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602

A synopsis of *Meriania* (Melastomataceae: Merianieae) in Peru

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Abstract

A synopsis of the genus *Meriania* in Peru is presented here, where 36 species are recognized, 25 of which are endemic. This synopsis includes a key to the genera in the tribe Meranieae, a key to the recognized *Meriania* species for Peru, illustrations, comments on affinities, distribution and phenology, and nomenclatural notes. Peru is now the country with the second highest diversity of the genus. The departments in Peru with the highest number of species are Amazonas (18 species), Cajamarca (11 species) and San Martín (9 species), and 24 species are located within Amotape-Huancabamba Zone in northern Peru. *Meriania* in Peru is characterized by being trees and shrubs, lacking malpighiaceae trichomes, inflorescences panicles or rarely dichasia, or solitary, (4–)5–6-merous flowers, usually large, with lobed, subcalyptrate or calyptrate calyces with regular, irregular or circumscissile dehiscence, spreading to campanulate corollas, stamen connectives with dorsal and dorso-basal appendages, anthers usually with a dorsally inclined pore, and capsular fruits. We propose one new combination, *Meriania sessilifolia* (Cogn.) Rob.Fern., R.Goldenb. & Michelang. Lectotypes for *Axinaea purpurea*, *Centronia sessilifolia*. *Graffenrieda acida*, *Meriania prunifolia*, *M. raimondii*, *M. rigida*, *M. rugosa*, *M. spruceana* and *Pachymeria rigida* are also designated.

Key words: Andean forests, *Axinaea*, *Centronia*, Meranieae, mountain ecosystems, Neotropics, Taxonomy

Resumen

Se presenta una sinopsis del género *Meriania* para Perú, donde se incluyen 36 especies, de las cuales 25 son endémicas. Esta sinopsis incluye una clave para los géneros de la tribu Meranieae, una clave para las especies de *Meriania* reconocidas para Perú, ilustraciones, comentarios de afinidades, distribución y fenología, y notas nomenclaturales. Perú ahora es el segundo país con la mayor diversidad del género. Además, los departamentos con el mayor número de especies son Amazonas (18 especies), Cajamarca (11 especies) y San Martín (9 especies), y 24 especies están localizadas dentro de la Zona de Amotape-Huancabamba en el norte del Perú. *Meriania* en Perú es caracterizado por presentar árboles y arbusto, sin tricomas malpigiáceos, inflorescencias en panículas, raramente en dicasios o flores solitarias, flores (4–)5–6-meras, usualmente grandes, con cálices caliptrados o subcaliptrados con dehiscencia regular, irregular o circumcísil, corolas patentes o campanuladas, conectivos de los estambres con apéndices dorsales y dorso-basales, anteras usualmente con un poro dorsalmente inclinado, y frutos capsulares. También proponemos una nueva combinación, *Meriania sessilifolia* (Cogn.) Rob.Fern., R.Goldenb. & Michelang. Además, designamos lectotipos para *Axinaea purpurea*, *Centronia sessilifolia*. *Graffenrieda acida*, *Meriania prunifolia*, *M. raimondii*, *M. rugosa*, *M. spruceana* y *Pachymeria rigida*.

Palabras clave : Bosques andinos, *Axinaea*, *Centronia*, Meranieae, ecosistemas montañosos, Neotrópico, Taxonomía

Introduction

Melastomataceae Juss., in the order Myrtales Reichb. (APG IV 2016), is a family of mostly tropical and sub-tropical trees, shrubs, climbers, and herbs comprising approximately 5858 species in 173 genera (Michelangeli *et al.* 2020, Penneys *et al.* 2022, Ulloa Ulloa *et al.* 2022). It is the sixth richest family of vascular plants in Peru with more than 660 species and 43 genera (Brako & Zarucchi 1993, Ulloa Ulloa *et al.* 2004, Paredes-Burneo *et al.* 2018, Torres *et al.* 2019). The Neotropical tribe Meranieae Triana currently includes eight accepted genera (Figure 1); *Adelobotrys* DC., *Axinaea* Ruiz & Pav., *Centronia* D.Don, *Graffenrieda* DC., *Macrocentrum* Hook.f., *Maguireanthus* Wurdack, *Meriania* Sw. and *Salpinga* Mart. ex DC. (Michelangeli *et al.* 2020, 2022). This tribe can be recognized by the diplostemonous flowers, anthers with dorsal appendages, partly to completely superior ovaries, and capsular fruits containing many cuneate seeds (Renner 1993, Michelangeli *et al.* 2022, Penneys *et al.* 2022).

Historically, the generic delimitations within Meranieae have been unclear (Wurdack 1973, 1976; Almeda 1993; Mendoza-Cifuentes & Fernández-Alonso 2010), something that has been made more evident with recent phylogenetic analyses (Michelangeli *et al.* 2022). For example, some of the morphological characteristics traditionally used to distinguish *Centronia* are inconsistent and may be present in related genera. *Centronia* had 16–18 accepted species (Wurdack 1973, Lozano & Becerra 1999) and was traditionally characterized by the presence of large flowers, calyptrate calyces with irregular or circumscissile dehiscence, and stamen connectives with dorso-basal appendages and dorsal appendages (Wurdack 1973). However, due to inconsistent use of these characters, many species have been transferred to *Meriania* (Wurdack 1976, 1987; Almeda 1993; Mendoza-Cifuentes & Fernández-Alonso 2012; Almeda & Penneys 2013), while others have been synonymized under *Meriania* (Wurdack 1976, Mendoza-Cifuentes & Fernández-

Alonso 2012, Mendoza-Cifuentes 2021) or *Wurdastom* B.Walln. (Mendoza-Cifuentes 2020). Currently, *Centronia* has five species; *C. laurifolia* D.Don (type of the genus), *C. neblinae* Wurdack, *C. reticulata* Triana, *C. sessilifolia* Cogn. (transferred to *Meriania* here) and *C. vaupesana* Wurdack (Michelangeli *et al.* 2020). All of them (except *C. sessilifolia*) lack large flowers and dorsal appendages in the stamen connectives. On the other hand, *Graffenrieda* has 68 species (Michelangeli *et al.* 2020) and is distinguished from other genera in the Merianieae by its usually smaller flowers, stamen connectives with dorso-basal appendages and ventrally inclined anther pores (Wurdack 1973, 1980; Almeda *et al.* 2014). Phylogenetic analyses of the tribe Merianieae have shown that *C. laurifolia* is placed within *Graffenrieda* (Dellinger *et al.* 2018, Caetano *et al.* 2020, Michelangeli *et al.* 2022). Therefore, *Centronia* species (except *C. sessilifolia*) have floral characters consistent with *Graffenrieda* and may be better placed there.

Another genus with delimitation problems in Merianieae is *Axinaea*, currently with 41 species (Cotton *et al.* 2014). Recent phylogenetic studies placed it within *Meriania* (Dellinger *et al.* 2018, 2019; Michelangeli *et al.* 2022). *Axinaea* has been traditionally associated with *Meriania* and is characterized by its stamen connectives with inflated (bulbous) dorso-basal appendages, but this feature is not constant in all its species (see comments on *Axinaea* species with 4-merous flowers under *M. rubriflora*). Also, there are species in a group (e.g.: *M. cuzcoana*) or in a complex (e.g.: *M. macrophylla* complex) with characters that are intermediate between *Axinaea* and *Meriania*. In the most recent phylogenetic analyses of Merianieae (Michelangeli *et al.* 2022), which sampled all the genera and over 50% of the species in the tribe, a small group of *Meriania* species (Adelbertia clade sensu Michelangeli *et al.* 2022) was recovered as a sister clade to *Adelobotrys*, and the remaining species of *Meriania* and *Axinaea* were recovered as a large and well supported clade. The Adelbertia clade contains a group composed of mostly Guayana Shield species [*M. aracaensis* Wurdack, *M. crassiramis* (Naudin) Wurdack and *M. sclerophylla* Triana], *M. urceolata* (from western Amazonia and the foothills of the Andes), and *Meriania calophylla* (Cham.) Triana (endemic to Eastern Brazil); these species share 3-locular ovaries with the ovules inserted only on the dorsal portion of the placenta, while the remaining *Meriania* (and *Axinaea*) have 4–8-locular ovaries with the ovules inserted not only on the dorsal portion of the placenta but also on the lateral sides (in cross section; Mendoza-Cifuentes & Fernández-Alonso 2010; Mendoza-Cifuentes 2021). For these reasons, it has been suggested that the species of Adelbertia clade may form a different genus (Mendoza-Cifuentes 2021; Michelangeli *et al.* 2022).

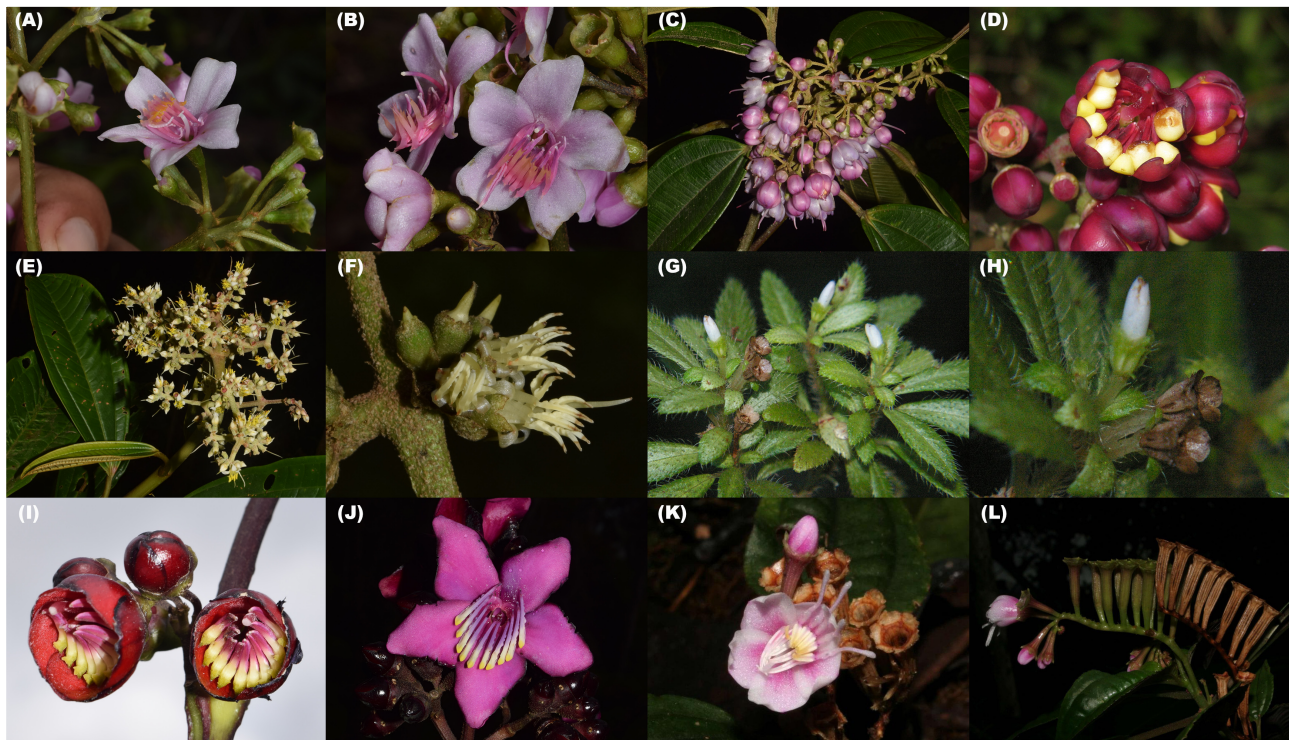


FIGURE 1. Genera of Merianieae in Peru. **A.** *Adelobotrys* (R. Fernandez-Hilario & A. Vásquez 1591). **B.** *Adelobotrys* (R. Fernandez-Hilario *et al.* 1658). **C.** *Axinaea* (R. Fernandez-Hilario *et al.* 1426). **D.** *Axinaea* (R. Fernandez-Hilario *et al.* 195). **E.** *Graffenrieda* (R. Fernandez-Hilario *et al.* 1737). **F.** *Graffenrieda* (R. Fernandez-Hilario *et al.* 1662). **G–H.** *Macrocentrum* (R. Vásquez *et al.* 39321). **I.** *Meriania* (R. Fernandez-Hilario *et al.* 2092). **J.** *Meriania* (R. Fernandez-Hilario *et al.* 1931). **K–L.** *Salpinga* (J. P. Janovec 3248). Photos by Robin Fernandez-Hilario (A–F and I–J); Rodolfo Vásquez (G–H) and Jhon P. Janovec (K–L).

Meriania currently comprises 121 species distributed from Southeast Mexico and the Greater Antilles to Eastern Brazil and Bolivia (Michelangeli *et al.* 2015, 2020, 2022). The last comprehensive revisions of *Meriania* were elaborated by Triana (1871) [1872] and Cogniaux (1891), covering 28 and 39 species respectively. It was subdivided by Cogniaux (1891) into five sections [*M. sect. Adelbertia* (Meisn.) Cogn., *M. sect. Meriania*, *M. sect. Davya* (DC.) Cogn., *M. sect. Pachymeria* (Benth.) Cogn. and *M. sect. Umbellata* Cogn.], which were recognized based on characters of inflorescences, calyces, and stamen connectives. Regional floristic works of Melastomataceae have included taxonomic treatments for *Meriania* in Brazil (Chiavegatto & Baumgratz 2008, Goldenberg 2009, Fagundes & Santos 2016), Colombia (Mendoza-Cifuentes 2021), Costa Rica (Almeda 2007), Ecuador (Wurdack 1980), the Greater Antilles (Michelangeli *et al.* 2015), Guyana (Wurdack 1993), Mesoamerica (Almeda 2009) and Venezuela (Wurdack 1973, Berry *et al.* 2001). In Peru, the last revision of the genus was made by Macbride (1941) where he recognized a total of 12 species, but some of these would later be treated under other genera (see doubtful and excluded taxa here). Subsequently, new species and transferred species were added to the Peruvian *Meriania* (Wurdack 1964, 1966, 1971, 1976, 1981), reaching the 15 species listed by Brako & Zarucchi (1993) in their checklist of the Peruvian flora. In the following 30 years, 53 new species of Melastomataceae were published for Peru (Wallnöfer 1996, 1999; Baumgratz 1999; Freire-Fierro 2001; Schulmann 2003; Bussman *et al.* 2010; Morales-Puentes & Penneys 2010; Sagástegui *et al.* 2010; Bussman & Paniagua 2012, 2013; Ulloa Ulloa *et al.* 2012; Bussmann 2013; Cárdenas *et al.* 2014; Cotton *et al.* 2014; Michelangeli *et al.* 2014; Ocampo & Almeda 2014; Penneys *et al.* 2015; Michelangeli & Ulloa Ulloa 2016; Burke *et al.* 2017; Burke & Michelangeli 2018; Michelangeli & Goldenberg 2018, 2020; Michelangeli & Paredes-Burneo 2018; Fernandez-Hilario *et al.* 2020, 2021, 2022), almost all of them coming from the Andes, and over half of them in two genera, *Miconia* (17) and *Meriania* (14). In the latter case, if new records are added (Paredes-Burneo *et al.* 2018; Fernandez-Hilario *et al.* 2021, 2022), this number increases to 19, which represents 52% of all the *Meriania* species currently recognized for Peru (36 species in this treatment).

Although *Meriania* is a woody genus with large, showy flowers, it is surprising that no recent taxonomic treatment has been carried out for Peru. Similar increases in species richness in the Peruvian Andes can be observed in other genera, such as *Macrocarpaea* (Gentianaceae, e.g., Grant 2004) and *Magnolia* (Magnoliaceae, e.g., Vázquez-García *et al.* 2012), which are also woody genera with large, showy flowers, and for which the greatest discovery of new species has taken place in recent years, as well. Unexplored areas or areas with few collections probably hold many new species to be discovered in different Andean genera (see Distler *et al.* 2009, Joppa *et al.* 2011). Therefore, the effective protection of the diverse Andean habitats is a high priority.

As part of the ongoing taxonomic revision of *Meriania* for Peru, we present here a synopsis of the genus with a key to the genera in the tribe Meranieae, a key to the 36 recognized *Meriania* species for Peru, along with illustrations, comments on affinities, nomenclatural notes, distributions and phenological information.

Materials and methods

We examined herbarium specimens collected in Peru and deposited in AMAZ, CPUN, CUZ, F, HAO, HOXA, HSP, HUT, KUELAP, MO, MOL, MOLF, NY, P, UPCB, US and USM (herbarium acronyms follow Thiers 2021). Some of the examined specimens are indicated with the acronyms ABERG and UNC, which refers to the non-indexed herbaria of the Andes Biodiversity and Ecosystem Research Group (Dept. Cusco) and ‘Laboratorio de Dendrología’ of the ‘Universidad Nacional de Cajamarca’ (Dept. Cajamarca), respectively. The specimens from the digital collections at L (<http://bioportal.naturalis.nl/>) and U (<http://bioportal.naturalis.nl/>) were consulted. We also conducted botanical expeditions to the Peruvian Andes between December 2019 and November 2022 (Fig. 2), mainly in northern regions, to study the populations in the field, as well as to explore poorly collected areas or locate rare species. A complete set of collections was deposited at MOLF and duplicates, when available, were sent to HOXA, KUELAP, NY and UPCB.

A morphological species concept has been used in this study, which establishes that consistent differences in morphology are considered evidence of the existence of separate species (see Judd 2007). The combination of several discontinuous morphological characters was used to recognize species. Indument terminology and fruit type follow Beentje (2010) and Baumgratz (1983–1985), respectively. When we describe the calyx, we use the term *dorsal projection* (see Basso-Alves *et al.* 2017) to refer to the distinct and opposite portion present in each sepal, which have been described in different ways in the Melastomataceae literature (e.g.: dorsal teeth, external teeth, external lobe, external projection). Information on the colors of vegetative and floral parts in the key and comments is derived from our own field observations and photographs, except where otherwise indicated.

The distribution maps were made in the software QGIS version 3.18.1 (QGIS Development Team 2021), and we used a grid size of 0.5° to analyse the species richness of *Meriania* across Peru. Comments on the distribution and morphological differences among Andean species of *Meriania* were made based on checklists and/or taxonomic treatments for Bolivia (Jørgensen *et al.* 2014), Colombia (Almeda *et al.* 2021, Mendoza-Cifuentes 2021), Ecuador (Wurdack 1980, Jørgensen & León-Yáñez 1999), Peru (Macbride 1941, Brako & Zarucchi 1993), and Venezuela (Wurdack 1973, Hokche *et al.* 2008). Additionally, we examined the protologues of the newly described *Meriania* species and the type specimens through JSTOR Global Plants Initiative portal (<https://plants.jstor.org>). Lectotypes designated here were chosen in correspondence with the rules of the International Code of Nomenclature (ICN) (Turland *et al.* 2018).



FIGURE 2. Botanical expeditions in Peruvian Andes. **A.** Robin Fernandez with fertile branches of *Meriania penningtonii* (Dept. Amazonas, Prov. Bongará, Dist. Yambrasbamba); Nov 2020. **B.** Reserva Comunal Chayu Nain (Dept. Amazonas, Prov. Bagua, Dist. Imaza); Nov 2022. **C.** Luis Pillaca collecting specimens of Melastomataceae (Dept. Cajamarca, Prov. San Ignacio, Dist. Huarango); Nov 2020. **D.** Wilder Chuquitucto, Luis Pillaca, Rosa Villanueva and Robin Fernandez exploring the subparamos of the ACP San Lorenzo (Dep. Amazonas, Prov. Bongará, Dist. Florida); Feb 2020. **E.** Akira Wong and Italo Revilla preparing the trip to the ACP Tilacancha (Dept. Amazonas, Prov. Chachapoyas, Dist. San Isidro de Maino); Dec 2021. Photos by Robin Fernandez-Hilario.

Taxonomic Treatment

Meriania Sw., nom. cons., Fl. Ind. Occ. 2: 823, t. 15. 1798. (Figures 3–7).

Type species: *Rhexia leucantha* Sw., type cons. [= *Meriania leucantha* (Sw.) Sw.].

Trees or **shrubs**, rarely **climbers**, distal branchlets glabrous or with various indument types. **Young branches** terete, quadrangular, or 4-winged; nodes with interpetiolar lines, flaps or without modifications. **Leaves** opposite, isophyllous to slightly anisophyllous. **Petioles** with projections or without modifications. **Leaf blades** petiolate or sessile, sometimes subpeltate or peltate; venation acrodromous basal or suprabasal; glabrous or covered with various indument types. **Inflorescences** terminal or pseudo-lateral (initially terminal but overtopped by the developing axillary bud) panicles, rarely dichasia, or solitary flowers. **Flowers** (4–)5–6-merous; diplostemonous; with spreading to campanulate corollas. **Hypanthium** terete to costate; glabrous or covered with various indument types. **Calyx** lobed, repand, truncate, subcalyprate or calyprate; dehiscence regular, irregular or circumscissile; with dorsal projections, acicular, claw-shaped, conic, callose, blunt or obsolete; glabrous or covered with various indument types. **Petals** oblong, obovate, slightly obovate, or strongly asymmetrically obovate; glabrous, rarely puberulent or slightly ciliate. **Stamens** isomorphic to strongly dimorphic, all bent to one side of the flower at anthesis giving the flower a zygomorphic appearance; filaments flat to semiterete; connectives sometimes prolonged below the thecae or abruptly inflated (bulbous), with two appendages, one dorso-basal and the other dorsal, the former descending or almost perpendicular to the thecae, sometimes laterally expanded, the latter obsolete to ascending; anthers usually opening by one dorsally inclined pore, thecae with smooth to corrugated surfaces. **Ovary** superior, sometimes $\frac{1}{2}$ inferior, usually glabrous; style incurved at the apex and opposite to the anthers at anthesis, glabrous. **Fruits** capsular (velatidia), with persistent hypanthium, calyx persistent or caducous; mature ovary exceeding the hypanthium length or completely concealed by the hypanthium. **Seeds** triangular-linear, numerous.



FIGURE 3. Morphological characteristics of Peruvian *Meriania*. **A.** Interpetiolar line (*M. tomentosa*; R. W. Bussmann et al. 17068). **B.** Interpetiolar flap (*M. zunacensis*; R. Fernandez-Hilario et al. 1920). **C.** Winged internode (*M. penningtonii*; R. Fernandez-Hilario et al. 2072). **D.** Winged internode (*M. tetragona*; R. Fernandez-Hilario et al. 2092). **E.** Adaxial projection (scutum) in the transition zone from the petiole to the midvein (*M. zunacensis*; R. Fernandez-Hilario et al. 1920). **F.** Swollen adaxial projection on the petiole apex (*M. drakei*; R. Fernandez-Hilario et al. 1775). **G.** Liguliform abaxial projections in the transition zone from the petiole to the midvein (*M. sanguinea*; R. Fernandez-Hilario et al. 1896). **H.** Tuberculate abaxial projections in the transition zone from the petiole to the midvein (*M. tetragona*; F. A. Michelangeli et al. 1739). **I.** Spreading corolla (*M. rigida*; R. Fernandez-Hilario et al. 1931). **J.** Campanulate corollas (*M. dazae*; J. L. Marcelo-Peña et al. 6568). **K.** Fruits with mature ovaries exceeding the hypanthia length (*M. sanguinea*; F. A. Michelangeli et al. 2743). **L.** Fruits with mature ovaries completely concealed by the hypanthia (*M. tomentosa*; F. A. Michelangeli et al. 1799). Photos by Rainer W. Bussmann (A); Robin Fernandez-Hilario (B–G and I–J); and Fabián A. Michelangeli (H, K and L).

Distribution and habitat:—Peru presents 36 species of *Meriania*, of which 25 are endemic. Twenty-four species were found in northern Peru within the Amotape-Huancabamba Zone (see Weigend 2002, Tejedor & Calatayud 2022) (Table 1), which holds the highest species richness in Peru. The departments with the highest number of species are Amazonas (18 species), Cajamarca (11 species) and San Martín (9 species) (Figure 7). Most species have restricted distributions, and only four species (*M. neilli*, *M. radula*, *M. sanguinea* and *M. tomentosa*) occur in more than five departments. The Peruvian species of *Meriania* grow mainly in the eastern flanks of the Andes in premontane forests, montane forests, elfin forests and subparamos at 350–3500 m, but two species (*M. escalerensis* and *M. microflora*) grow in the sub-Andean cordilleras (Andean Tepuis sensu Neill *et al.* 2014).

TABLE 1. Distribution of *Meriania* species by department in Peru. (*) Endemic.

Species	Amazonas	Ayacucho	Cajamarca	Cusco	Huánuco	Junín	La Libertad	Lambayeque	Loreto	Pasco	Piura	San Martín	Ucayali
<i>Meriania acida</i> (*)			X										
<i>Meriania amisophylla</i> (*)					X								
<i>Meriania bicentenaria</i> (*)										X			
<i>Meriania bongarana</i> (*)	X												
<i>Meriania callosa</i> (*)	X												
<i>Meriania cuzcoana</i> (*)				X									
<i>Meriania dazae</i> (*)	X												
<i>Meriania drakei</i>	X												
<i>Meriania escalerensis</i> (*)									X				
<i>Meriania franciscana</i>	X		X										
<i>Meriania hirsuta</i> (*)											X		
<i>Meriania juanjil</i> (*)	X												
<i>Meriania megaphylla</i> (*)							X						
<i>Meriania microflora</i> (*)	X												
<i>Meriania neillii</i>	X	X	X	X	X	X				X	X		X
<i>Meriania ninakurorum</i> (*)												X	
<i>Meriania peltata</i>			X										
<i>Meriania penningtonii</i> (*)	X												
<i>Meriania prunifolia</i> (*)												X	
<i>Meriania radula</i>	X		X		X		X			X		X	
<i>Meriania rigida</i>	X		X								X	X	
<i>Meriania rubriflora</i> (*)										X			
<i>Meriania rugosa</i> (*)	X												
<i>Meriania sanguinea</i>	X		X		X					X	X	X	
<i>Meriania sessilifolia</i> (*)			X										
<i>Meriania speciosa</i>	X											X	
<i>Meriania sumatika</i> (*)				X									
<i>Meriania tetragona</i>	X		X					X			X		
<i>Meriania tetraquetra</i> (*)	X		X									X	
<i>Meriania tomentosa</i>	X		X	X	X	X				X	X	X	
<i>Meriania urceolata</i>												X	
<i>Meriania Vargasii</i> (*)				X									
<i>Meriania Vasquezii</i> (*)										X			
<i>Meriania vilcabambensis</i> (*)				X									
<i>Meriania weberbaueri</i> (*)					X	X				X			
<i>Meriania zunacensis</i>	X												
Total	18	1	11	6	6	3	2	1	1	8	6	9	1

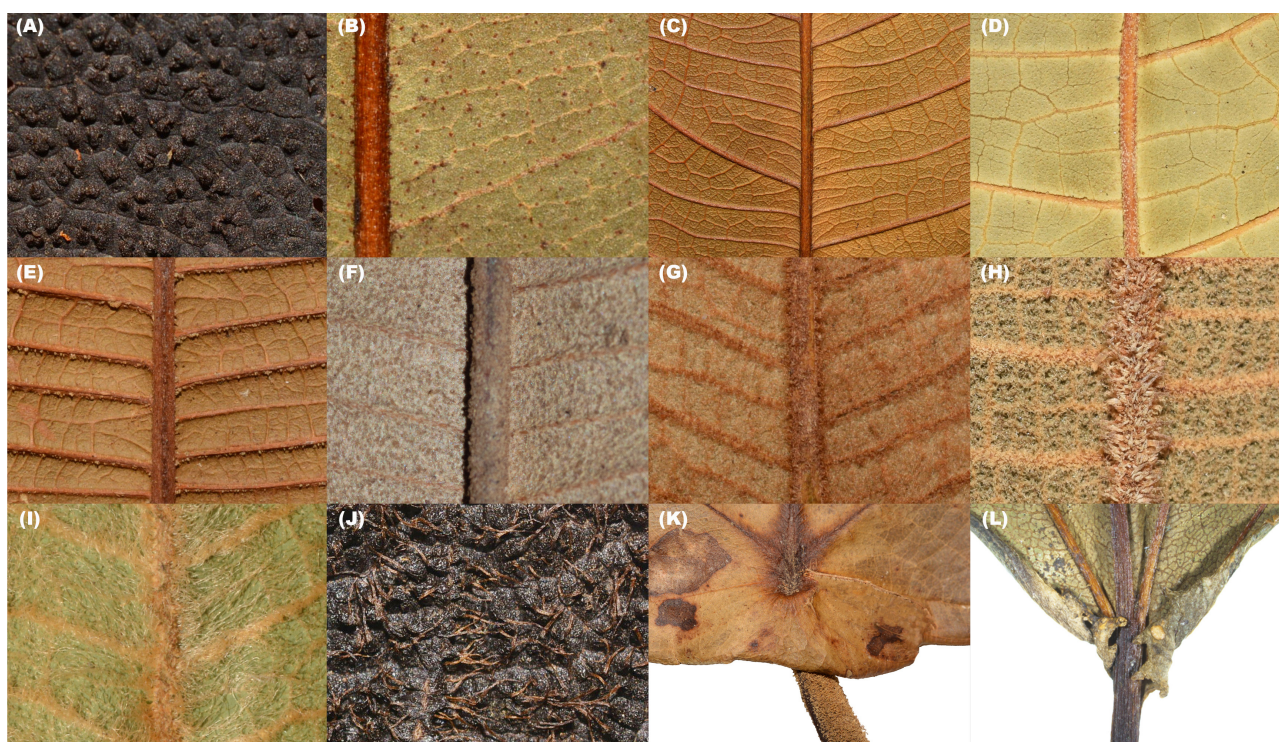


FIGURE 4. Morphological characteristics of Peruvian *Meriania*. **A.** Bullate adaxial leaf surface (*M. sanguinea*; R. Fernandez-Hilario et al. 1896). **B.** Punctiform abaxial leaf surface (*M. cuzcoana*; W. Farfán et al. 976). **C.** Glabrous abaxial leaf surface (*M. callosa*; R. Fernandez-Hilario et al. 2055). **D.** Furfuraceous abaxial leaf surface (*M. vilcabambensis*; L. Valenzuela 7494). **E.** Puberulent abaxial leaf surface (*M. drakei*; R. Fernandez-Hilario et al. 1775). **F.** Pubescent abaxial leaf surface (*M. bicentenaria*; A. Monteagudo et al. 6960). **G.** Tomentose abaxial leaf surface (*M. tomentosa*; R. Fernandez-Hilario et al. 1905). **H.** Setulose abaxial leaf surface (*M. radula*; D. Paredes et al. 604). **I.** Villose abaxial leaf surface (*M. sumatika*; I. Huamantupa et al. 2060). **J.** Hirsute adaxial leaf surface (*M. hirsuta*; S. Baldeón & J. Campos 5373). **K.** Peltate leaf base (*M. peltata*; R. Fernandez-Hilario et al. 2093). **L.** Leaf base with dentate-undulate revolute auricles (*M. cuzcoana*; L. Valenzuela et al. 6904).

Key to the genera of Meranieae in Peru

1. Tiny herbs generally less than 50 cm tall, or occasionally subshrubs up to 1.5 m tall; fruits with mature hypanthia costate with 8–10 evident ribs2
- Shrubs, vines, or trees more than 1 m tall; fruits with mature hypanthia terete, sometimes slightly angled in *Adelobotrys* or slightly costate in *Meriania* (with 10 evident ribs in *Meriania sumatika*, but in this case trees 5–20 m tall)3
2. Inflorescences solitary or in pairs; stamen connectives with one dorso-basal appendage **Macrocentrum** (Fig. 1G–1H)
- Inflorescences in unilateral scorpioid cymes with more than 10 flowers (with 1–4 flowers in *S. peruviana*); stamen connectives with two appendages, one dorso-basal and the other dorsal **Salpinga** (in Peru) (Fig. 1K–1L)
3. Stamen connectives with two appendages, one dorso-basal and the other dorsal4
- Stamen connectives with only one dorso-basal appendage5
4. Vines or occasionally shrubs with malpighiaceae trichomes; stamen connectives with bifid ascending dorsal appendages or at least apically bilobed **Adelobotrys** (Fig. 1A–1B)
- Shrubs, trees or rarely climbers, glabrous or with various indument types but never with malpighiaceae trichomes; stamen connectives with dentiform dorsal appendages or as mere humps, if it is ascending then blunt, apically sagittate or trilobed **Meriania p.p.** (Fig. 1J)
5. Inflorescences erect, pseudo-pendulous or pendulous; stamen from both cycles with evident inflated (bulbous) connectives, except some species with 4-merous flowers but in these cases always with pendulous inflorescences (see comments below *Meriania rubriflora*) **Axinaea** (Fig. 1C–1D)
- Inflorescences erect (except pendulous in *M. rubriflora*); stamens from both cycles with connectives not inflated (bulbous) (but antepetalous stamens of *Meriania macrophylla* complex with connectives inflated)6
6. Hypanthia and calyces with various indument types; petals less than 4 mm long, if more than 4 mm long then hypanthia and calyces setose; stamen connectives with dorso-basal appendages always descending; anthers with pores ventrally inclined. **Graffenrieda** (including *Centronia s.s.*) (Fig. 1E–1F)
- Hypanthia and calyces with various indument types but never setose; petals more than 9.5 mm long; stamen connectives with dorso-basal appendages descending or almost perpendicular to the thecae; anthers with pores dorsally inclined **Meriania p.p.** (Fig. 1I)

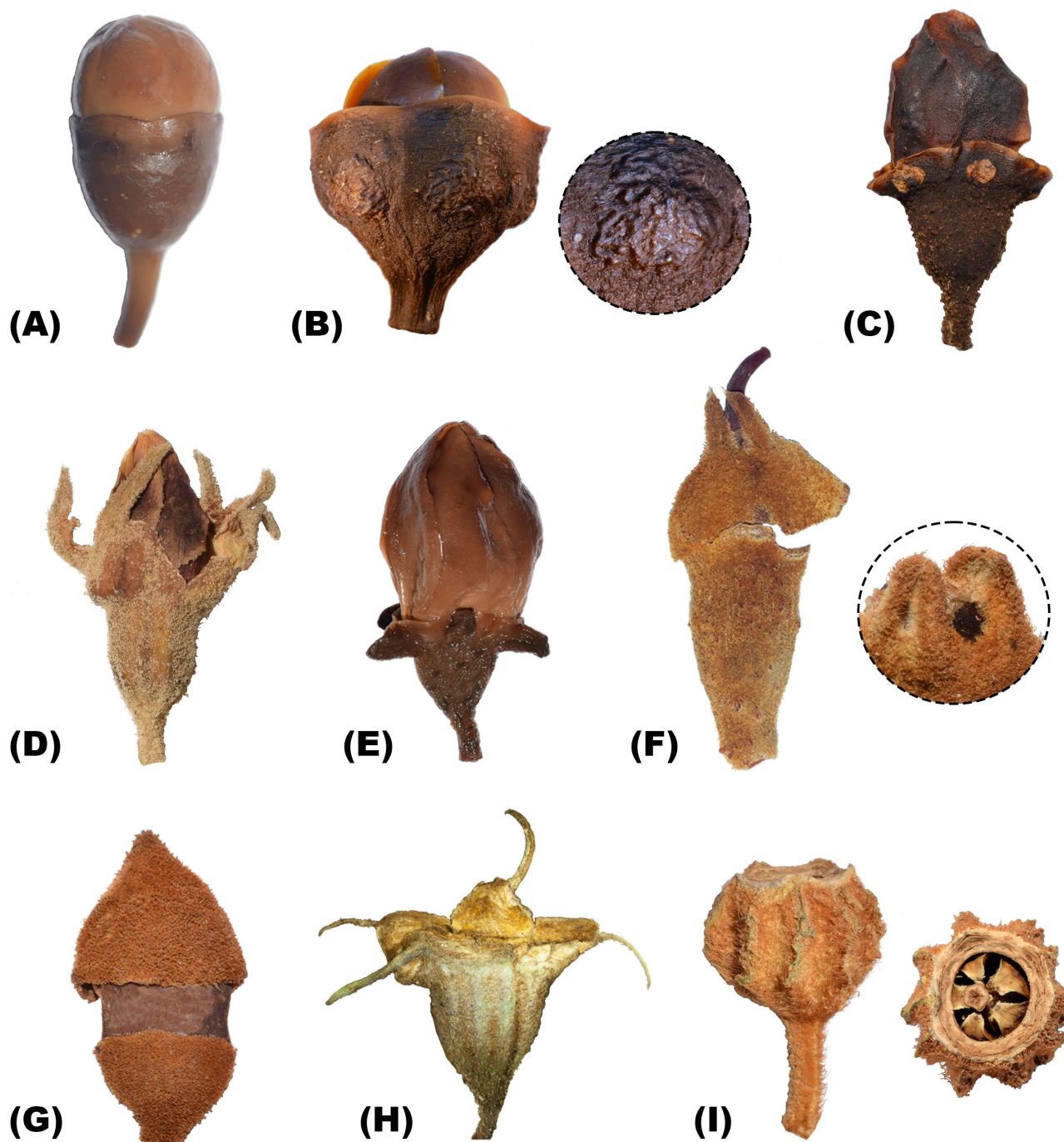


FIGURE 5. Morphological characteristics of Peruvian *Meriania*. **A.** Calyx lacking dorsal projections (*M. hexamera*; I. Revilla 3484). **B.** Calyx with callose dorsal projections (left), and detail of a dorsal projection (right) (*M. callosa*; R. Fernandez-Hilario et al. 2055). **C.** Calyx with whitish callose dorsal projections (*M. penningtonii*; R. Fernandez-Hilario et al. 2072). **D.** Calyx with claw-shaped dorsal projections (*M. dazae*; J. L. Marcelo-Peña et al. 6568). **E.** Calyx with blunt dorsal projections (*M. rugosa*; H. van der Werff 17006). **F.** Subcalyptrate calyx with small claw-shaped projections and irregular dehiscence (left), and detail of the subcalyptrate calyx apex (right) (*M. vasquezii*; R. Vásquez et al. 45480). **G.** Calyptrate calyx with circumscissile dehiscence (*M. escalerensis*; M. Ríos et al. 3316). **H.** Calyx with aciculate dorsal projections and slightly costate hypanthium (*M. prunifolia*; J. Schunke-Vigo 11712). **I.** Costate hypanthium with 10 evident ribs (left) and apical view (right) (*M. sumatika*; P. Núñez & J. Arque 8369).

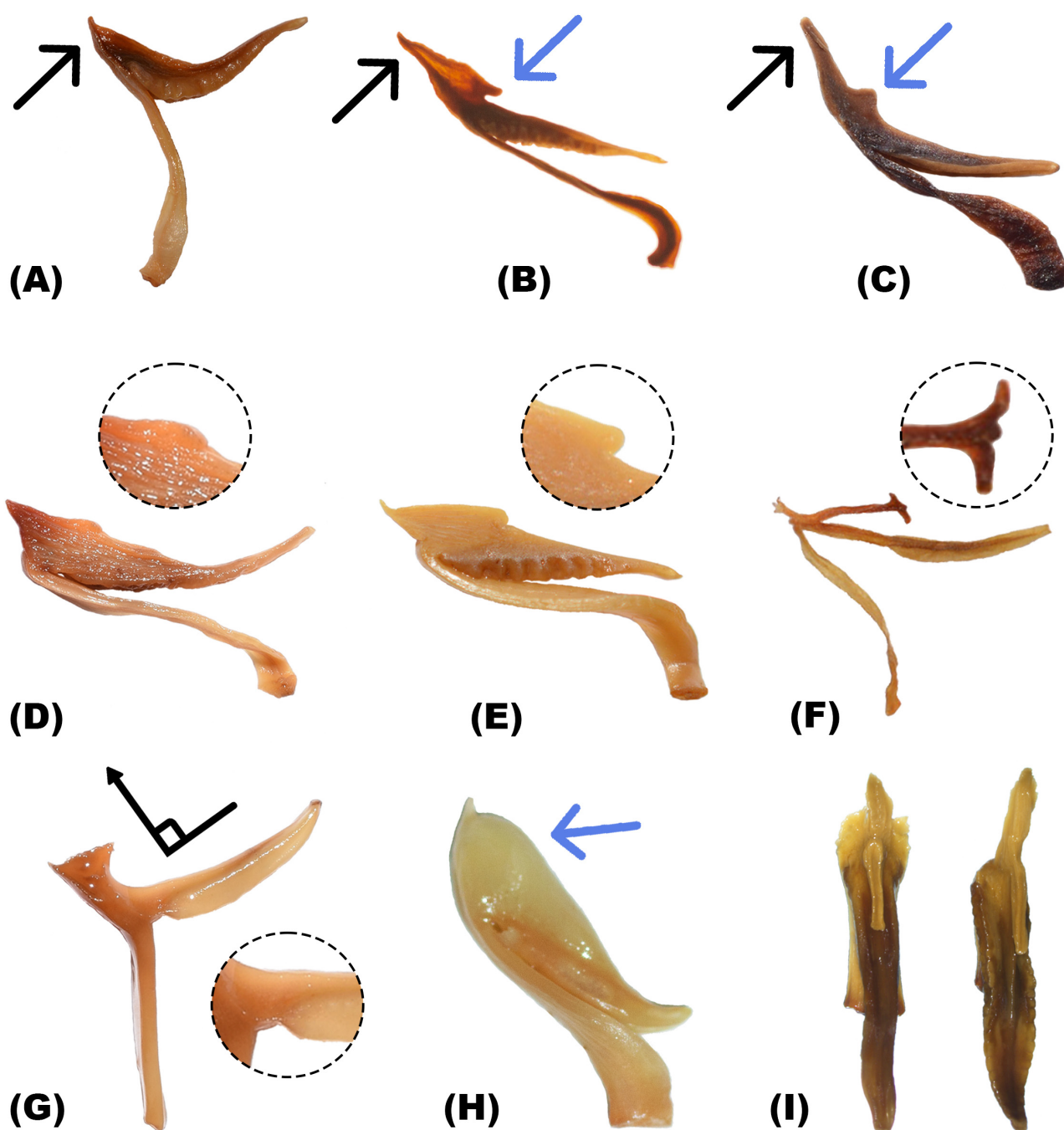


FIGURE 6. Morphological characteristics of Peruvian *Meriania*. **A.** Stamen with a triangular descending dorso-basal appendage (black arrow) but no dorsal appendage (*M. tetraquetra*; R. Fernandez-Hilario & A. Vásquez 251). **B.** Stamen with a triangular descending dorso-basal appendage and a blunt ascending dorsal appendage (blue arrow) (*M. megaphylla*; A. Weberbauer 7048). **C.** Stamen with an acuminate descending dorso-basal appendage (black arrow) and a dorsal appendage as a mere hump (blue arrow) (*M. franciscana*; C. Díaz & S. Fernández 10150). **D.** Stamen with a triangular descending dorso-basal appendage and a dorsal appendage as a mere hump, and detail of the dorsal appendage (*M. rugosa*; F. A. Michelangeli et al. 1725). **E.** Stamen with a triangular descending dorso-basal appendage and a dentiform dorsal appendage, and detail of the dorsal appendage (*M. hexamera*; I. Revilla 3484). **F.** Stamen with a multilobed descending dorso-basal appendage and an apically trilobed ascending dorsal appendage, and detail of the dorsal appendage apex (*M. microflora*; I. Huamantupa et al. 15552). **G.** Stamen with an almost perpendicular dorso-basal appendage to the theca, and detail of the prolonged connective below the theca (*M. tetragona*; R. Fernandez-Hilario et al. 2092). **H.** Stamen with inflated (bulbous) connective (blue arrow) (*M. bicentenaria*; R. Villanueva-Espinoza 675). **I.** Antepetalous stamen with a laterally expanded dorso-basal appendage (left) and antepetalous stamen with a dorso-basal appendage not laterally expanded (right) (*M. vilcabambensis*; L. Valenzuela 7494).

