

135 years in the shadows: rediscovery of *Lophophytum weddellii* Hook. f. (Santalales, Balanophoraceae) in Colombia

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Abstract. The rediscovery of *Lophophytum weddellii* Hook. f. (Balanophoraceae) in Colombia is documented 135 years after its last record. Three individuals were found in Segovia, Antioquia, parasitizing *Inga umbellifera* (Vahl) Steud. (Fabaceae), representing the first confirmed host and photographic record for the country. Morphological data, pollen description, and floral visitors are reported. Historical notes on William Purdie's 1845 collections and the biogeographic context of the Nechí Refuge highlight the relevance of this finding for understanding the disjunct distribution of the species between the Magdalena Valley and the Amazon Basin.

Keywords. Belidae, ecoregion, holoparasite, Magdalena Valley, Neotropics

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Introduction

The family Balanophoraceae, which comprises holoparasitic species that have entirely lost their photosynthetic capacity, represents an atypical group among angiosperms. This highly specialized lifestyle is accompanied by a suite of morphological, anatomical, and genetic adaptations that markedly distinguish them from other flowering plants (Hansen 2015; Su et al. 2015). Recent studies have uncovered remarkable insights into their molecular biology, including highly reduced plastomes with an unusually high adenine and thymine content, a marked codon usage bias, and, notably, unique modifications to the genetic code (Sánchez-Puerta 2023; Ceriotti et al. 2025).

In particular, the study of *Lophophytum mirabile* Schott & Endl. 1832) reveals that this species possesses the highest number of horizontally transferred functional genes recorded to date, illuminating evolutionary mechanisms associated with root parasitism (Sánchez et al. 2017). These molecular transformations are accompanied by a parasitic reduction syndrome, expressed in the extreme simplification of vegetative structures, many of which remain concealed within host tissue (Davis and Xi 2015). As a result, these species have adopted a subterranean and cryptic lifestyle, which significantly hinders their detection and subsequent inclusion in botanical collections.

In Colombia, the family Balanophoraceae is represented by six species, among which *Ombrophytum villamariensis* S.Guzm.-Guzm. and *Lophophytum weddellii* Hook. f. (1856:49) are particularly noteworthy, as they are the only representatives of the subfamily Lophophytoideae Harms in the country. In particular, *L. weddellii* was originally described by botanist Joseph Dalton Hooker (1856), based on two specimens collected and sent by William Purdie during his 1845 expedition to the montane forests of the Magdalena Valley, in the department of Norte de Santander, Colombia (Hansen 1980; Olson et al. 2001). A subsequent collection was recorded in 1890 by F. Sander et al. (Hansen 1980). Although recent records have documented the presence of this species in the Peruvian and Brazilian Amazon (Cardoso et al. 2015), no additional specimens of *L. weddellii* have been reported from Colombia since the historical collections by Purdie and Sander et al. (Hansen 1980).

During botanical explorations in Segovia, Antioquia, Colombia, three individuals of *L. weddellii* were collected. This finding represents the first documented occurrence of the species in the country



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in 135 years since its original description. Furthermore, we report the first record of its host plant and floral visitors, as well as the first photographic record of this species in Colombia.

Methods

A field expedition was conducted from 20 to 29 March 2022 in Vereda La Manuela, Segovia municipality, Antioquia, Colombia. During flora sampling in fragmented forest (IDEAM 2010), three individuals of *Lophophytum weddellii* were identified, all associated with the roots of *Inga umbellifera* (Vahl) Steud.

For specimen collection, careful excavation was carried out to locate the host tree's roots, followed by the removal of a root fragment of *Inga umbellifera* along with the haustorium of *L. weddellii* to extract the sample. The collected material was stored in airtight bags to maintain integrity. This procedure enabled documentation of the interaction between the two species and yielded representative samples of both female and male reproductive structures of *Lophophytum weddellii*.

Following field collection, the material was transported to the Herbario Universidad de Caldas FAUC (Index Herbariorum 2019), where measurements and photographs of all fresh structures were taken. Subsequently, specimens were fixed and preserved in 70% ethanol for permanent storage in the herbarium collection. Photographic measurements were conducted using ImageJ (Schneider et al. 2012), with general morphological terminology and colour descriptions following the Kew Plant Glossary (Beentje 2016). Specific terminology for *Lophophytum* morphology was based on Hansen et al. (1980) and Cardoso (2014). In addition, virtual collections and digital images of herbarium specimens from the Missouri Botanical Garden (MO), Universidad Nacional de San Antonio Abad del Cusco (CUZ), Field Museum of Natural History (F), Naturalis Biodiversity Center (U), and Smithsonian Institution (US) were examined.

Pollen grains from the material were recollected, acetolysed, and mounted on microscope slides according to Erdtman (1986). These slides were deposited in the Laboratorio de Palinología del Instituto de Estratigrafía (IIES). The pollen description follows the terminology proposed by Punt et al. (2007), and measurements were performed using ImageJ v. 1.51n. Photographs were taken using a Leica ICC50 HD camera and the Leica Application Suite LAS EZ v. 3.4.0, at the Laboratorio de Botánica de la Universidad de Caldas. The following metrics were calculated for the palynomorphs based on the measurements of at least 10 grains: the mean and standard deviation of the equatorial diameter in equatorial view (E.E.), polar axis in equatorial view (E.P.), and equatorial diameter in polar view (D.E.); to find its shape, the relationship between polar axis in equatorial view and equatorial diameter in equatorial view (E.P./E.E.) was calculated; particular characteristics were described such as colpi, pores, apertures, columellae, among others (Roubik and Moreno 1991; Velásquez and Rangel 1995; Herrera and Urrego 1996; Velásquez 1999; García et al. 2011; Fontes et al. 2019). The distribution map was generated using QGIS v. 3.10.12 (QGIS Development Team 2020).

