L. Robles 29/3133* (XAL); 1 km al sur de Cinco Palos, 1700 m, 19.II.2016, *M. Cházaro B. and C. Arzaba 10963* (XAL); 500 m al este de Mesa de la Yerba, en un predio particular, 2000 m, 13.VII.2022, *C. Gallardo-Hernández et al. 5388* (XAL); entre Cinco Palos y Zapotales, 1550 m, 01.IV.1983, *H. Narave F. et al. 249* (MEXU, XAL). Municipality Misantla, 2 km adelante de la entrada local, en bajada a Misantla, 1880 m, 18.XI.1967, *A. Gómez-Pompa 1132* (XAL). Municipality Rafael Lucio, Carretera Banderilla - Perote, Rancho Santa Bárbara, 1300 m, 16.VII.1984, *F. Vázquez B. 1855* (XAL). Municipality San Andrés Tlalnahuayocan, without elevation data, 6.V.1997, *P. Zamora C. 3950* (XAL). Municipality Xalapa, estacionamiento del jardín botánico, 1321 m, 28.IX.2018, *F. G. Lorea and L. R. Tlaxcalteco 5752* (XAL); loc. cit., 1321 m, 20.IV.2017, *F. G. Lorea H. and L. R. Tlaxcalteco T. 6540* (XAL). Municipality Xico, poblado de Micoxtla, 2000 m, 15.V.2005, *A. Albalat Botana 12* (MEXU, XAL); Micoxtla, 2121 m, 2.VI.2010, *G. Castillo C. et al. 24952* (XAL); Camino de Herradura de Xico a Corral de Rajas, 1750 m, 7.VIII.1986, *M. Cházaro B. and L. Robles 3839* (XAL); camino del Ingenio El Rosario a Xico, 1950 m, 13.IV.1983, *H. Narave F. 376* (MEXU, XAL); Gorge at Puente Acabaloya, ca. 1 km SE of Xico Viejo along trail between the two, 1600 m, 21.III.1983, *M. Nee and K. Taylor 26294* (XAL). Municipality Yecuatla, Congregación La Paz de Enríquez, Carretera Naolinco - Misantla, 1500 m, 17.VII.1979, *J. I. Calzada 5429* (XAL); 3-4 km adelante de Paz Enríquez, carretera Chiconquiaco - Misantla, 21.VII.1975,

M. E. Hernández 13 (MEXU); along very winding road from Naolinco to Misantla, just above Santa Rita and 3 km by road N of Paz de Enríquez, 1550 m, 2.IV.1983, *M. Nee et al. 26426* (XAL).

Specimens examined of *Magnolia oaxacensis*: MEXICO. Oaxaca, municipality Mazatlán Villa de Flores, San Pedro de los Encinos, 2340 m, 26.XI.2001, *X. Munn-Estrada and F. Mendoza 1678* (MEXU, XAL). Municipality San Lucas Zoquiapan, 2223 m, 05.III.2002, *X. Munn-Estrada et al. 2081* (MEXU). Municipality Teotitlán de Flores Magón, Puerto de la Soledad, Carr. Federal 182, 2335 m, *E. Martínez S. and M. S. Samain 2019-019* (MEXU); Puerto de la Soledad, Carr. Federal 182, 2340 m, *G. Piña and Urlet s.n.* (MEXU).

Discussion

The continuously updated infrageneric classification of the genus *Magnolia* in the Neotropics based on morphological and molecular data (e.g., [Figlar, 2012](#); [Wang et al., 2020](#); [Aldaba Nuñez et al., 2025, 2026](#)) has improved our understanding of the corresponding clades. However, the lack of detailed morphological studies at species level for previously described taxa and the incomplete samples that have been used to describe several new species may complicate the correct identification of taxa, as well as the comparison with other species ([Aldaba Nuñez, 2020](#)), such as is the case here with *Magnolia oaxacensis* and *M. schiedeana*. While the former taxon is known from a brief description based on very few samples in a small area in Oaxaca, the latter seems to be a species complex encompassing several taxa throughout Veracruz (where the historical type locality is located), Hidalgo, Puebla and Querétaro.