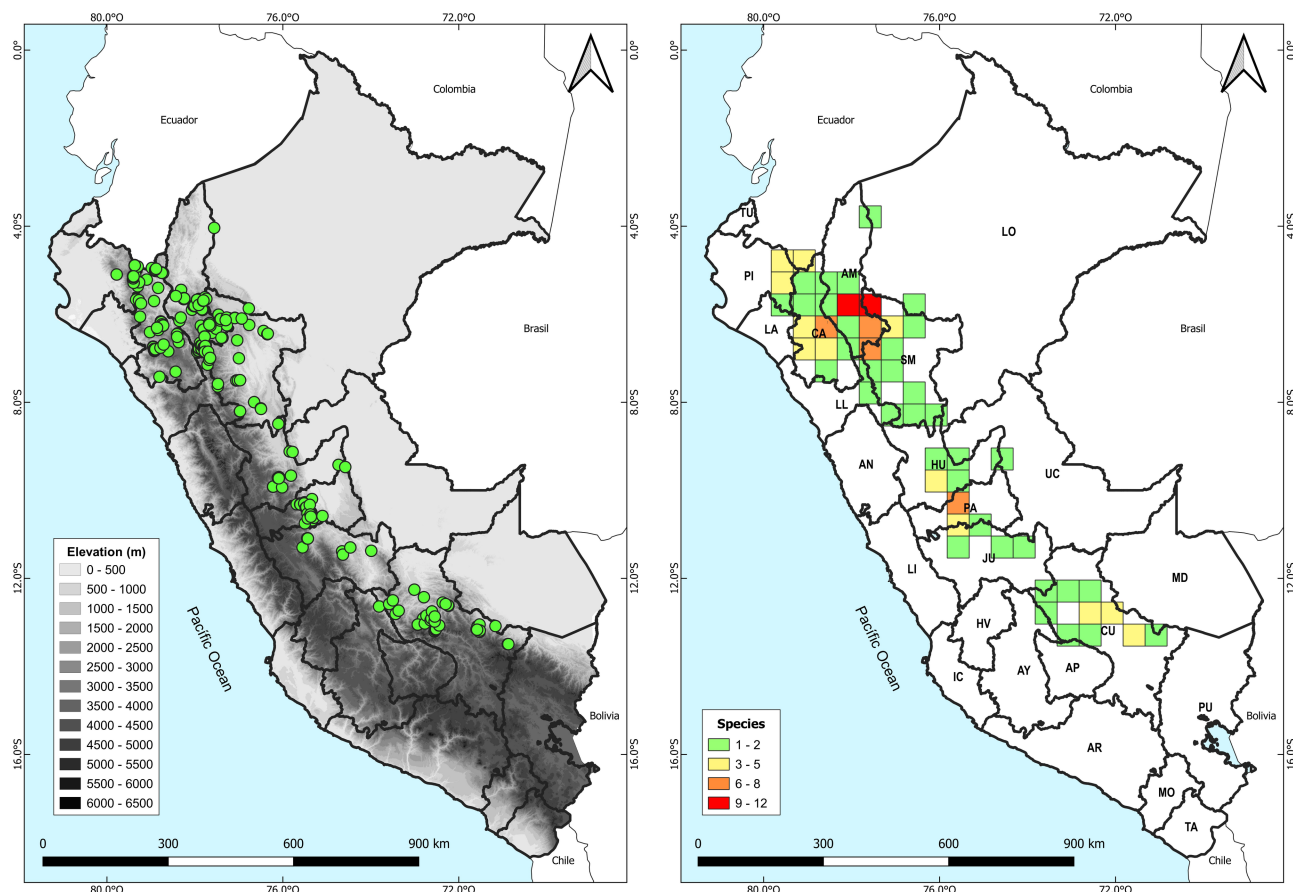


FIGURE 7. Map with the locations of the examined *Meriania* specimens in this treatment (left), and map with species richness showing the most diverse grids in red (right). Departmental abbreviations: AM (Amazonas), AN (Ancash), AP (Apurímac), AR (Arequipa), AY (Ayacucho), CA (Cajamarca), CU (Cusco), HU (Huánuco), HV (Huancavelica), IC (Ica), JU (Junín), LA (Lambayeque), LI (Lima), LL (La Libertad), LO (Loreto), MD (Madre de Dios), MO (Moquegua), PA (Pasco), PI (Piura), PU (Puno), SM (San Martín), TA (Tacna), TU (Tumbes) and UC (Ucayali).

Key to the species of *Meriania* in Peru

1. Leaf blades with dentate-undulate, revolute auricles at the base (Fig. 4L), and punctiform abaxial surfaces (Fig. 4B) *M. cuzcoana*
- Leaf blades without auricles (but *M. rigida* and *M. zunacensis* with revolute bases, and *M. franciscana* and *M. neillii* with slightly revolute bases), and abaxial surface not punctiform2
2. Inflorescences solitary, dichasia 3 or 9-flowered (often reduced to 5-flowered)3
- Inflorescences in panicles with more than 10 flowers (but see comments below *M. hirsuta*)5
3. Calyx calyptrate with irregular dehiscence*M. sessilifolia*
- Calyx lobed with regular dehiscence4
4. Terminal branches and leaf blades glabrous; leaf blades 7.7–10 cm long; hypanthium terete; calyx with acute dorsal projections ..
..... *M. speciosa*
- Terminal branches and abaxial leaf blades moderately to densely furfuraceous; leaf blades 2.3–8.2 cm long; hypanthium slightly costate; calyx with acicular dorsal projections (Fig. 5H) *M. prunifolia*
5. Leaf blades bullate (Fig. 4A); corolla campanulate and deep red; stamen connectives with dorsal-basal appendages almost perpendicular to thecae (Fig. 6G)6
- Leaf blades flat to bullate; corolla spreading or campanulate, white, pink, pink-orange to reddish-orange, or fuchsia to reddish-purple but never deep red (except red in *M. rubriflora*); stamen connectives with dorsal-basal appendages not perpendicular to thecae9
6. Nodes with developed interpetiolar flaps7
- Nodes with only interpetiolar lines, not flaps8
7. Internodes quadrangular and 4-winged (Fig. 3D); petioles with abaxial tuberculate projections (rarely horn-shaped) on the transition zone from the petiole to the midvein (Fig. 3H) *M. tetragona*
- Internodes terete-quadrangular; petioles with abaxial liguliform projections on the transition zone from the petiole to the midvein (Fig. 3G) *M. sanguinea*
8. Branches, petioles, and both leaf surfaces hirsute (Fig. 4J); antesepalous stamen connectives with dorso-basal appendages laterally expanded *M. hirsuta*

-	Branches, petioles, and abaxial leaf surfaces moderately to densely setulose (Fig. 4H); stamen connectives from both cycles with dorso-basal appendages not laterally expanded	<i>M. radula</i>
9.	Antepetalous stamens with inflated (bulbous) connectives (Fig. 6H).....	10
-	Stamens from both cycles without inflated (bulbous) connectives.....	13
10.	Leaf blades subpeltate to peltate (Fig. 4K), and more than 8.4 cm wide	11
-	Leaf blades neither subpeltate nor peltate, less than 8.1 cm wide.....	12
11.	Leaf blades 22.8–28.7 × 13.3–16.7 cm, peltate, abaxial surfaces pubescent to setulose	<i>M. peltata</i>
-	Leaf blades 17.2–27.7 × 8.1–15.5 cm, subpeltate, abaxial surfaces puberulent	<i>M. ninakurorum</i>
12.	Leaf abaxial surface densely pubescent, the trichomes evenly covering the entire surface (Fig. 4F); petals fuchsia to light fuchsia; antepetalous stamen connectives without dorsal appendages	<i>M. bicentenaria</i>
-	Leaf abaxial surface sparsely to densely puberulent, the trichomes not covering the entire surface; petals reddish-purple; antepetalous stamen connectives with blunt ascending dorsal appendages	<i>M. franciscana</i>
13.	Stamens strongly dimorphic (connectives with different shapes, sizes and colors), antepetalous stamen connectives with apically trilobed (Fig. 6F) or sagittate ascending dorsal appendages	14
-	Stamens dimorphic (connectives with different shapes and sizes but with similar colors) or isomorphic, stamen connectives from both cycles without dorsal appendages (Fig. 6A), with dentiform dorsal appendages (Fig. 6E), with blunt ascending dorsal appendages (Fig. 6B) or dorsal appendages as mere humps (Fig. 6C and 6D).....	15
14.	Petioles with adaxial and lateral liguliform projections on the apex; corolla white; antepetalous stamen connectives with apically trilobed ascending dorsal appendages (Fig. 6F).....	<i>M. microflora</i>
-	Petioles without projections; corolla fuchsia; antepetalous stamen connectives with apically sagittate ascending dorsal appendages	<i>M. urceolata</i>
15.	Corolla campanulate, pink-orange to reddish-orange (except fuchsia in <i>M. vasquezii</i> and red in <i>M. rubriflora</i>) (Fig. 3J).....	16
-	Corolla spreading, fuchsia to reddish-purple (Fig. 3I)	22
16.	Calyx calyptrate or subcalyptrate, with irregular dehiscence (Fig. 5F)	17
-	Calyx neither calyptrate nor subcalyptrate, with regular dehiscence	20
17.	Calyx calyptrate, without dorsal projections	18
-	Calyx subcalyptrate, with dorsal projections 0.5–3 mm long (Fig. 5F).....	19
18.	Inflorescences with flowers in regular dichasia (3-flowered) in the branchlet ends; petals 20–24 mm long	<i>M. tomentosa</i>
-	Inflorescences with flowers in 5–6-flowered umbels in the branchlet ends; petals 9–10 mm long.....	<i>M. acida</i>
19.	Leaf blades 10.8–12.7 × 2.7–3 cm, abaxial surface sparsely to moderately puberulent, trichomes not covering the entire surface... ..	<i>M. juanjil</i>
-	Leaf blades 16.5–23.5 × 9.3–10.7 cm, abaxial surface densely villose, evenly covering the entire surface	<i>M. vasquezii</i>
20.	Nodes with robust interpetiolar flaps; inflorescences pendulous; calyces with obsolete dorsal projections	<i>M. rubriflora</i>
-	Nodes without interpetiolar flaps; inflorescences erect; calyces with claw-shaped dorsal projections (Fig. 5D)	21
21.	Abaxial leaf surface tomentose with whitish to cream trichomes when dry; petals 19.5–24 mm long	<i>M. dazae</i>
-	Abaxial leaf surface pubescent with ferruginous trichomes when dry; petals 13–15.5 mm long	<i>M. bongarana</i>
22.	Calyx calyptrate, with circumscissile dehiscence (Fig. 5G).....	<i>M. escalerensis</i>
-	Calyx not calyptrate, with regular dehiscence.....	23
23.	Stamens dimorphic; antepetalous stamen connectives with descending dorso-basal appendages laterally expanded (Fig. 6I)	24
-	Stamens isomorphic; stamen connectives from both cycles with descending dorso-basal appendages not laterally expanded.....	28
24.	Leaves sessile (petioles up to 3 mm long), base auriculate	<i>M. amischophylla</i>
-	Leaves with petioles longer than 8 mm, base acute, attenuate, or obtuse (rarely broadly obtuse in <i>M. weberbaueri</i>).....	25
25.	Stamen connectives without dorsal appendages.....	<i>M. weberbaueri</i>
-	Stamen connectives with blunt ascending dorsal appendages (Fig. 6B).....	26
26.	Hypanthium 10-costate, with longitudinal ridges up to 2.5 mm high (Fig. 5I).....	<i>M. sumatika</i>
-	Hypanthium terete, without ridges	27
27.	Inflorescences, hypanthia, and calyces densely tomentose, the trichomes up to 1.5 mm long.....	<i>M. vargasii</i>
-	Inflorescences, hypanthia, and calyces sparsely to densely furfuraceous, the trichomes up to 0.25 mm long (Fig. 4D)	<i>M. vilcabambensis</i>
28.	Nodes with robust interpetiolar flaps (sometimes small in <i>M. callosa</i>) (Fig. 3B)	29
-	Nodes without interpetiolar flaps	31
29.	Internodes quadrangular and 4-winged; stamen connectives with blunt ascending dorsal appendages (Fig. 6B)	<i>M. megaphylla</i>
-	Internodes quadrangular, but not winged; stamen connectives with dorsal appendages as mere humps or obsolete.....	30
30.	Petioles 25–50 mm long, with an adaxial projection (scutum) on the transition zone from the petiole to the midvein (Fig. 3E).....	<i>M. zunacensis</i>
-	Petioles 10–22 mm long, without projections	<i>M. callosa</i>
31.	Petioles with an apical adaxial projection (Fig. 3F); petals abaxially moderately to densely puberulent	<i>M. drakei</i>
-	Petioles without projections; petals glabrous	32
32.	Leaf blades with entire margins, and the adaxial surfaces flat	33
-	Leaf blades with denticulate margins, and the adaxial surfaces flat to bullate	34
33.	Flowers 6-merous; calyx without dorsal projections (Fig. 5A).....	<i>M. neillii</i>
-	Flowers 5-merous; calyx with thick, callose dorsal projections.....	<i>M. rigida</i>
34.	Leaf venation with 1 pair of secondary veins (lateral nerves) and an additional pair of faint submarginal veins.....	<i>M. rugosa</i>
-	Leaf venation with 2 pairs of secondary veins (lateral nerves) and an additional pair of faint submarginal veins	35
35.	Internodes quadrangular and 4-winged, wings 1–3.5 mm high (Fig. 3C); calyx with callose dorsal projections, whitish and much lighter than the rest of the calyx and hypanthium when dry (Fig. 5C).....	<i>M. penningtonii</i>
-	Internodes quadrangular, without wings; calyx with small conic dorsal projections, of the same color as the rest of the calyx and hypanthium when dry.....	<i>M. tetraquetra</i>

1. *Meriania acida* (Markgr.) Wurdack, Phytologia 35(1): 5 (1976). Basionym: *Graffenrieda acida* Markg., Notizbl. Bot. Gart. Berlin-Dahlem 13(119): 462 (1937). Type:—**PERU. Cajamarca:** Prov. Cutervo, Tambillo, 26 Aug 1878 (fl.), *A. Raimondi* 3341 (lectotype, designated here: USM! [accession no. 1629g]; isoelectotypes: USM! [accession nos. 1629a, 1629b, 1629c, 1629d, 1629e, 1629f, 1629h], US!-fragment [barcode 001201396]). Remaining syntypes:—**PERU. Cajamarca:** Prov. Cutervo, Tambillo, 26 Aug 1878 (fl.), *A. Raimondi* 3695 (fl.) (USM! [accession no. 1629l]), *A. Raimondi* 3813 (USM! [accession nos. 1629m, 1629n, 1629ñ]), same locality and date (ster.), *A. Raimondi* 4844 (USM! [accession no. 1629j]), same locality and date (fl.), *A. Raimondi* 6126 (USM! [accession no. 1629m]). **COLOMBIA. Antioquia:** S. Augusto, 25 Dec 1879, *Kalbreyer* 1293 (not located). (Figure 8).

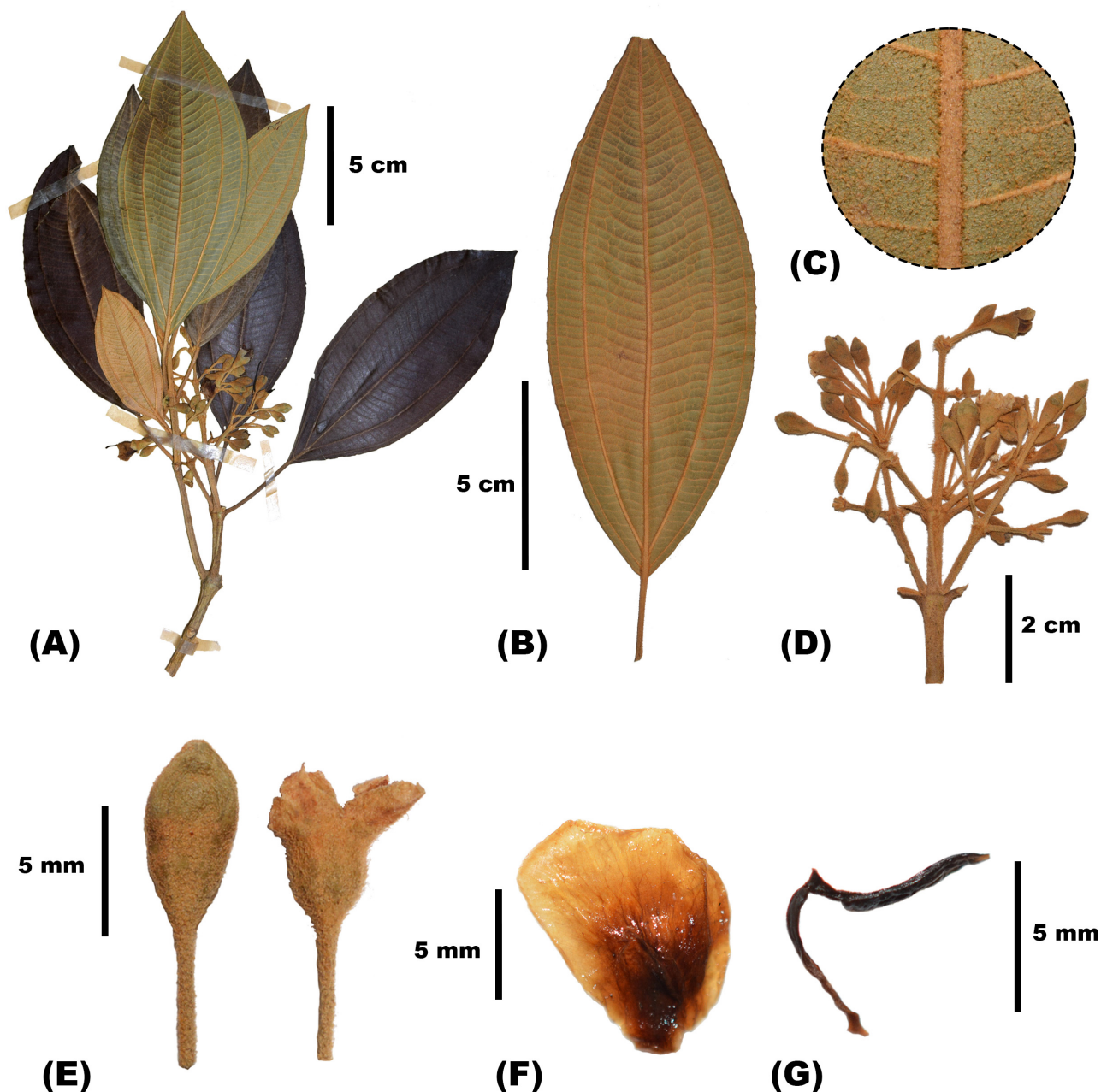


FIGURE 8. *Meriania acida*. **A.** Terminal fertile branch with inflorescence. **B.** Leaf blade, abaxial view. **C.** Detail of abaxial leaf surface. **D.** Inflorescence with flower buds. **E.** Flower bud (left) and calyx with irregular dehiscence (right). **F.** Petal. **G.** Stamen, lateral view. A–G from *A. Raimondi* 3695.

Comments:—*Meriania acida* is only known in Peru from the original material collected by A. Raimondi in 1878. It is characterized by its calyptrate calyces without dorsal projections (Fig. 8E) and campanulate, reddish-orange corollas. In Peru there are three other species with calyptrate calyces (*M. escalerensis*, *M. sessilifolia* and *M. tomentosa*). However, *M. escalerensis* and *M. sessilifolia* have spreading, deep pink to reddish-purple corollas. In addition, *M.*

escalerensis has calyces with circumscissile dehiscence (vs. irregular in *M. acida*, Fig. 8E) and stamen connectives with blunt ascending dorsal appendages (vs. absent). On the other hand, *M. sessilifolia* shares with *M. acida* the calyces with irregular dehiscence but the former is clearly distinguishable by its sessile leaves [vs. clearly petiolate, (1.5–)2.2–3.4 cm long]. The Peruvian species most similar to *M. acida* is *M. tomentosa*, but they can be differentiated by the petal length (9–10 mm long vs. 20–24 mm long) and the shape of the descending dorso-basal appendages of the stamen connectives (acute vs. blunt).

Based on a collection made in Amazonas (*Wurdack 1054*), Wurdack (1964, 1976) considered *M. acida* to be closely related to *M. denticulata* (Gleason) Wurdack, from Ecuador, because both share subcalyprate calyces and small dorsal projections on the calyx. However, after a detailed analysis we recognized *Wurdack 1054* to be an undescribed species, and proposed *M. juanjil* (Fernandez-Hilario *et al.* 2022). *Meriania acida* is easily distinguishable from *M. juanjil* by its calyprate calyx without dorsal projections (vs. subcalyprate with acute dorsal projections), leaf blades 5–8 cm wide (vs. 2.7–3 cm wide) and petals 9–10 mm long (vs. 11–13.5 mm long).

Nomenclatural notes:—Markgraf (1937) cited in the protologue five Peruvian specimens (*Raimondi 3341*, 3695, 3813, 4844 and 6126) and one Colombian specimen (*Kalbreyer 1293*), so these specimens must be considered as syntypes conforming with Art. 9.6 of the ICN (Turland *et al.* 2018). The A. Raimondi collection housed in USM corresponds to the specimens that were sent on loan to Berlin in 1926 (Anonymous 1939, 1942), so they may have been seen by F. Markgraf. According to Art. 9.3 and 9.12 of the ICN (Turland *et al.* 2018), we chose *Raimondi 3341* for lectotypification, because this specimen has the highest number of fertile sheets (duplicates).

Distribution and phenology:—*Meriania acida* is apparently restricted to northern Peru and only present in the department of Cajamarca (Fig. 9). Markgraf (1937) cited one Colombian specimen in the protologue of *M. acida*. However, none of the species currently recognized for Colombia (see Mendoza-Cifuentes 2021) matches the concept we used here for *M. acida*. Although the original material collected by A. Raimondi does not give details of its habitat, *Meriania acida* probably grows in montane forest relicts. It has been collected in flower in August.

Specimens examined:—PERU. Cajamarca: Prov. Cutervo, Tambillo, 26 Aug 1878 (ster.), *A. Raimondi 3536* (USM!), same locality and date (ster.), *A. Raimondi 6240* (USM!), same locality and date (ster.), *A. Raimondi 6319* (USM!).

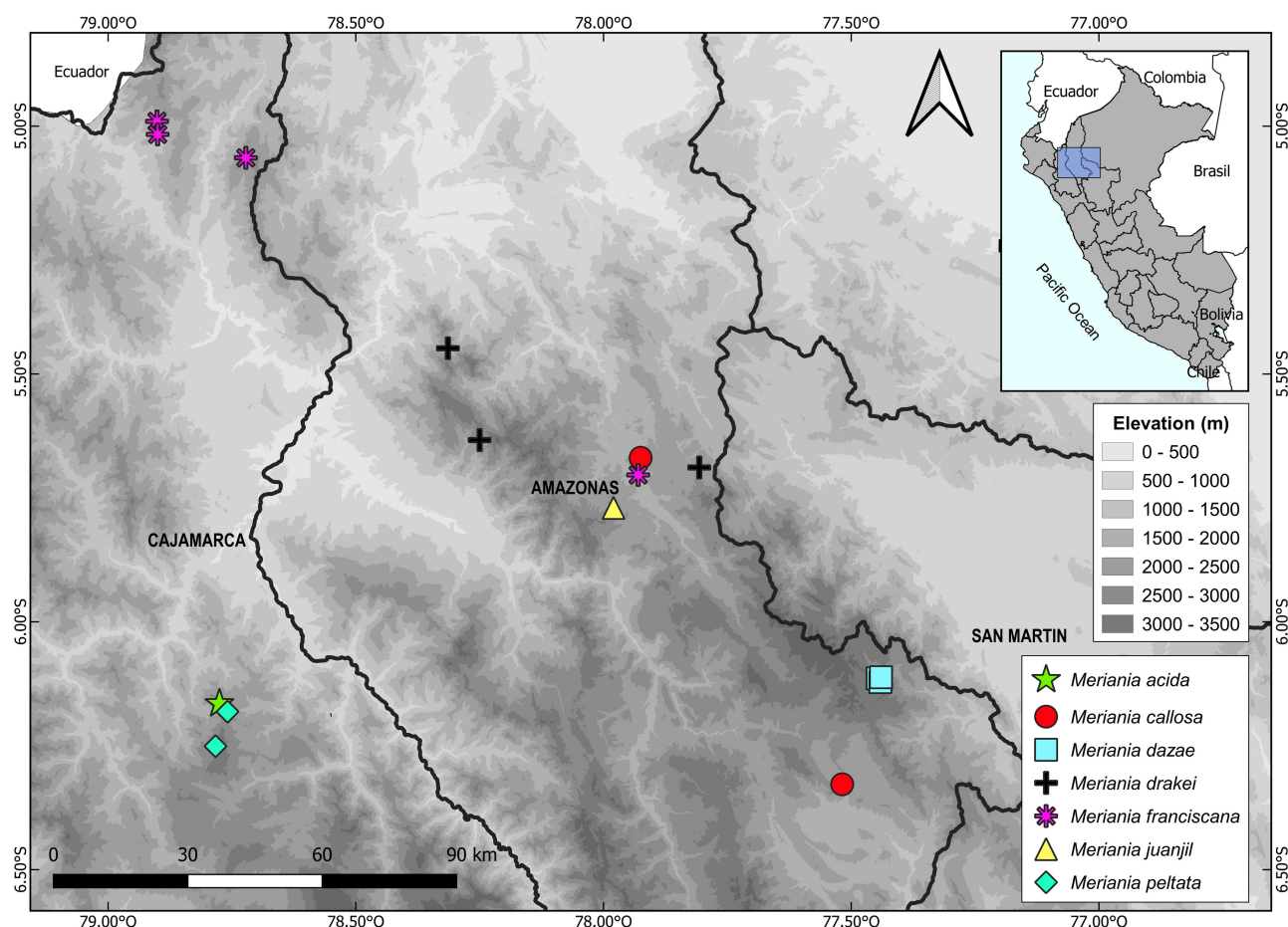


FIGURE 9. Distribution map of *M. acida*, *M. callosa*, *M. dazae*, *M. drakei*, *M. franciscana*, *M. juanjil* and *M. peltata*.

2. *Meriania amischophylla* Wurdack, Phytologia 48(3): 238 (1981). Type:—PERU. Loreto [Huánuco]: Prov. Coronel Portillo, Dist. Padre Abad, la cumbre de la Divisoria, 1500–1600 m, 6 Feb 1978 (fl.), *J. Schunke V. 9842* (holotype: US! [barcode 00120355]; isotypes: AAU!, F! [accession no. 2010208], MO! [accession no. 2796540], NY! [barcode 00228949], U! [barcode U0282674], USM! [accession no. 88597]). (Figure 10).

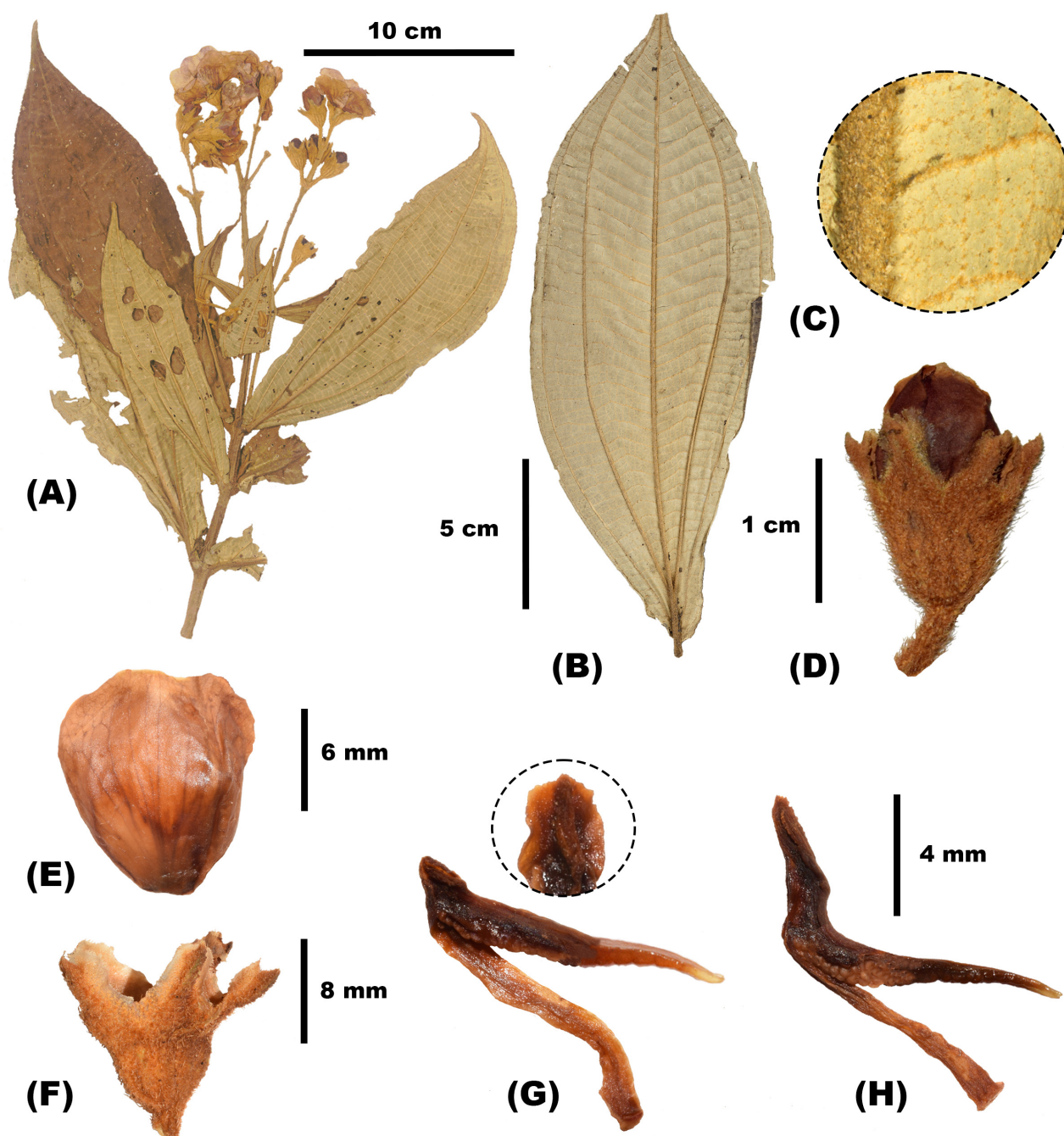


FIGURE 10. *Meriania amischophylla*. **A.** Terminal fertile branch with inflorescence. **B.** Leaf blade, abaxial view. **C.** Detail of abaxial surface. **D.** Flower bud. **E.** Petal. **F.** Hypanthium and calyx in lateral view. **G.** Antesepalous stamen, lateral view, with detail of the dorso-basal appendage, frontal view (above). **H.** Antepetalous stamen, lateral view. A, D–H from *J. Schunke V. 9842*; B–C from *J. Schunke V. 11374*.

Comments:—*Meriania amischophylla* is easily distinguishable from other Peruvian species by its subsessile leaves (petioles up to 3 mm long) (Fig. 10B), calyces with regular dehiscence (Fig. 10D), spreading, reddish-purple corollas and antesepalous stamen connectives with laterally expanded descending dorso-basal appendages and dorsal appendages as mere humps (Fig. 10G). Laterally expanded dorso-basal appendages have only been observed in six other Peruvian species (*M. hirsuta*, *M. sumatika*, *M. Vargasii*, *M. vasquezii*, *M. vilcabambensis* and *M. weberbaueri*). Within this

group, *M. amischophylla* is more closely related to *M. weberbaueri*, with which it shares spreading, fuchsia to reddish-purple corollas and stamen connectives without ascending dorsal appendages. However, *M. amischophylla* differs from *M. weberbaueri* by its sessile leaves (vs. petioles 1.3–5.1 cm long) and distinctly suprabasal secondary veins (vs. basal to slightly suprabasal). *Meriania sumatika*, *M. vargasii* and *M. vilcabambensis* have stamen connectives with ascending dorsal appendages, *M. vasquezii* has calyces with irregular dehiscence, and *M. hirsuta* has campanulate, deep red corollas.

Sessile or subsessile leaves are unusual characters in the Andean species of *Meriania*, occurring only in *M. amischophylla*, *M. amplexicaulis* Wurdack, *M. mexiae* Wurdack and *M. sessilifolia*. *Meriania amplexicaulis* (Ecuador) is the most closely related to *M. amischophylla* due to its similar indumentum and calyx with regular dehiscence and dorsal projections. However, the former differs by its petals 16–18 cm long (vs. 19–32 cm), stamens with connectives prolonged below the thecae (vs. not prolonged) and antesealous stamen connectives with ascending appendages (vs. a mere hump).

Distribution and phenology:—*Meriania amischophylla* is endemic to Peru and restricted to the Cordillera La Divisoria in the Huánuco-Ucayali border, and grows in montane forests at 1500–1600 m (Fig. 11). It has been collected in flower in February and April.

Specimens examined:—**PERU. Huánuco:** Prov. Leoncio Prado, Dist. Hermilio Valdizán, la Divisoria, carretera a Pucallpa, 1600 m, 24 Apr 1980 (fl.), *J. Schunke V. 11374* (NY!, US!).

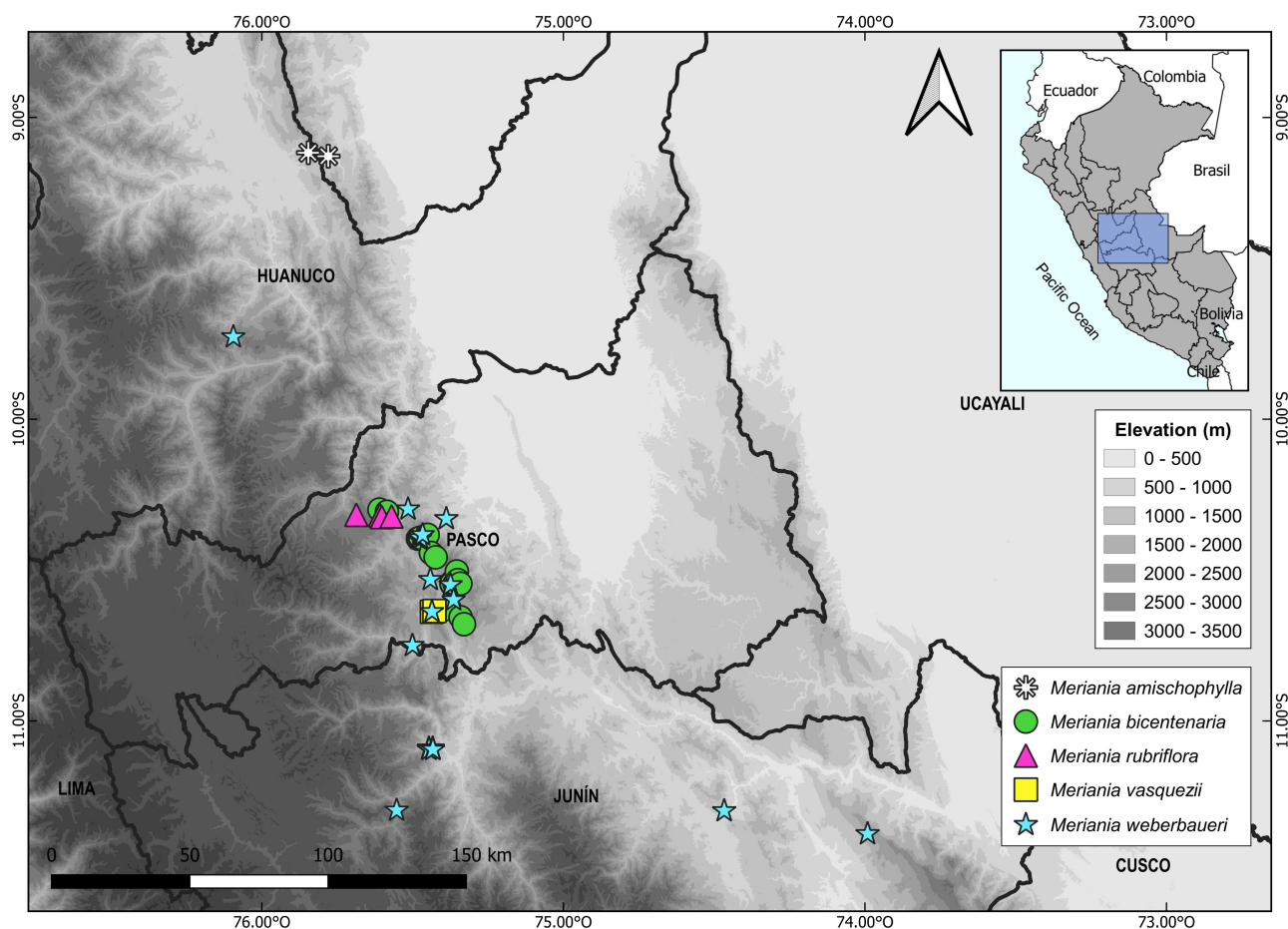


FIGURE 11. Distribution map of *M. amischophylla*, *M. bicentenaria*, *M. rubriflora*, *M. vasquezii* and *M. weberbaueri*.

3. *Meriania bicentenaria* Rob.Fern., R.Rojas & Michelang., Willdenowia 52(1): 40 (2022). Type:—**PERU. Pasco:** Prov. Oxapampa, Dist. Oxapampa, Abra Oxapampa-Villa Rica, 2300–2500 m, 10°40′36″S, 75°18′55″W, 06 Aug 2004 (fl., fr.), *R. Vásquez, A. Monteagudo, L. Valenzuela, J. Perea & A. Peña 30366* (holotype: HOXA! [accession no. 10648]; isotypes: NY! [barcode 03785787], USM! [accession no. 215491]). (Figures 12–13).