Results

Lophophytum weddellii Hook. f.

Figures 1–3, 5

New record. COLOMBIA — ANTIOQUIA • Segovia, La Manuela village, plot 8; 07°15'N, 074°33'W; 685 m elev.; 20 Mar. 2022; J.A. Orozco-A & J.A. Sierra-Giraldo 1447 (FAUC 29250, in alcohol+glycerine).

Description. Holoparasitic root herb (Figures 1A, 2A), dioecious, growing on *Inga umbellifera*; 15–17 cm tall; subterranean tuber brown, cylindrical, (80) 107.9 × 49.3 (61.9) mm, covered by dark-purple to brown subpeltate bracts (Figure 1A); petioles 6–7 mm long (Figure 1B2); pelta ovate-triangular to rhombic, 20–25 × 10–15 mm; apex long-acuminate; base acuminate; bracts proximally deciduous, leaving ellipsoid to rectangular warts, 6–12 mm in diameter and 5–6 mm high; runners, volva, and peduncle absent. Unisexual inflorescence, covered by persistent dark-purple to brown subpeltate bracts (Figure 1A); petioles 7.58 mm long (Figure 1B2); pelta ovate-triangular to rhombic, 30–35 × 13–15 mm (decreasing distally); apex-long acuminate, base acuminate (Figure 1B1). Male inflorescence; dimensions and details of spiral arrangement unknown (Figures 1C1, 2B); lateral branches, yellowish, triangular, 6–7 × 7.5–8.0 mm, bearing approximately 15–20 flowers (Figure 1D1, D2). Flower {6–(9–)} 10.0 – 11.0 (–13) mm long; receptacle 4–5 mm in diameter, composed of two irregular, unequal cells (Figure 1D1); filament white to yellowish, 0.5–1.0 mm long; anther yellowish to cream, oblong, basifixed; thecae homomorphic, slightly offset from each other, not inserted at the same