We have compared the collections of the new taxon only with specimens of *M. schiedeana* s.s. of the area around Xalapa, Veracruz, given that this is the region where the type collection of this species has been made. *Magnolia schiedeana* as currently recognized has a broad morphological variation and geographic distribution (Hidalgo, Oaxaca, Puebla, Querétaro, Veracruz) and further research is needed to establish whether this concerns one or more taxa. It is noteworthy to mention that the specimens



Table 1: Comparison between geographically and morphologically close species of *Magnolia yuuklava* Vicuña, E.Martínez & Samain, sp. nov. * = Morphological data used of Vázquez-García (1994) and Vázquez-García et al. (2012).

Character	<i>M. oaxacensis</i> A.Vázquez	<i>M. schiedeana</i> Schtdl.	<i>Magnolia yuuklava</i> Vicuña, E.Martínez & Samain
Tree size (m)	4-15	3-20	5-40
Leaf shape	elliptical	elliptical, rarely ovate	ovate to lanceolate
Numbers of veins	7-10	10-14	10-12
Texture	chartaceous	chartaceous	coriaceous
Leaf length (cm)	9.5-19	8-18	5.1-28
Leaf width (cm)	4-9.5	3.5-7.5	2-10.1
Flower diameter (cm)	8*	5.0-10.0	5.4-7
Sepaloid tepal (cm)	3.1-3.8 × 1.7-2	2.2-2.5 × 0.8-1.0	2.2-3.1 × 1.4-2
Petaloid tepal (cm)	3.1-3.7 × (1.5-)2-2.2*	2.2-5.3 × 1.2	3.2-4 × 1.2-1.7
Fruit shape	ovoid	elongated	ovoid
Mature fruit size (cm)	2.0-3.1 × 1.0-1.8	3.2-6.5 × 1.2-2.4	4.1-5.8 × 2.3-3
Number of carpels	10-18*	20-25	21-28
Seed length (mm)	1*	5-6	6-11
Polyfollicle pubescence	yellow pubescent*	absent	absent
Elevation (m a.s.l.)	680-2340	840-2150	1900-2275
Distribution	Sierra Mazateca, Sierra Norte de Oaxaca, Oaxaca	Veracruz	Sierra Mixe, Oaxaca
Habitat	cloud forest, elfin forest, eco- tone between cloud forest and rain forest	cloud forest, Liquidambar forest, oak forest, pine-oak forest	cloud forest
Geology	limestone rocks	igneous rocks	metamorphic rocks

of *Magnolia yuuklava* in the National Herbarium of Mexico (MEXU) had been identified as *M. schiedeana*.

As can be seen from Table 1, *Magnolia yuuklava* can be clearly differentiated from the other two species based on morphological observations. In addition, all three species differ in the geological origin of the area where they occur (metamorphic rocks vs. limestone or igneous rocks), which we have widely observed throughout the Neotropics, although this yet has to be documented and described in further detail.

Magnolia yuuklava is here considered as a Critically Endangered species. Although it is likely that further exploration, when the necessary permissions can be obtained in the future, may lead to the discovery of more populations in other communities of the municipality Totontepec Villa de Morelos and adjacent municipalities with similar

elevations, it is very unlikely that the threshold of 100 km² for the extent of occurrence will be surpassed or that more than one location sensu IUCN Red List can be considered. Despite the relative conservation of its habitat by the Mixe communities, there is a continued decline of the populations and the habitat quality, as a consequence of which an urgent conservation action plan should be proposed to inform an adequate conservation strategy in cooperation with the local communities. Conservation genetic studies are currently underway to assess the species' genetic diversity and support the development of *in situ* conservation actions.

Prior to this study, we considered 11 *Magnolia* species of for the state of Oaxaca, with two species from the section *Macrophylla*, five of subsection *Mexicana* F.A.Aldaba, E.Martínez & Samain of the section *Talauma*



and four of section *Magnolia* (Aldaba Núñez et al., 2026). The findings of the present study increase the number of species recognized in section *Magnolia* in Oaxaca from four to five, bringing the total number of *Magnolia* species recorded in this state to 12. Given that the type material as well as additional collections of several of the recently described species are not available in herbaria, further research is required to be able to present a detailed comparison of all *Magnolias* of Oaxaca.

Author contributions

Project administration: MSS; Conceptualization: EMS, MSS; Data curation: EMS, MSS; Investigation: WWVZ, EMS, MSS; Methodology: EMS, MSS; Funding acquisition: MSS; Resources: EMS, MSS; Writing – original draft: WWVZ, MSS; Writing – review and editing: EMS, MSS; Validation: EMS, MSS.

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Declaration of Artificial Intelligence Use

No AI has been used in any aspect of the research and manuscript.

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