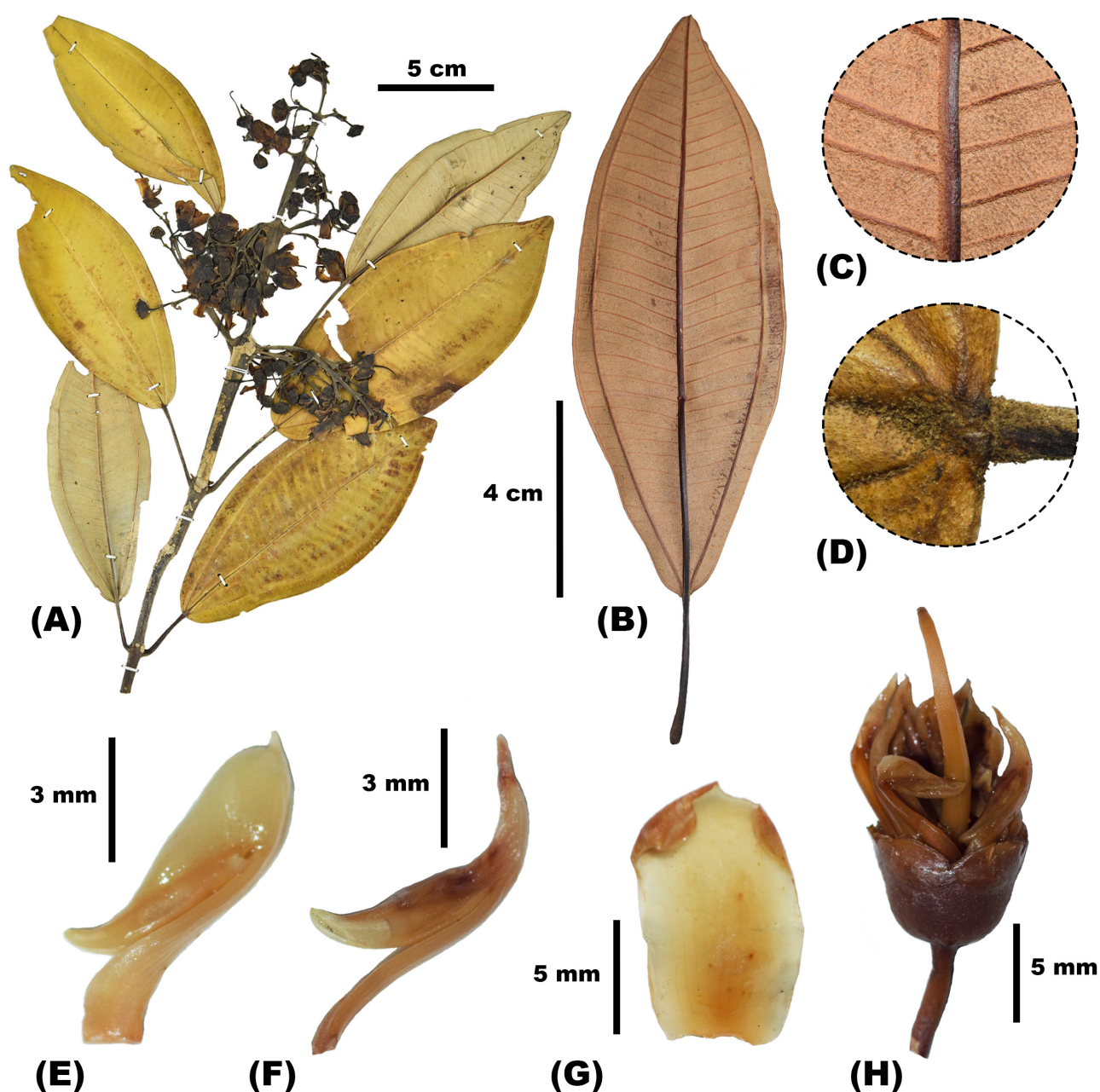


FIGURE 12. *Meriania bicentenaria*. **A.** Terminal fertile branch with inflorescence. **B.** Leaf blade, abaxial view. **C.** Detail of the abaxial leaf surface. **D.** Detail of the leaf base, adaxial surface. **E.** Antepetalous stamen, lateral view. **F.** Antesepalous stamen, lateral view. **G.** Petal. **H.** Flower with petals removed. A, C–D from A. Monteagudo *et al.* 6960; B, E–H from R. Villanueva-Espinoza 675.

Comments:—*Meriania bicentenaria* is part of the *M. macrophylla* complex (see comments under *M. franciscana* for diagnostic characteristics) and differs from other species of *Meriania* by the combination of densely pubescent abaxial leaf blades, with roughened to dendritic trichomes evenly covering entire surface (Fig. 12B–C), calyces with rounded lobes and without dorsal projections, campanulate, fuchsia to light fuchsia corollas, strongly dimorphic stamens, antepetalous stamens with inflated (bulbous) connectives (Fig. 12E), and antepetalous stamen connectives without dorsal appendages (Fig. 12F). Among Peruvian species, *M. bicentenaria* most closely resembles *M. franciscana* but differs by the indument on abaxial leaf blades (densely pubescent vs. sparsely to densely puberulent), petal color (fuchsia to light fuchsia vs. reddish-purple), and the dorsal appendages of the antepetalous stamen connectives (absent vs. blunt ascending). A detailed comparison of *M. bicentenaria* with other related species can be found in Fernandez-Hilario *et al.* (2022).

Distribution and phenology:—*Meriania bicentenaria* is a tree endemic to central Peru (Department of Pasco) and grows in montane forests at 2200–2550 m (Fig. 11). It has been collected in flower from June to September, and in fruit from March to November.

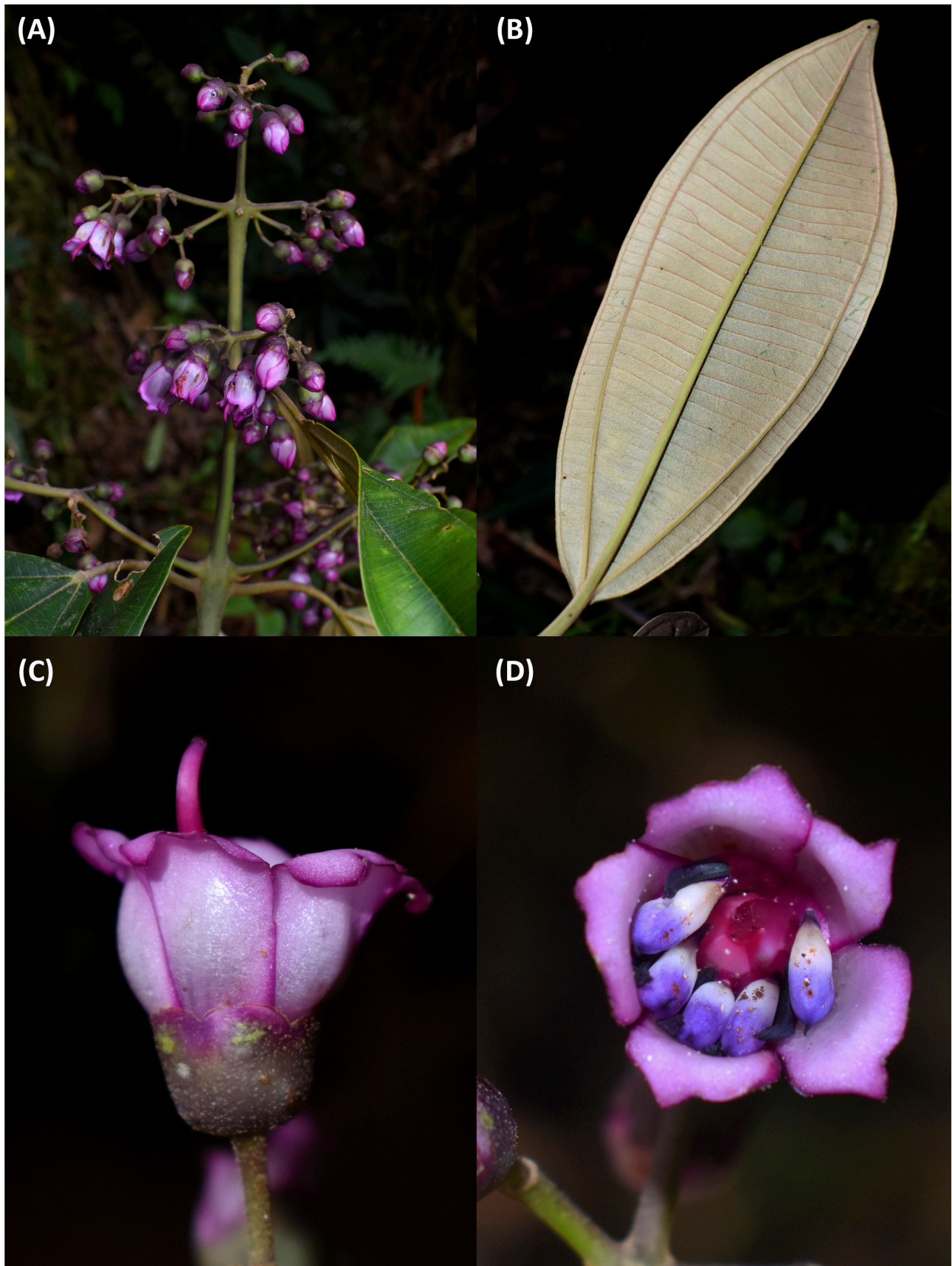


FIGURE 13. *Meriania bicentenaria*. **A.** Terminal fertile branch. **B.** Leaf blade, abaxial view. **C.** Flower at anthesis, lateral view. **D.** Flower at anthesis, apical view. From R. Villanueva-Espinoza 675. Photos by Rosa Villanueva-Espinoza. Reproduced with permission from Willdenowia.

Specimens examined:—**PERU. Pasco:** Prov. Oxapampa, Dist. Palcazú, without locality, 2200 m, 10°32'S, 75°23'W, 04 Oct 1984 (fr.), *D. Smith et al.* 8685 (F!); Dist. Oxapampa, camino a la Cordillera Yanachaga, 2400 m, 10°23'S, 75°27'W, 19 Jul 1984 (fr.), *D. Smith et al.* 7913 (F!, US!, USM!), camino Oxapampa-Abra Villa Rica, 2270 m, 10°39'23"S, 75°20'27"W, 10 Aug 2004 (fl.), *A. Monteagudo et al.* 6960 (HOXA!, NY!), camino Oxapampa-Villa Rica, km 37 en zona de amortiguamiento, 2462 m, 10°38'12"S, 75°24'45"W, 15 Mar 2006 (ster.), *S. Vilca et al.* 643 (HOXA!, USM!), Centro de Investigación del CDS, 2210 m, 10°32'44"S, 75°22'16"W, 11 Jun 2022 (ster.), *R. Fernandez-Hilario* 2298 (HOXA!, MOLF!), Cuenca del río San Alberto, 2286 m, 10°32'39.90"S, 75°22'13.63"W, 01 Oct 2019 (ster.), *C. Llerena* 23 (MOLF!), same locality and data (fr.), *C. Llerena* 32 (MOLF!), CDS, Sector San Alberto - Entrada al PN Yanachaga Chemillén, 2290 m, 10°32'25"S, 75°22'14"W, 10 Jun 2021 (fl.), *R. Villanueva-Espinoza* 675 (MOLF!), PN Yanachaga Chemillén, 2420 m, 10°32'S, 75°21'W, 26 Aug 2002 (fl., fr.), *A. Monteagudo et al.* 3807 (AMAZ!, MOLF!, NY!), PN Yanachaga Chemillén, cercanías del Refugio el Cedro, 2420 m, 10°32'51"S, 75°21'32"W, 26 Aug 2002 (fl., fr.), *A. Monteagudo et al.* 3808-A (HOXA!), San Alberto, 2457 m, 10°32'43.54"S, 75°21'37.14"W, 24 Mar 2014 (ster.), *R. Tupayachi et al.* 13589 (HSP!), San Alberto, 2457 m, 10°32'41.47"S, 75°20'29.34"W, 25 Mar 2014 (ster.), *R. Tupayachi et al.* 13601 (HSP!), Sector San Alberto, 2468 m, 10°32'45"S, 75°21'24"W, 17 Aug 2006 (fr.), *L. Cárdenas et al.* 715 (CUZ!, F!, HOXA!, MOLF!, NY!, USM!), PN Yanachaga Chemillén, Sector San Alberto, zona de amortiguamiento, 2450 m, 10°19'S, 75°13'W, 16 Mar 2005 (fr.), *R. Rojas et al.* 3539 (HOXA!, NY!); Dist. Huancabamba, PN Yanachaga Chemillén, Fundo Osobamba. 2243 m, 10°23'34.7"S, 75°28'28.1"W, 25 Jun 2016 (fl.), *L. Valenzuela et al.* 30395 (USM!), Grapanazu, sector San Daniel, zona de amortiguamiento del PN Yanachaga Chemillén, 2236 m, 10°26'36"S, 75°26'21"W, 08 Jul 2004 (fl.), *J. Perea et al.* 1445 (HOXA!, NY!), same locality and data (fl.), *J. Perea et al.* 1449 (HOXA!, NY!), same locality, 10 Jul 2004 (fl., fr.), *J. Perea et al.* 1467 (HOXA!, NY!), Acacazu, 2200–2300 m, 10°30'24"S, 75°23'13"W, 06 Jul 2004 (fl., fr.), *R. Rojas et al.* 3132 (HOXA!, NY!), PN Yanachaga Chemillén, Sector Quebrada Yanachaga, 2300 m, 10°23'45"S, 75°28'55"W, 19 Aug 2004 (fl.), *R. Vásquez et al.* 30410 (HOXA!, NY!, USM!), same locality and data (fl.), *R. Vásquez et al.* 30419 (HOXA!, MO!), same locality, 2407 m, 10°23'38"S, 75°28'36"W, 20 Set 2004 (fl., fr.), *J. Perea & J. Mateo* 1781 (HOXA!, NY!), PN Yanachaga Chemillén, parcela permanente 1.0 ha Oso Playa, 2200 m, 10°17'58"S, 75°36'35"W, 11 Nov 2006 (fr.), *A. Monteagudo et al.* 13406 (NY!, USM!), Torre Bamba, 2550 m, 10°18'24"S, 75°35'06"W, 20 May 2004 (fr.), *R. Rojas et al.* 2403 (HOXA!).

4. *Meriania bongarana* Rob.Fern., R.Goldenb. & Michelang., Willdenowia 52(1): 45 (2022). Type:—**PERU. Amazonas:** Prov. Bongará, Dist. Yambrasbamba, Inmediaciones de la Estación Biológica Abra Patricia, 2320 m, 05°41'32.91"S, 77°48'41.1"W, 19–20 Feb 2020 (fl., fr.), *R. Fernandez-Hilario, R. Villanueva-Espinoza & L. Pillaca* 1930 (holotype: MOLF! [barcode 000006]; isotypes: CUZ!, HOXA! [accession no. 077852], NY! [barcode 04239398], UPCB! [accession no. 99400]). (Figures 14–15).

Comments:—*Meriania bongarana* is distinguishable by the combination of ferrugineous indumentum evenly covering the adaxial surface of leaves (Fig. 14B–C), calyces with claw-shaped dorsal projections (1.5–2.5 mm long) (Fig. 14G), campanulate, pink-orange corollas, petals 13–15.5 mm long, isomorphic stamens, connectives prolonged below the thecae and stamen connectives with slightly crown-shaped descending dorso-basal appendages (Fig. 14E). Among Peruvian species, *M. bongarana* most closely resembles *M. dazae* but differs by the indument on the abaxial leaf blades (ferrugineous pubescent vs. whitish to cream tomentose), petal length (14–15.5 mm long vs. 19.5–24 mm long), and the dorsal appendages of the stamen connectives (absent vs. a mere hump). A detailed comparison of *M. bongarana* with other related species can be found in Fernandez-Hilario *et al.* (2022).

Distribution and phenology:—Known only from three localities, *Meriania bongarana* is endemic to northern Peru (Department of Amazonas) and grows in montane forest at 2000–2320 m (Fig. 16). It has been collected in flower in February and July, and in fruit in February, July and November.

Specimen examined:—**PERU. Amazonas:** Prov. Bagua, Dist. Copallin, camino a refugio Lechuza, Reserva Comunal Copallin, 2000 m, 05°39'13"S, 78°15'14"W, Jul 2022 (fl., fr.), *I. Revilla et al.* 3211 (MOLF!); Dist. Imaza, Reserva Comunal Chayu Nain, alrededores de campamento Yumi Atsawai, 2160 m, 05°26'51"S, 78°18'58"W, 04–07 Nov 2022 (fr.), *R. Fernandez-Hilario et al.* 2352 (HOXA!, MOLF!).

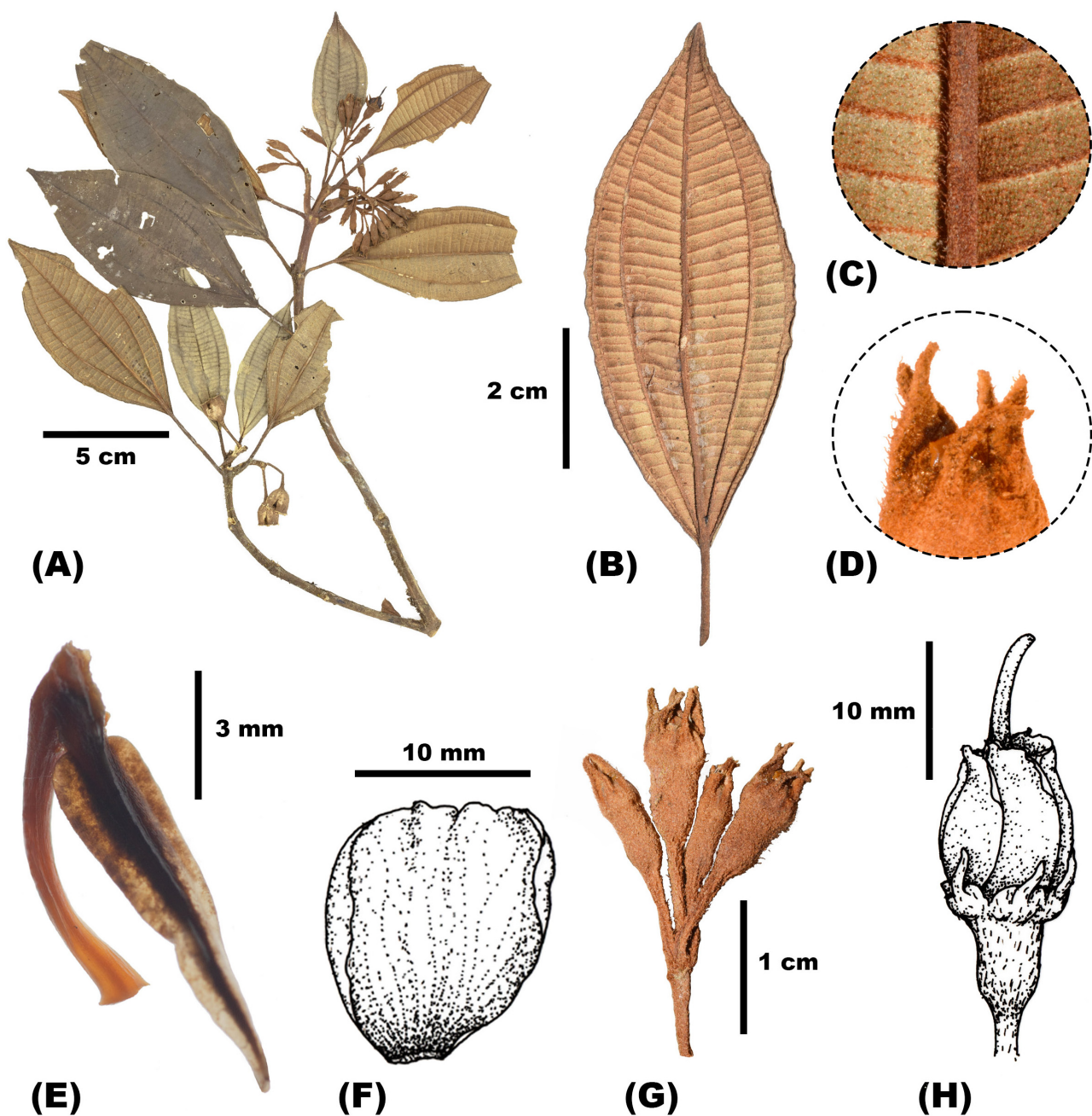


FIGURE 14. *Meriania bongarana*. **A.** Terminal fertile branch with inflorescence. **B.** Leaf blade, abaxial view. **C.** Detail of the abaxial leaf surface. **D.** Detail of the dorsal appendages of the calyx. **E.** Stamen, lateral view. **F.** Petal. **G.** Inflorescence branch. **H.** Flower, lateral view. A–D from R. Fernandez-Hilario *et al.* 1930. Drawing by Leticia Lajo (F and H).

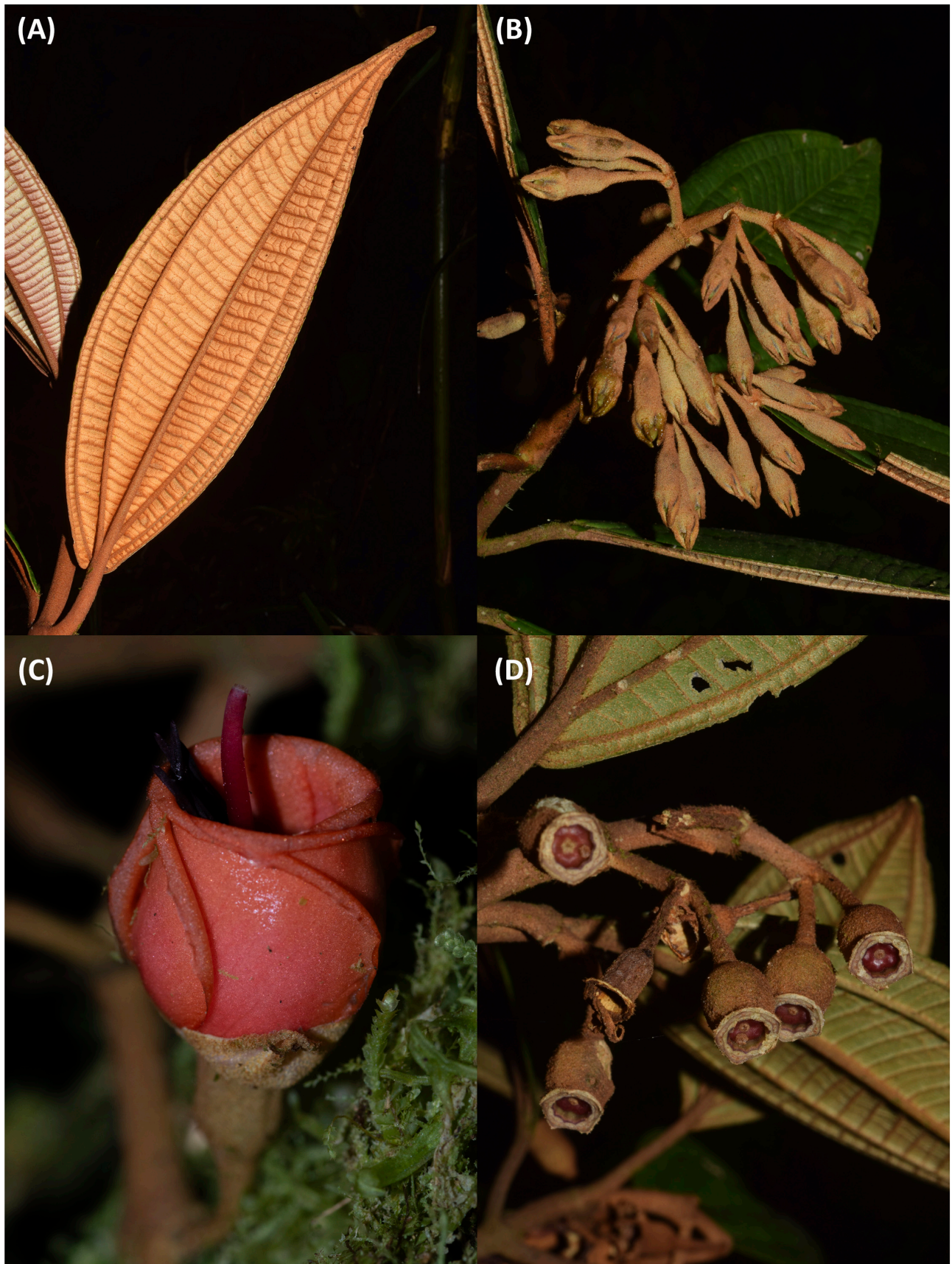


FIGURE 15. *Meriania bongarana*. **A.** Leaf blade, abaxial view. **B.** Inflorescence with flower buds. **C.** Flower. **D.** Fruits. A from *R. Fernandez-Hilario et al.* 2352; B and D from *R. Fernandez-Hilario et al.* 1930; C from *I. Revilla et al.* 3211. Photos by Robin Fernandez (A, B and D) and Akira Wong (C).

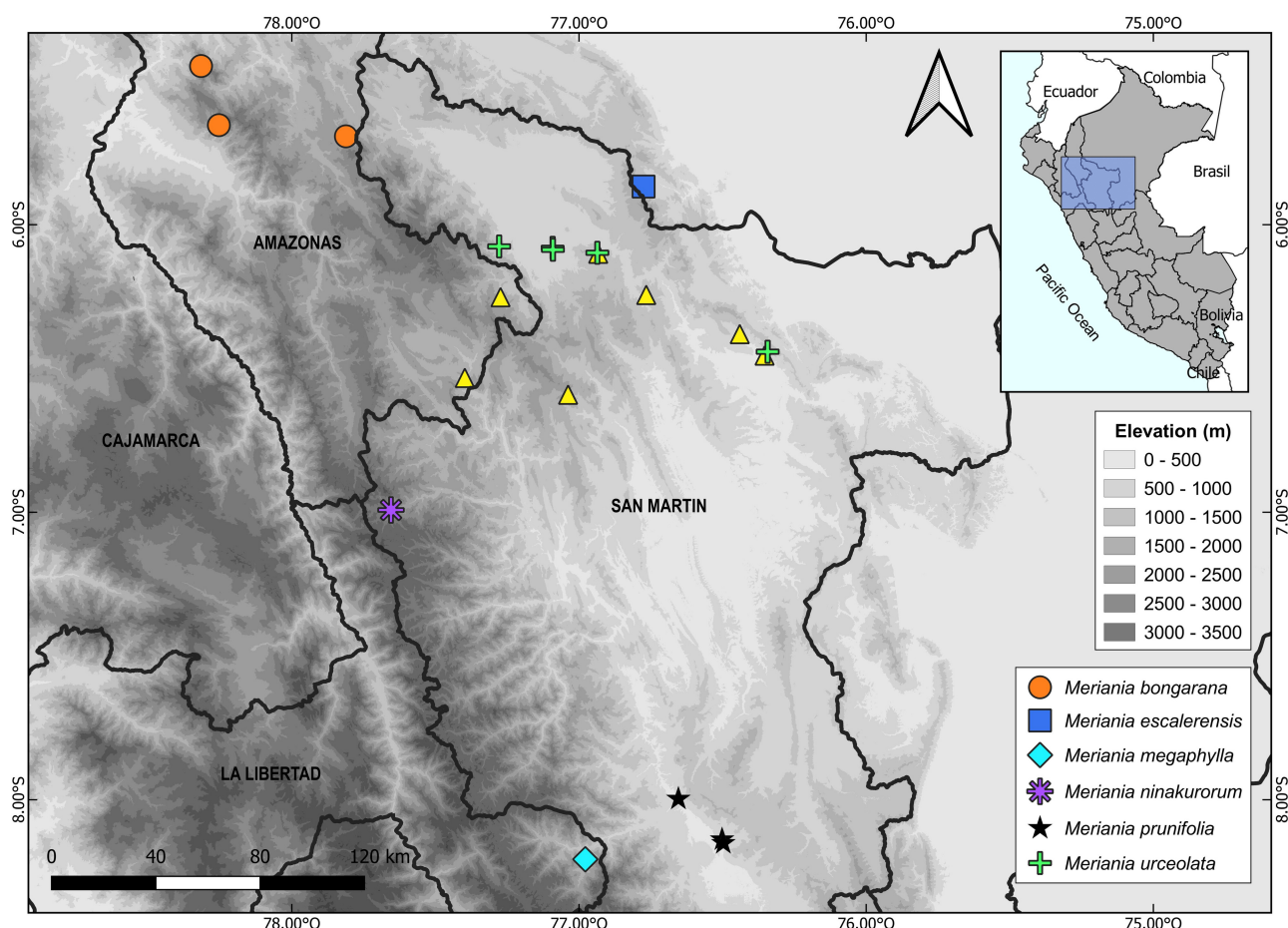


FIGURE 16. Distribution map of *M. bongarana*, *M. escalerensis*, *M. megaphylla*, *M. ninakurorum*, *M. prunifolia*, *M. speciosa* and *M. urceolata*.

5. *Meriania callosa* Rob.Fern., R.Goldenb. & Michelang., Willdenowia 52(1): 49 (2022). Type:—**PERU. Amazonas:** Prov. Bongará, Dist. Yambrasbamba, ruta desde CP Santa Rosa hacia bosque El Toro, 1950 m, 05°40'07.98"S, 77°55'30.04"W, 11 Nov 2020 (fl.), *R. Fernandez-Hilario, W. Chuquitucto & A. Wong* 2055 (holotype: MOLF! [barcode 000007]; isotypes: HOXA! [accession no. 077833], KUELAP! [accession no. 971], MOLF! [barcode 000008], NY! [barcode 04239399], UPCB! [accession no. 99412]). (Figures 17–18).

Comments:—This species is distinguishable by the combination of nodes with interpetiolar flaps (0.5–3 mm long) (Fig. 17D), glabrous hypanthia and calyces, calyces with callose dorsal projections (Fig. 17H)), spreading, fuchsia corollas, isomorphic stamens, stamen connectives with two appendages (Fig. 17E), one triangular descending dorso-basal appendage, and other dorsal appendage as a mere hump (rarely inconspicuous). Among Peruvian species, *M. callosa* most closely resembles *M. zunacensis* but differs by the projections on the insertion of the petioles with the leaf blades [absent vs. present (scutum)], petiole length (10–22 mm vs. 25–50 mm), and the dorsal projections on calyces (callose vs. absent). A detailed comparison of *M. callosa* with other related species can be found in Fernandez-Hilario *et al.* (2022).

Distribution and phenology:—*Meriania callosa* is endemic to northern Peru (Department of Amazonas) and grows in montane forests at 1880–1970 m (Fig. 9). It has been collected in flower in April and November, and fruit in August and November.

Specimens examined:—**PERU. Amazonas:** Prov. Bongará, Dist. Yambrasbamba, ruta desde CP Santa Rosa hacia bosque El Toro, 1970 m, 05°40'09.22"S, 77°55'30.05"W, 11 Nov 2020 (fl. bud, fr.), *R. Fernandez-Hilario et al.* 2056 (HOXA!, MOLF!, NY!, UPCB!); Prov. Rodríguez de Mendoza, Dist. Mariscal Benavides, CP Izcuchaca, 1880 m, 06°19'40"S, 77°31'05"W, 30 Aug 1998 (fr.), *R. Vásquez & J. Campos* 25339 (NY!), same locality, 11 Apr 2001 (fl.), *H. van der Werff et al.* 16941 (NY!, USM!).

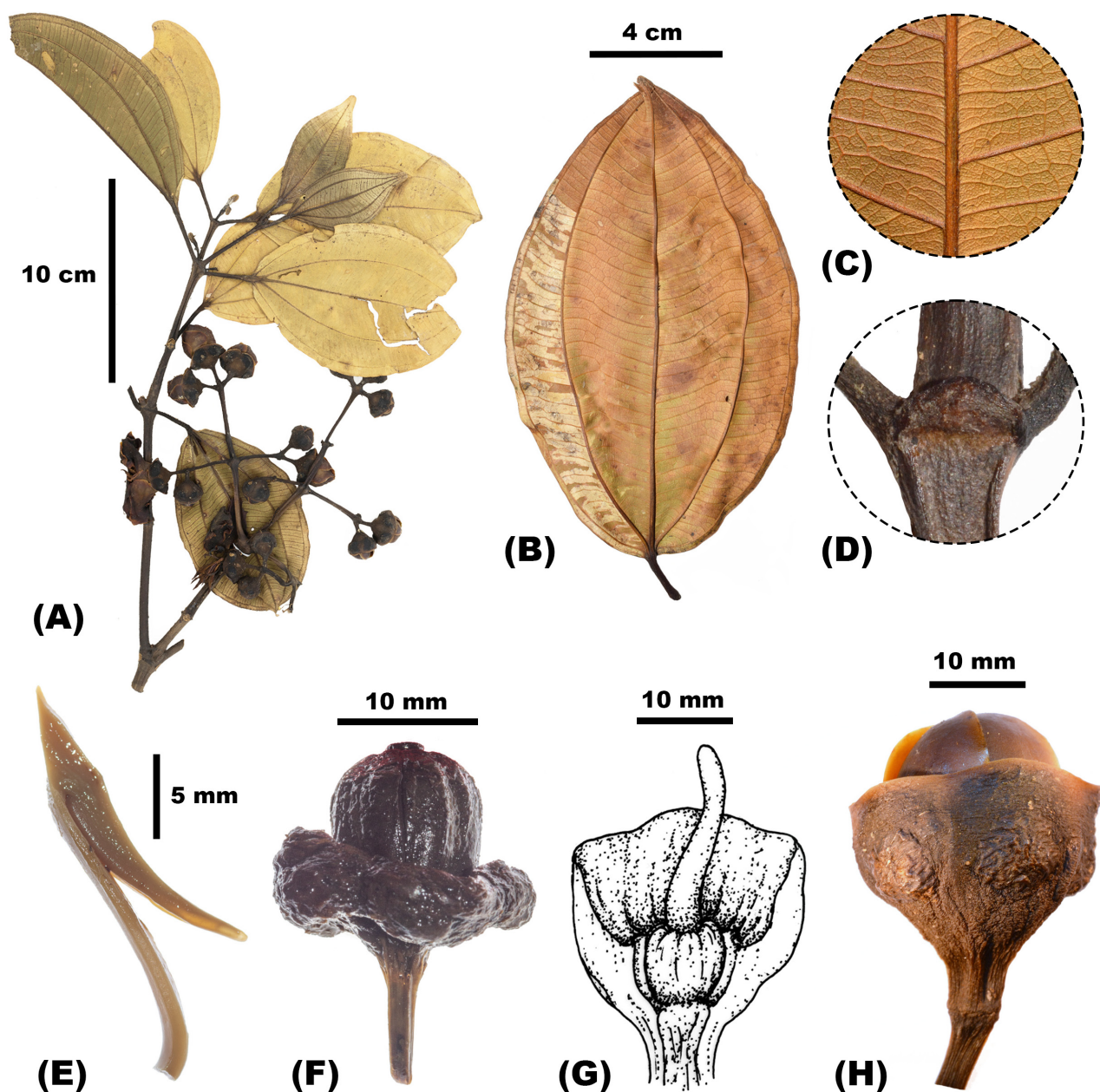


FIGURE 17. *Meriania callosa*. **A.** Terminal fertile branch with inflorescence. **B.** Leaf blade, abaxial view. **C.** Detail of the abaxial leaf surface. **D.** Detail of the interpetiolar flap. **E.** Stamen, lateral view. **F.** Fruit. **G.** Longitudinal section of the flower with the petals and stamens removed. **H.** Flower bud. A from *H. van der Werff et al. 16941*; B–H from *R. Fernandez-Hilario et al. 2055*. Drawing by Leticia Lajo (G).



FIGURE 18. *Meriania callosa*. **A.** Leaf blade, abaxial view. **B.** Inflorescence with flower buds. **C.** Flower at anthesis, lateral view. **D.** Flower at anthesis, apical view. A–D from *R. Fernandez-Hilario et al. 2055*. Photos by Robin Fernandez. Reproduced with permission from Willdenowia.

6. *Meriania cuzcoana* Wurdack, Phytologia 13(2): 71 (1966). Type:—**PERU. Cusco:** Prov. Paucartambo, laderas boscosas de Pillahuata, 2000 m, 9–10 May 1945 (fl.), C. Vargas 5107 (holotype: US! [barcode 00120364]; isotypes: CUZ! [2 sheets]). (Figures 19–20).

Comments:—*Meriania cuzcoana* can be easily recognized as the only Peruvian species of *Meriania* with revolute auricles at the base of the leaf blades (Fig. 19D). This feature is present in other Andean *Meriania* species (e.g., *M. ardyae* D.Fernández & Dellinger and *M. selvaflorensis* Humberto Mend.), but none have auricles with dentate-undulate margins such as in *M. cuzcoana*. The presence of revolute auricles is a common feature in *Axinaea* species, and within that genus four species (*A. floribunda* Triana, *A. grandifolia* Triana, *A. macrophylla* Triana and *A. quitensis* Benoist) have auricles similar to the ones in *M. cuzcoana*. However, *M. cuzcoana* is clearly distinguished from *Axinaea* by the lack of inflated (bulbous) dorso-basal appendages of the stamen connectives (Cotton *et al.* 2014, Dellinger *et al.* 2014).

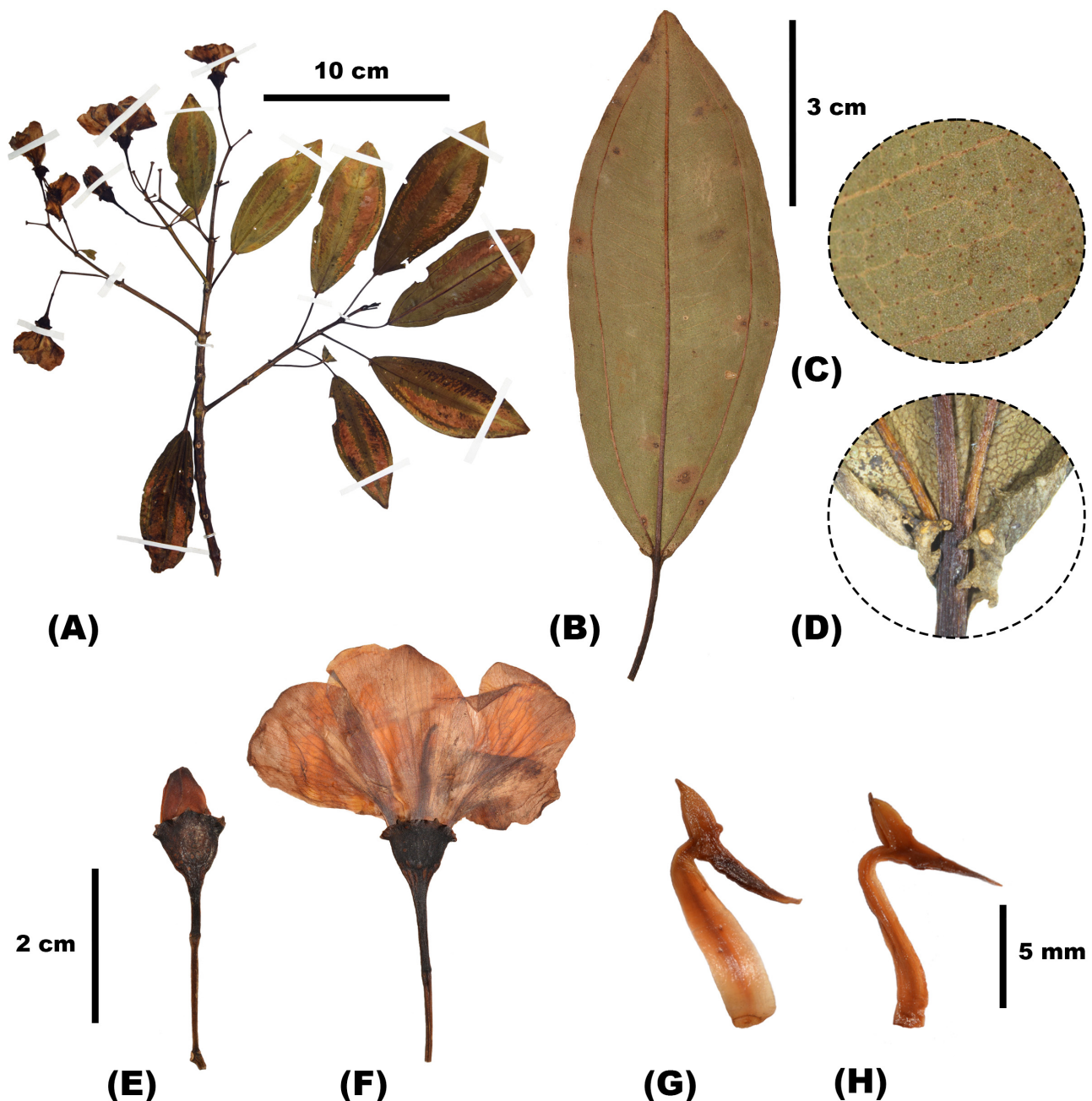


FIGURE 19. *Meriania cuzcoana*. **A.** Terminal fertile branch with inflorescence. **B.** Leaf blade, abaxial surface. **C.** Detail of abaxial leaf surface. **D.** Detail of the revolute leaf base, abaxial view. **E.** Flower bud. **F.** Flower at anthesis. **G–H.** Stamens, lateral view. A–C and E–H from W. Farfán *et al.* 976; D from L. Valenzuela *et al.* 6904.



FIGURE 20. *Meriania cuzcoana*. **A.** Leaf blade, abaxial view. **B.** Detail of the revolute base of the leaf blade. **C.** Flower at anthesis, apical view. **D.** Flower at anthesis, lateral view. A–D from *F. A. Michelangeli et al. 1908*. Photos by Fabián A. Michelangeli.

The dorsal appendages of the stamen connectives in *M. cuzcoana* are variable in size (Fig. 19G–H); they can be inconspicuous as in *Michelangeli et al. 1908* or evident as in *Vargas 5107* (up to 0.5 mm long). Likewise, the margin of the leaf blades can be variable; it is usually entire, but it is seldom slightly denticulate. Among the Peruvian species, the most likely closest relative to *M. cuzcoana* is *M. neillii*, because both species share glabrous leaves and spreading, reddish-purple corollas. However, *M. cuzcoana* is distinguished by its punctiform abaxial leaf blades (Fig. 19B) (vs. without dots in *M. neillii*), 5-merous flowers (vs. 6-merous), and stamen connectives with white descending dorso-basal appendages (vs. yellow).

The specimen *Chambi & Chambi s.n.* (fl. bud) has cuneate leaf bases and suprabasal venation, with the secondary veins sometimes asymmetrical, but it retains the revolute auricles with dentate-undulate margins. Although the tertiary venation pattern, inflorescence structure and flower buds are similar to those observed in *M. cuzcoana*, we placed this specimen with reservation here.

Distribution and phenology:—*Meriania cuzcoana* is endemic to southern Peru and recorded in La Convención and Paucartambo provinces (Department of Cusco), and grows in montane forests at 2000–3000 m (Fig. 21). It has been collected in flower from March to August and in fruit in June.