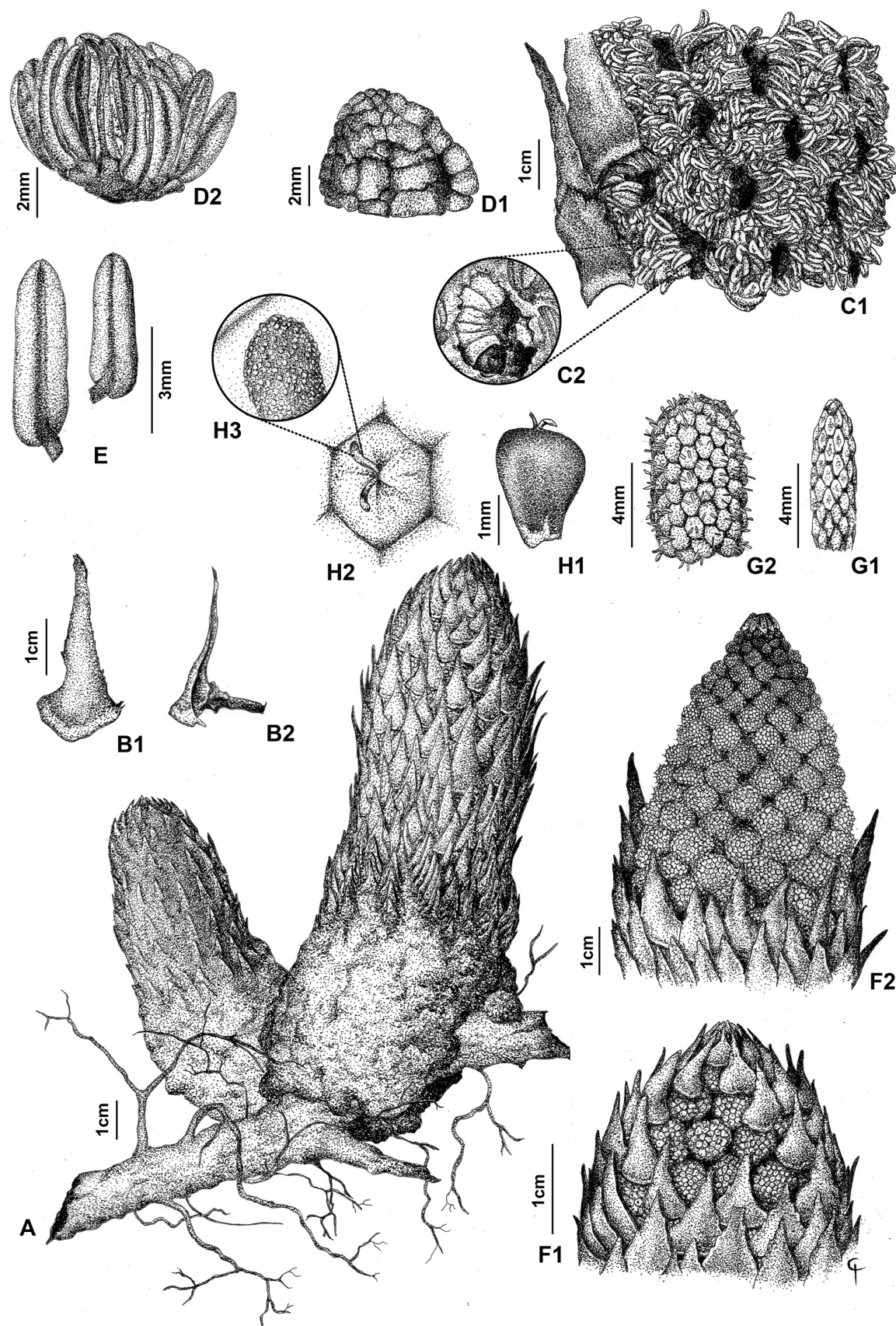


Figure 1. *Lophophytum weddellii* Hook. f. **A.** Plant with host root. **B.** Bracts. **B1.** Frontal view. **B2.** Lateral view. **C.** Male inflorescence. **C1.** Frontal view with portion of bracts removed. **C2.** Coleopteran larva inside the male branch. **D.** Male lateral branch. **D1.** Frontal view with filaments and anthers removed. **D2.** Frontal view with filaments and anthers. **E.** Anthers. **F.** Female inflorescence. **F1.** Frontal view with portion of bracts removed. **F2.** Frontal view with all bracts removed (persistent bracts form part of the tubercle). **G.** Female lateral branch. **G1.** Frontal view with flowers removed. **G2.** Frontal view with flowers. **H.** Female flower. **H1.** Frontal view. **H2.** Top view. **H3.** Stigma close-up (note papillose surface). Drawn by María José Rodríguez.

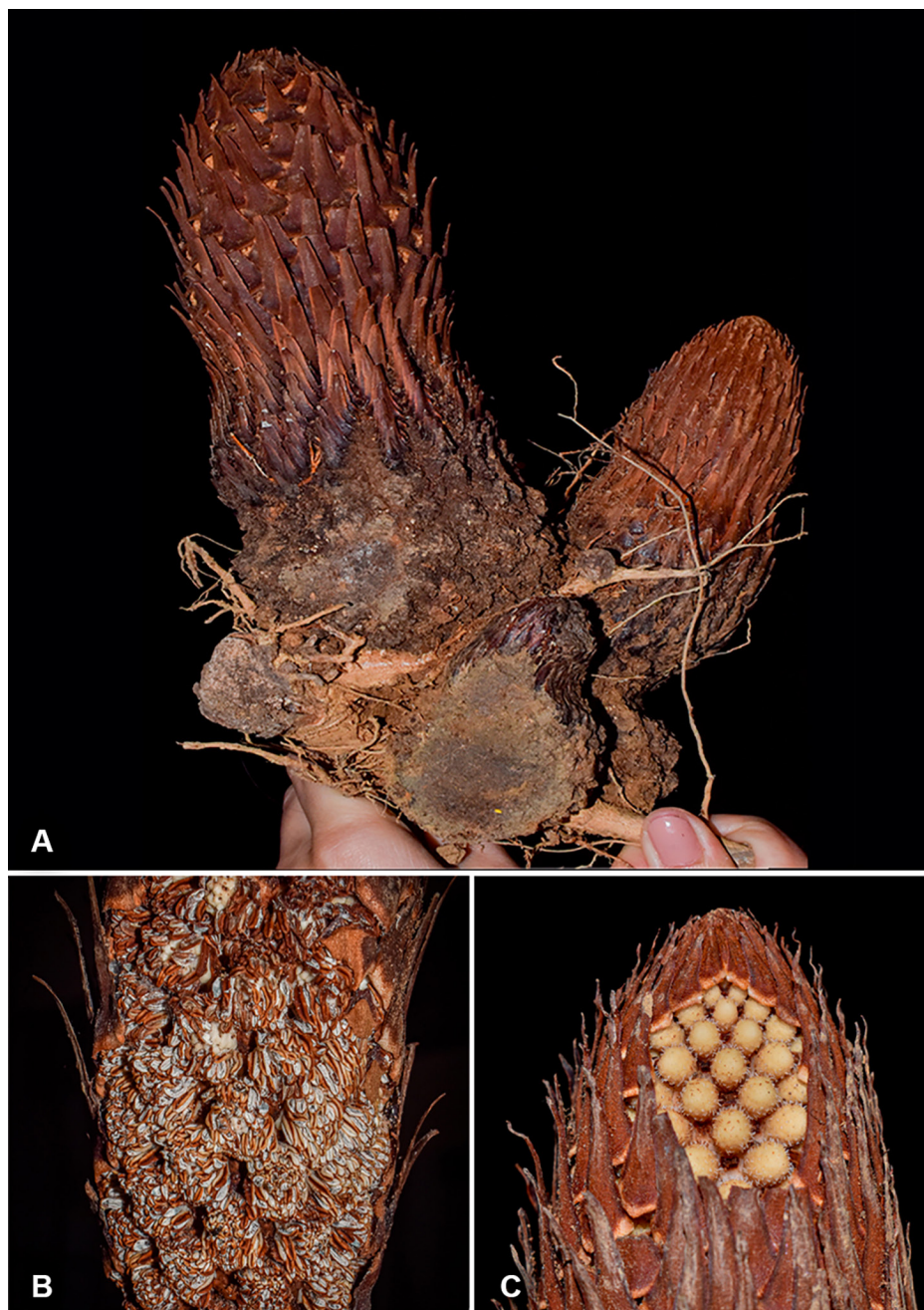


Figure 2. *Lophophytum weddellii* Hook. f. **A.** Plant. **B.** Male inflorescence with bracts removed. **C.** Female inflorescence with a bract segment removed. Photos taken by Santiago Guzmán-Guzmán.