Specimens examined:—**PERU. Cusco:** Prov. La Convención, Dist. Maranura, Mesapelada, 2450 m, 12°54'33"S, 72°37'06"W, 19 Apr 2004 (fl.), *W. Galiano et al. 6136* (NY!); Dist. Ocobamba, Mesa pelada, 2613 m, 12°54'13"S, 72°37'06"W, 23 Mar 2004 (fl.), *L. Valenzuela et al. 3147* (NY!); Dist. Quellouno, Lacco, 2741 m, 12°36'44"S, 72°14'37"W, 16 Jun 2006 (fl.), *L. Valenzuela et al. 6904* (NY!, USM!), same locality, 2650 m, 12°37'31"S, 72°14'03"W, 18 Jun 2006 (fr.), *L. Valenzuela et al. 6939* (CUZ!, NY!). Prov. Paucartambo, Dist. Challabamba, carretera Paucartambo-Pillcopata, Pacchayoc, 2395 m, 13°09'25.92"S, 71°35'54.24"W, 14 Jun 2012 (fl.), *F. A. Michelangeli et al. 1908* (NY!, USM!); Dist. Kosñipata, PN Manu, km 8 de la trocha unión, 2500 m, 13°05'18.60"S, 71°34'28.56"W, 29 Jul 2003 (fl.), *M. Raurau et al. 71* (ABERG!), same locality, 2500 m, 13°05'18.82"S, 71°34'28.56"W, 03 Aug 2003 (fl.), *W. Farfán et al. 976* (ABERG!, USM!), same locality, 2500 m, 13°05'38"S, 71°34'26"W, 21 Jul 2017 (fl.), *F. Sinca et al. 1627* (ABERG!), EB Wayquecha, 3000 m, 13°10'S, 71°35'W, Jul 2010 (fl. bud), *P. Chambi & J. Chambi s.n.* (USM!).

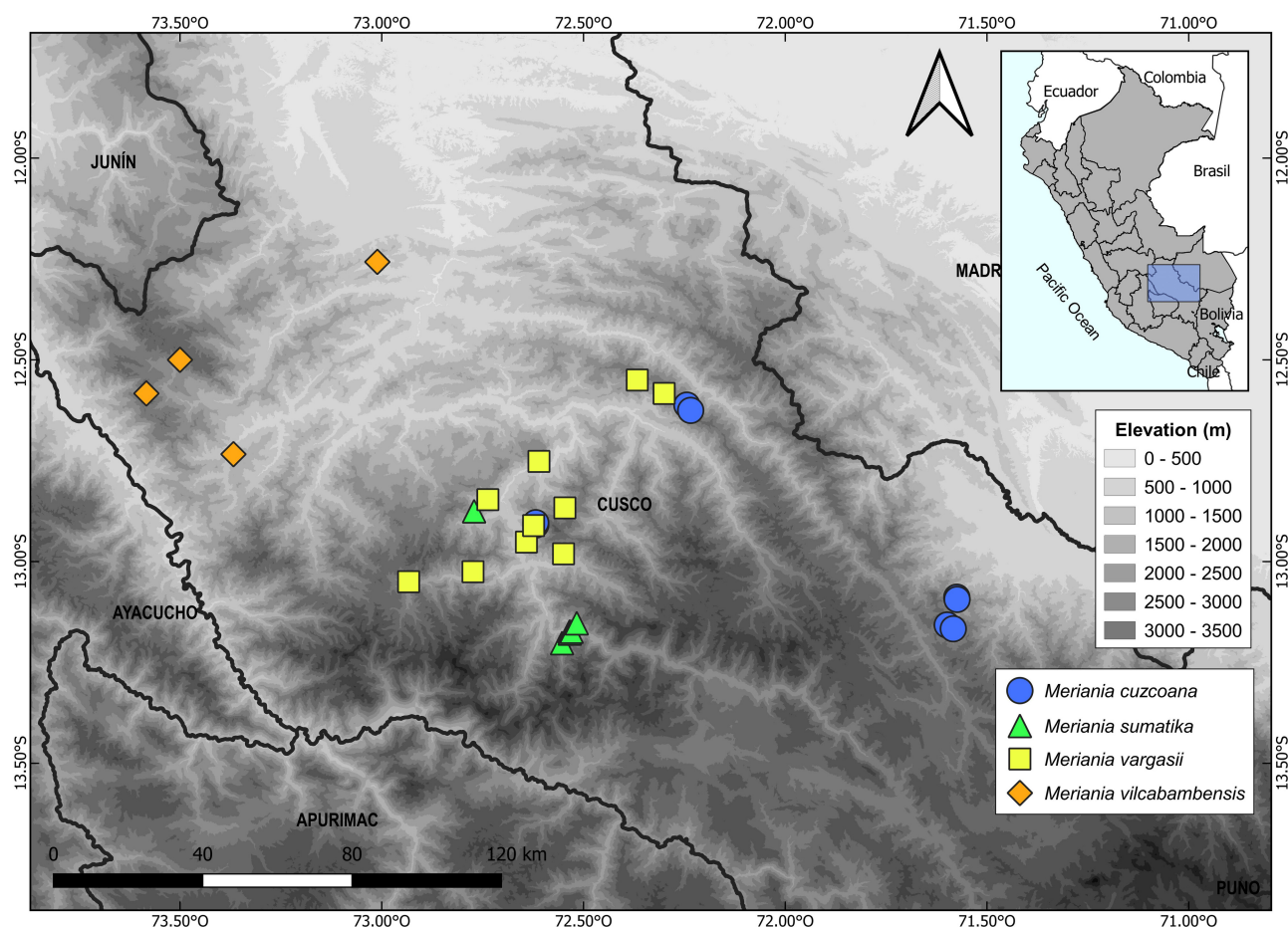


FIGURE 21. Distribution map of *M. cuzcoana*, *M. sumatika*, *M. vargasii* and *M. vilcabambensis*.

7. *Meriania dazae* Rob.Fern., R.Goldenb. & Michelang., Nordic J. Bot. 39(3)-e02669: 6 (2021). Type:—**PERU. Amazonas:** Prov. Rodríguez de Mendoza, Dist. Vista Alegre, subiendo la quebrada Salas, 2750 m, 06°06'50.58"S, 77°26'48.21"W, 06 Aug 2012 (fl., fr.), *J.L. Marcelo-Peña, R. Fernandez-Hilario & J. Santos 6568* (holotype: MOLF! [barcode 000001]; isotype: MOLF! [barcode 000002]). (Figures 22–23).

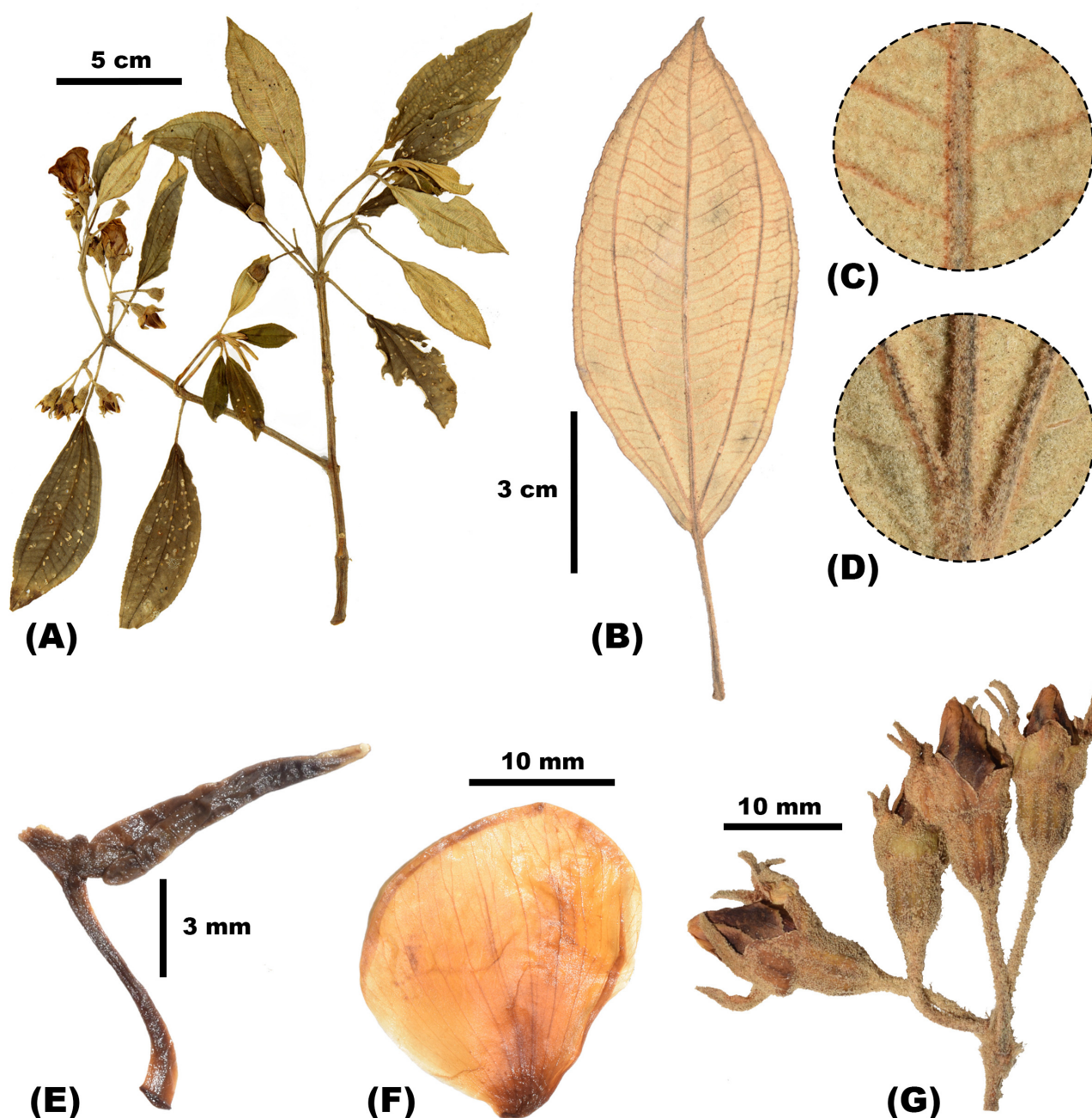


FIGURE 22. *Meriania dazae*. **A.** Terminal fertile branch with inflorescences. **B.** Leaf blade, abaxial view. **C.** Detail of the abaxial leaf surface. **D.** Detail of the domatia on abaxial leaf surface. **E.** Stamen in lateral view. **F.** Petal. **G.** Inflorescence branch. A, C–G from *J.L. Marcelo et al. 6568*; B from *J.L. Marcelo et al. 6528*.

Comments:—*Meriania dazae* belongs to a group of species characterized by campanulate, pink-orange to reddish-orange corollas and lobed calyx, usually with claw-shaped dorsal projections. Within this group, *M. dazae* can be differentiated by the combination of elongated trichomes with substellate bases, evenly covering the adaxial surface of leaves (Fig. 22B–C), calyces with claw-shaped dorsal projections 1–4.5 mm long (Fig. 22G), petals 19.5–24 mm long, isomorphic stamens and stamen connectives with two appendages (Fig. 22E), one crown-shaped descending dorso-basal appendage and the other dorsal appendage as a mere hump. Among Peruvian species, *M. dazae* most closely resembles *M. bongarana* but differs by indument on the abaxial leaf blades (whitish to cream tomentose vs.

ferrugineous pubescent), petal length (19.5–24 mm long vs. 14–15.5 mm long), and the dorsal appendages of the stamen connectives (a mere hump vs. absent). A detailed comparison of *M. dazae* with other related species can be found in Fernandez-Hilario *et al.* (2021).

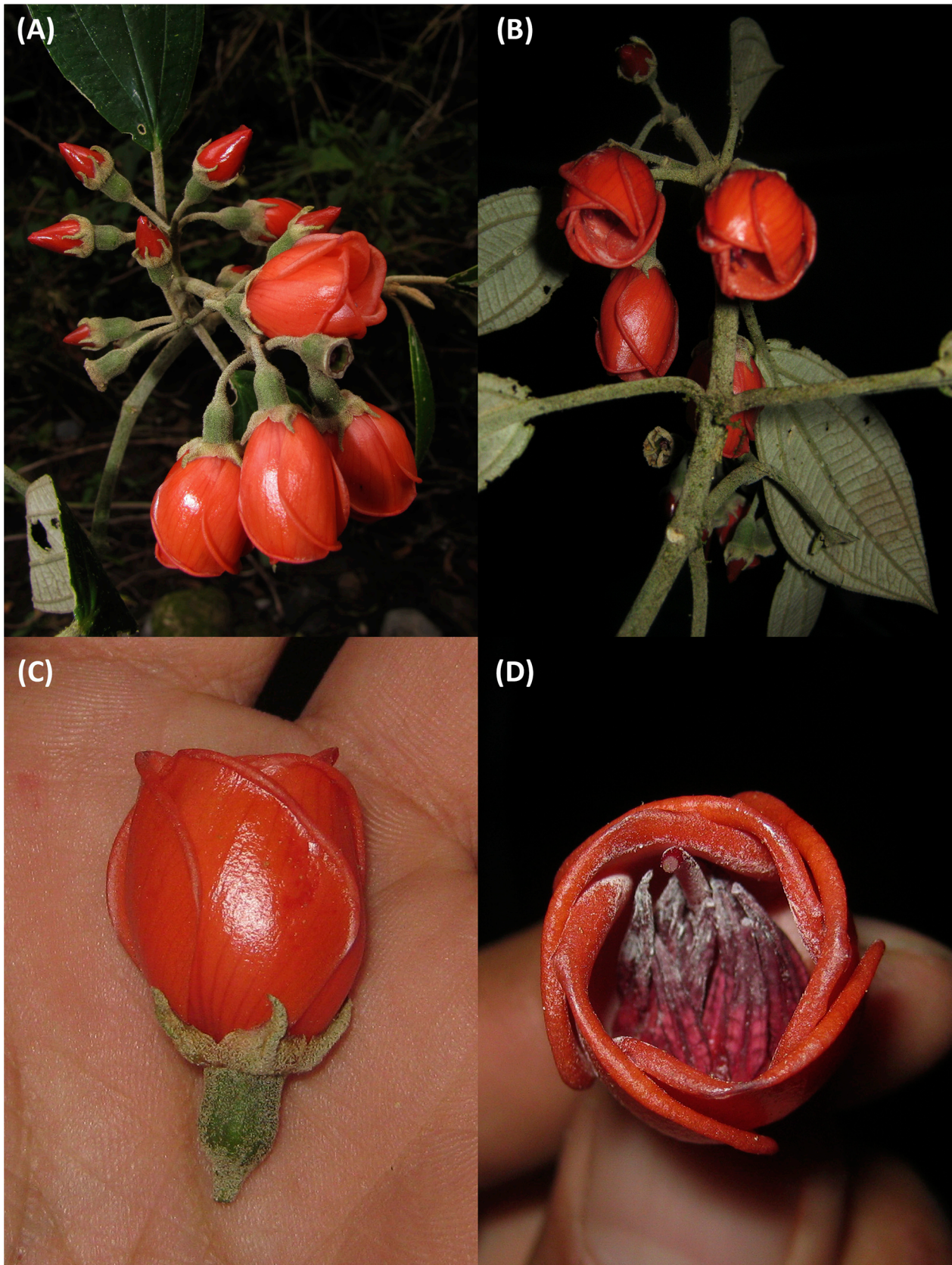


FIGURE 23. *Meriania dazae*. **A–B.** Terminal fertile branches with inflorescences. **C.** Flower at anthesis, lateral view. **D.** Flower at anthesis, apical view. A from J.L. Marcelo *et al.* 6568; B–D from R. Fernandez-Hilario *et al.* 169. Photos by José L. Marcelo (A) and Robin Fernandez (B–D). Reproduced with permission from Nordic Journal of Botany.

Distribution and phenology:—*Meriania dazae* is endemic to northern Peru and known from a single locality in the Vista Alegre Omia Regional Conservation Area in the Department of Amazonas, and grows in montane forests at 2660–2750 m (Fig. 9). It has been collected in flower and fruit in August.

Specimens examined:—**PERU. Amazonas:** Prov. Rodríguez de Mendoza, Dist. Vista Alegre, Área de Conservación Vista Alegre, inmediaciones de campamento no. 1 y quebrada Salas, 2660 m, 06°06'42.52"S, 77°26'23.28"W, 04 Aug 2012 (fl.), *R. Fernandez-Hilario et al.* 169 (MOLF!, UPCB!), subiendo la quebrada Salas, 2660 m, 06°06'44.20"S, 77°26'27.51"W, 04 Aug 2012 (fl.), *J.L. Marcelo-Peña et al.* 6528 (MOLF!), same locality, 2750 m, 06°06'50.58"S, 77°26'48.21"W, 06 Aug 2012 (fl.), *J.L. Marcelo-Peña et al.* 6559 (MOLF!).

8. *Meriania drakei* (Cogn.) Wurdack, Mem. New York Bot. Gard. 16: 3 (1967). Basionym: *Axinaea drakei* Cogn. in A.DC. & C.DC., Monogr. Phan. 7: 447 (1891). Type: **ECUADOR:** Quebrada near Loja, 09 Nov 1881 (fl.), *Poortman* 149 (lectotype, first step designated by Wurdack 1980, second step designated by Fernandez-Hilario *et al.* 2021: P! [barcode P00228665]; isolectotypes: BR!-fragment [barcode BR0000005628759], F!-fragment [accession no. 935562], P! [barcode P0228664]). (Figures 24–25).

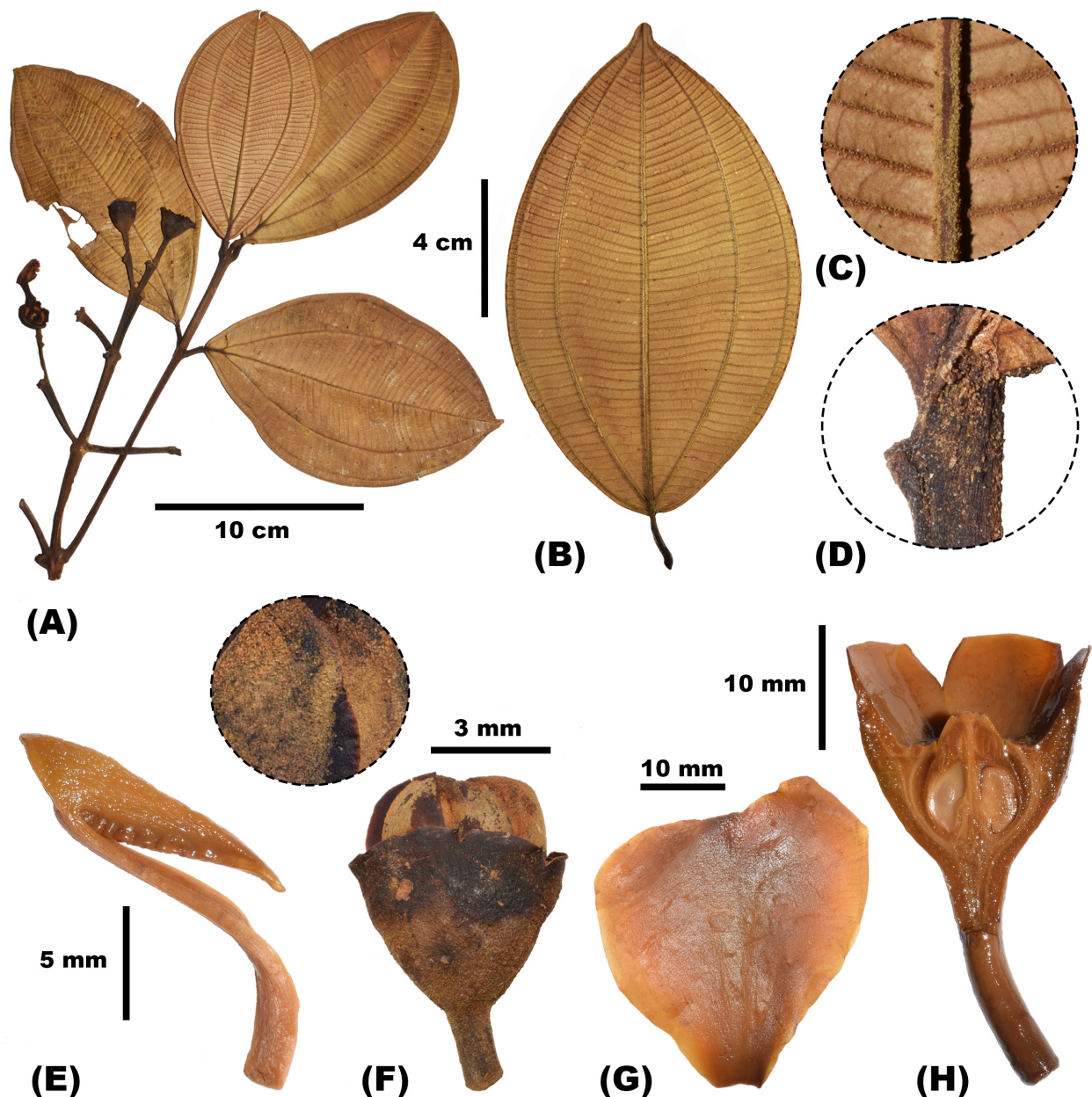


FIGURE 24. *Meriania drakei*. **A.** Terminal fertile branch with inflorescence. **B.** Leaf blade, abaxial view. **C.** Detail of the abaxial leaf surface. **D.** Detail of the adaxial projection on the petiole. **E.** Stamen in lateral view. **F.** Flower bud with detail of the petal surface. **G.** Petal. **H.** Hypanthium, calyx and ovary, lateral view. A–H from *R. Fernandez-Hilario et al.* 1775.

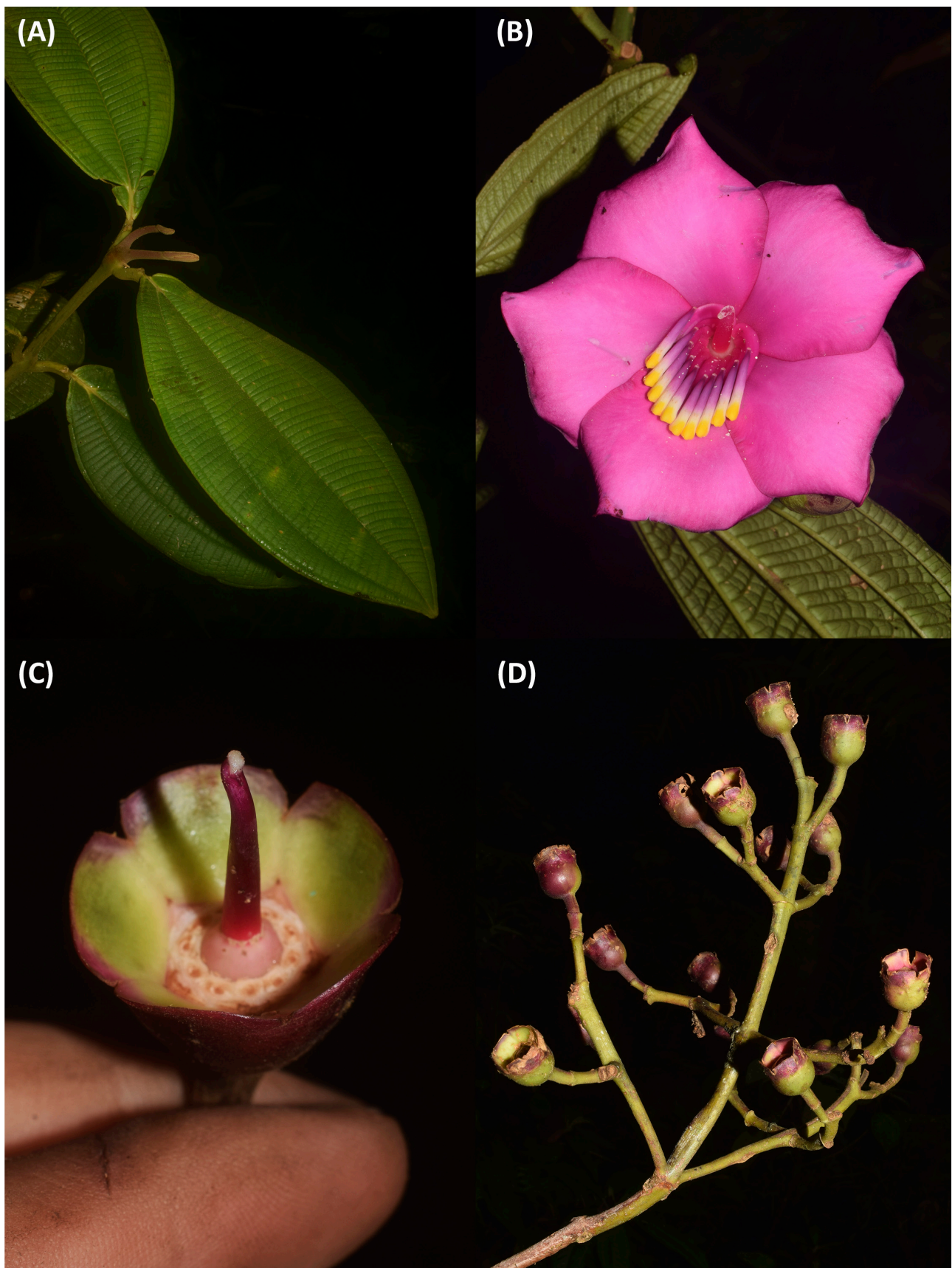


FIGURE 25. *Meriania drakei*. **A.** Terminal sterile branch. **B.** Flower at anthesis, apical view. **C.** Flower, petals and stamens removed. **D.** Infructescence. A and C from *R. Fernandez-Hilario et al. 1775*; B from *R. Fernandez-Hilario et al. 2386*; D from *R. Fernandez-Hilario et al. 1937*. Photos by Robin Fernandez.

Comments:—*Meriania drakei* can be easily recognized by its externally puberulent petals (Fig. 24F), and it is also the only Peruvian species with a swollen adaxial projection on the apex of the petiole (Fig. 24D). Although Mendoza-Cifuentes (2021) mentions that this character is not constant in the Colombian populations, it is constant in the petioles of the Peruvian specimens examined. Other species such as *M. bicentenaria*, *M. franciscana*, *M. megaphylla* and *M. zunacensis* have an adaxial projection (scutum) on the insertion of the petiole with the leaf blade, but in *M. bicentenaria* and *M. franciscana* sometimes those can be obscured by trichomes. However, *M. drakei* is easily distinguishable from all of them by the indumentum on the petals (externally puberulent vs. glabrous). A detailed comparison of *M. drakei* with related species can be found in Fernandez-Hilario *et al.* (2021).

Distribution and phenology:—*Meriania drakei* occurs from southern Colombia to northern Peru (Department of Amazonas in montane forests at 2010–2280 m) (Fig. 9). It has been collected in flower in November and December, and in fruit in February.

Specimens examined:—**PERU. Amazonas:** Prov. Bagua, Dist. Imaza, Reserva Comunal Chayu Nain, rumbo hacia el campamento Yumi Awai, 2010 m, 05°26'54"S, 78°18'50"W, 08–10 Nov 2022 (fl.), *R. Fernandez-Hilario et al.* 2386 (MOLF!). Prov. Utcubamba, Dist. Cajaruro, Buffer Zone of the Cordillera del Colán National Sanctuary, 2280 m, 05°38'32.22"S, 78°15'13.32"W, 19–22 Dec 2019 (fl.), *R. Fernandez-Hilario et al.* 1775 (HOXA!, MOLF!, NY!, UPCB!, USM!). Prov. Bongará, Dist. Yambrasbamba, Lechuz pathway of the Abra Patricia Biological Station, 2120 m, 05°41'18.89"S, 77°48'23.68"W, 21 Feb 2020 (fr.), *R. Fernandez-Hilario et al.* 1937 (HOXA!, MOLF!, UPCB!).

9. *Meriania escalerensis* Rob.Fern., R.Goldenb. & Michelang., Willdenowia 52(1): 53 (2022). Type:—**PERU. Loreto:** Prov. Alto Amazonas, Dist. Balsapuerto, Cordillera Escalera, Campamento Cumbre – Alto Cachiyacu, 1930 m, 05°52'02.1"S, 76°46'29.3"W, 22 Sep 2013 (fl.), *M. Ríos, T. Mori, D. Neill, L. Torres & C. Vriesendorp* 3316 (holotype: AMAZ!; isotypes: ECUAMZ! [accession no. 6070], F! [accession no. 2323926], USM! [accession no. 287375]). (Figures 26–27).

Comments:—This species is recognized by its ferrugineous indumentum (Fig. 26B–C), calyptrate calyces with circumscissile dehiscence (Fig. 26G), spreading, fuchsia corollas, isomorphic stamens, and stamen connectives with two appendages (Fig. 26E), one triangular descending dorso-basal appendage and the other blunt ascending dorsal appendage. Among Peruvian species, *M. escalerensis* most closely resembles *M. acida* but differs by the calyx dehiscence (circumscissile vs. irregular), shape and color of corollas (spreading and fuchsia vs. campanulate and reddish-orange), and the dorsal appendages of the stamen connectives (blunt ascending vs. absent). A detailed comparison of *M. escalerensis* with other related species can be found in Fernandez-Hilario *et al.* (2022).

Distribution and phenology:—Known only from the type specimen, *Meriania escalerensis* is endemic to northern Peru, in the Cordillera Escalera (Loreto–San Martín border) and grows in elfin forests at 1930 m (Fig. 16). It has been collected in flower in September.

10. *Meriania franciscana* C.Ulloa & Homeier, Anales Jard. Bot. Madrid 65(2): 383 (2008). *Meriania macrophylla* subsp. *franciscana* (C.Ulloa & Homeier) Humberto Mend., Acta Bot. Mex. 128(e1734): 72 (2021). Type:—**ECUADOR. Zamora-Chinchipe:** Reserva San Francisco, road Loja–Zamora, ca 35 km from Loja, 1890 m, 03°58'S, 79°04'W, 28 Jul 2007 (fl.), *J. Homeier* 2625 (holotype: QCNE! [barcode QCNE225593]; isotypes: GOET! [barcode GOET011446], LOJA! [barcode 213337], M! [barcode M-0274973], MO! [barcode MO-2161006], NY! [barcode 01287741], QCA! [barcode 144072]). (Figure 28).

Comments:—*Meriania franciscana* belongs to the *M. macrophylla* complex (Wurdack 1978, Ulloa Ulloa & Homeier 2008, Bussmann & Paniagua 2012, Fernandez-Hilario *et al.* 2022), characterized by campanulate corollas, strongly dimorphic stamens and antepetalous stamens with inflated (bulbous) connectives. *Meriania bicentenaria*, *M. franciscana*, *M. ninakurorum* and *M. peltata* are the only species of this complex occurring in Peru. Within this group *M. franciscana* can be distinguished by its adaxial appendages (scutum) on the insertion of the petiole with the leaf blade (Fig. 28D), glabrous to densely puberulent abaxial leaf blades (Fig. 28B–C), lobed calyces, reddish-purple petals, antepetalous stamen connectives with blunt ascending dorsal appendages (Fig. 28E) and antesepalous stamen connectives with dorsal appendages as a mere hump (Fig. 28F).

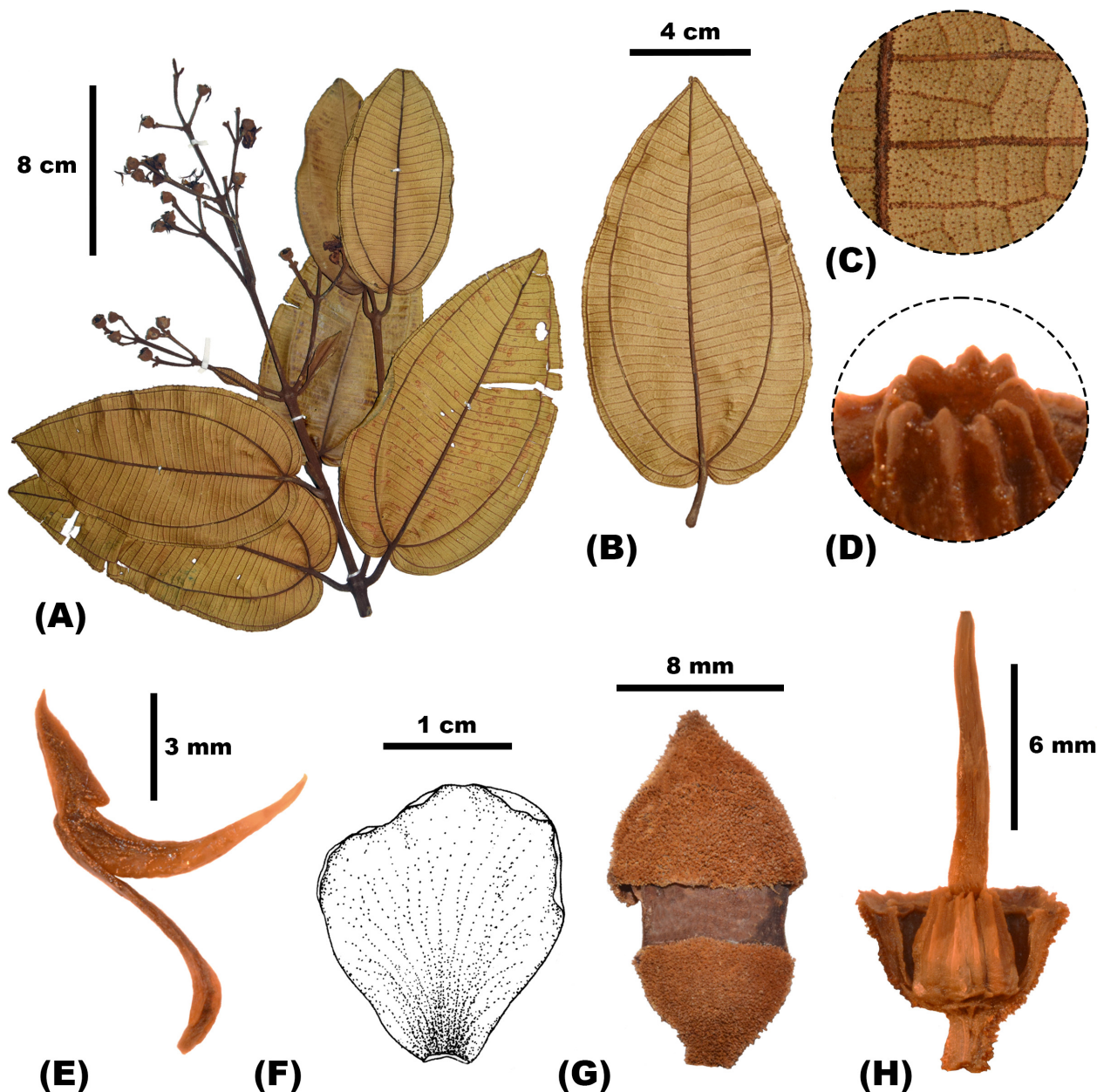


FIGURE 26. *Meriania escalerensis*. **A.** Terminal fertile branch with inflorescence. **B.** Leaf blade, abaxial view. **C.** Detail of the abaxial leaf surface. **D.** Detail of the apex of the ovary. **E.** Stamen, lateral view. **F.** Petal. **G.** Flower bud, lateral view. **H.** Longitudinal section of the flower with petals and stamens removed. A–H from *M. Ríos et al.* 3316. Drawing by Leticia Lajo (F).

The specimen *Fernandez-Hilario et al.* 2034 collected in Amazonas shares the same morphological characteristics of leaves and inflorescences as the population recorded in Cajamarca. However, it has truncate calyces and antepetalous stamen connectives without dorsal appendages. This difference suggests that the Amazonas population probably corresponds to a different species. Therefore, more material needs to be collected and reviewed before a conclusion can be drawn.

In his review of *Meriania* for Colombia, Mendoza-Cifuentes (2021) considered that all the species from the *M. macrophylla* complex (except *M. ninakurorum*, which was not treated by him) should be recognized as subspecies of a broadly defined *M. macrophylla*. However, *M. franciscana* differs from the Colombian taxa from that group, because it does not have bifid descending dorso-basal appendages. Although this feature may be variable within the same inflorescence in some species of the complex (Mendoza-Cifuentes 2021), none of the Colombian species of the *M. macrophylla* complex have antepetalous stamen connectives with ascending dorsal appendages, or antesepalous stamen connectives with dorsal appendages as a mere hump, as is the case in *M. franciscana*. For this reason, we do not consider *M. franciscana* to be a subspecies of *M. macrophylla* and recognized it as a separate species.



FIGURE 27. *Meriania escalerensis*. **A.** Terminal fertile branch with inflorescence. **B.** Flower at anthesis, apical view. A–B from *M. Ríos et al.* 3316. Photos by Luis Torres. Reproduced with permission from Willdenowia.

Distribution and phenology:—*Meriania franciscana* occurs from southern Ecuador (Zamora-Chinchipe province) to northern Peru (Departments of Amazonas and Cajamarca in montane forests at 1750–2370 m) (Fig. 9). It has been collected in flower in March, November and December, and in fruit in August and November.

Specimens examined:—**PERU. Amazonas:** Prov. Bongará, Dist. Yambrasbamba, inmediaciones de CP Miraflores, 1980 m, 05°42'13.19"S, 77°55'47.64"W, 10 Nov 2020 (fl., fr.), *R. Fernandez-Hilario et al.* 2034 (HOXA!, MOLF!, UPGB!). **Cajamarca:** Prov. San Ignacio, Dist. Huarango, CP Selva Andina, camino hacia la captación de agua, 2378 m, 05°03'50"S, 78°43'19"W, 25 Aug 2007 (fr.), *J. Perea et al.* 2775 (NY!), Dist. San José de Lourdes, CP Camana, 1750–1900 m, 05°01'S, 78°54'W, 04 Mar 1997 (fl.), *J. Campos & S. Corrales* 3393 (MOLF!, NY!, USM!), bottom of cerro Picorana, 2100 m, 04°59'25"S, 78°54'05"W, 01 Dec 1998 (fl.), *C. Díaz & S. Fernández* 10150 (HUT!, MOLF!, NY!, USM!).

11. *Meriania hirsuta* Rob.Fern., Paredes-Burneo & Michelang., Willdenowia 52(1): 56 (2022). Type:—**PERU. Piura:** Prov. Huancabamba, Dist. El Carmen de la Frontera, Río Samaniego margen izquierda, Zona de Amortiguamiento del Santuario Nacional Tabaconas-Namballe, 2150 m, 05°06'43.1"S, 79°21'25.7"W, 28 Apr 2003 (fl.), *S. Baldeón & J. Campos* 5373 (holotype: USM! [accession no. 273379]). (Figure 29)

Comments:—*Meriania hirsuta* belongs to the *M. radula* complex (see comments under *M. radula* for diagnostic characteristics) and is recognisable within the complex by the combination of branches and leaves with bullate laminae and hirsute indumentum (trichomes up to 4 mm long) (Fig. 29C–D), slightly dimorphic stamens (Fig. 29F–G), and antesealous stamen connectives with laterally expanded perpendicular dorso-basal appendages (Fig. 29G). *Meriania arizae* Humberto Mend. & Fern.Alonso, *M. horrida* C.Ulloa & Achá and *M. mutisii* (Humb. & Bonpl.) Humberto Mend. & Fern.Alonso have similar indumentum to *M. hirsuta*, but all of them have flat adaxial leaf surfaces (vs. bullate in *M. hirsuta*) and spreading, reddish-purple corollas (vs. campanulate and deep red). A detailed comparison of *M. hirsuta* with related species can be found in Fernandez-Hilario *et al.* (2022).