level as the connective; dehiscence longitudinal (Figures 1E, 2B). Pollen, monad (Figure 3A); subprolate; amb circular; isopolar; radially symmetrical; tricolporate, with longitudinal pores and colpi with constriction (Figure 3B, C); exine tectate; columellae conspicuous and shorter than $1\ \mu\text{m}$, simplicolumellate; nanoverrucate (Figure 3D, E), verruca length $0.4\ \mu\text{m}$ ($0.3\text{--}0.6\ \mu\text{m}$, $n = 7$); verruca width $0.4\ \mu\text{m}$ ($0.2\text{--}0.5\ \mu\text{m}$, $n = 7$); equatorial view length $28.8\ \mu\text{m}$ ($26.1\text{--}31.7$, $n = 8$); equatorial view width $24\ \mu\text{m}$ ($21.8\text{--}26.4$, $n = 8$); polar view length $23.8\ \mu\text{m}$ ($21.6\text{--}26.3$, $n = 7$); colpi length $19.3\ \mu\text{m}$ ($16.7\text{--}21.9$, $n = 3$); colpi width $1.3\ \mu\text{m}$ ($0.7\text{--}2.2$, $n = 3$); pore length $1.9\ \mu\text{m}$ ($1.7\text{--}2.1$, $n = 2$); pore width $2.3\ \mu\text{m}$ ($2.2\text{--}2.3$, $n = 2$). Female inflorescence, $8\text{--}9 \times 4\text{--}5\ \text{cm}$; with approximately 11 spirals, each bearing 15 lateral branches (Figures F1, F2, 2C); lateral branches yellowish to cream, cylindrical, $8\text{--}9 \times 5\text{--}6\ \text{mm}$ (including flowers), each bearing approximately 90–100 flowers (Figure 1G1, G2, 2C). Female flower yellowish to cream, hexagonal-prismatic to obovate, $3.0\text{--}3.5\ \text{mm}$ long, apex rounded to truncate; pedicel yellowish to cream, $0.4 \times 0.8\ \text{mm}$; ovary $2.0 \times 1.5\text{--}2.0\ \text{mm}$, truncate at apex; bilabiate, with an inconspicuous deep groove for style insertion (Figure 1H). Style yellowish to cream; $0.5\text{--}1.0\ \text{mm}$ long (Figure 1H1, H2); stigma capitate, papillose; $0.1\ \text{mm}$ long (Figure 1H3). Fruit unknown.