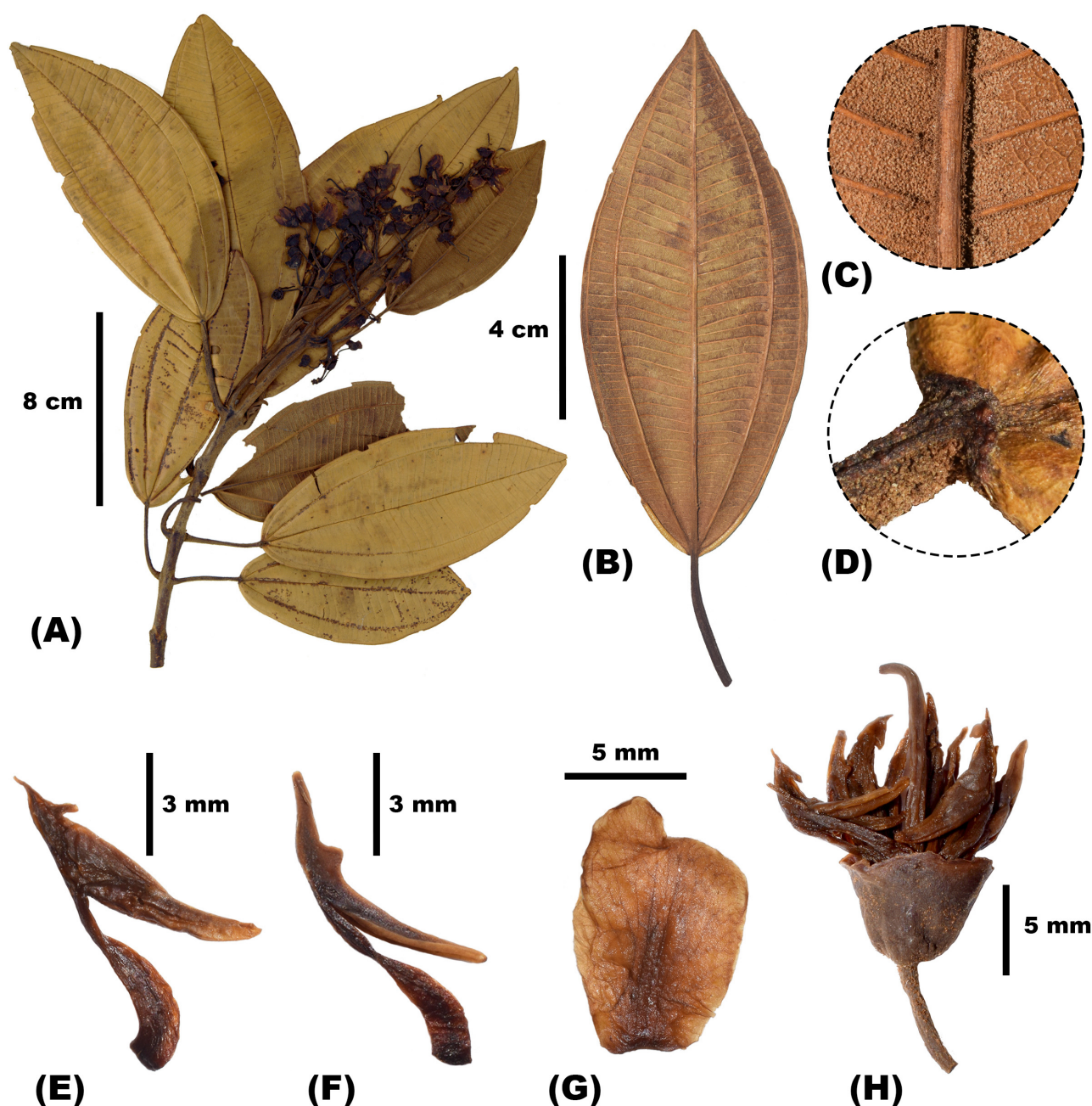


FIGURE 28. *Meriania franciscana*. **A.** Terminal fertile branch with inflorescence. **B.** Leaf blade, abaxial view. **C.** Detail of the abaxial leaf surface. **D.** Detail of the leaf base, adaxial surface. **E.** Antepetalous stamen, lateral view. **F.** Antesepalous stamen, lateral view. **G.** Petal. **H.** Flower bud with petals removed. A, B, D–F and H from C. Díaz & S. Fernández 10150; C and G from J. Campos & S. Corrales 3393.

The location of the inflorescences on the branches in *M. hirsuta* is unclear as the only fertile specimen (Baldeón & Campos 5373) has three short branches with flowers located at the distal nodes. The inflorescences could be interpreted as axillar fascicles (8–10-flowered) or as one terminal panicle (8–18.5 cm long with 3 nodes). The former is a feature not seen within *Meriania* and the latter is present in all species within the *M. radula* complex, although in these species the inflorescences are longer than 18 cm and with more than (4–)5 nodes.

Distribution and phenology:—*Meriania hirsuta* is endemic to northern Peru (Department of Piura) and grows in montane forests at 2150–3035 m (Fig. 30). It has been collected in flower in April.

Specimen examined:—PERU. Piura: Prov. Ayabaca [Huancabamba], Dist. El Carmen de la Frontera, Carretera Sapalache-Cerro Chinguelas, 3035 m, 05°08'23.6"S, 79°23'45.4"W, 03 Sep 2016 (ster.), F. A. Michelangeli *et al.* 2636 (NY!, USM!).

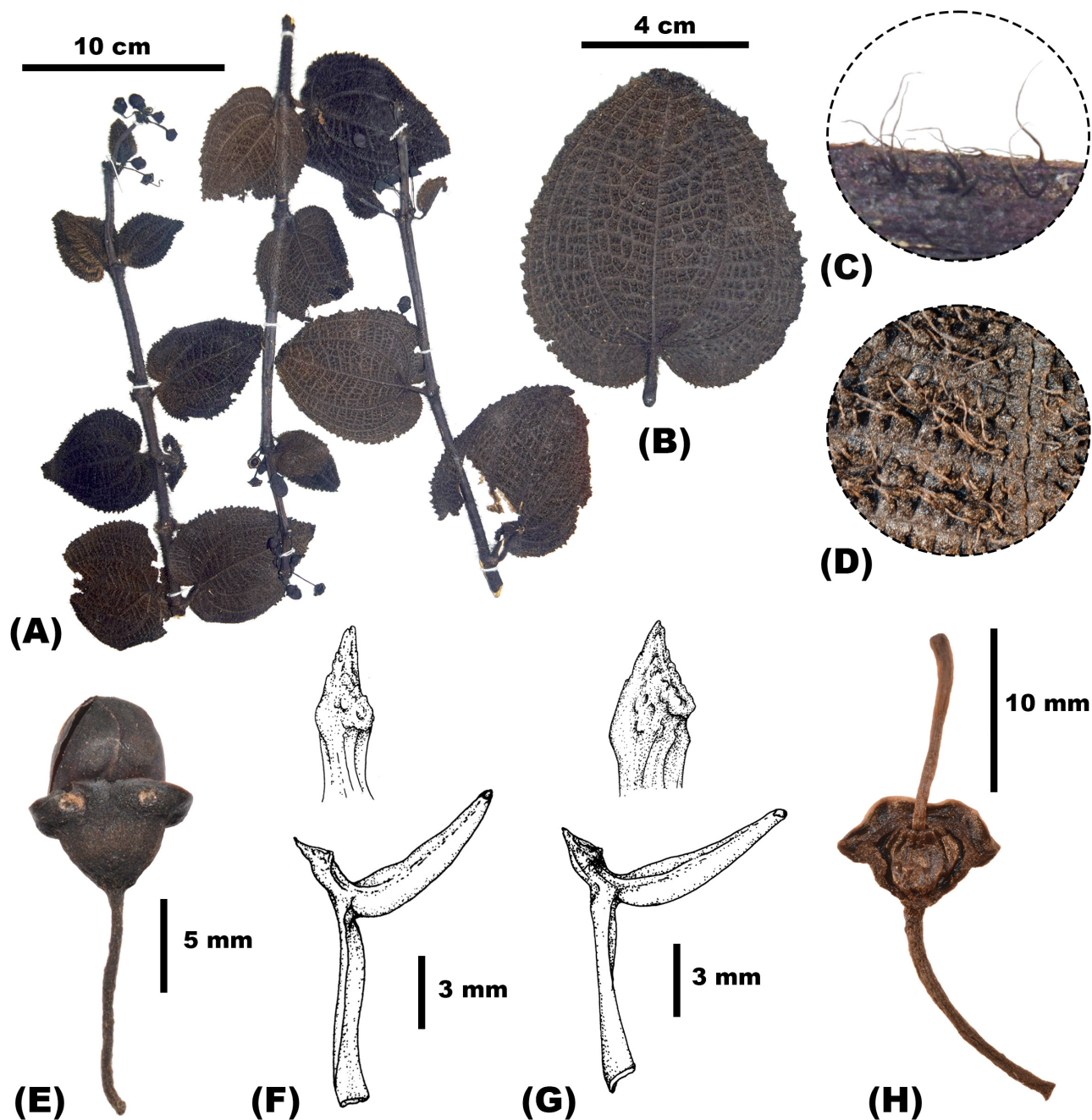


FIGURE 29. *Meriania hirsuta*. **A.** Terminal fertile branches with inflorescences. **B.** Leaf blade, abaxial view. **C.** Detail of the hirsute internode. **D.** Detail of the adaxial leaf surface. **E.** Flower bud. **F.** Antesepalous stamen, lateral view, with detail of the perpendicular dorso-basal appendage. **G.** Antepetalous stamen, lateral view, with detail of the perpendicular dorso-basal appendage. **H.** Longitudinal section of the flower with petals and stamens removed. A–H from *S. Baldeón & J. Campos 5373*. Drawing by Leticia Lajo (F and G).

12. *Meriania juanjil* Rob.Fern., R.Goldenb. & Michelang., *Willdenowia* 52(1): 58 (2022). Type:—**PERU. Amazonas:** Prov. Bongará, Montane rainforest along Yambrasbamba-Pomacocha trail between Yambrasbamba and Yanayacu, 2200–2300 m, 26 Jun 1962 (fl.), *J. Wurdack 1054* (holotype: USM! [accession no. 27403]; isotypes: F! [accession no. 1601214], NY! [barcode 02499960], P! [barcode 05225706], US! [barcode 02925052]). (Figure 31).

Comments:—*Meriania juanjil* differs from the other Peruvian species of *Meriania* by the combination of elliptic leaf blades (10.8–12.7 × 2.7–3 cm) with moderate puberulent indumentum on the abaxial surface (Fig. 31B–C), subcalyptrate calyx with small conic dorsal projections (ca. 0.5 mm long) (Fig. 31D) and irregular dehiscence (Fig. 31G), campanulate, pink-orange corollas, isomorphic stamens and stamen connectives prolonged below the thecae. Among Peruvian species, *M. juanjil* most closely resembles *M. acida* but differs by the width of leaf blades (2.7–3 cm

vs. 5–8 cm), calyx shape (subcalyptrate vs. calyptrate), and dorsal projections on the calyces (small conic, ca. 0.5 mm long vs. absent). A detailed comparison of *M. juanjil* with other related species can be found in Fernandez-Hilario *et al.* (2022).

Distribution and phenology:—Known only from the type specimen, *Meriania juanjil* is endemic to northern Peru (Department of Amazonas) and grows in montane forests at 2200–2300 m (Fig. 9). It has been collected in flower in June.

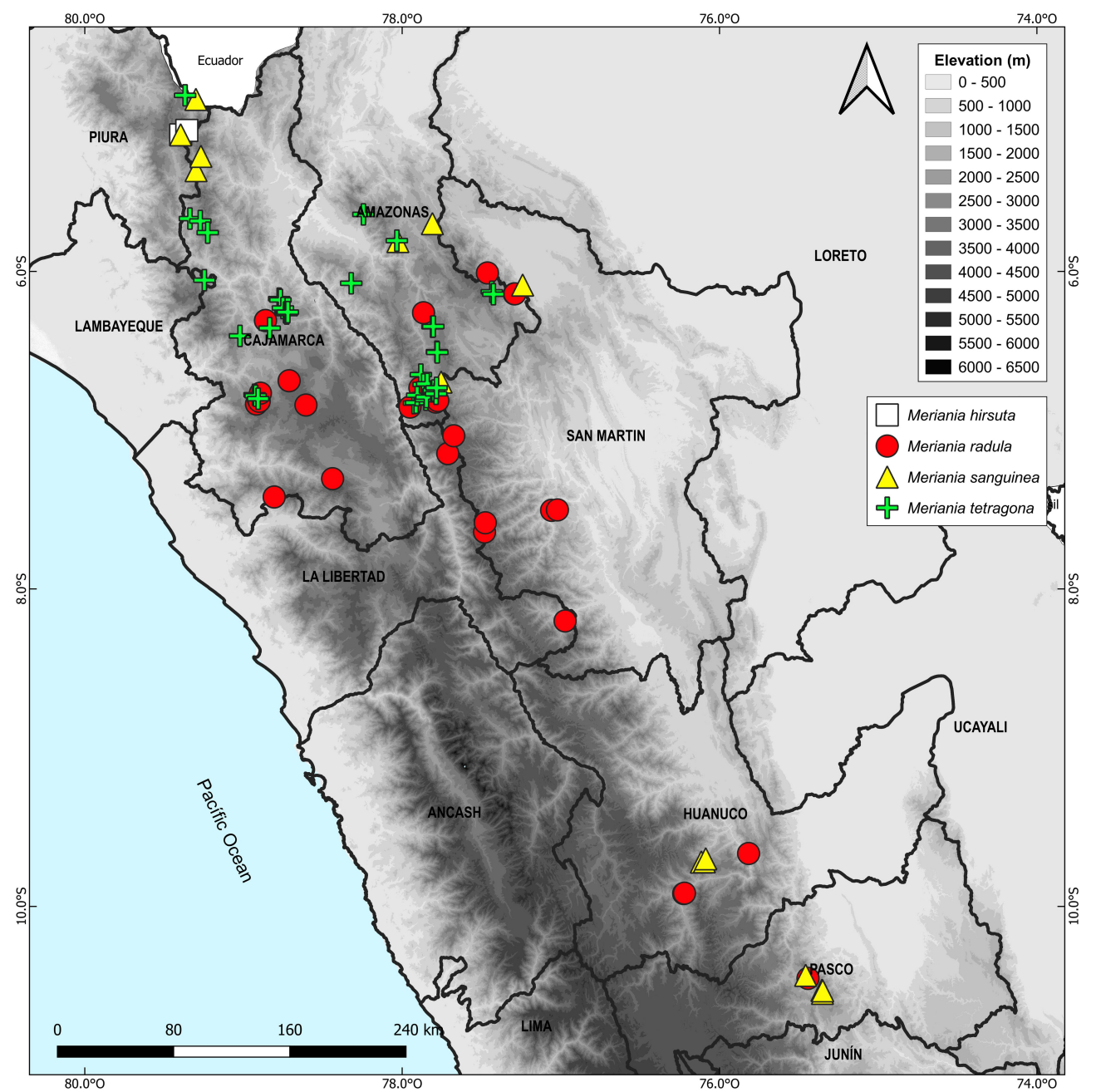


FIGURE 30. Distribution map of *M. radula*, *M. sanguinea*, *M. tetragona* and *M. hirsuta*.

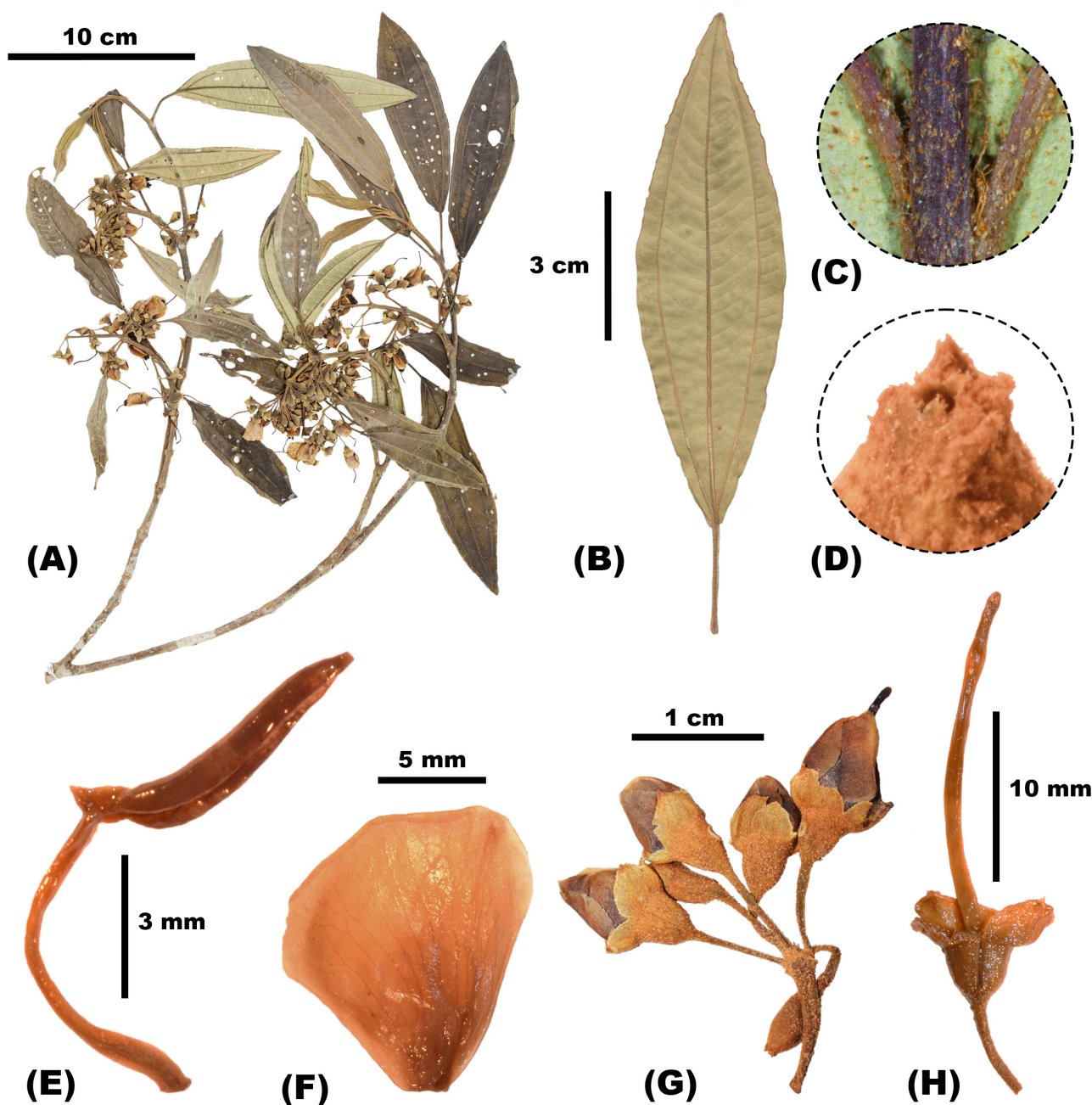


FIGURE 31. *Meriania juanjil*. **A.** Terminal fertile branch with inflorescences. **B.** Leaf blade, abaxial view. **C.** Detail of the convergence of the midvein and secondary veins, abaxial view. **D.** Detail of the apex of the calyx. **E.** Stamen, lateral view. **F.** Petal. **G.** Inflorescence branch. **H.** Flower with petals and stamens removed. A–H from *J. Wurdack 1054*.

13. *Meriania megaphylla* Rob.Fern., R.Goldenb. & Michelang., *Willdenowia* 52(1): 61 (2022). Type:—**PERU. La Libertad:** Prov. Pataz, Dist. Ongón, valle del río Mixiollo, 2000–2100 m, 04 Aug 1914 (fl.), *A. Weberbauer 7048* (holotype: MOL! [barcode 00003237]; isotypes: MOL!-fragment [barcode 00003236], F!-fragment [accession no. 628681]). (Figure 32).

Comments:—The distinctive characters of *M. megaphylla* include its quadrangular and 4-winged internodes, nodes with interpetiolar flaps, large leaf blades (21–29.4 × 14.8–22 cm) (Fig. 32B), adaxial projections (scutum) on the transition zone from the petiole to the midvein (Fig. 32D), spreading, reddish-purple corollas, isomorphic stamens, and stamen connectives with two appendages (Fig. 32F), one triangular descending dorso-basal appendage, and the other blunt ascending dorsal appendage. Among Peruvian species, *M. megaphylla* most closely resembles *M. zunacensis* but differs by the adaxial leaf surfaces (bullate vs. flat), petal length (20.5–22.5 mm vs. 40–50 mm), and the dorsal

appendages of the stamen connectives (blunt ascending vs. absent). A detailed comparison of *M. megaphylla* with other related species can be found in Fernandez-Hilario *et al.* (2022).

Distribution and phenology:—Known only from the type specimen, *Meriania megaphylla* is endemic to northern Peru (Department of La Libertad) and grows in montane forests at 2000–2100 m (Fig. 16). It has been collected in flower in August.

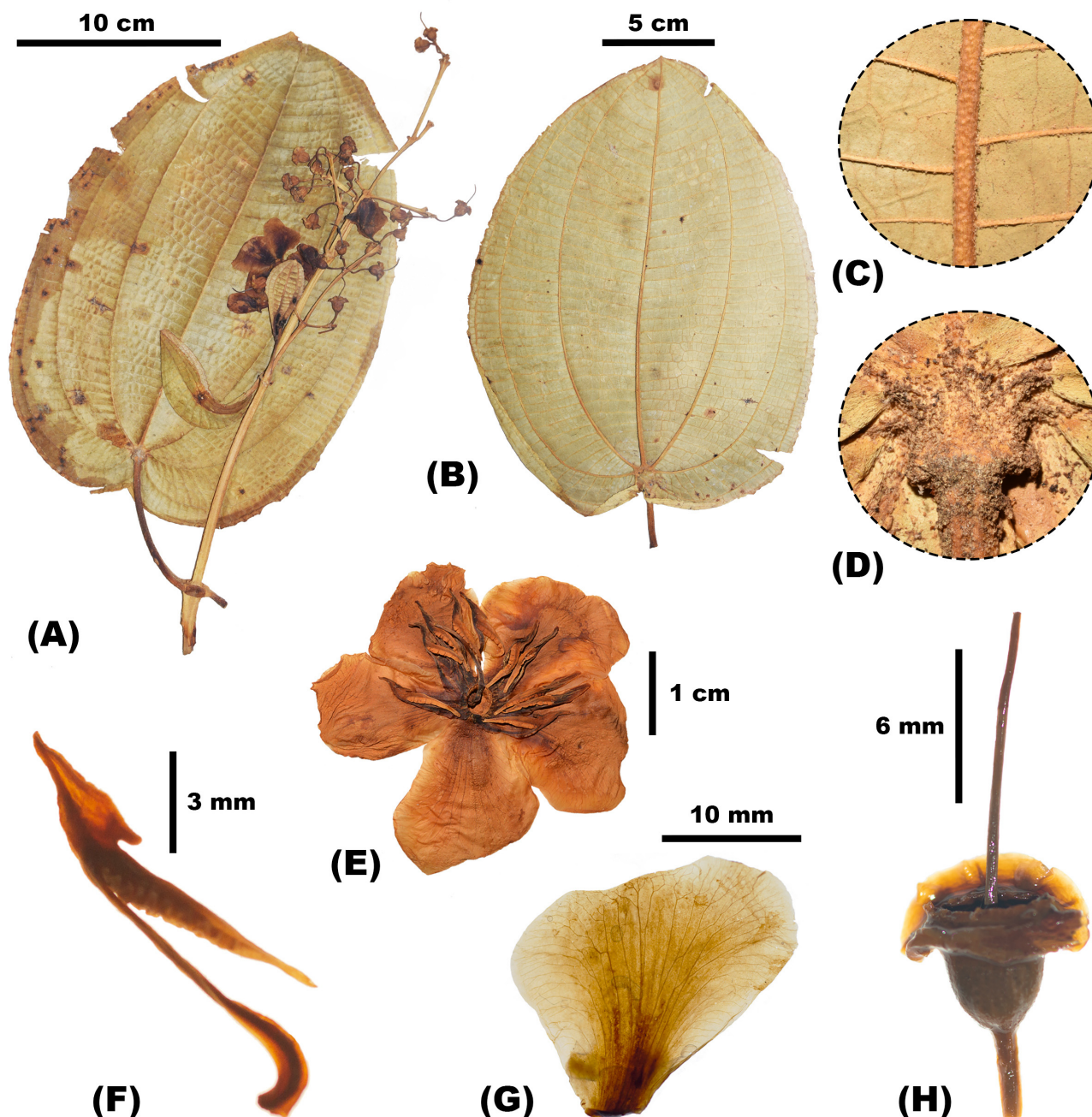


FIGURE 32. *Meriania megaphylla*. **A.** Terminal fertile branch with inflorescence. **B.** Leaf blade, abaxial view. **C.** Detail of the adaxial leaf surface. **D.** Detail of the base of the leaf blade. **E.** Flower at anthesis, apical view. **F.** Stamen, lateral view. **G.** Petal. **H.** Flower with petals and stamens removed. A–H from *A. Weberbauer* 7048.

14. *Meriania microflora* Rob.Fern., R.Goldenb. & Michelang., *Phytotaxa* 456(1): 87 (2020). Type:—**PERU. Amazonas:** Prov. Condorcanqui, Dist. Santiago, Cerros Kampankis, serranía entre los ríos Santiago y Morona, desde Río Marañón hasta frontera con Ecuador, Campamento 2, Qda. Katerpisa, 710 m, 04°02'17.35"S, 77°33'45.50"W, 09 Aug 2011 (fl.), *I. Huamantupa, D. Neill, N. Pitman & C. Kajekai* 15552 (holotype: USM! [accession no. 360020]; isotypes: F! [accession no. 2307857], NY! [barcode 03240851]). (Figures 33–34).

Comments:—This species has the smallest flowers in *Meriania* (petals 4–4.5 mm long), and it is readily recognizable among Peruvian species by the combination of nodes without interpetiolar flaps, abaxial and lateral liguliform projections on the apex of the petioles (Fig. 33D), spreading, white corollas (Fig. 33G), stamen connectives with multilobed descending dorso-basal appendages and antepetalous stamen connectives with apically trilobed ascending dorsal appendages (Fig. 33E). White corollas and lobed ascending dorsal appendages are features more common among Brazilian species of *Meriania*, but none of these species have stamen connectives with descending dorso-basal appendages, or projections on the petioles. A detailed comparison of *M. microflora* with related species can be found in Fernandez-Hilario *et al.* (2020).

Distribution and phenology:—Known only from the type specimen, *Meriania microflora* is endemic to Peru and has been recorded only in the Cordillera Kampankis in the Amazonas-Loreto border in sub-Andean forests at 710 m (Fig. 35). It has been collected in flower in August.

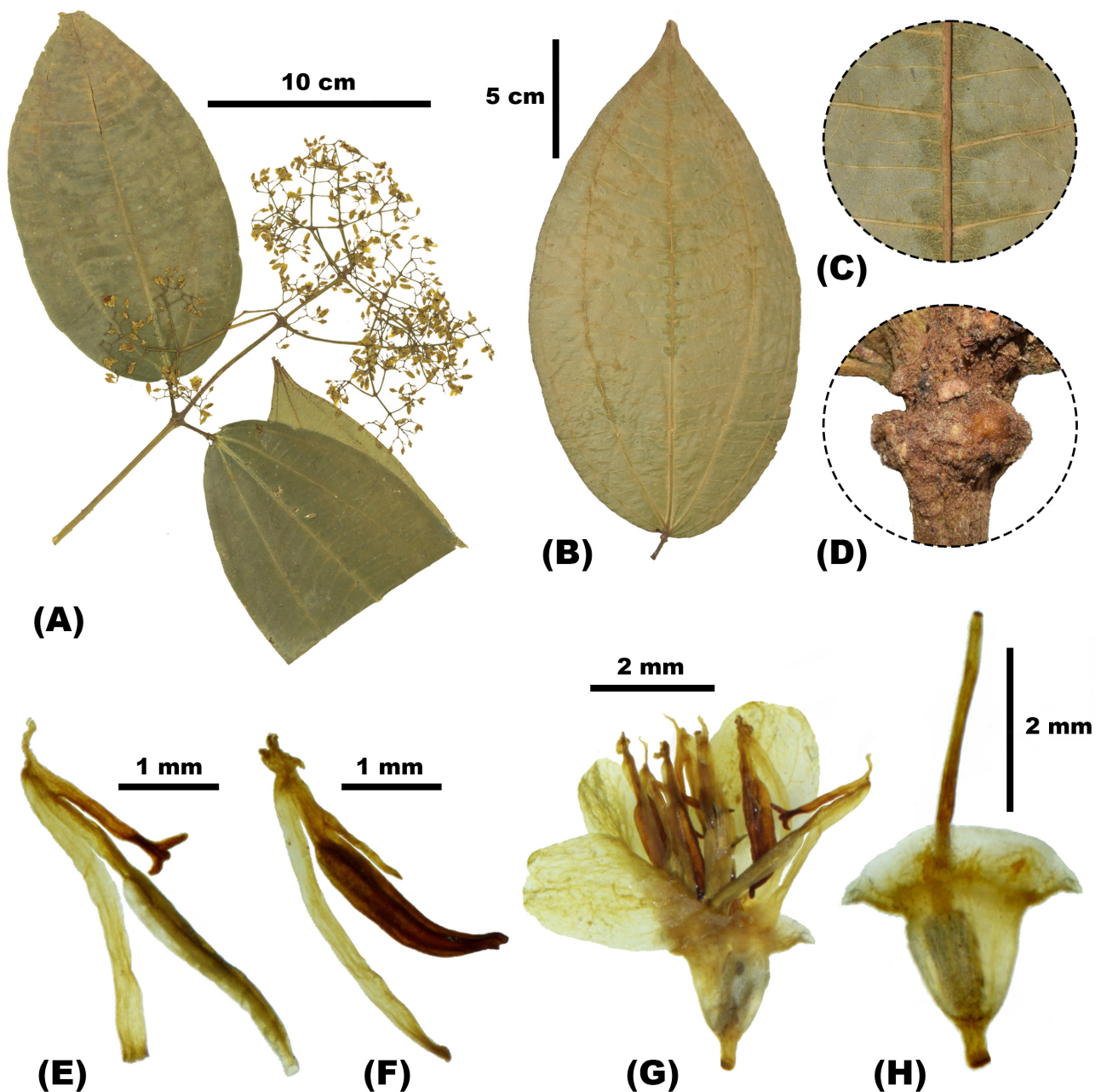


FIGURE 33. *Meriania microflora*. **A.** Terminal fertile branch with inflorescence. **B.** Leaf blade, abaxial view. **C.** Detail of the adaxial leaf surface. **D.** Detail of the abaxial projections of the petiole. **E.** Antepetalous stamen, lateral view. **F.** Antesepalous stamen, lateral view. **G.** Flower bud with two petals removed. **H.** Flower with petals and stamens removed. A–H from I. Huamantupa *et al.* 15552.

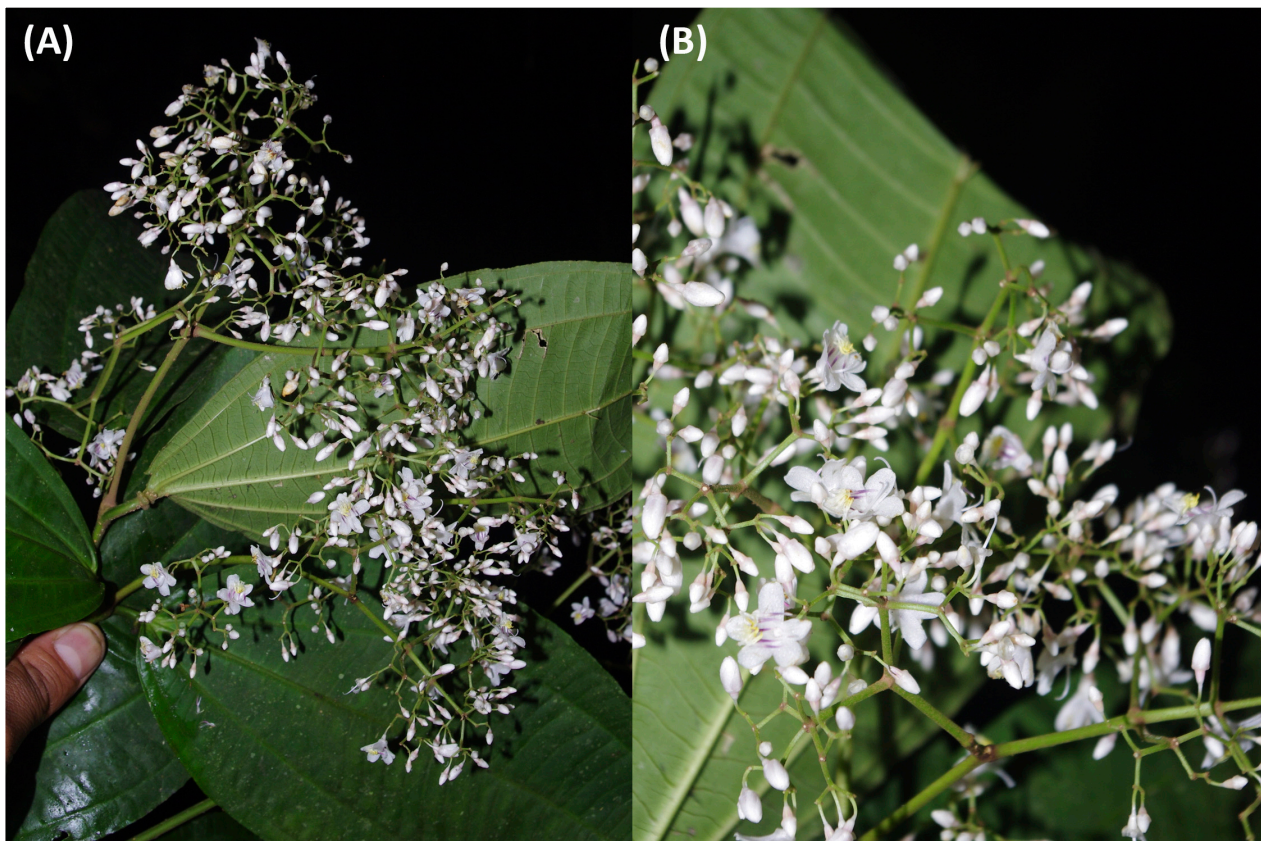


FIGURE 34. *Meriania microflora*. **A.** Terminal fertile branch. **B.** Detail of inflorescence. From *I. Huamantupa et al. 15552*. Photos by Isau Huamantupa.

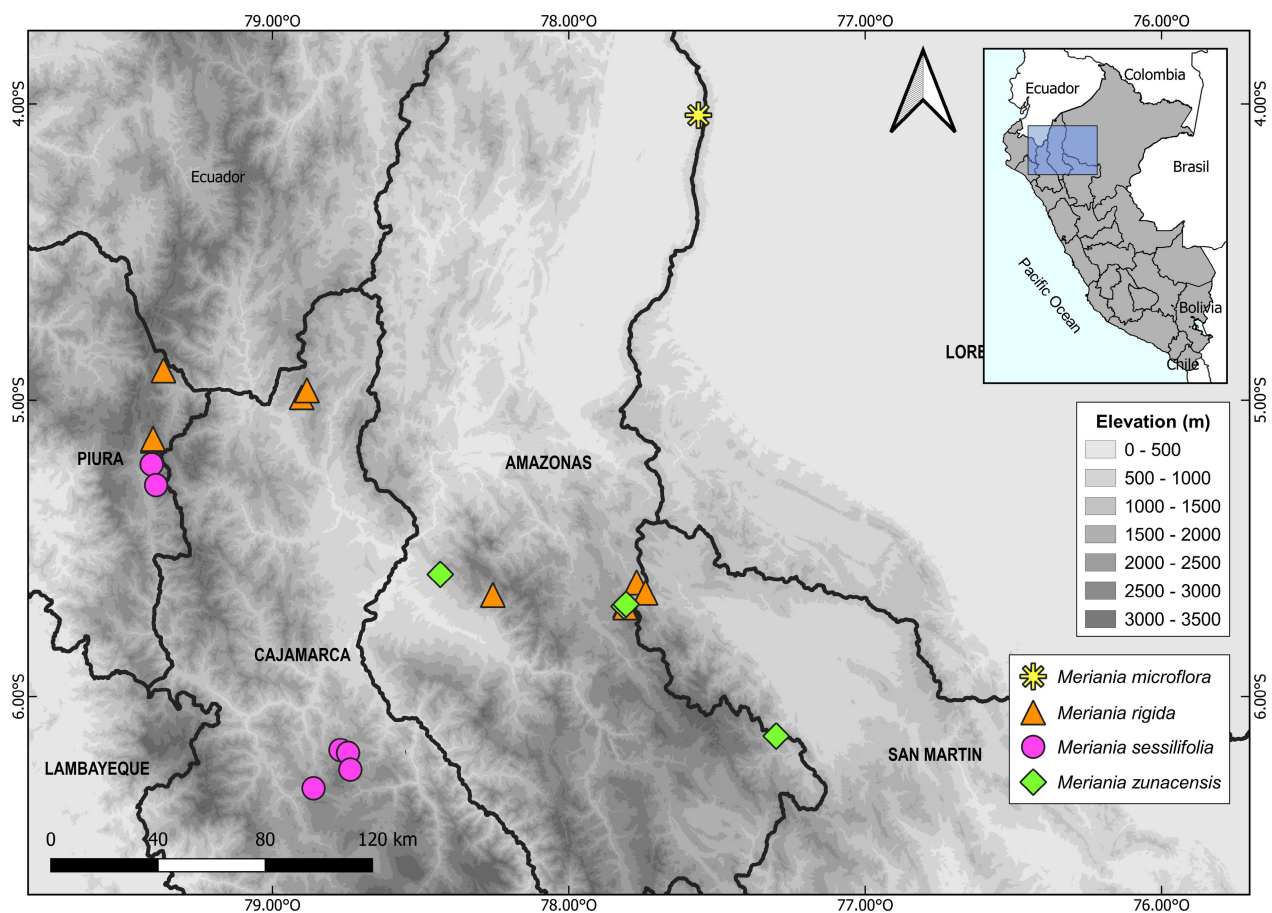


FIGURE 35. Distribution map of *M. microflora*, *M. rigida*, *M. sessilifolia* and *M. zunacensis*.

15. *Meriania neillii* Humberto Mend., Acta Bot. Mex. 128(e1734): 85 (2021). Type:—**ECUADOR. Napo:** Southern slopes of Volcán Sumaco, Hollin – Loreto road, km 40, 1200 m, 11 Feb 1989 (fl.), *D. Neill & M. Asanza* 8887 (holotype: CAS [n.s.]; isotypes: MO! [barcode MO-1716563], NY! [barcode 02500066]). (Figures 36–37).

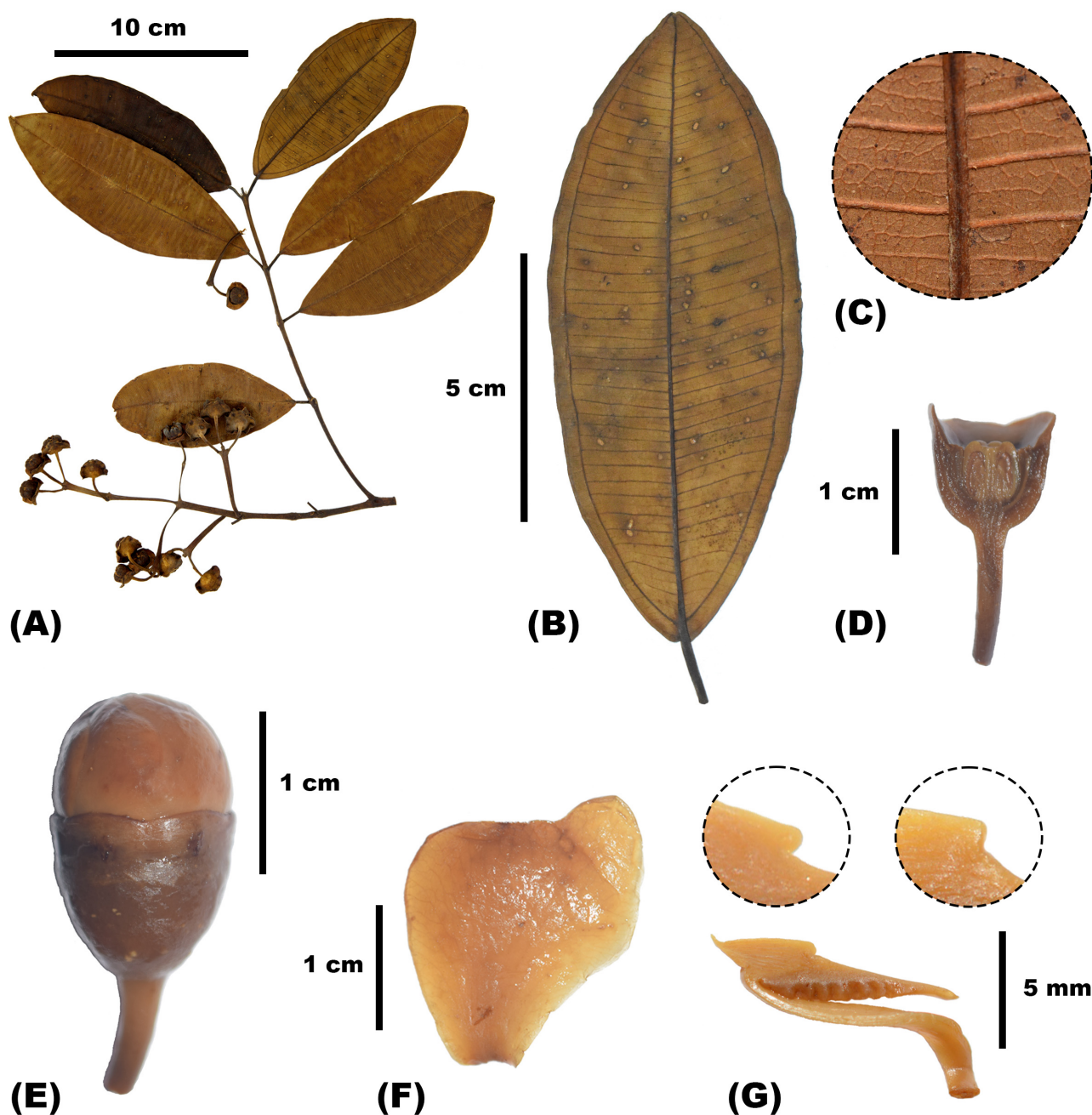


FIGURE 36. *Meriania neillii*. **A.** Terminal fertile branch with infructescence. **B.** Leaf blade, abaxial view. **C.** Detail of the abaxial leaf surface. **D.** Longitudinal section of the flower with petals, stamens and style removed. **E.** Flower bud. **F.** Petal. **G.** Stamen, lateral view, with details of dorsal appendages. A–C from *J. L. Marcelo-Peña & A. Castillo* 1709; D–G from *I. Revilla* 3484.

Comments:—*Meriania hexamera* Sprague has been traditionally considered a widely distributed species from Colombia to Peru. However, Mendoza-Cifuentes (2021) considers that *M. hexamera* is restricted to Colombia, and that the populations in Ecuador, Peru and southern Colombia correspond to a different species (*M. neillii*). According to him, the main differences between them would be the thickness of the stems (2.2–4 mm in diameter in *M. neillii* vs. 4–9 mm in diameter in *M. hexamera*) and petioles (1–1.6 mm in diameter vs. 2–3.5 mm in diameter), and the pattern of venation (one pair of secondary veins vs. two pairs of secondary veins). However, some specimens cited under *M. hexamera* (e.g., *Lawrence* 420) by Mendoza-Cifuentes (2021) have thin stems and petioles. Likewise, *Cuatrecasas* 9139 and *Franco* 5312 have leaf blades with one pair of secondary veins and one pair of faint submarginal veins but were cited under *M. hexamera*. The only notable difference provided by Mendoza-Cifuentes (2021) is the apex of the

ovaries (with lobes 0.3–1 mm long in *M. neillii* vs. with a ring 2–4 mm long in *M. hexamera*). Because the delimitation between *M. hexamera* and *M. nielli* is unclear, we choose for the moment to refer to the Peruvian populations as *M. neillii* with reservations.

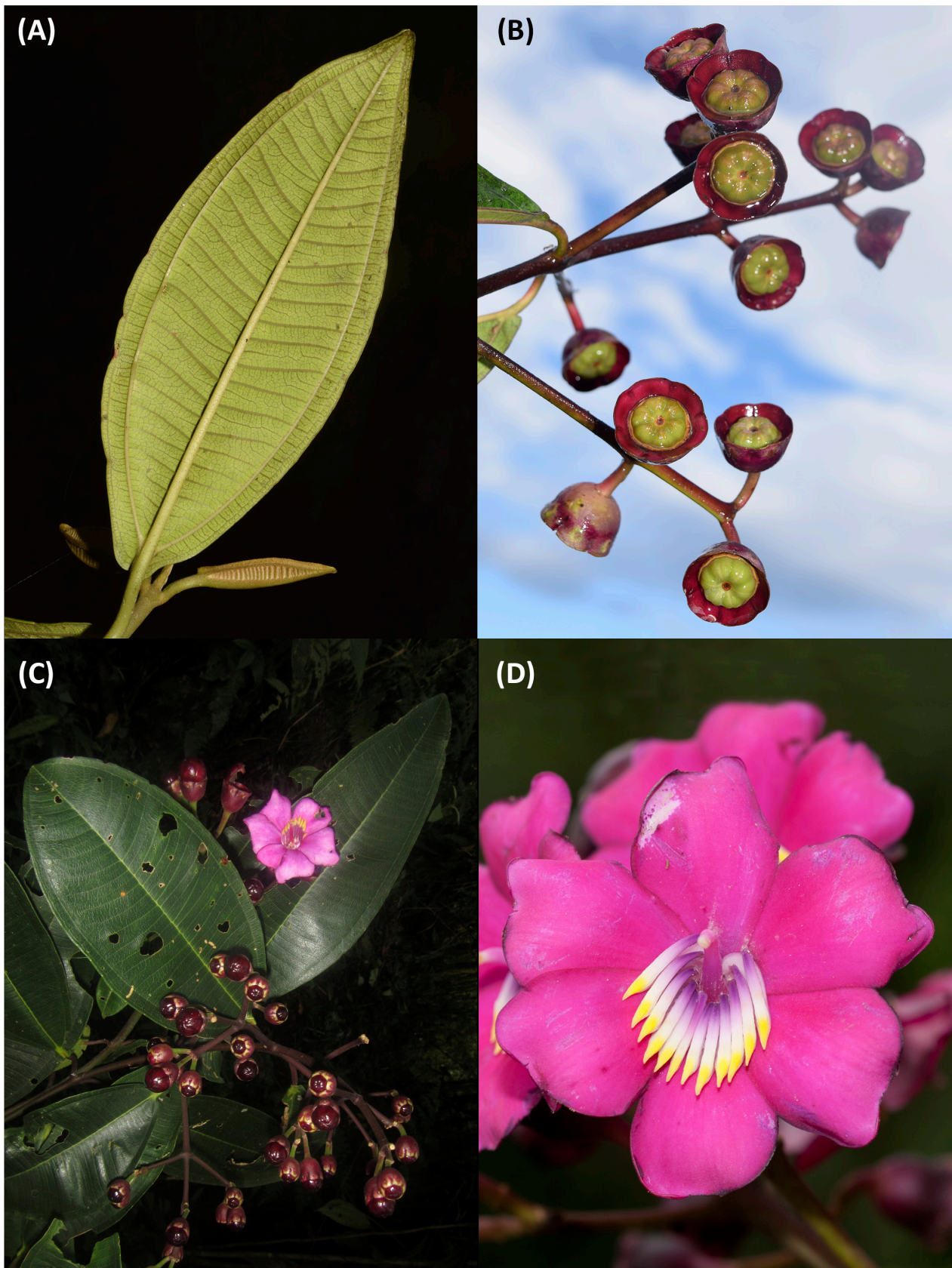


FIGURE 37. *Meriania neillii*. **A.** Leaf blade, abaxial view. **B.** Infructescence. **C.** Terminal fertile branch with inflorescence. **D.** Flower at anthesis, apical view. A and B from R. Fernandez-Hilario et al. 2227; C from I. Revilla 3484; D from F. A. Michelangeli et al. 1756. Photos by Robin Fernandez-Hilario (A and B), Italo Revilla (C) and Fabián A. Michelangeli (D).

Meriania neillii is the most widely distributed *Meriania* species in Peru, and it is easily recognisable by its glabrous vegetative structures (rarely sparsely puberulent), leaf blades with entire margins and clearly parallel tertiary venation (Fig. 36B–C), and 6-merous flowers with spreading, reddish-purple corollas (Fig. 37D). It can be confused with *M. franciscana*, but this has adaxial projections (scutum) on the insertion of the petiole with the leaf blade (vs. absent in *M. neillii*), 5-merous flowers (vs. 6-merous), and strongly dimorphic stamens (vs. isomorphic). *Meriania neillii* could be related to *M. cuzcoana* which also has 6-merous flowers and with similar corollas but see comments under *M. cuzcoana* for differences.

Peruvian populations of *M. neillii* usually have constant characteristics; the calyces do not have dorsal projections (Fig. 36E) and the leaf blades have slightly suprabasal venation. The leaf blades have obtuse to slightly rounded bases, however in many specimens the bases are slightly revolute giving the appearance of acute or cuneate bases. Nevertheless, there are some atypical specimens; *Núñez & Alanya 13322* (fr.) has slightly narrowly cordate bases and *Graham 6143* (fl.) has flowers smaller than usual (hypanthium plus calyx 6–6.5 mm long vs. 7.5–10 mm long). The venation in *M. neillii* usually consists of a main vein, one pair of secondary veins (lateral veins) and one pair of faint submarginal veins (e.g., *Baldeón et al. 3069*, *Graham 6143*, *Núñez 13322*). Nevertheless, in some specimens the submarginal veins are more evident, and there is a larger space between the submarginal veins and the margin of the leaf blades, where an additional third pair of faint veins can be observed (e.g., *Campos & Corrales 3608*, *Campos & Díaz 4386*, *Monteagudo 15855*). This latter pattern of venation can also be observed in the type of *M. neillii*. For this reason, we could consider that *M. neillii* may have up to two pairs of secondary veins.

Distribution and phenology:—*Meriania neillii* is widely distributed from southern Colombia to southern Peru, and occurs in almost all Peruvian Andean departments (from Amazonas to Cusco) in montane forest and rarely in premontane forest at (700–)1400–2700 m (Fig. 38). It has been collected in flower from February to December, and in fruit from March to November.

Specimens examined:—**PERU. Amazonas:** path from Chachapoyas to Moyobamba, 2700–3300 m, Jan 1930 (ster.), *L. Williams 7598* (F!); near the border with Dept. San Martín, 2000 m, 03 Apr 2001 (fl.), *H. van der Werff et al. 16639* (NY!). Prov. Bongará, montane rainforest along Yambrasbamba Trail between Yambrasbamba and Yanayacu, 2200–2300 m, 05°41'S, 77°48'W, 26 Jun 1962 (fl., fr.), *J. Wurdack 1050* (F!, NY!, USM!, US!); Shillac, norte del camino de Pedro Ruíz, 2300 m, 05°49'S, 78°01'W, 31 Aug–02 Sep 1983 (fl.), *D. Smith & S. Vásquez 4868* (USM!); Dist. Shipasbamba, Shilla, 1850–1900 m, 06 May 1981 (fr.), *K. Young & M. Eisenberg 381* (NY!); Dist. Yambrasbamba, alrededores de CP Miraflores, 2100, 05°42'05"S, 77°55'35"W, 03 Jul 2022 (fl., fr.), *R. Fernandez-Hilario et al. 2227* (MOLF!), Buenos Aires, 1860–2000 m, 02–26 Mar 1967 (fl.), *S. Tillet 673–310* (US!, USM!), Centro de Investigación de la ONG Neotropical Primate Conservation y bosque “El Toro”, 2000 m, 05°39'17.05"S, 77°54'51.30"W, 22–28 Jul 2018 (fr.), *R. Fernandez-Hilario et al. 1431* (MOLF!), ruta desde CP Santa Rosa hacia bosque El Toro, 2160 m, 05°40'41.13"S, 77°55'12.72"W, 11 Nov 2020 (fl. bud), *R. Fernandez-Hilario et al. 2057* (HOXA!, MOLF!, NY!, UPCB!). Prov. Luya, Dist. Camporendondo, Tullanya, 1700–2000 m, 06°09'07"S, 78°21'05"W, 27 Nov 1996 (fl.), *R. Vásquez et al. 211859* (HUT!, MOLF!, USM!). **Ayacucho:** Prov. La Mar, Machete, 1100 m, 26 Oct 2000 (ster.), *L. Vargas 03* (USM!). **Cajamarca:** Prov. Jaén, Dist. Chirinos, Las Pírias, 14 Jul 2005 (fr.), *J.L. Marcelo-Peña & A. Castillo 1709* (MOLF!); Dist. Jaén, San José de la Alianza y Nueva Jerusalén, 25 May 2012 (fl.), *L. Dávila 2409* (UNC!). Prov. San Ignacio, camino arriba de Nuevo Trujillo cerca de Santa Fé, 1182–1600 m, 05°01'09"S, 78°52'11"W, 16 Mar 2012 (fl.), *F. A. Michelangeli et al. 1756* (NY!); Dist. Huarango, Poblado Selva Andina, trocha comunal, 1613 m, 05°03'02"S, 78°45'14"W, 25 Apr 2007 (fl., fr.), *J. Perea & J. Mateo 3085* (NY!), Poblado Selva Andina, trocha de captación de agua, 1798 m, 05°03'37"S, 78°45'13"W, 18 Apr 2007 (fl.), *J. Perea & J. Mateo 2969* (NY!); Dist. San José de Lourdes, 1650 m, 05°00'43"S, 78°54'09"W, 14 Feb 2000 (fl. bud), *J. Campos & R. Vásquez 6382* (MOLF!, NY!, USM!), alrededores de Camaná, 1850 m, 05°01'00"S, 78°54'00"W, 22 Mar 1997 (fl., fr.), *J. Campos & S. Corrales 3608* (MOLF!, NY!, USM!), localidad Estrella del Oriente, 1600–1700 m, 04°57'00"S, 78°59'00"W, 04 Sep 1997 (fr.), *J. Campos & P. Díaz 4386* (HUT!, MOLF!, NY!, USM!). Prov. San Ignacio, 12.67 km SW de San Ignacio, 2.88 km de Alto Ihumaca, 2151 m, 05°12'48.1"S, 79°05'44.9"W, 07 Jun 2011 (ster.), *M. Samain et al. 2011-131* (USM!). **Cusco:** Prov. La Convención, Dist. Echarati, Llactahuaman, 1650 m, 12°51'55"S, 73°30'40"W, 14 Jul 1998 (ster.), *S. Baldeón et al. 3069* (USM!), San Antonio, pie de carretera, 1744 m, 12°25'S, 72°32'W, 23 Aug 2005 (fl.), *G. Calatayud et al. 3470* (NY!). Prov. Paucartambo, Kosñipata, San Pedro, 900 m, 13°05'S, 71°10'W, 28 Mar 1991 (fr.), *P. Núñez & N. Alanya 13322* (CUZ!, NY!, USM!), Santa Isabel - San Pedro, 1250 m, 25 Nov 1965 (fl.), *C. Vargas 16965* (CUZ!), same locality and date (fl.), *16995* (US!); Dist. Kosñipata, road from Pillawata to Patria, 1190 m, 05 Feb 1975 (fl.), *T. Plowman & W. Davis 4995* (US!). **Huánuco:** Prov. Leoncio Prado, Dist. Pucayacu, PN Cordillera Azul, 1604 m, 08°29'24.42"S, 76°06'14.48"W, 26 Feb 2022 (fr.), *R. Rojas et al. 11171* (HOXA!). Prov. Puerto Inca, Dist. Yuyapichis, CCNN Tahuantinsuyo, Reserva Comunal El Sira, 1568 m, 09°25'20.1"S, 74°44'05"W,

02 May 2014 (fl.), *L. Valenzuela et al.* 27578 (HOXA!). **Junín:** Prov. Satipo, Dist. Llaylla, 1430 m, Feb 2005 (ster.), *E. Castro* 35 (MOLF!), Donato, 1635 m, 11°27'39"S; 74°38'07"W, 25 Oct 2019 (fl., fr.), *I. Revilla* 3484 (HSP!). **Pasco:** Prov. Oxapampa, Dist. Huancabamba, PN Yanachaga Chemillén, parte alta de la trocha Tunqui-Cajonpata, 1940 m, 10°16'21"S, 75°30'26"W, 02 Nov 2007 (fl., fr.), *A. Monteagudo et al.* 15855 (HOXA!, MOLF!, NY!, USM!); Dist. Palcazú, Alto Lagarto, 700 m, 10°11'57"S, 75°21'23"W, 03 Dec 2007 (fl.), *R. Rojas et al.* 4817 (HOXA!, USM!), Palcazú, 2100 m, 10°32'S, 73°23'W, 28 Sep 1984 (fr.), *D. Smith* 8556 (US!, USM!). **Piura:** Prov. Huancabamba, Dist. El Carmen de la Frontera, Rosario bajo, entre el Tambo y Pan de Azúcar, 1935–2250 m, 04°56'23.99"S, 79°18'57.45"W, 25 Apr 2006 (fl.), *A. Cano et al.* 16342 (USM!). **Ucayali:** Prov. Coronel Portillo, Dist. Iparia, falda al cerro Ariapo, Reserva Comunal El Sira, 1800 m, 09°28'16"S, 74°34'54"W, 23 Sep 2011 (fl.), *J. Graham* 6143 (MOLF!, NY!).

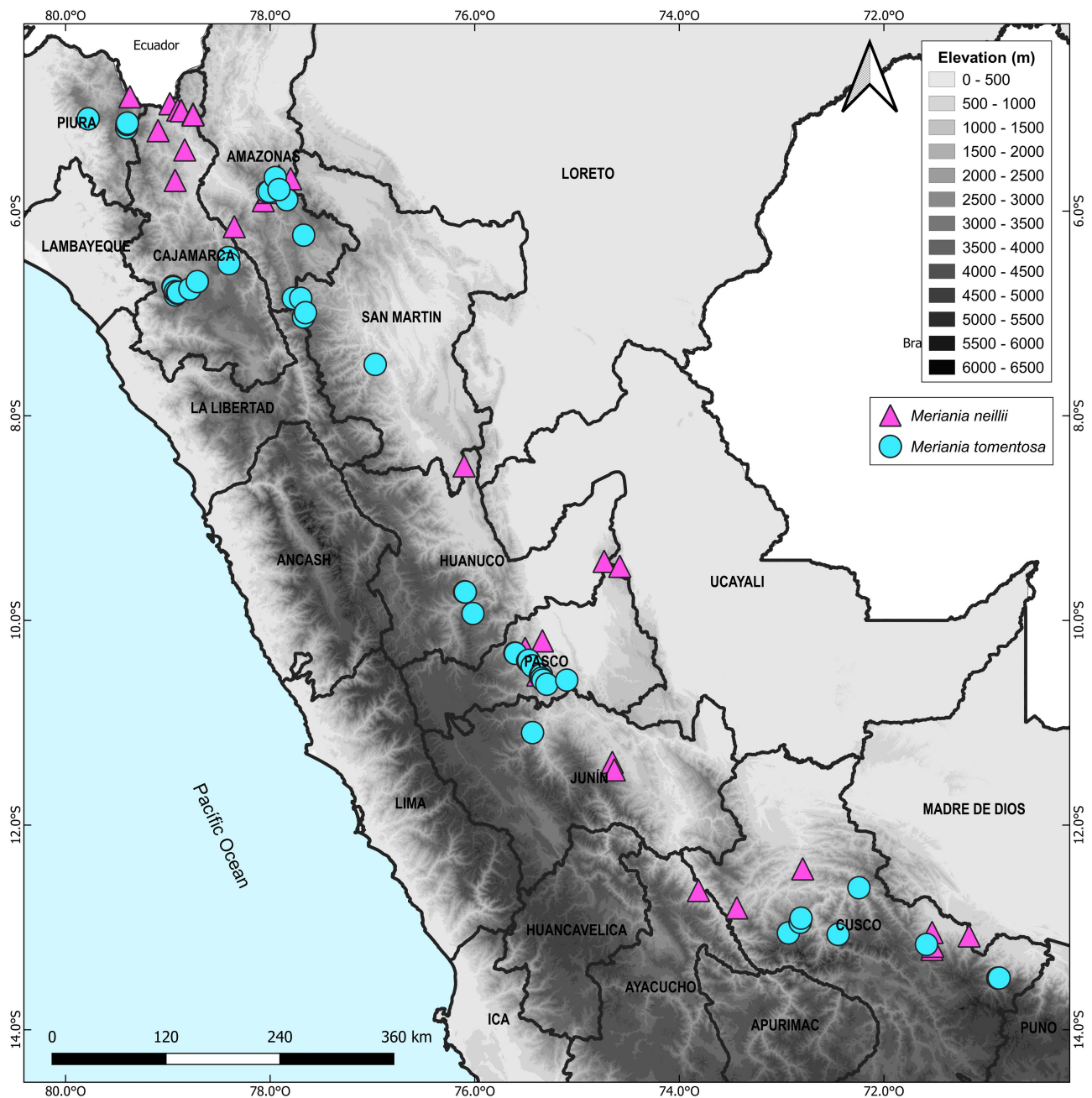


FIGURE 38. Distribution map of *M. neillii* and *M. tomentosa*.

16. *Meriania ninakurorum* (Bussmann & Paniagua) E.Cotton & Balslev, Sci. Danic. Biol. 4: 108 (2014). Basionym: *Axinaea ninakurorum* Bussmann & Paniagua, Arnelodoa 19(1): 23 (2012). Type: **PERU. San Martín:** Prov. Huallaga, Dist. Bolívar, cloud forest surrounding “Pampa Hermosa” around old Chacha and Inca settlement, with high amount of old Cedrela, 2400 m, 06°59'32"S, 77°39'16"W, 24 May 2011 (fl.), *R.W. Bussmann, N. Paniagua, C. Vega & L.*

Cotrina 17067 (holotype: HAO! [accession no. 20106]; isotypes: CAS! [barcode 474651], M! [barcode M-0274715], MO! [barcodes MO-2695409, MO-2822726, MO-2822727, MO-2822728], NY! [barcode 02059485]). (Figure 39).

Comments:—*Meriania ninakurorum* in one of the four Peruvian species (along with *M. bicentenaria*, *M. franciscana* and *M. peltata*) that form part of the *M. macrophylla* complex. These species (except *M. peltata*, typical form) differ from the other species of the complex by the stamen connectives lacking bifid descending dorso-basal appendages. Also, *M. ninakurorum* can be recognized by its subpeltate leaves (Fig. 39A), lanceolate to ovate leaf blades 17.2–27.7 × 8.1–15.5 cm, puberulent abaxial leaf surfaces, petioles without projections, truncate or repand calyces, 5-merous flowers, pink petals (Fig. 39B), stamen connectives without dorsal appendages, and antepetalous stamen connectives with falcate descending dorso-basal appendage. *Meriania ninakurorum* could be confused with *M. franciscana* and *M. peltata* (Peruvian population, see additional comments below this species). However, floral and vegetative characters distinguish them, *M. franciscana* has elliptic to broadly elliptic leaf blades, antepetalous stamen connectives with blunt ascending dorsal appendages, antesepalous stamen connectives with dorsal appendages as a mere hump and leaves with an adaxial projections (scutum) on the insertion of the petiole with the leaf blade, and *M. peltata* differs by its large ovate leaf blades (22.8–28.7 × 13.3–16.7 cm) and pubescent to setulose abaxial leaf surfaces.

Meriania ninakurorum was described as a species with isomorphic stamens, although even the illustration and photos (see Fig. 1 and 2 in Bussmann & Paniagua 2012) show strongly dimorphic stamens. Probably due to this misinterpretation this species was originally described as *Axinaea*. Nevertheless, *M. ninakurorum* has only antepetalous stamens with inflated (bulbous) connectives from almost the middle of the thecae, which is a diagnostic characteristic for species of the *M. macrophylla* complex. All species in *Axinaea* have both antepetalous and antesepalous stamen connectives with inflated (bulbous) dorso-basal appendages (except some species with 4-merous flowers) (Cotton *et al.* 2014).

Distribution and phenology:—Known only from the type specimen, *Meriania ninakurorum* is endemic to northern Peru (Department of San Martín) and occurs in montane forests at 2400 m (Fig. 16). It has been collected in flower in May.

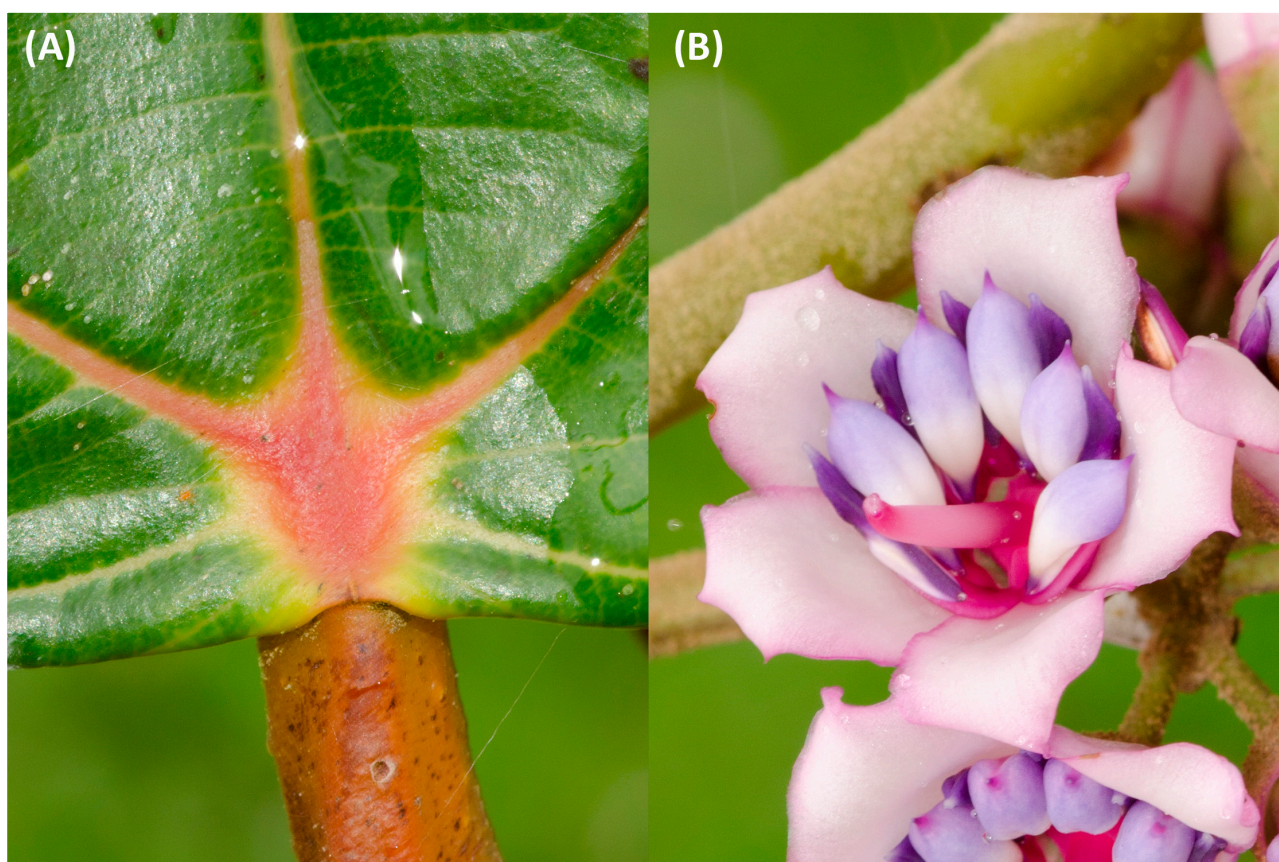


FIGURE 39. *Meriania ninakurorum*. **A.** Detail of the base (subpeltate) of the leaf blade. **B.** Flower at anthesis, apical view. A–B from *R. W. Bussmann et al. 17067*. Photos by Rainer W. Bussmann.

17. *Meriania peltata* L.Uribe, *Caldasia* 8(40): 532 (1962). *Meriania macrophylla* subsp. *peltata* (L.Uribe) Humberto Mend., *Acta Bot. Mex.* 128(e1734): 73 (2021). Type:—**COLOMBIA, Cundinamarca**: bosques abajo del Salto de Tequendama, cerca a El Ermitaño, 2200 m, 18 May 1959 (fl., fr.), *L. Uribe Uribe* 3285 (holotype: COL! [barcode COL000003288]; isotypes: AAU!, COL! [barcodes COL000016055, COL000003289, COL000003290], ENCB! [ENCB008627], F! [accession no. 1810513]. GH! [barcode 00072676], MO! [barcode MO-313849], NY! [barcodes 00228973, 02500165], US! [barcodes 00120384, 00120385], VEN! [barcode 111520]). (Figures 40–41).

Comments:—We place two nearby populations collected in northern Peru and identified by H. Mendoza in 2009 (see identification label of *Llatas & Suarez* 2762) with reservations under *M. peltata*, which differs from the typical form (Colombia) by its truncate to repand calyces (Fig. 40G) (vs. evident and irregular lobed) and stamen connective with acuminate to falcate descending dorso-basal appendages (Fig. 40E–F) (vs. bifid). *Meriania peltata* was previously known only from Andean forests from Ecuador and Colombia (Fernández-Fernández 2010, Almeda *et al.* 2021), and now two new localities are recorded in the Department of Cajamarca in northern Peru.

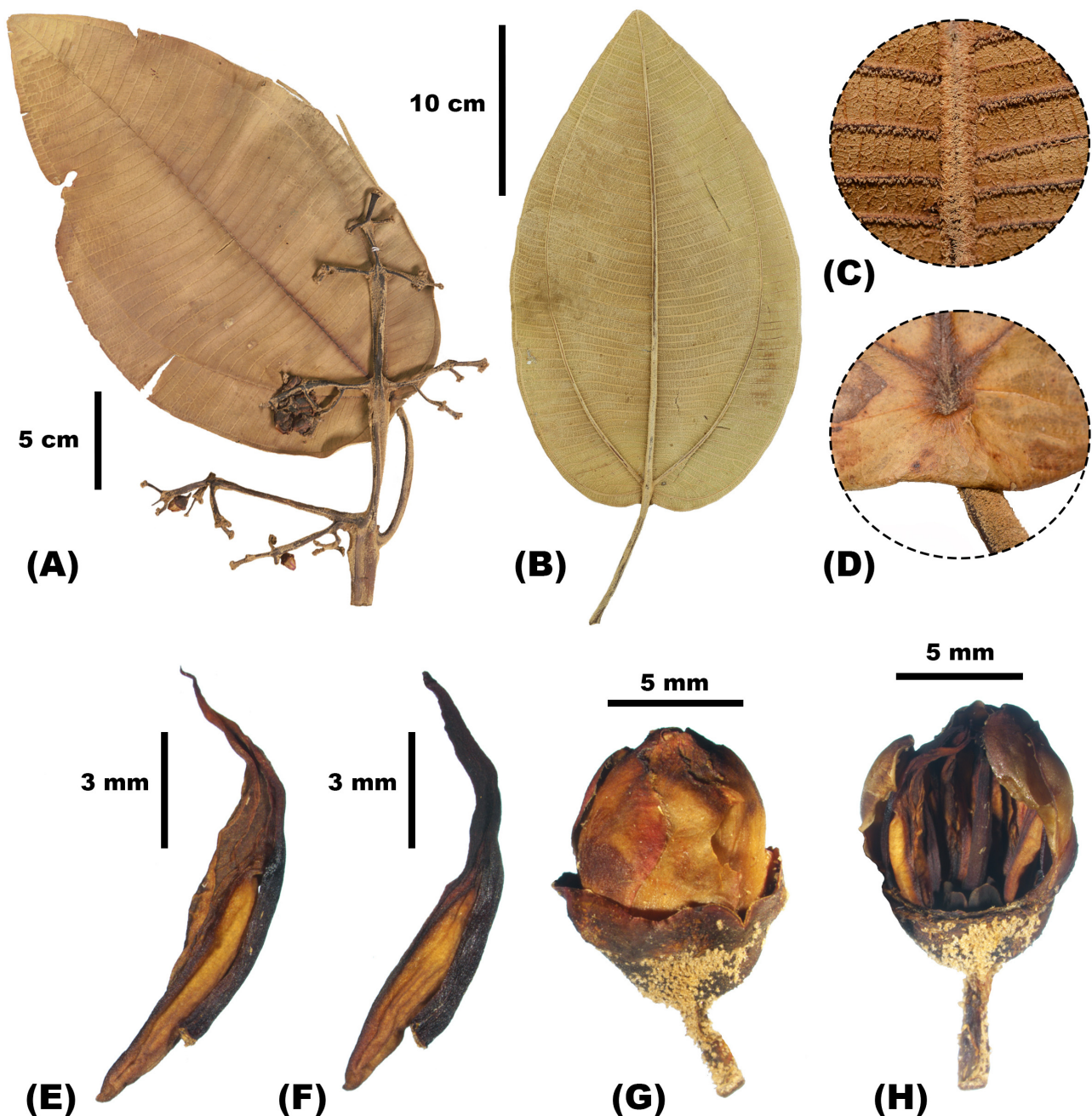


FIGURE 40. *Meriania peltata*. **A.** Terminal fertile branch with inflorescence. **B.** Leaf blade, abaxial view. **C.** Detail of the abaxial leaf surface. **D.** Detail of the leaf base, adaxial surface. **E.** Antepetalous stamen, lateral view. **F.** Antesepalous stamen, lateral view. **G.** Flower bud. **H.** Flower bud with petal removed. A, B and E–H from *S. Llatas & H. Suarez* 2762; C–D from *R. Fernandez-Hilario et al.* 2093.

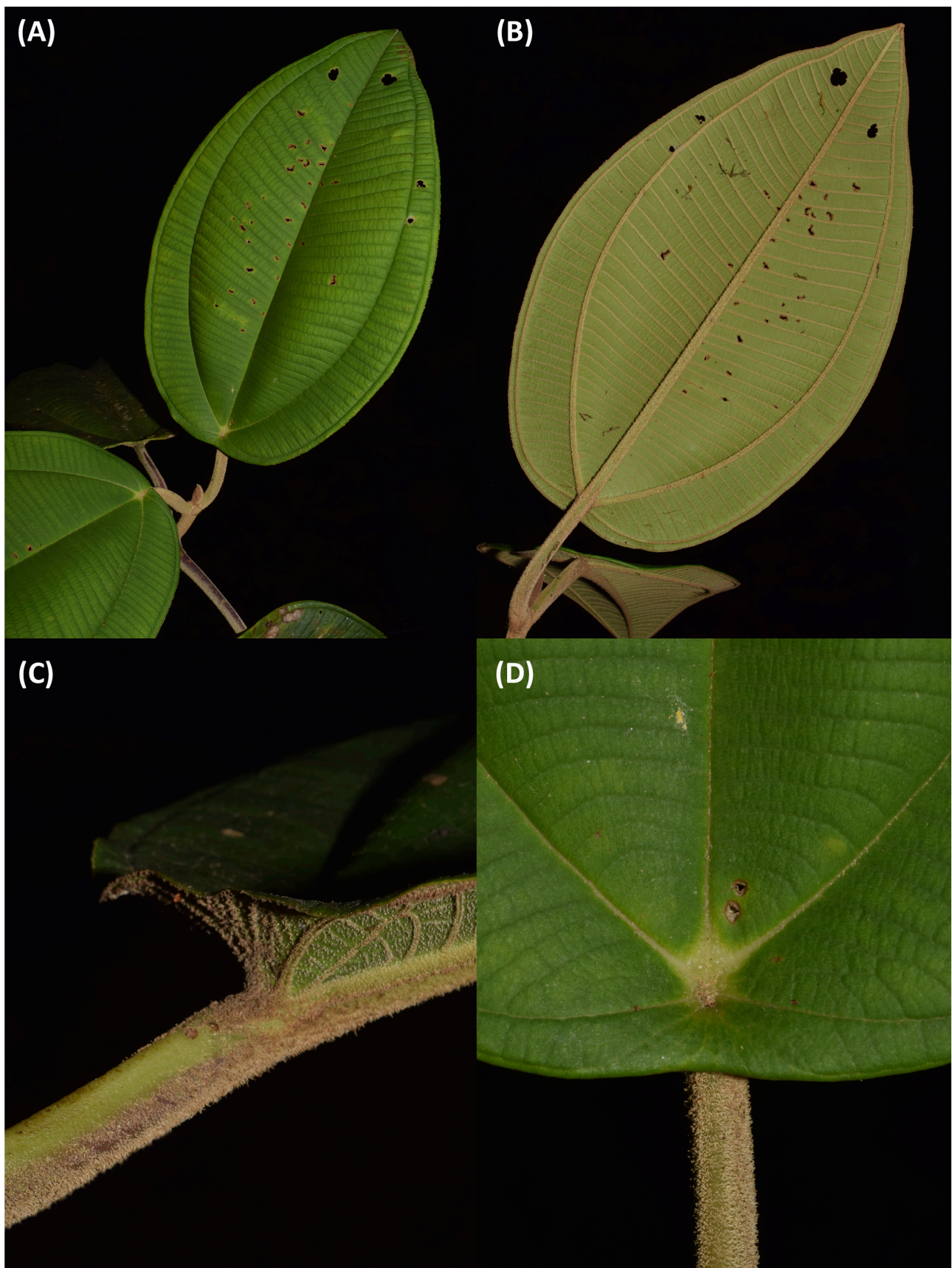


FIGURE 41. *Meriania peltata*. **A.** Terminal sterile branch. **B.** Leaf blade, abaxial view. **C–D.** Details of the bases (peltate) of leaf blades. A–D from R. Fernandez-Hilario *et al.* 2093. Photos by Robin Fernandez-Hilario.

Meriania peltata is one of the four Peruvian species (along with *M. bicentenaria*, *M. franciscana* and *M. ninakurorum*) that form part of the *M. macrophylla* complex (see comments under *M. franciscana* for diagnostic characteristics). It can be differentiated from the other ones by the combination of peltate leaves (vs. subpeltate in *M. ninakurorum*, and not peltate in *M. bicentenaria* and *M. franciscana*), large ovate leaf blades (22.8–28.7 × 13.3–16.7 cm) and pubescent to setulose abaxial leaf surfaces (Fig. 40C).

Distribution and phenology:—*Meriania peltata* occurs from Colombia to northern Peru (Department of Cajamarca in montane forests at 2200–2400 m) (Fig. 9). It has been collected in flower in July.

Specimens examined:—**PERU. Cajamarca:** Prov. Cutervo, Dist. San Andrés, Grutas de San Andrés, 2200 m, 15 Jul 1990 (fl.), *S. Llatas & Suarez 2762* (F!, US!); Dist. Santo Tomás, PN Cutervo, cerca de la catarata Santa Rosa, 2400 m, 06°10'52.39"S, 78°45'31.97"W, 26 Nov 2020 (ster.), *R. Fernandez-Hilario et al. 2093* (HOXA!, MOLF!, UPGB!).

18. *Meriania penningtonii* Rob.Fern., R.Goldenb. & Michelang., *Nordic J. Bot.* 39(3)-e02669: 2 (2021). Type:—**PERU. San Martín [Amazonas]:** Rioja to Pedro Ruiz, border with Amazonas [near to CP Buenos Aires], 1800 m, 05°45'S, 77°40'W, 04 Dec 2003 (fl.), *T.D. Pennington, R.T. Pennington & A. Daza 17639* (holotype: MOLF! [barcode 000003]; isotypes: E! [barcode E00177820], K! [barcode K000544378], MOLF! [barcodes 000004, 000005]). (Figures 42–43).

Comments:—*Meriania penningtonii* is clearly distinguished by its quadrate and 4-winged internodes (the wings projections up to 3.5 mm high) (Fig. 43B), the nodes without interpetiolar flaps, callose dorsal projections on the calyces, spreading, reddish-purple corollas, and stamen connectives with dorsal appendages as mere humps (Fig. 42E). Other species such as *M. tetragona* (Ecuador and Peru) and *M. nobilis* Triana (Colombia) have quadrangular-winged internodes, but none of these species have evident winged projections like *M. penningtonii*. Additionally, the dorsal projections on the calyx are whitish and much lighter than the rest of the calyx and hypanthium when dry (Fig. 42G), which makes *M. penningtonii* easily recognisable. *Meriania callosa*, *M. fantastica* Alvear, Humberto Mend. & Almeda, *M. rigida* and *M. sessilifolia* have spreading corollas and calyces with callose dorsal projections, but in these species the projections are never whitish when dry. A detailed comparison of *M. penningtonii* with other related species can be found in Fernandez-Hilario *et al.* (2021).

Distribution and phenology:—*Meriania penningtonii* is endemic to northern Peru (Department of Amazonas) and occurs in montane forests at 1800–2180 m (Fig. 44). It has been collected in flower in July and December.

Specimens examined:—**PERU. Amazonas:** Prov. Bongará, Dist. Yambrasbamba, bosque “El Toro” de la Comunidad Campesina de Yambrasbamba, 2088 m, 05°39'16.9"S, 77°54'36.9"W, 23 Jul 2015 (fl. bud), *S. Almeyda & C. Castillo 18* (MOLF!, UPGB!), Abra Patricia-Alto Nieva Private Conservation Area, Abra Patricia, from the highway to the mountain top, 2180 m, 05°40'03.67"S, 77°46'14.56"W, 20 Jul 2014 (fl.), *Y.F. Deng et al. 1660* (USM!), inmediaciones del CP Miraflores, 1960 m, 05°42'16.44"S, 77°55'54.18"W, 10 Nov 2020 (fl. bud), *R. Fernandez-Hilario et al. 2030* (HOXA!, MOLF!, NY!), ruta desde CP Santa Rosa hacia bosque El Toro, 2000 m, 05°40'15.03"S, 77°55'26.60"W, 11 Nov 2020 (fl.), *R. Fernandez-Hilario et al. 2058* (HOXA!, MOLF!, NY!, UPGB!), ruta desde CP La Florida hacia finca de Don Ilario, 2100 m, 05°40'21.68"S, 77°57'16.02"W, 12 Nov 2020 (fl.), *R. Fernandez-Hilario et al. 2072* (HOXA!, MOLF!, UPGB!).

19. *Meriania prunifolia* D.Don, *Mem. Wern. Nat. Hist. Soc.* 4: 323 (1823). Type:—**PERU:** without locality, no date (fr.), *H. Ruiz & J. Pavón s.n.* (lectotype, designated here: MA! [barcode MA813829]; isoelectotypes: BR! [barcode 00000562904], F!-fragment [accession nos. 843473, 1026676], FI! [barcode FI004715], G-probably destroyed [negative at F], G!-fragment [barcode G00219817], K! [barcode K000329450]). (Figure 45).

Comments:—This species is easily recognisable by the combination of the smallest leaf blades recorded within the genus (2.3–8.2 × 1.4–3.2 cm) (Fig. 45B), pseudo-lateral (initially terminal but overtopped by developing axillary buds) or terminal solitary flowers, and calyces with long acicular dorsal projections (Fig. 45D). To date, the flowers of *M. prunifolia* are unknown, because the few known specimens have been collected in fruit. However, the fruits have calyces with acicular dorsal projections and ribbed hypanthia, which are also present in other *Meriania* species. Acicular dorsal projections are remarkably present in *Meriania* species from the Greater Antilles (see Michelangeli *et al.* 2015). Because the complete morphology of the flowers is not known, it is not possible to establish affinities of *M. prunifolia* with other species of the genus.