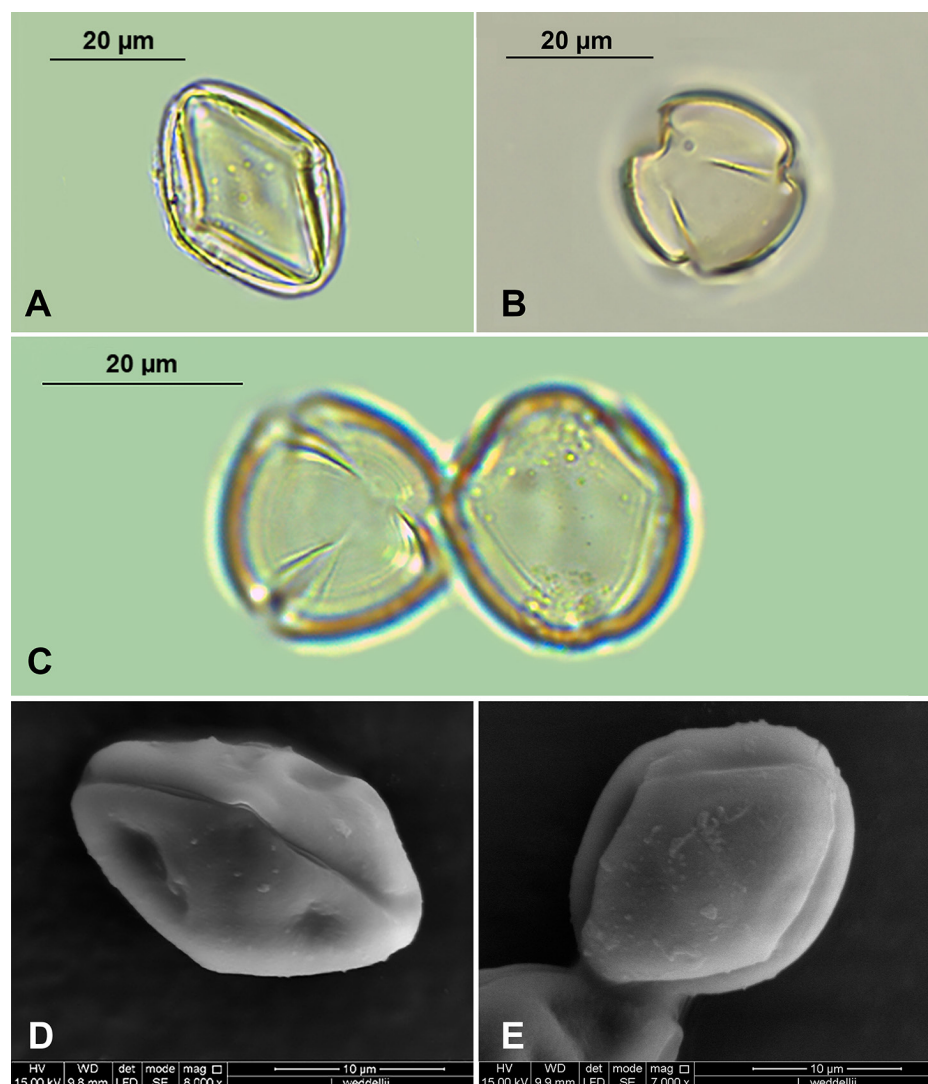


Figure 3. Pollen morphology of *Lophophytum weddellii* Hook. f. **A, D, E.** Equatorial view. **B–C.** Polar view. From J. A. Orozco-A & J. A. Sierra-Giraldo 1447 (FAUC).

Comparison. *Lophophytum weddellii* Hook. f. differs from the other species of the genus by being dioecious and by having persistent bracts and pistillate flowers with a bilabiate perianth.

Virtual specimens examined. PERU — AMAZONAS • Bagua Province, Distrito Imaza, Región nororiental del Marañón, Comunidad de Kampaenza, Ribera de la quebrada Shimutax, Río Marañón, bosque de transición; 04°55'S, 078°19'W; 320 m elev.; 7 Oct. 1994; N. Jaramillo & C. Peas 534; MO 4933286 — LORETO • Provincia Maynas, Iquitos, east of Iquitos at Yanomono, Bushmaster Trail, Explorama Camp, north bank of the Amazon River; 03°04'S, 072°08'W; Jul. 1984; Alfredo (Mathias) s.n.; MO 3275834 — MADRE DE DIOS • Provincia Manu, Río Los Amigos, Treeplot II, upland forest, tributary of Río Madre de Dios; 12°32'S, 070°41'W; 350 m elev.; 22 May 1998; Núñez et al. 21968; CUZ 39773 — SAN MARTÍN • Provincia Mariscal Cáceres, Distrito Campanilla, Carretera Marginal de la Selva, 7.4 km N of Pulcache; 07°43'S, 076°40'W; 900–950 m elev.; 21 Dec. 1981; T. Plowman & J. Schunke 11639; F 1891751 • Provincia Mariscal Cáceres, Tocache Nuevo, Palo blanco, W of the bridge, in upper forest with deep shade and humid soil; 600–700 m elev.; 4 Dec. 1981; J. Schunke 5675; F 1721699, U 301493, US 2708614.

Discussion

The forests in the surroundings of the village of La Manuela, Segovia (Antioquia, Colombia), where the population of *Lophophytum weddellii* is found, exhibit a stratified structure with a canopy reaching up to 40 m in height. The understory features dense herbaceous and shrub cover, characterized by shady, moist conditions that favour species adapted to such environments. Dominant botanical families include Araceae, Arecaceae, Costaceae, Cyclanthaceae, Piperaceae, Rubiaceae, Primulaceae, and Salicaceae, among others (Figures 4A, 5A).