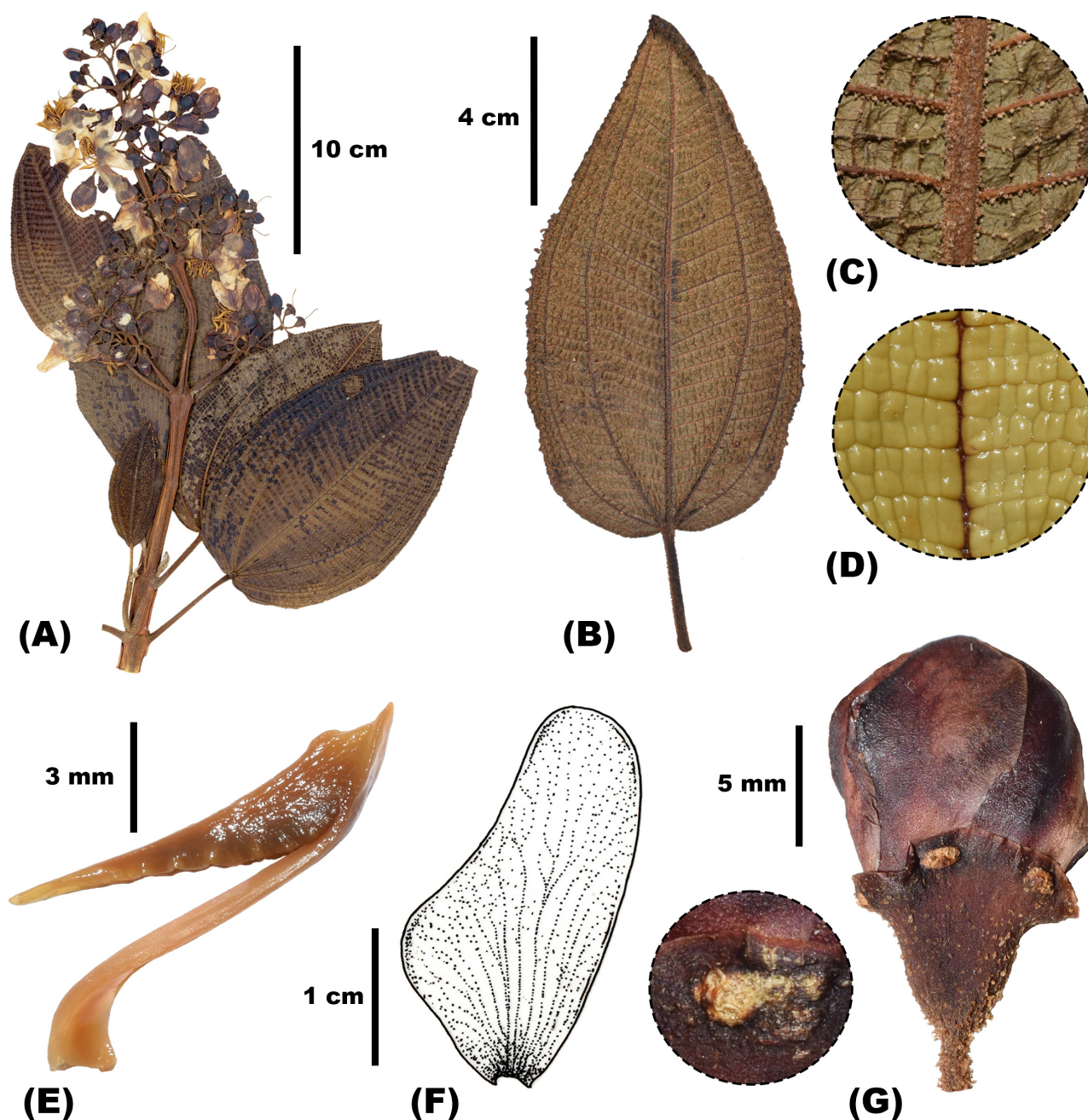


FIGURE 42. *Meriania penningtonii*. **A.** Terminal fertile branch with inflorescence. **B.** Leaf blade, abaxial view. **C.** Detail of the abaxial leaf surface. **D.** Detail of the adaxial leaf surface. **E.** Stamen in lateral view. **F.** Petal. **G.** Flower bud with detail (left) of the dorsal projection on the calyx. **A, F and G** from *T.D. Pennington et al. 17639*; **B–E** from *R. Fernandez-Hilaro et al. 2072*. Drawing by Leticia Lajo (**F**).

Nomenclatural notes:—Don (1823) cited in the protologue “*Pavón h. (v. s. in Herb. Lamb.)*”. However, none of the sheets seen by us have any label or annotation indicating that it corresponds to the Ruiz & Pavón specimen purchased by A. B. Lambert (see Miller 1970). Therefore, *Ruiz & Pavón s.n.* must be considered as a syntype conforming with Art. 9.6 of the ICN (Turland *et al.* 2018). According to Art. 9.3 and 9.12 of the ICN (Turland *et al.* 2018), we chose as lectotype the only sheet housed in MA.

Distribution and phenology:—*Meriania prunifolia* is endemic to northern Peru (Department of San Martín) and occurs in premontane forests at 350–750 m (Fig. 16). It has been collected in fruit in March, May, July and December.

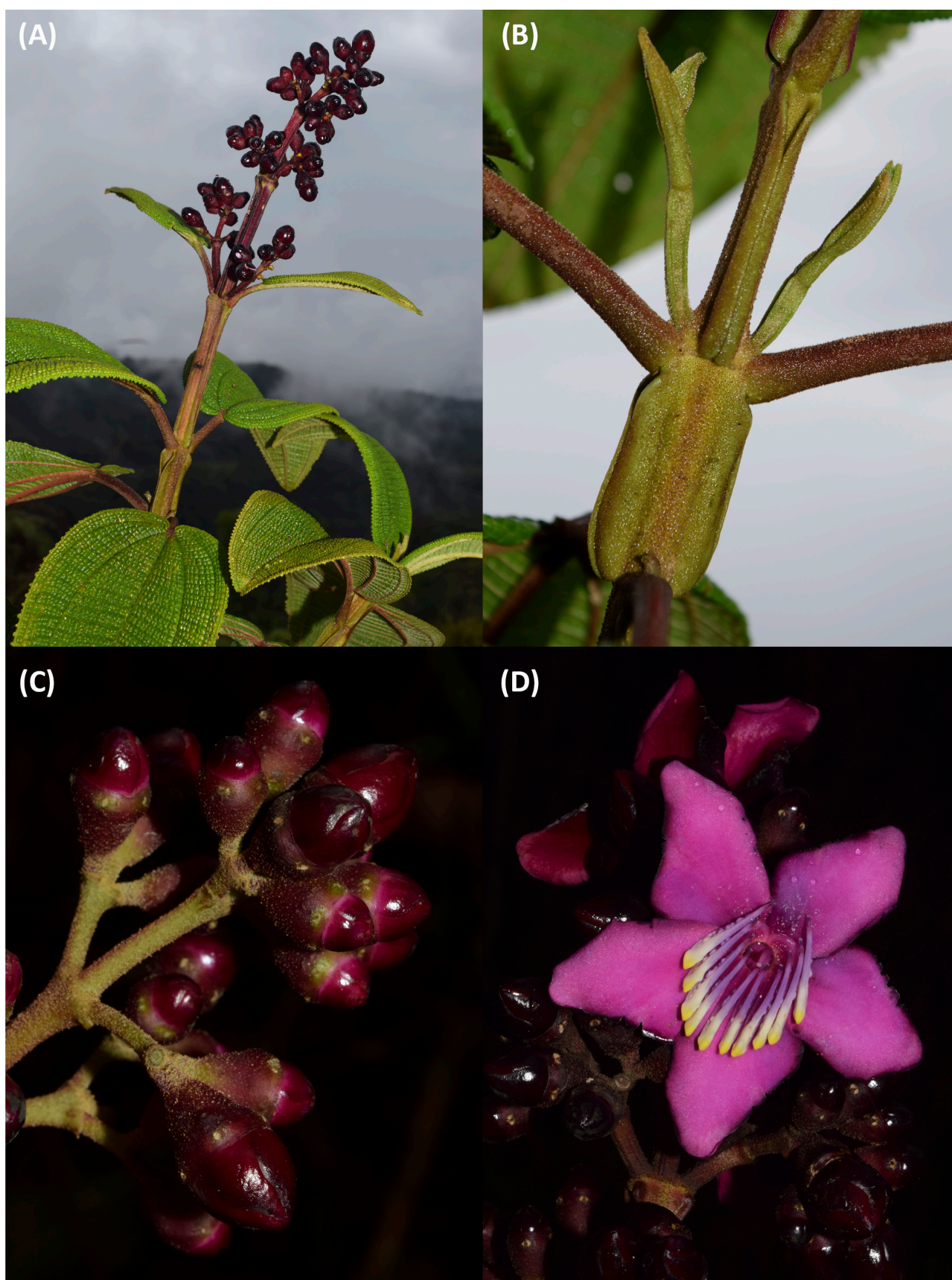


FIGURE 43. *Meriania penningtonii*. **A.** Terminal fertile branch with inflorescence. **B.** Winged internodes. **C.** Flower buds. **D.** Flower at anthesis, apical view. A–B from R. Fernandez-Hilario *et al.* 2036; C from R. Fernandez-Hilario *et al.* 2026; D from R. Fernandez-Hilario *et al.* 2046. Photos by Robin Fernandez. Reproduced with permission from Nordic Journal of Botany.

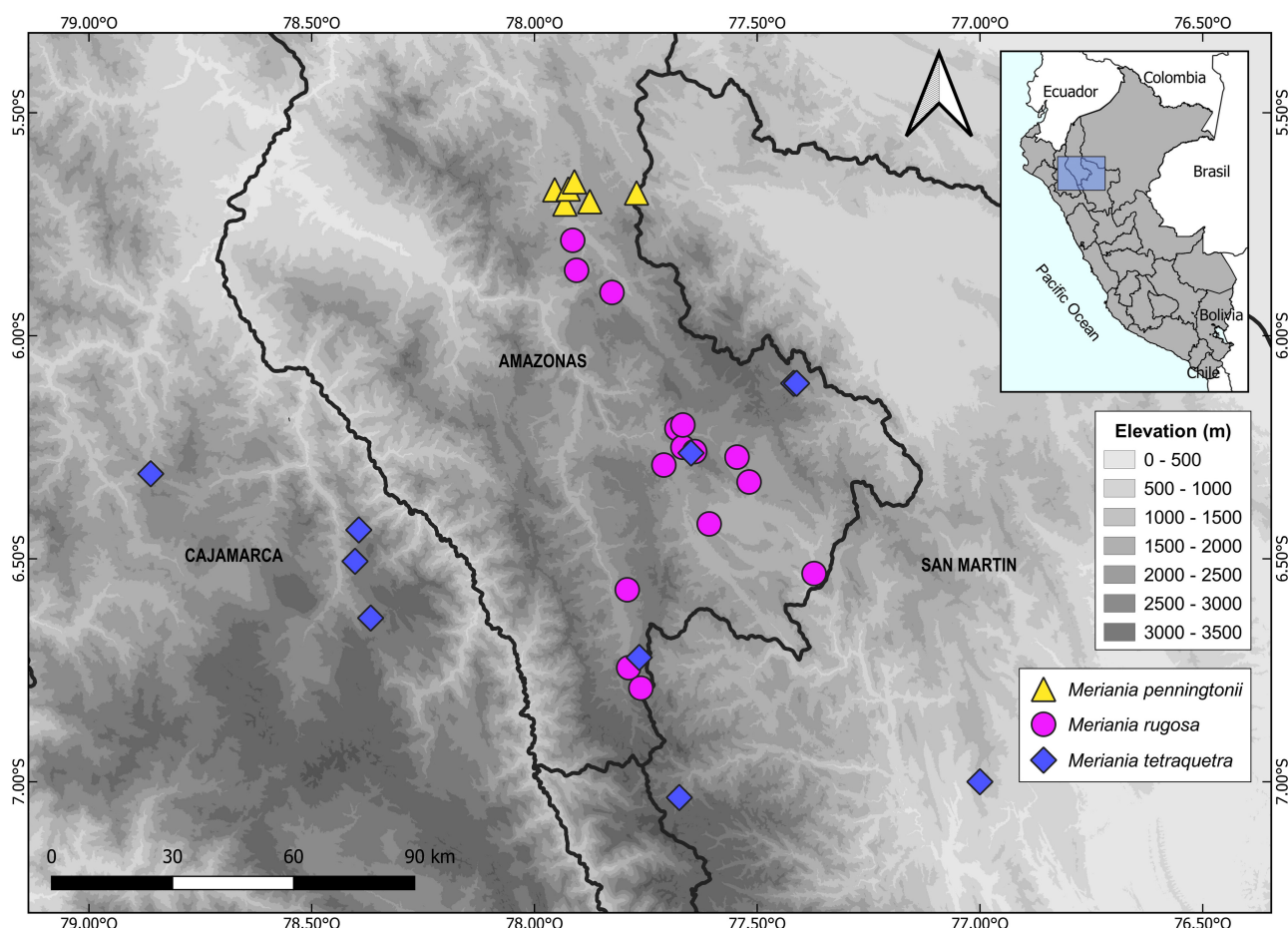


FIGURE 44. Distribution map of *M. penningtonii*, *M. rugosa* and *M. tetraquetra*.

Specimens examined:—**PERU. San Martín:** Prov. Mariscal Cáceres [Tocache], Dist. Pólvora, desembocadura del río Mishollo (margen derecha del Río Huallaga), 350–380 m, 25 Jul 1973 (fr.), *J. Schunke* V. 6426 (US!); Dist. Shunté, Camino a Shunté, cerca de Yacu Sisa, al borde de la quebrada, 550–600, 07 Mar 1981 (fr.), *J. Schunke-Vigo* 12567 (MO!); Dist. Tocache, Palo Blanco, al oeste del Puente, a orilla de la quebrada en bosque alto, 600–700 m, 04 Dec 1972 (fr.), *J. Schunke* V. 5667 (F!, NY!, U!, US!), Cerro de Palo Blanco, al borde de la quebrada con mucha sombra, 700–750 m, 26 May 1980 (fr.), *J. Schunke-Vigo* 11712 (AMAZ!, NY!, US!, USM!). **Without locality:** no date (fr.), *A. Raimondi* 1987 (USM!).

20. *Meriania radula* (Benth.) Triana, Trans. Linn. Soc. London 28(1): 66 (1871) [1872]. Basionym: *Axinaea radula* Benth., Pl. Hartw. [Bentham] 130 (1839) [1844]. Type:—**ECUADOR. Loja:** in Cerro San Francisco prope Loxa, no date (fl., fr.), *Hartweg s.n.* (lectotype, designated by Wurdack 1980: K! [barcode K000329444]). (Figures 46–47).

Axinaea purpurea Ruiz & Pav., Syst. Veg. Fl. Peruv. Chil. 1: 122 (1798). Type:—**PERU. Huánuco:** Muña, no date (fl., fr.), *H. Ruiz & J. Pavón s.n.* (lectotype, designated here: MA! [barcode MA813832]; isolectotypes: B-probably destroyed [negative at F], BM! [barcodes BM000939005, BM000939006], F! [accession nos. 842789, 844825], HAL! [barcode HAL120101], MA! [barcodes MA813830, MA813831]).

Miconia incarum J.F.Macbr., Trop. Woods no. 17: 12 (1929). Type:—**PERU. Huánuco:** at head of canyon 6 miles south of Mito, 3000 m, 01–05 Aug 1922 (fl.), *J.F. Macbride & W. Featherstone* 1867 (holotype: F! [accession no. 518362]).

Comments:—*Meriania radula* belongs to the *M. radula* complex which is characterized by the combination of ovate, bullate leaf blades, campanulate, deep red corollas (Fig. 47G) and stamen connectives with dorso-basal appendages perpendicular to the thecae (Fig. 46G). This complex includes *M. almedae* Wurdack, *M. hirsuta*, *M. radula*, *M. sanguinea* Wurdack and *M. tetragona*. Within this complex, *M. radula* is easily recognisable by its nodes without interpetiolar flaps and abaxial tuberculate projections on the apex of the petioles. Also, *M. radula* is the only species within the complex with abaxial densely setulose leaf blades, evenly covering the entire surface (Fig. 46C).

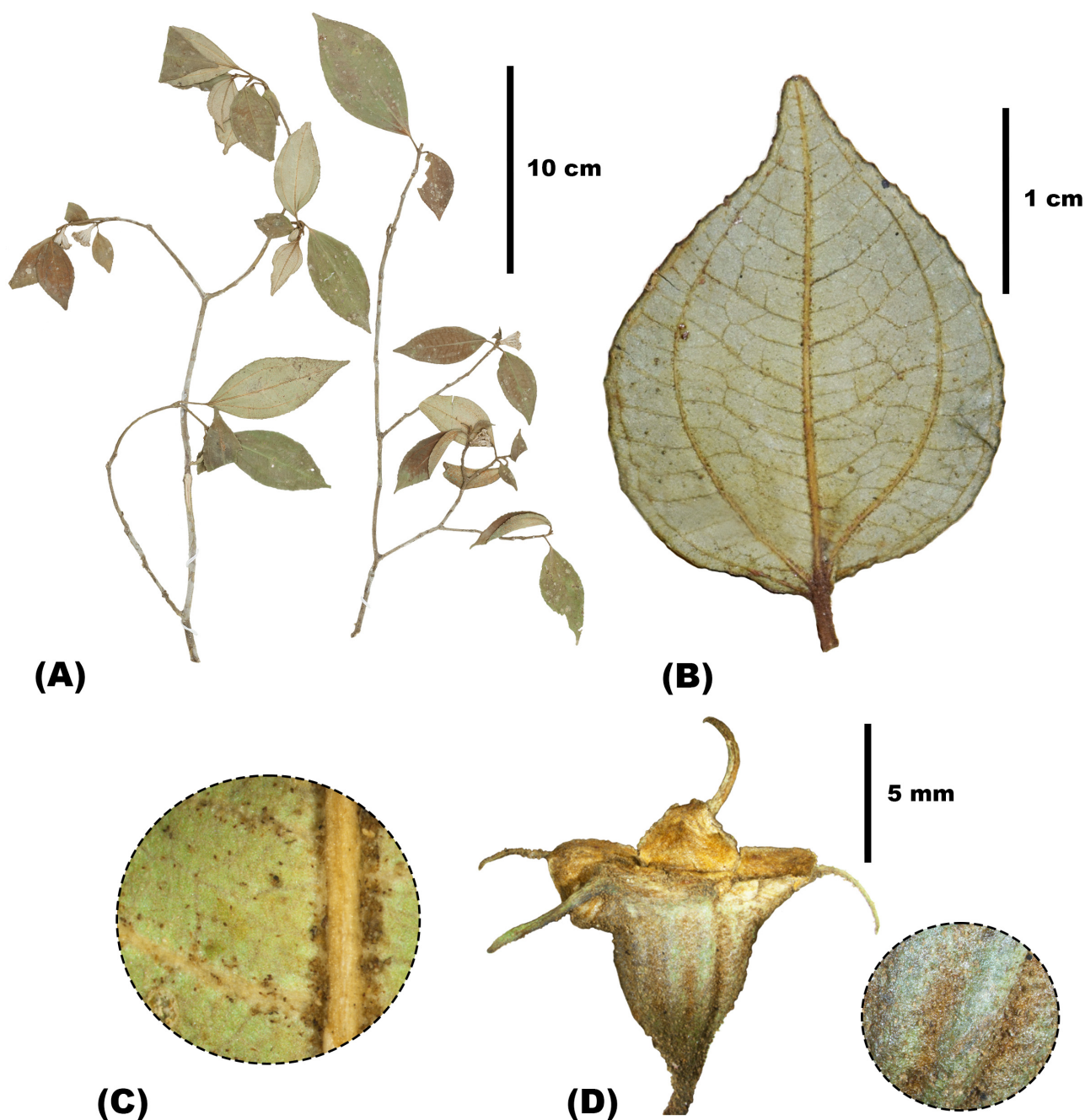


FIGURE 45. *Meriania prunifolia*. **A.** Terminal fertile branch with fruits. **B.** Leaf blade, abaxial view. **C.** Detail of the abaxial leaf surface. **D.** Fruit with detail of the surface (right). A and C from *J. Schunke V. 5667*; B from *A. Raimondi 1987*; D from *J. Schunke-Vigo 11712*.

The dorsal projections on the calyx in *M. radula* are whitish when dry and contrast with the rest of the calyx and hypanthium. Among the Peruvian species, this feature occurs in *M. penningtonii* and is less conspicuous in *M. hirsuta*. Some specimens of *M. penningtonii* have even been erroneously determined as species of the *M. radula* complex. However, *M. radula* is easily distinguishable from *M. penningtonii* by its terete internodes (vs. quadrangular and 4-winged) and campanulate, deep red corollas (vs. spreading, reddish-purple).

Nomenclatural notes:—*Axinaea purpurea* and *A. radula* were published in 1798 and 1844, respectively. Triana (1871) [1872] considered these two species as conspecific when he proposed the combination in *Meriania*, and aware of the specific epithet of the former unavailable in *Meriania* due to the existence of *M. purpurea* Sw., published in 1798. Therefore, the oldest legitimate name, *A. radula* was used for the valid combination in *Meriania* (Art. 11.4 of the ICN ; Turland *et al.* 2018).

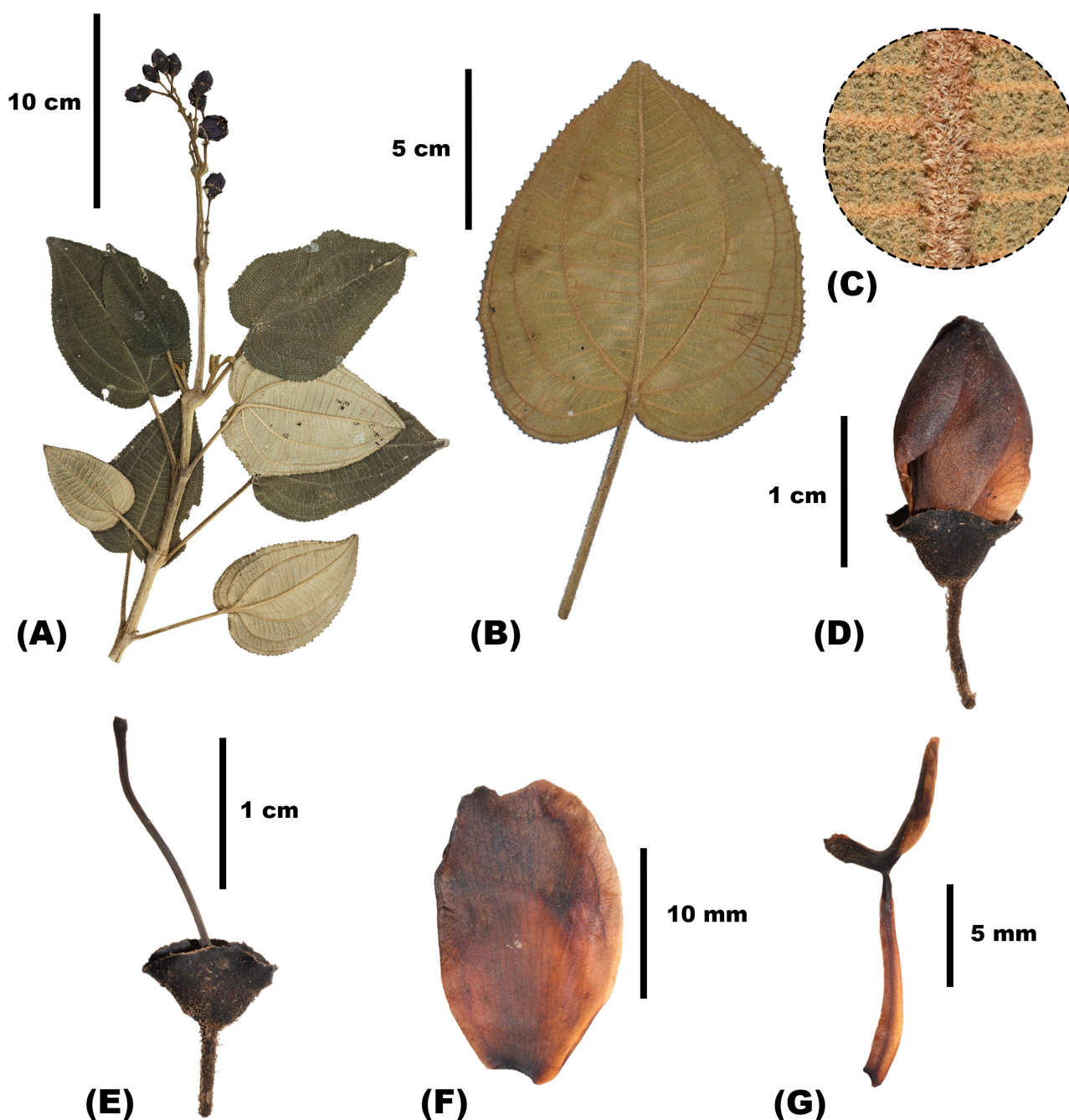


FIGURE 46. *Meriania radula*. **A.** Terminal fertile branch with inflorescence. **B.** Leaf blade, abaxial view. **C.** Detail of the abaxial surface. **D.** Flower bud. Petal. **E.** Flower with petals and stamens removed. **F.** Petal. **G.** Stamen, lateral view. A from *J. Wurdack* 658; B–G from *D. Paredes et al.* 604.

According to Art. 9.10 of the ICN (Turland *et al.* 2018), we must consider that Wurdack (1980) made an inadvertent lectotypification of *A. radula* when he wrote “*Hartweg's n. (K, holotype)*” in his treatment of Melastomataceae for the Flora of Ecuador. Also, we chose as lectotype of *A. purpurea* the sheet (duplicate) housed in MA that best matches the illustration published in Ruiz & Pavón (1957, see pl. CDX), conforming with Art. 9.3 and 9.12 of the ICN (Turland *et al.* 2018).

Distribution and phenology:—*Meriania radula* occurs in Ecuador and Peru, and it is recorded from Amazonas to Pasco in subparamos and elfin forests at 2590–3600 m (Fig. 30). It has been collected in flower from February to November, and in fruit in February, March, August, September and November.

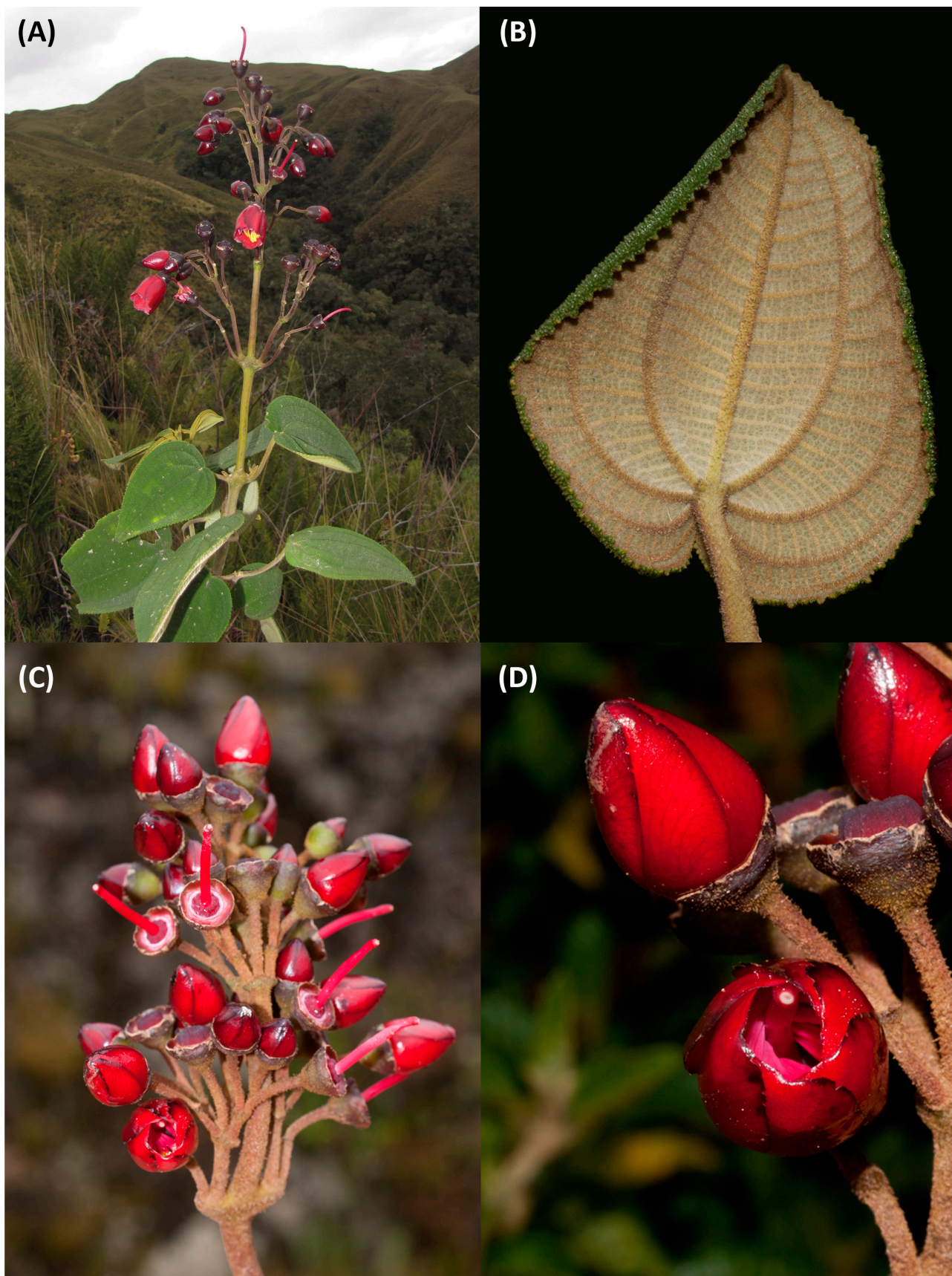


FIGURE 47. *Meriania radula*. **A.** Terminal fertile branch with inflorescence. **B.** Leaf blade, abaxial view. **C–D.** Detail of the inflorescences. A from J.L. Marcelo-Peña *s.n.*, B–D from F.A. Michelangeli *et al.* 1732. Photos by José Luis Marcelo-Peña (A) and Fabián A. Michelangeli (B–D).

Specimens examined:—PERU. Amazonas: Prov. Chachapoyas, road Balsas to Chachapoyas, upper eastern Calla-Calla slopes at pass, 3000–3300 m, 02 Jun 1998 (fl.), *M. Weigend et al.* 98/339 (CPUN!, F!, USM!); Trail to Laguna de Los Cóndores, surroundings of Laguna Esperanza/Siete Lagunas, 3275–3500 m, 06°48'44"S, 77°42'59"W, 26 Jun 2010 (fl.), *R. Bussmann et al.* 16485 (MO!, NY!); Upper slopes of Puma-urcu east-southeast of Chachapoyas, 2700–3000 m, 01 Jun 1962 (fl.), *J. Wurdack* 658 (F!, MO!, NY!, P!, U!, US!, USM!); Dist. Leymebamba, km 397 de la carretera, 27 km de Leymabamba, 2300–3540 m, 06°43'44"S, 77°53'18"W, 13 Mar 2012 (fl., fr.), *F. A. Michelangeli et al.* 1732 (NY!, USM!), path from Atalaya to La Muralla Karst, 3300–3400 m, 06°49'18"S, 77°44'00"W, 04 Jul 2010 (fl.), *R. Bussmann et al.* 16617 (MO!, NY!). Prov. Rodríguez de Mendoza, Dist. Vista Alegre, bosque ribereño, 26 Aug 2012 (fl.), *J.L. Marcelo-Peña et al.* 7258 (MOLF!), same locality and date (fr.), 7267 (MOLF!). **Cajamarca:** Prov. Cajamarca, Dist. Jesús, SAIS, José Carlos Mariátegui, km 60, 3300 m, 04 Jun 1984 (fl.), *D. Smith & I. Sánchez-Vega* 7488 (MO!). Prov. Contumazá, Dist. Contumazá, Bosque Cachil, 3400–3600 m, 08–11 Mar 2012 (ster.), *L. Dávila* 2309 (UNC!). Prov. Cutervo, CP San Cristóbal del Nudillo, sector el Mirador, 2690 m, 06°18'33.68"S, 77°51'40.71"W, 01–03 Nov 2012 (fr.), *L. Dávila* 2482 (UNC!), 2590–2750 m, s.f. (fr.), *L. Dávila* 2954 (UNC!). Prov. Hualgayoc, Hacienda Taulis, Río La Quina above La Playa, 2850 m, 04 Sep 1964 (fl., fr.), *P. Hutchinson & K. von Bismarck* 6500 (F!, MO!, NY!, US!, USM!); Dist. Chugur, Sector las Quinuas, Ramírez, el Chéncho, 3186 m, 06°41'19.44"S, 78°42'44.68"W, 01–02 Sep 2018 (fl., fr.), *L. Dávila* 3852 (UNC!). Prov. Santa Cruz, Dist. Pulán, Bosque Los Cedros, San Pedro Sur - La Mariela, 3200 m, 06°49'04.96"S, 78°54'03.86"W, 15–16 May 2010 (ster.), *L. Dávila* 1146 (UNC!), Caserio La Zanja, sector Pampa Verde y San Pedro Norte, Bosque El Cedro, 2900–3300 m, 20–22 Sep 2013 (fl.), *L. Dávila* 2672 (UNC!), parte baja de la quebrada Cocan, ladera oeste, 3280 m, 02 Nov 2001 (fl.), *I. Sánchez & M. Sánchez* 11109 (CPUN!, F!), Parte Oeste del campamento La Zanja, Sector San Pedro Norte, 3320 m, 06 Jun 2004 (fl.), *G. Iberico & L. Dávila* 636 (CPUN!, UNC!). **La Libertad:** Prov. Bolívar, Nevado de Cajamarquilla, 09 Sep 1946 (fl.), *R. Ferreyra* 1265 (USM!). Prov. Pataz, valle del río Mixiollo, encima de Ongón, 3200 m, 03 Aug 1914 (fl.), *A. Weberbauer* 7032 (F!, MOL!, US!). **Pasco:** Prov. Oxapampa, Dist. Huancabamba, PN Yanachaga Chemillén, La Colmena Trocha Erica, 3320 m, 10°27'13"S, 75°26'33"W, 19 Aug 2008 (fl.), *L. Valenzuela et al.* 11528 (HOXA!, USM!). **San Martín:** Prov. Huallaga, Dist. Bolívar, surrounding “Pampa Hermosa” around old Chacha and Inca settlement, 3000 m, 07°02'07"S, 77°40'29"W, 24 May 2011 (fl.), *R. Bussmann et al.* 17087 (F!, HAO!, L!, MO!). Prov. Mariscal Cáceres, Bosquecillo, PN Río Abiseo, 3400 m, 21 Jun 1988 (fl. bud), *B. León & K. Young* 2008 (USM!); Río Abiseo National Park, forest near lake in Chochos valley, 3050 m, 07°30'S, 77°30'W, 13 Feb 1986 (fr.), *K. Young* 2771 (F!); Puerta del Monte, 3450 m, 21 Nov 1989 (fl. bud), *K. Young* 1952 (USM!); Dist. Huicungo, Sector Los Chochos, lado occidental del PN Río Abiseo, 3400 m, 07°38'30.03"S, 77°28'50.89"W, 19 Jul 2016 (fl.), *D. Paredes et al.* 604 (MOLF!). Prov. Rioja, Dist. Nueva Cajamarca, Cuenca Yuracyacu, 3215 m, 06°00'35.2"S, 77°27'45.19"W, 30 Jul 2005 (fl.), *W. Palomino et al.* 8000 (CUZ!).

21. *Meriania rigida* (Benth.) Triana, Trans. Linn. Soc. London 28(1): 66 (1871) [1872]. *Chastenea rigida* (Benth.) Naudin, Ann. Sci. Nat., Bot., ser. 3, 18: 123 (1852). Basionym: *Pachymeria rigida* Benth., Pl. Hartw. [Benth.] 130 (1844). Type:—**ECUADOR. Loja:** in montibus prope Loja, 1842 (fl.), *Hartweg* 735 (lectotype, first step designated by Wurdack 1980, second step designated here: K! [barcode K000329439]; isolectotypes: BM! [barcode BM000939007], BR!-fragment [barcode 000005313341], F!-fragment [accession no. 1026704], G-probably destroyed [negative at F], K! [specimen from the right-hand side of sheet, barcode K000329440], LD! [barcode 1403377], S! [accession no. S05-3270]). Possible remaining syntype:—**ECUADOR:** Eastern Andes, 900 ft., (fl.), *no collector* 355 (K! [barcode K000329438]). (Figures 48–49).

Comments:—This species can be recognized by the combination of elliptic to oblong leaf blades, glabrous to sparsely puberulent abaxial leaf blades, with thick, callose dorsal projections (Fig. 48E), 5-merous flowers with isomorphic stamens, stamen connectives with triangular descending dorso-basal appendages, and dentiform to inconspicuous dorsal appendages (Fig. 48I–J). Due to the shape of the leaf blades and appendages of the stamen connectives, *M. rigida* can be confused with *M. neillii*. However, the latter can be differentiated by its 6-merous flowers and calyces without dorsal projections.

Paredes-Burneo et al. (2018) first recorded the presence of *M. rigida* in Peru based on material collected in Huancabamba (Department of Piura). But there are other populations in Peru that can also be attributed to *M. rigida* and there is variability among them all. The populations in Piura (*Michelangeli et al.* 2635 and *Paredes et al.* 526) have elliptic to broadly elliptic leaf blades 7–15.5 × 2.6–5.2 cm and slightly lobed calyces, while the population in Amazonas (*Fernandez-Hilario et al.* 1931, 1934 and *Revilla et al.* 3210) has moderately puberulent leaves (Fig. 48F), oblong leaf blades 5.2–9 × 4.7–6.5 cm and calyces with conspicuous lobes. On the other hand, the specimens *Tarazona*

et al. P8-49 and Tarazona *et al.* P1-23 (both in fl. bud) collected in the Amazonas-San Martín border have small leaf blades ($3.2\text{--}5 \times 1.4\text{--}2.5$ cm) with revolute bases and smaller flowers (hypanthium plus calyx $6.5\text{--}7.5$ mm long). The Peruvian populations that best match with the typical population of *M. rigida* in Loja (Ecuador) are in the Department of Cajamarca (Campos *et al.* 5892 and Díaz & Fernández 10217), these specimens have glabrous leaves, leaf blades $5.6\text{--}9.3 \times 2.5\text{--}3.8$ cm with revolute bases (Fig. 48B–D) and hypanthium plus calyx $10\text{--}11$ mm long.

Despite the variability in the populations, all the specimens have the same inflorescence structure; it is a terminal panicle with short basal paraclades, main axis with three nodes and flowers on branchlet ends arranged in regular dichasia. Additionally, within each specimen examined, the stamen connectives have dorsal appendages that can be dentiform, truncate or inconspicuous. For the moment, we include with reservations all the Peruvian populations mentioned under the name *M. rigida*.

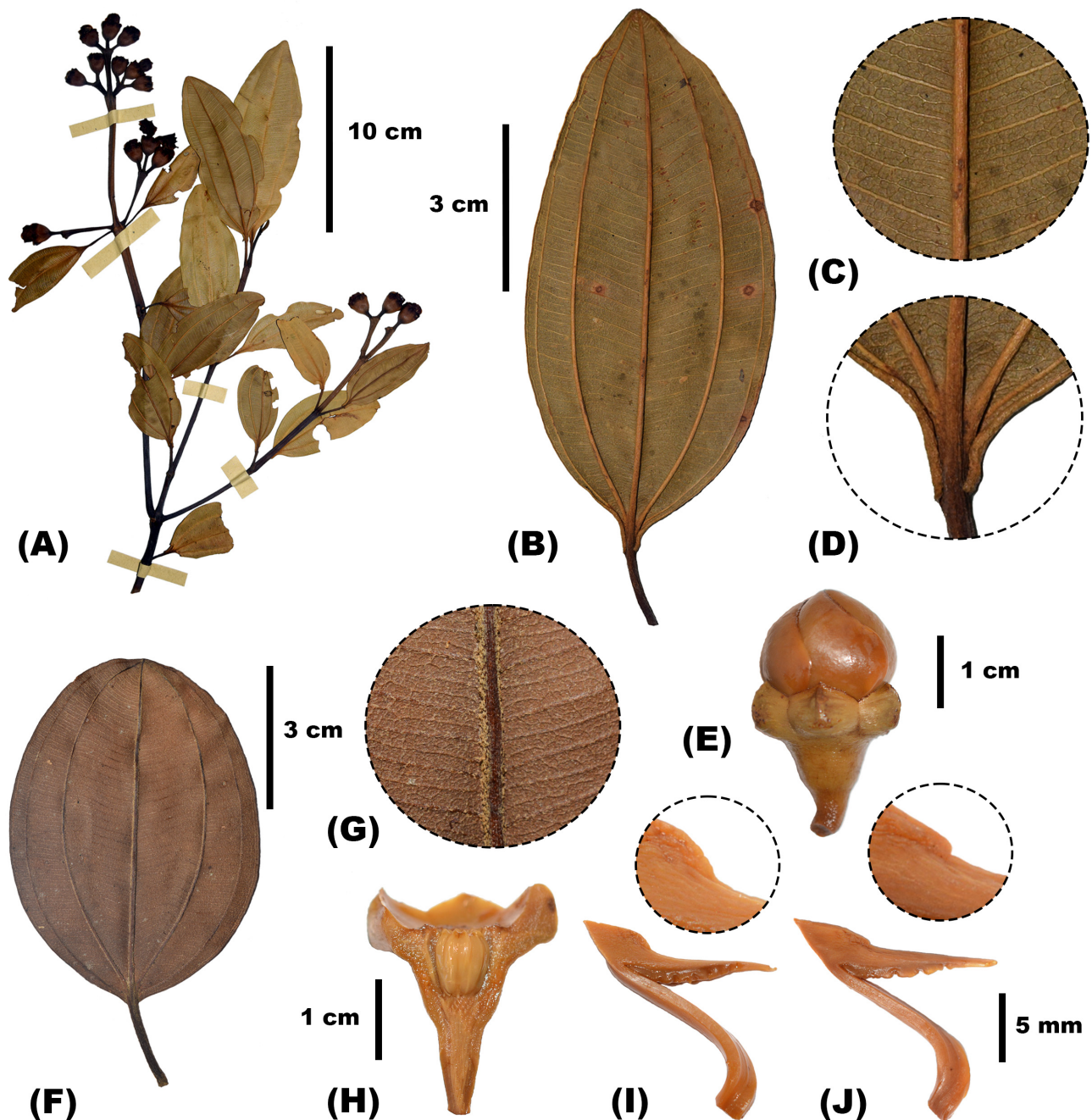


FIGURE 48. *Meriania rigida*. **A.** Terminal fertile branch with inflorescence. **B.** Leaf blade, abaxial view. **C.** Details of the abaxial surface. **D.** Detail of the revolute leaf base. **E.** Flower bud. **F.** Leaf blade, abaxial view. **G.** Details of the abaxial surface. **H.** Longitudinal section of the flower with petals, stamens and style removed. **I, J.** Stamens, lateral view, with details of the dorsal appendages. A–D from C. Díaz & S. Fernández 10217; E–J from R. Fernandez-Hilario *et al.* 1931.