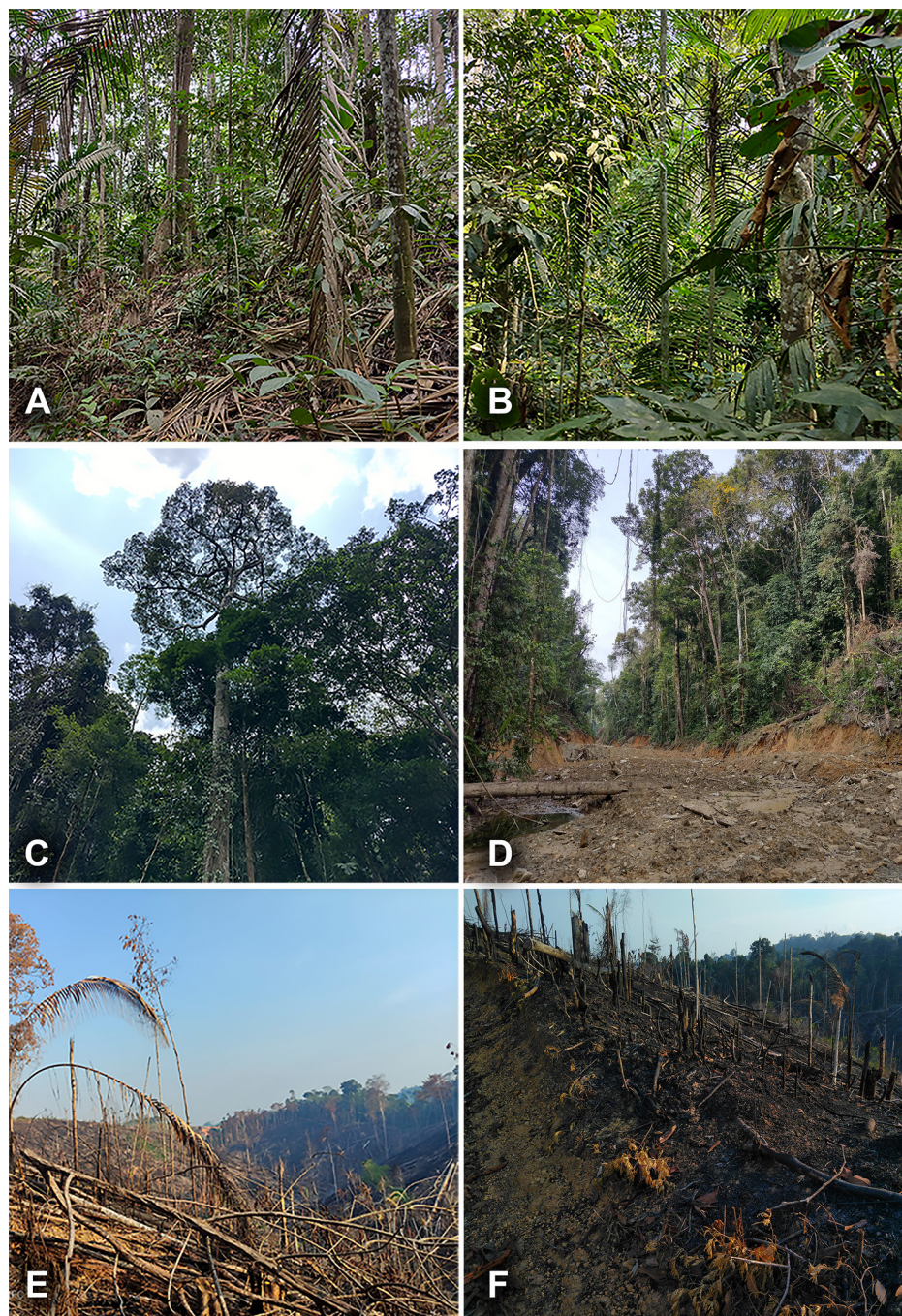


Figure 4. Forest strata and deforestation. **A.** Understory. **B.** Mid-stratum. **C.** Canopy. **D.** Mining-related deforestation. **E, F.** Agriculture-related deforestation.

The mid-stratum consists primarily of palms (*Oenocarpus bataua* Mart., *Oenocarpus mapora* H. Karst, and *Socratea exorrhiza* (Mart.) H. Wendl.) and heliophytic plants, including both ephemeral [*Annona mucosa* Jacq., *Bellucia grossularioides* (L.) Triana, *Casearia arborea* (Rich.) Urb., *Cecropia peltata* L., *Cecropia obtusifolia* Bertol., *Jacaranda copaia* (Aubl.) D. Don, *Miconia prasina* (Sw.) DC., *Tapirira guianensis* Aubl., *Triplaris americana* L.] and persistent species [*Aspidosperma cuspa* (Kunth) S.F.Blake, *Batocarpus costaricensis* Standl. & L.O. Williams, *Compsonera claroensis* Janovec & A.K. Neill, *Himatanthus articulatus* (Vahl) Woodson, *Protium macrophyllum* (Kunth) Engl., *Pourouma hirsutipetiolata* Mildbr., *Swartzia simplex* (Sw.) Spreng., *Trattinnickia aspera* (Standl.) Swart, *Virola sebifera* Aubl.]. These species can reach heights up to 20 m (Finegan 1992; Sánchez et al. 2007) and play a crucial role in forest dynamics by exploiting intermediate light conditions (Figure 4B).

The upper stratum comprises large trees exceeding 1 m in diameter and reaching heights of up to 40 m, including *Brosimum alicastrum* Sw. and *Brosimum guianense* (Aubl.) Ducke, *Ceiba pentandra* (L.) Gaertn., *Lecythis tuxyana* Pittier, *Lecythis mesophylla* S.A.Mori [= *Chytroma mesophylla* (S.A. Mori) O.M. Vargas & C.W. Dick], *Luehea seemannii* Triana & Planch., *Magnolia silvioi* (Lozano) Govaerts, *Inga*

umbellifera (Vahl) Steud., *Symphonia globulifera* L.f. These trees generate shade that regulates key environmental conditions—such as light, wind, and humidity—and serve as habitat for diverse faunal species (Figure 4C; Guariguata and Ostertag 2002).

This region has undergone significant historical degradation due to extensive cattle ranching, open-pit mining, and armed conflict, which represent the primary drivers of deforestation and landscape transformation (Figure 4D–F). Cattle ranching requires large-scale land clearance, leading to forest loss and ecological imbalance (Mahecha et al. 2016; González et al. 2018). Mining operations directly alter soil composition and remove vegetation cover, thereby threatening forest integrity and associated ecosystem services (Heck and Tranca 2014).

Inga umbellifera is here recorded as the first confirmed host for *L. weddellii*. All three individuals of *L. weddellii* were observed parasitizing *I. umbellifera*. Parasitic associations with members of Fabaceae have previously been documented for other species of *Lophophytum*. For example, *L. bolivianum* has been reported parasitizing an unidentified species of *Pithecellobium* (Borchsenius and Olesen 1990); *L. mirabile* on *Inga marginata* Willd., *Enterolobium contortisiliquum* (Vell.) Morong, and *Sterculia apetala* (Jacq.) H.Karst. (Cardoso 2014); and *L. pyramidalis* on *Parapiptadenia rigida* (Benth.) Brenan, *Anadenanthera colubrina* (Vell.) Brenan (González & Sato 2016), *Apuleia* sp., *Inga* sp., and *Myrcia splendens* (Sw.) DC. (Cardoso 2014). To date, *Lophophytum rizzoi* Delprete remains the only species in the genus without confirmed host records.

This strong affinity with Fabaceae is particularly relevant considering the findings on horizontal gene transfer in *L. pyramidalis* (Sánchez et al. 2017), where approximately 80% of the protein-coding genes acquired from Fabaceae have replaced native homologous genes, further highlighting the close evolutionary relationship between *Lophophytum* and members of the Fabaceae.

These records significantly expand our understanding of *Lophophytum* reproductive biology. However, further studies incorporating field-based observations and precise taxonomic identification of floral visitors are needed to thoroughly comprehend the dynamics of these interactions.

In addition to host associations, interactions with insects appear to serve a key function in the biology of the species. Adult beetles of at least three distinct species were observed actively moving around the male lateral branches. Although direct pollen consumption, nectar feeding, or oviposition behaviour was not observed, beetle larvae were found inside the base of the branches during morphological examination and measurement (Figures 1C2, 5C). These observations are consistent with previous reports by several authors (Borchsenius and Olesen 1990; Ferrer et al. 2011; Guzmán-Guzmán 2019), who have documented a close association between the family Belidae, particularly the tribe Oxycorynina, and the family Balanophoraceae. Research has shown that three of the four genera of Oxycorynina are specifically associated with genera of this parasitic family (Marvaldi et al. 2006; Li et al. 2024): *Balanophorobius* Anderson, 2005 has been linked to an unidentified specimen of Balanophoraceae, possibly *Helosis cayennensis* (Sw.) Spreng. (Anderson 2005); *Oxycorynus* Chevrolat, 1832 to *Lophophytum bolivianum* Wedd. and *Lophophytum pyramidale* (Leandro) L.J.T.Cardoso & J.M.A.Braga (Ferrer et al. 2011); and *Alloxycorynus* Voss, 1957 to *Ombrophytum subterraneum* (Aspl.) B.Hansen (Bruch 1923; Marvaldi et al. 2006). More recent observations by the first author revealed a close relationship between an undetermined *Balanophorobius* specimen and *Ombrophytum villamariensis*, in which adults copulate on the inflorescence, females oviposit inside male branches, larvae feed on the central pith, and adults emerge synchronously with anther dehiscence, becoming covered in pollen grains.

Additionally, about five individuals of a hymenopteran species were observed perforating the bracts of male branches and actively chewing the anthers (Figure 5D). These observations are consistent with previous reports by Borchsenius and Olesen (1990), who documented the presence of hymenopterans of the tribe Meliponini (family Apidae) collecting anther tissue and pollen from male buds in *Lophophytum bolivianum*.

From an evolutionary perspective, estimates based on relaxed molecular clock models suggest that the origin of the Balanophoraceae family dates to approximately 109 million years ago (Ma) (99–119.5 Ma) (Naumann et al. 2013). In particular, for the subfamily Lophophytoideae, although no lineage-specific phylogenetic analyses with temporal calibrations have yet been conducted for its constituent genera, its close association with weevils of the tribe Oxycorynina (Marvaldi et al. 2006; Ferrer et al. 2011) enables a correlated divergence estimate of around 47.7 Ma, based on recent molecular and fossil data that have clarified the evolutionary history of Belidae (Li et al. 2024).

Considering the above explanations, it is possible that *L. weddellii* was once distributed throughout the tropical humid forests of the Pan-Amazonian region during a period consistent with this estimated origin. These forests began to form following the continental breakup between 135 and 100 Ma and continued expanding until the late Miocene, approximately 10 Ma (Hoorn et al. 2010a; Mora et al.



Figure 5. Habitat and ecology of *Lophophytum weddellii*. **A.** Habitat. **B.** In situ individuals; note the layer of soil and leaf litter displaced by the protrusion and subterranean emergence of inflorescences. **C.** Coleopteran larva inside the base of a male branch. **D.** Hymenopterans feeding on anthers and bracts.

2011). However, the uplift of the Andes, particularly the Central and Eastern Cordilleras, approximately 2 Ma (Gregory-Wodzicki 2000), disrupted biological corridors between the Magdalena and Amazon basins, isolating populations that were formerly connected through montane forests of the Magdalena Valley and lowland Amazonian rainforest (Figure 6).

Prior to this event, strong biotic corridors connected these regions, enabling continuous species exchange. Additionally, during the arid phases of the Pleistocene, tropical humid refugia played a critical role in the persistence and establishment of species by serving as limited areas that facilitated their survival and dispersal through interconnected ecosystems (Hoorn et al. 2010b).

The Nechí District (Morrone 2014) is of particular importance, as it encompasses both the Nechí refugium—where the population evaluated in this study occurs—and the Catatambo refugium, corresponding to the type locality of the species (Hernández-Camacho et al. 1992). These areas likely were crucial in maintaining historical connectivity, as their extensive humid forests, swamps, and marshes facilitated biotic exchange between the Magdalena Valley and the Amazon Basin during the Miocene, primarily through lowland corridors such as the Táchira depression (also known as the Burbúa depression) (Hernández-Camacho et al. 1992; Hoorn et al. 2010b).

This historical connectivity is still reflected in the present-day composition of the Nechí District, which largely preserves floristic elements from Chocó and Urabá, supported by the absence of major geographic barriers and the presence of similar environmental conditions (e.g. temperature, precipitation, evapotranspiration, and elevation) within the Magdalena–Urabá ecoregion (Olson et al. 2001; Bocanegra-González et al. 2024). In contrast, Amazonian floristic elements are less represented due to the elevation of the Eastern Cordillera, which has limited sustained biotic exchange. Nevertheless, species connectivity has persisted through discontinuous corridors such as the Serranía de La Lindosa and the humid forests of the Andean–Orinoco piedmont (Latorre et al. 2014).

It is precisely this connection between the Magdalena and Amazonian populations that demands attention, especially considering increasing deforestation, agricultural expansion, and mining activi-

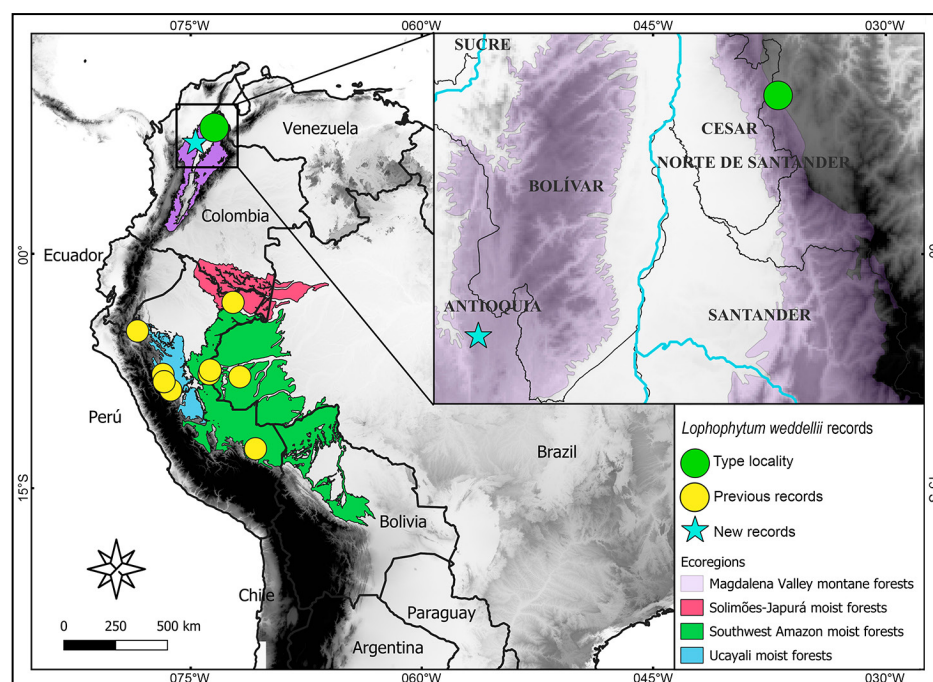


Figure 6. Distribution map and ecoregions of *Lophophytum weddellii*.

ties in the Magdalena Valley (Figure 4D–F), which are disrupting key biotic corridors essential for species dispersal. This disruption is intensified by anthropogenic barriers that impede endozoochorous dispersal mediated by mammals, a mechanism proposed for members of the subfamily Lophophytoideae (Pio Corrêa 1948; Borchsenius and Olesen 1990; Hansen 2015; Stevenson et al. 2021). Therefore, further research into the natural history of these species is urgently required, particularly to understand the processes enabling successful dispersal in these isolated localities. Additionally, new occurrence records are necessary to identify other potential populations and to help clarify the current seemingly disjunct distribution of *L. weddellii*.

Regarding the first record of *L. weddellii* in Colombia, William Purdie was a prominent Scottish botanist and explorer who visited the country between 1844 and 1846 (Purdie 1847; Ewan 1948) under the patronage of Sir William Jackson Hooker, then director of the Royal Botanic Gardens, Kew. During his stay, he conducted valuable botanical explorations in regions of significant scientific interest, including the Sierra Nevada de Santa Marta and the paramos of Nevado del Ruiz, producing some of the earliest floristic records for these areas. He also undertook a series of expeditions across the Central and Eastern Cordilleras of the Andes (Purdie 1847).

As part of this expedition, on 20 July 1845, Purdie conducted a 15-day survey through the montane forests surrounding the municipality of Ocaña. In his notes, he reported an approximate elevation of 2,500 feet (ca. 760 m) in the nearby mountains (Purdie 1847; Ewan 1948). During this expedition, Purdie collected two individuals of *L. weddellii*, which he observed in humid habitats near the ridgelines of the cordillera. According to his notes, the species was relatively abundant—so much so that it was known among local communities as “Cardón de la Cordillera,” a name also used for certain cactus (*Acanthocereus* (Engelm.) Britton & Rose and *Cereus* P. Miller) species, possibly alluding to the spiny and rugged appearance of *L. weddellii*.

On the other hand, the specimen collected in 1890 by Sander & Co., has not been precisely located. This firm operated as a commercial house for botanical specimens, employing numerous collectors worldwide to supply the high demand for exotic plants (particularly orchids) among the European aristocracy of the time. Many of their collections lack detailed locality information, and the multiplicity of collection points and collectors involved makes it extremely difficult to determine the exact provenance of the *L. weddellii* specimen associated with this record. In this context, the specimen documented in this study constitutes the first modern record of the species in Colombia with a precise locality.

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Additional information

Conflict of interest

The authors affirm that they have no competing interests.

Ethical statement

No ethical statement is reported.

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Author contributions

Conceptualization: SGG, JASG, JAOA. Data curation: SGG. Formal analysis: SGG, JASG, JAOA. Investigation: SGG. Methodology: SGG, JASG, JAOA. Supervision: SGG. Visualization: SGG, JASG, JAOA. Software: SGG. Validation: SGG, JASG, JAOA. Writing – original draft: SGG. Writing – review and editing: SGG, JASG, JAOA.

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Data availability

All data that support the findings of this study are available in the main

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