FIGURE 49. *Meriania rigida*. **A.** Terminal fertile branch. **B.** Leaf blade, abaxial view. **C.** Detail of the inflorescence. **D.** Flower at anthesis, apical view. A, C and D from R. Fernandez-Hilario *et al.* 1931, B from F.A. Michelangeli *et al.* 2635. Photos by Robin Fernandez-Hilario (A, C and D) and Fabián A. Michelangeli (B).

Nomenclatural notes:—According to Art. 9.10 of the ICN (Turland *et al.* 2018), we have to consider that Wurdack (1980) made an inadvertent lectotypification (first-step) of *M. rigida* when he wrote “*Hartweg 735 (K, holotype)*” in his treatment of Melastomataceae for the Flora of Ecuador. However, there are two sheets of *Hartweg 735* housed in K. Therefore, we designate the sheet K000329439 as the lectotype (second-step), conforming with Art. 9.17 (Turland *et al.* 2018).

Distribution and phenology:—*Meriania rigida* occurs in Ecuador and northern Peru (Departments of Amazonas, Cajamarca, Piura and San Martín in montane forests at 1920–2800 m) (Fig. 35). It has been collected in flower in February, July, October, and December, and in fruit in September.

Specimens examined:—**PERU. Amazonas:** Prov. Bagua, Dist. Copallín, camino a refugio Lechuza, Reserva Comunal Copallín, 1920 m, 05°39'25"S, 78°15'22"W, Jul 2022 (fl.), *I. Revilla et al.* 3210 (MOLF!). Prov. Bongará, Dist. Yambrasbamba, colina cruzando la carretera al lado opuesta de la Estación Biológica Abra Patricia, 2360 m, 05°41'57.08"S, 77°48'33.83"W, 21 Feb 2020 (fl.), *R. Fernandez-Hilario et al.* 1934 (HOXA!, KUELAP!, MOLF!, NY!, UPCB!), inmediaciones de la Estación Biológica Abra Patricia, trochas cercanas a la estación, 2280 m, 05°41'34.49"S, 77°48'34.94"W, 19–20 Feb 2020 (fl.), *R. Fernandez-Hilario et al.* 1931 (CUZ!, HOXA!, KUELAP!, MOLF!, NY!, UPCB!), without locality, 05°36'52.69"S, 77°46'16.10"W, 29 Mar 2016 (fl. bud), *M. Tarazona et al.* P8-49 (MOLF!). **Cajamarca:** Prov. San Ignacio, Dist. San José de Lourdes, base del cerro Picorana, 2050–2160 m, 04°59'25"S, 78°54'05"W, 04 Dec 1998 (fl.), *C. Díaz & S. Fernández* 10217 (HUT!, NY!, USM!), Picorana, 2250–2300 m, 04°58'00"S, 78°53'01"W, 02 Dec 1998 (fl. bud), *J. Campos et al.* 5892 (MOLF!, USM!). **Piura:** Prov. Huancabamba, Dist. El Carmen de la Frontera, Carretera Sapalache-Cerro Chingelas, 6.5 despues de Sapalache, catarata de Chorro Blanco, 2780 m, 05°08'09.7"S, 79°24'12.7"W, 03 Set 2016 (fr.), *F. A. Michelangeli et al.* 2635 (NY!, USM!), Cerro Chinguela, catarata Chorro Blanco, 2803 m, 05°07'48.72"S, 79°24'10.08"W, 25 Oct 2015 (fl.), *D. Paredes et al.* 526 (NY!, USM!), SOJO, Proyecto Minero Río Blanco, 2540 m, 04°53'58.88"S, 79°22'03.51"W, 20–21 Jun 2005 (ster.), *A. Cano et al.* 15729 (USM!). **San Martín:** Prov. Rioja, Dist. Pardo Miguel, without locality, 05°38'58.36"S, 79°44'26.81"W, 03 Apr 2016 (fl. bud), *M. Tarazona et al.* P1-23 (MOLF!).

22. *Meriania rubriflora* Michelang. & R. Goldenb., *Phytotaxa* 374(3): 190 (2018). Type:—**PERU. Pasco:** Prov. Oxapampa, Dist. Huancabamba, Sector Oso Playa, camincho a la parcela Oso Playa, 2565 m, 10°19'05"S, 75°36'28"W, 25 Jun 2006 (fl.), *L. Cárdenas, A. Monteagudo, A. Peña, J. Mateo & R. Francis* 458 (holotype: USM!; isotypes: CUZ!, HOXA! [accession no. 26984], MO!, MOLF! [barcode 000023], P! [barcode P04801621], USM!). (Figure 50).

Comments:—Among Peruvian species of *Meriania*, this species is unusual by the combination of developed interpetiolar flaps (Fig. 50D), large pendulous inflorescences (27–34 cm long) (Fig. 50A), 4-merous flowers with red corollas. Although some Andean (*M. arizae*, *M. mexiae*, *M. sararensis* Humberto Mend. & Fern. Alonso and *M. selvaflorensis*) and Brazilian (*M. baumgratziana* R. Goldenb. & Michelang., *M. glazioviana* Cong., *M. longipes* Triana and *M. tetramera* Wurdack) species of *Meriania* exhibit pendulous inflorescences, this characteristic is more common in *Axinaea*. Many species of *Axinaea* have pseudo-lateral inflorescences, which can be interpreted as somewhat pendulous (see Cotton *et al.* 2014), but there are species that have evident and large pendulous inflorescences. Peruvian species with this characteristic are *A. crassinoda* Triana, *A. dependens* Ruiz & Pav. Ex D. Don, *A. fernando-cabiesii* Bussmann, J. A. Gruhn & A. Glenn, *A. mertensioides* Wurdack, *A. oblongifolia* (Cogn.) Wurdack, *A. pendula* E. Cotton, *A. reginae* Bussmann, J. A. Gruhn & A. Glenn and *A. sessilifolia* Triana. Within this group only *A. crassinoda*, *A. dependens* and *A. pendula* have developed interpetiolar flaps, 4-merous flowers and red corollas. *Meriania rubriflora* (Department of Pasco) is morphologically close to *A. dependens* (Departments of Huánuco and Pasco) by sharing leaf blades and inflorescences similar in size and shape. However, the former can be differentiated by its branches sparsely to moderately covered with glandular projections (vs. moderately to densely furfuraceous in *A. dependens*) and petals 11.7–12.3 mm long (vs 8–10 mm long).

Although Michelangeli & Goldenberg (2018) considered *M. rubriflora* as a species of *Meriania* based on its stamens without evident inflated (bulbous) connectives (Fig. 50E), Cotton *et al.* (2014) in their revision of *Axinaea* indicated that species with 4-merous flowers have stamen connectives with elliptical appendages instead of the inflated (bulbous) dorso-basal appendages characteristic of *Axinaea*. Even the illustrations of *A. crassinoda* (see drawing on Mathews 3212 in K) or *A. pendula* (see Fig. 58 in Cotton *et al.* 2014) show stamen connectives like those of *M. rubriflora*. The species of *Axinaea* with 4-merous flowers can be considered intermediate forms between *Axinaea* and *Meriania*, which would also be the case of the *Meriania macrophylla* complex by their antepetalous stamens with inflated (bulbous) connectives. Recent phylogenetic studies have placed *Axinaea* species within *Meriania* (Dellinger

et al. 2018, 2019; Michelangeli *et al.* 2022), and further studies are needed to resolve whether *Meriania* and *Axinaea* should be considered separate genera.

Distribution and habitat:—*Meriania rubriflora* is endemic to central Peru (Department of Pasco) and occurs in montane forests at 2480–2560 m (Fig. 11). It has been collected in flower in June.

Specimens examined:—**PERU. Pasco:** Prov. Oxapampa, Dist. Huancabamba, Sector Oso Playa, margen izquierda del río, 2497 m, 10°19'28"S, 75°36'07"W, 20 Jun 2006 (fl.), *L. Cárdenas* 407 (CUZ!, HOXA!, MOLF!), remanente de bosque, 2480 m, 10°19'21"S, 75°34'11"W, 26 Jun 2004 (fl.), *R. Rojas & J. Perea* 3073 (HOXA!, NY!), Zona de amortiguamiento del PN Yanachaga Chemillén, 2567 m, 10°19'05"S, 75°36'28"W, 25 Jun 2008 (fl. bud), *A. Monteagudo et al.* 16516 (HOXA!).

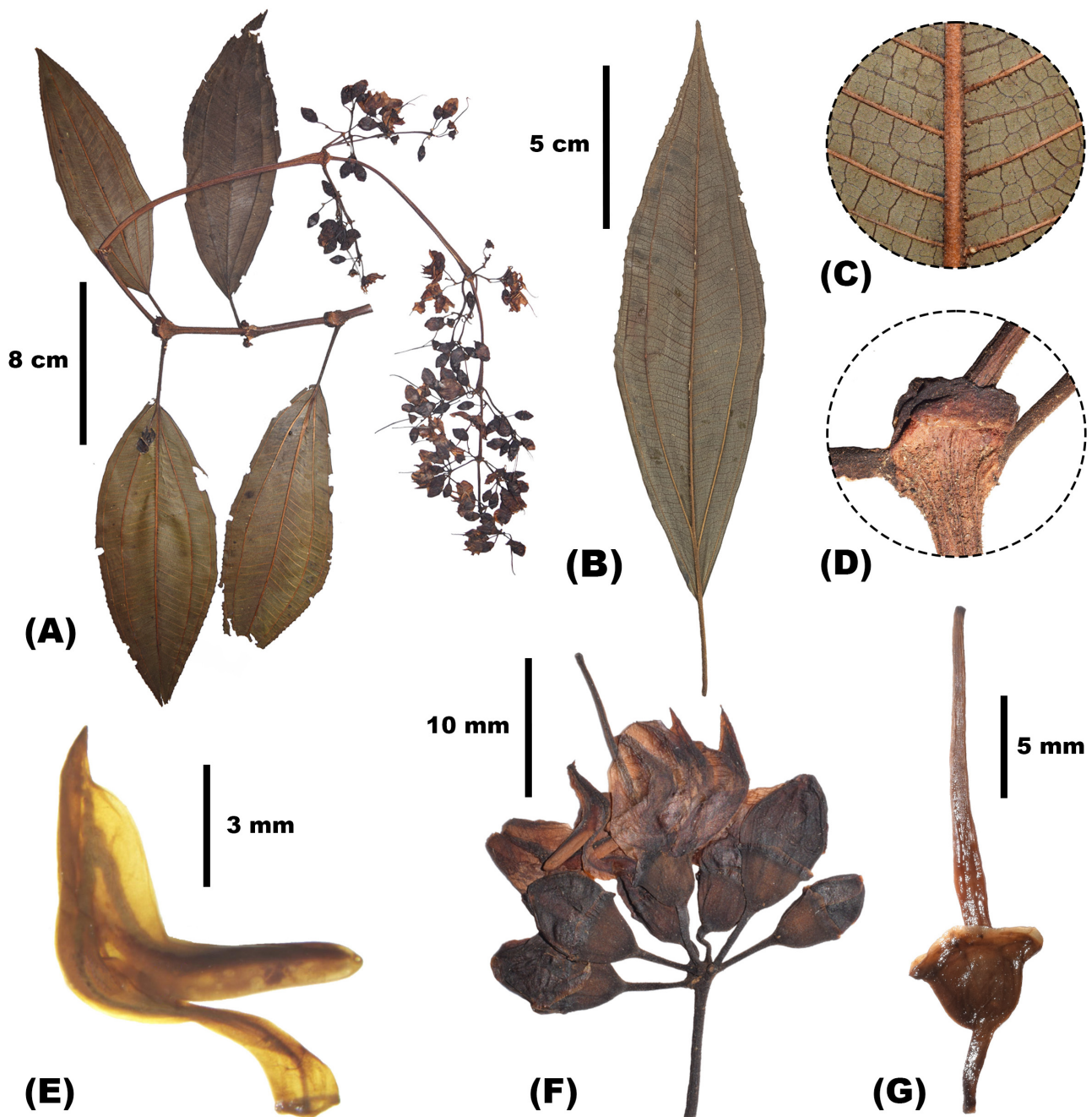


FIGURE 50. *Meriania rubriflora*. **A.** Terminal fertile branch with inflorescence. **B.** Leaf blade, abaxial view. **C.** Detail of the abaxial leaf surface. **D.** Detail of the interpetalolar flap. **E.** Stamen in lateral view. **F.** Inflorescence branch. **G.** Flower with petals and stamens removed. B from *J.L. Marcelo et al.* 6528; A, C–G from *L. Cárdenas et al.* 458; B from *R. Rojas & J. Perea* 3073.

23. *Meriania rugosa* Markgr., Notizbl. Bot. Gart. Berlin-Dahlem 13(119): 460 (1937). Type:—**PERU. Amazonas:** Prov. Rodríguez de Mendoza, valle de Huayabamba, Mar 1869 (fl.), *A. Raimondi* 1866 (lectotype, designated here: USM! [accession no. 1670a]. Remaining syntype:—**PERU. Amazonas:** Prov. Rodríguez de Mendoza, entre Cochamal y Sta. Rosa, valle de Huayabamba, Apr 1869 (ster.), *A. Raimondi* 1796 (USM! [accession no. 1670b]). (Figures 51–52).

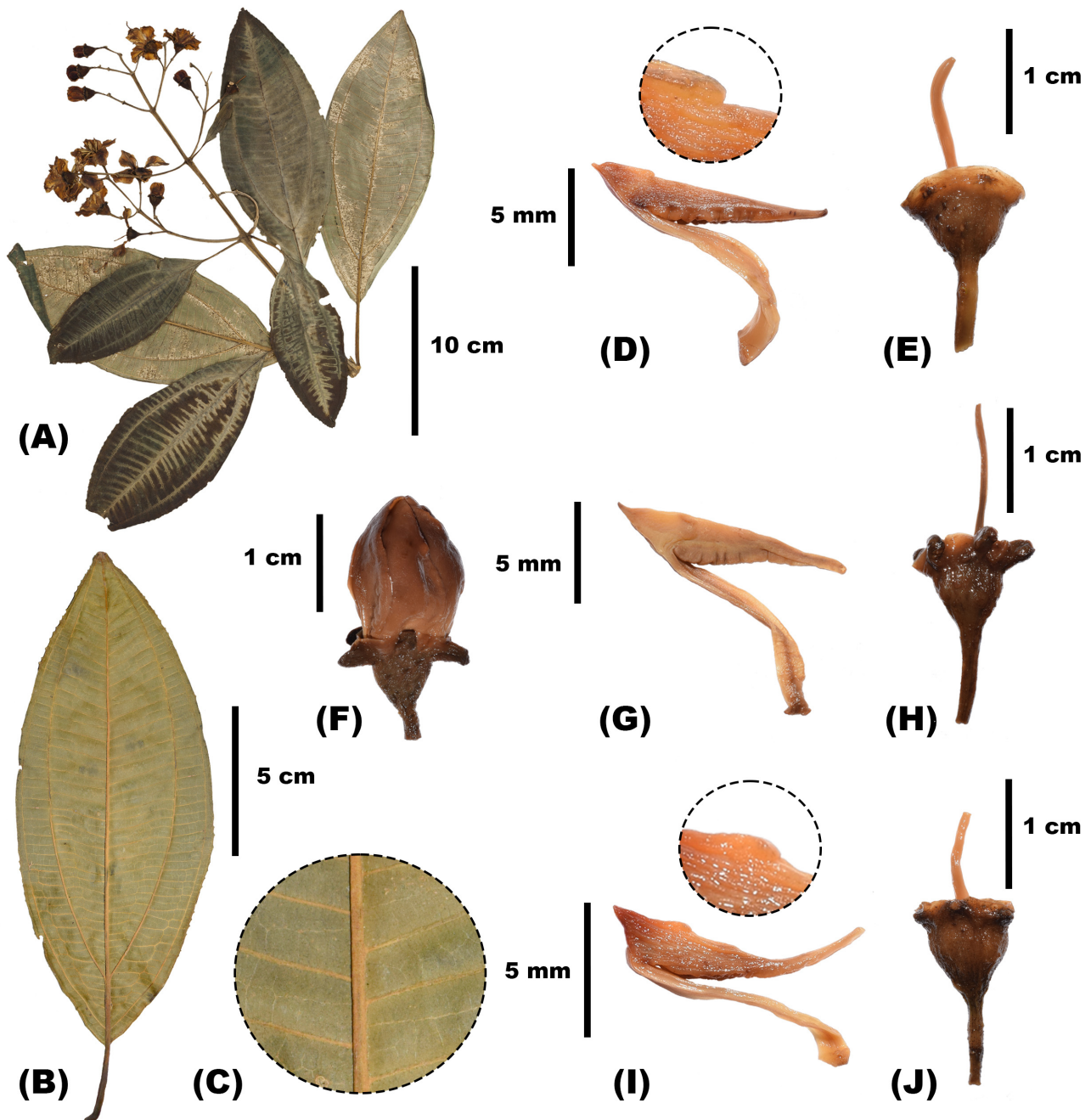


FIGURE 51. *Meriania rugosa*. **A.** Terminal fertile branch with inflorescence. **B.** Leaf blade, abaxial view. **C.** Detail of the abaxial leaf surface. **D.** Stamen, lateral view, with detail of the dorsal appendage (above). **E.** Flower with petals and stamens removed. **F.** Flower bud. **G.** Stamen, lateral view. **H.** Flower with petals and stamens removed. **I.** Stamen, lateral view, with detail of the dorsal appendage (above). **J.** Flower with petals and stamens removed. A–C and I–J from *F. A. Michelangeli et al.* 1725; D–E from *F. A. Michelangeli et al.* 1704; F–H from *H. van der Werff* 17006.

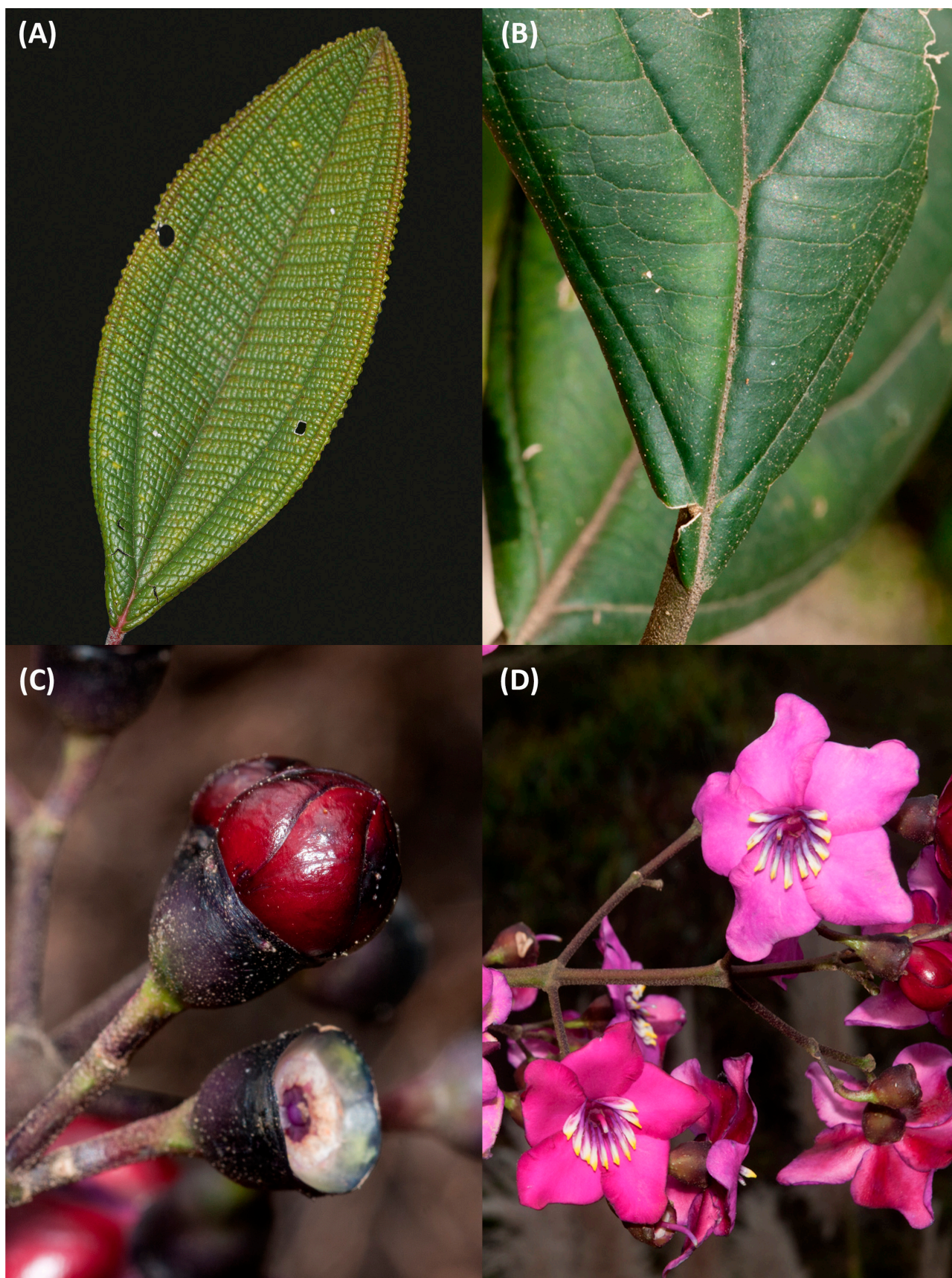


FIGURE 52. *Meriania rugosa*. **A.** Leaf blade, adaxial view. **B.** Detail of the base of the leaf blade. **C.** Detail of the inflorescence. **D.** Inflorescence with flowers at anthesis. A from R.W. Bussmann *et al.* 16614, B and D from F.A. Michelangeli *et al.* 1725, C from F.A. Michelangeli *et al.* 1704. Photos by Rainer W. Bussmann (A) and Fabián A. Michelangeli (B–D).

Comments:—We have placed a group of specimens collected in the south of the department of Amazonas under *M. rugosa* s.l. All specimens of *M. rugosa* share elliptic leaf blades, suprabasal venation, one pair of secondary nerves (Fig. 51B), 5-merous flowers with spreading, reddish purple corollas, and isomorphic stamens. However, there is a high amount of variability across localities, sometimes in very close populations; *Boeke 2052* and *Bussmann et al. 16614* are located across the Lajasbamba mountain range (Chachapoyas province), and have densely puberulent stems, bullate leaf blades and stamen connectives with dentiform dorsal appendages. The type of *M. rugosa* (Rodríguez de Mendoza province) and *van der Werff et al. 17006* (Chachapoyas province) show slightly bullate leaf blades, calyces with blunt dorsal projections 2–3 mm long (Fig. 51F and H), anthers 9–9.5 mm long, and stamen connectives without dorsal appendages (Fig. 51G). The northern specimens *Michelangeli et al. 1704* and *van der Werff et al. 24958* (Bongará province) have flat leaf blades, calyces with obsolete dorsal projections (Fig. 51E), anthers 9.5–10 mm long, and stamen connectives with dentiform dorsal appendages (Fig. 51D).

Although there are clearly distinguishable forms that could be recognized as distinct entities (species or subspecies), in the central distribution of *M. rugosa* s.l. there are specimens that could be considered intermediate forms. For example, *Michelangeli et al. 1725* (Chachapoyas Province) has flat leaf blades, calyces with small conic dorsal projections ca. 0.5 mm (Fig. 51J), stamen connectives with dorsal appendages as a mere hump to dentiform (Fig. 51I), and connectives prolonged below the thecae ca. 0.5 mm. Also, *Pennington et al. 17862* (Rodríguez de Mendoza Province) has puberulent stems and abaxial leaf blades, calyces with blunt dorsal projections ca. 2 mm long, anthers 5–6 mm, and stamen connectives without dorsal projections. For this reason, we place all forms mentioned here under our concept of *M. rugosa* s.l.

Based on all of this, perhaps the best option is to consider *M. rugosa* as a highly variable species, but united by elliptic leaf blades, suprabasal venation, one pair of secondary nerves, 5-merous flowers with spreading, reddish purple corollas, and isomorphic stamens. The Peruvian species likely closely related to *M. rugosa* s.l. are *M. penningtonii* and *M. tetraquetra* (see comments under this species for difference). *Meriania penningtonii* is clearly differentiated by its ovate leaf blades (vs. elliptic in *M. rugosa*), basal venation (vs. suprabasal), quadrangular and 4-winged internodes (vs. quadrangular) and callose dorsal projections on the calyx (vs. absent, small conic or blunt).

Nomenclatural notes:—Markgraf (1937) cited in the protologue of *M. rugosa*, two specimens, *Raimondi 1796* and *1866* as types, both of which we have located in the A. Raimondi collection housed at USM. The A. Raimondi collection housed in USM corresponds to the specimens that were sent on loan to Berlin in 1926 (Anonymous 1939, 1942), so they may have been seen by F. Markgraf. These specimens must be considered as syntypes conforming with Art. 9.6 of the ICN (Turland *et al.* 2018). According to Art. 9.3 and 9.12 of the ICN (Turland *et al.* 2018), we chose as lectotype the only sheet with flowers (*Raimondi 1866*).

Distribution and phenology:—*Meriania rugosa* is endemic to northern Peru (Department of Amazonas) and occurs in montane forests at 1880–3300 m (Fig. 44). It has been collected in flower in February, March, April, May, July, August, and November, and in fruit in June and July.

Specimens examined:—**PERU. Amazonas:** Partly along main road Jumbilla-Pedro Ruiz, partly along road to Tialango, 2080 m, 05°52'31"S, 76°46'36"W, 03 Nov 2012 (fl.), *H. van der Werff et al. 24958* (HOXA!, NY!); Road E of Chachapoyas between Pupos and Molinopampa, 1980–2340 m, 06°15'S, 77°40'W, 14 Feb 1985 (fl.), *J. Luteyn & E. Cotton 11402* (NY!, USM!); Izuchaca, 1880 m, 06°19'40"S, 77°31'05"W, 11 Apr 2001 (fl. bud), *H. van der Werff et al. 16943* (NY!). Prov. Bongará, 0.5–2 km al sur de Nuevo Gualulo, 2400–2108 m, 05°51'11.6"S, 77°54'19.5"W, 11 Mar 2012 (fl.), *F. A. Michelangeli et al. 1704* (NY!, USM!); Dist. Florida, trocha rumbo a CP Perlamayo, 05°47'10"S, 77°54'49"W, 30 Aug 2022 (fl.), *R. Fernandez-Hilario et al. 2275* (MOLF!). Prov. Chachapoyas, moist scrub forest on south side of Molinopampa-Diosan pass, 2700–3100 m, 08 Aug 1962 (fl.), *J. Wurdack 1617* (F!, NY!, US!, USM!); remnants of forest a few km past Molinopampa, 2450 m, 06°12'S, 77°40'W, 13 Apr 2001 (fl.), *H. van der Werff et al. 17006* (MOLF!, NY!, USM!); scrub forest along Río Ventilla 1–2 km, west of Molinopampa, 2350–2400 m, 23–25 Jul 1962 (fr.), *J. Wurdack 1483* (F!, NY!, US!, USM!); Dist. Leymebamba, camino rumbo hacia la ACP Los Chilchos, 3300 m, 06°47'25"S, 77°45'40"W, 26–29 Jun 2022 (fl. bud), *R. Fernandez-Hilario et al. 2350* (MOLF!), Leimebamba-Lajasbamba trail, 28 Jun 1977 (fr.), *J. Boeke 2052* (NY!, US!, USM!), trail from Atalaya to Leymebambaa, 2800 m, 06°44'39"S, 77°47'18"W, 04 Jul 2010 (fl.), *R. Bussmann et al. 16614* (NY!); Dist. Molinopampa, 2–3 km al oeste del pueblo, 38 km de Chachapoyas, a lo largo del Río Ventilla, 2400 m, 06°12'36.8"S, 77°40'49"W, 12 Mar 2012 (fl.), *F. A. Michelangeli et al. 1725* (NY!, USM!). Prov. Rodríguez de Mendoza, Dist. San Nicolás, carretera R. de Mendoza Rioja, Laguna Huamanpata, 2000 m, 06–09 May 2005 (fl.), *T. Pennington et al. 17862* (MOLF!).

24. *Meriania sanguinea* Wurdack, Mem. New York Bot. Gard. 16: 4 (1967). Type:—**ECUADOR. Azuay:** The eastern cordillera, 1–8 km north of the village of Sevilla de Oro, 2400–2700 m, 12 Jul - 12 Aug 1945 (fl.), *W. Camp E-4620* (holotype: US! [barcode 00120387]; isotypes: COL! [barcode COL000003291], GH! [barcode 00072677], NY! [barcode 00228976], U! [barcode U0004073]). (Figures 53–54).

Comments;—*Meriania sanguinea* belongs to the *M. radula* complex (see comments under *M. radula* for diagnostic characteristics) along with *M. almedae*, *M. hirsuta*, *M. radula* and *M. tetragona*. Although specimens of this species are usually misidentified as *M. radula* or *M. tetragona*; *M. sanguinea* can be recognized from the other Peruvian species in the complex by its abaxial liguliform projections on the transition zone from the petiole to the midvein (Fig. 53E), while *M. hirsuta* has no projections, *M. radula* has small abaxial tuberculate projections and *M. tetragona* has abaxial tuberculate (rarely horn-shaped) projections. In addition, only *M. sanguinea* and *M. tetragona* have nodes with interpetiolar flaps (Fig. 54A) and both can be differentiated by their internodes (terete-quadrangular in *M. sanguinea* vs. quadrangular and winged in *M. tetragona*).

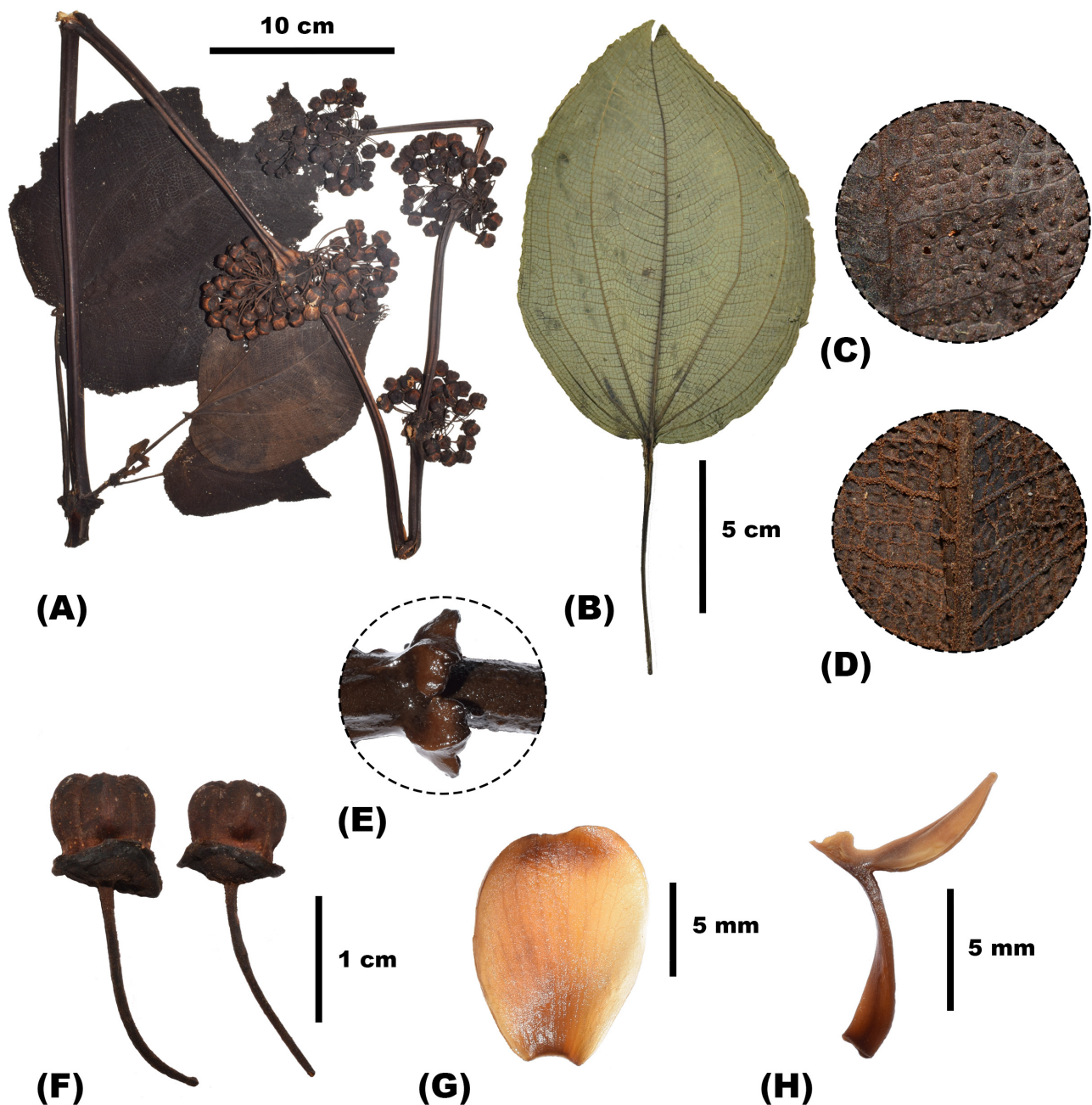


FIGURE 53. *Meriania sanguinea*. **A.** Terminal fertile branch with infructescence. **B.** Leaf blade, abaxial view. **C.** Detail of the adaxial leaf surface. **D.** Detail of the abaxial leaf surface. **E.** Detail of the abaxial projections of the petiole. **F.** Fruits. **G.** Petal. **H.** Stamen, lateral view. A, C–H. from R. Fernandez-Hilario et al. 1896; B from L. Cárdenas & R. Francis 855.



FIGURE 54. *Meriania sanguinea*. **A.** Interpetiolar flap. **B.** Abaxial projections on the apex of the petiole. **C.** Detail of the inflorescence. **D.** Flower at anthesis, apical view. A–D from *R. Fernandez-Hilario et al. 1896*. Photos by Robin Fernandez-Hilario.

Some Peruvian species of *Axinaea* (*A. crassinoda*, *A. dependens* and *A. pendula*) are usually confused with *M. sanguinea* for sharing large inflorescences and campanulate, red corollas. However, these species of *Axinaea* can be differentiated by their pendulous inflorescences and 4-merous flowers (vs. erect inflorescences and 5-merous flowers in *M. sanguinea*, Fig. 54C–D). In addition, no Peruvian species of *Axinaea* have abaxial projections on the transition zone from the petiole to the midvein (vs. liguliform projections in *M. sanguinea*) and usually have pseudo-lateral inflorescences (vs. terminal).

Distribution and phenology:—*Meriania sanguinea* is distributed from Colombia to Peru, and occurs from the department of Piura to Pasco in montane forests and elfin forests at 1900–3300 m (Fig. 30). It has been collected in flower in almost every month except April, May, July, and September, and in fruit in January, February, March, May, and September.

Specimens examined:—**PERU. Amazonas:** Prov. Chachapoyas, Dist. Leymebamba, Cordillera Yasgolga, east of peak, close to Refugio “Laurel”, 2789 m, 06°41’44”S, 77°41’24”W, 18 Jun 2009 (fl.), *R. Bussmann et al.* 15624 (HUT!, MO!). Prov. Bongará, Dist. Florida, desde toma de agua en San Lorenzo hacia CP Vista Alegre, 2480 m, 05°48’42.83”S, 78°01’36.70”W, 17–18 Feb 2020 (fl., fr.), *R. Fernandez-Hilario et al.* 1896 (HOXA!, MOLFI!, NY!, UPCB!); Dist. Yamborasbamba, Colina cruzando la carretera al lado opuesto de la Estación Biológica Abra Patricia, 2360 m, 05°41’57.08”S, 77°48’33.83”W, 21 Feb 2020 (fl.), *R. Fernandez-Hilario et al.* 1933 (MOLFI!, UPCB!). **Cajamarca:** Prov. Jaén, alrededores laguna Corazón de San Miguel, Tabaconas, 3300 m, 02 Dec 2011 (fl.), *L. García & Y. Tenorio* 8361 (HUT!). Prov. San Ignacio, Cerro Coyona, SN Tabaconas Namballe, 2700–2857 m, 05°16’31”S, 79°16’06”W, 21 Nov 1998 (fl.), *J. Campos et al.* 5816 (NY!). **Huánuco:** Prov. Huánuco, Dist. Chinchao, Caserio San Pedro de Carpish. Alrededor del túnel de Carpish, 3011 m, 09°43’09”S, 76°05’43”W, 04 Feb 2002 (fl.), *H. Beltrán & I. Salinas* 5052 (USM!), San Pedro de Carpish, 2770–2820 m, 09°43’14”S, 76°06’53”W, 01 May 2005 (fr.), *I. Salinas* 1003 (USM!), San Pablo de Carpish y alrededores del túnel, 2660 m, 09°42’05.58”S, 76°04’56.28”W, 17–18 Jan 2020 (fl., fr.), *R. Fernandez-Hilario et al.* 1847 (HOXA!, MOLFI!, NY!, UPCB!). **Pasco:** Prov. Oxapampa, Dist. Huancabamba, PN Yanachaga Chemillén, Sector San Daniel, entre la laguna San Daniel y pajonal al oeste de la laguna, 2375 m, 10°26’03.27”S, 75°27’26”W, 18 Feb 2018 (ster.), *F. A. Michelangeli & S. Riva* 2952 (HOXA!, NY!, USM!), Dist. Oxapampa, PN Yanachaga Chemillén, Estación Biológica San Alberto, Abra Esperanza, 2903 m, 10°31’43”S, 75°21’17”W, 17 Feb 2012 (fl., fr.), *R. Vásquez & L. Valenzuela* 37768 (HOXA!), Abra Esperanza, camino a la laguna, 2828 m, 10°32’52”S, 75°21’04”W, 10 Dec 2010 (fl.), *E. Briceño & R. Rivera* 494 (NY!), Sector San Alberto. Camino hacia el ojo de agua, a 30 min del refugio, 2877 m, 10°31’45”S, 75°21’08”W, 13 Oct 2006 (fl.), *L. Cárdenas & R. Francis* 855 (CUZ!, HOXA!, MO!, USM!), Sector San Alberto, en el Abra Esperanza y alrededores, 2780 m, 10°31’55”S, 75°20’59”W, 02 Oct 2007 (fl.), *L. Hernani & A. Peña* 355 (HOXA!, NY!, USM!), Sector San Alberto, sendero entre Abra Esperanza y bosque esclerófilo, 2825 m, 10°31’51.3”S, 75°21’04.4”W, 21 Mar 2016 (fr.), *F. A. Michelangeli et al.* 2743 (NY!, USM!). **Piura:** Prov. Huancabamba, Dist. El Carmen de la Frontera, Carretera Sapalache-Cerro Chingelas, 9.5 km después de Sapalache, 3055 m, 05°08’23.6”S, 79°23’45.4”W, 03 Sep 2016 (fr.), *F. A. Michelangeli et al.* 2618 (NY!, USM!); Dist. Rosario Alto, Cordillera de los Andes, 2125 m, 04°55.9”S, 79°18.7”W, 02 Aug 2004 (fl.), *J. Campos et al.* 10243 (USM!). **San Martín:** Prov. Rioja, along road Rioja-Pedro Ruiz, El Mirador, 1900 m, 26 Mar 1998 (fl. bud), *H. van der Werff et al.* 15745 (MO!).

25. *Meriania sessilifolia* (Cogn.) Rob.Fern., R.Goldenb. & Michelang., comb. nov. Basionym: *Centronia sessilifolia* Cogn., in A.DC. & C.DC., Monogr. Phan. 7: 459 (1891). Type:—**PERU. Piura:** Huancabamba, 02 Dec 1881 (ster.), *Poortmann* 223 (lectotype, designated here: P! [barcode P00228659]; isoelectotypes: BR!-fragment [barcode 000005628971], F!-fragment [accession no. 935561], P! [barcode P00228660]). Remaining syntype:—**PERU. Piura:** Huancabamba, 19 Jan 1883 (fl.), *Poortmann* 484 (P! [barcode P00228661]). (Figures 55–56).

Comments:—*Centronia* was traditionally characterized by the presence of large flowers, calyptrate calyces with circumscissile dehiscence, and stamen connectives with dorsal appendages (Wurdack 1973). However, the first and third character are notoriously absent in the type of the genus (*C. laurifolia* D.Don). For this reason and other inconsistent characters within *Centronia* many species have recently been transferred to *Meriania* (Almeda 1993, Mendoza-Cifuentes & Fernández-Alonso 2012). Also, phylogenetic analyses of the tribe Meranieae have shown that *C. laurifolia* is placed within *Graffenrieda* (Dellinger *et al.* 2018, Caetano *et al.* 2020, Michelangeli *et al.* 2022; see additional comments in the introduction). On the other hand, *Centronia sessilifolia* has large flowers, calyptrate calyces with irregular dehiscence and spreading, reddish-purple corollas. These characteristics are present in other *Meriania* species and, therefore, we transfer *C. sessilifolia* to *Meriania* here as previously suggested by Mendoza-Cifuentes & Fernández-Alonso (2012).

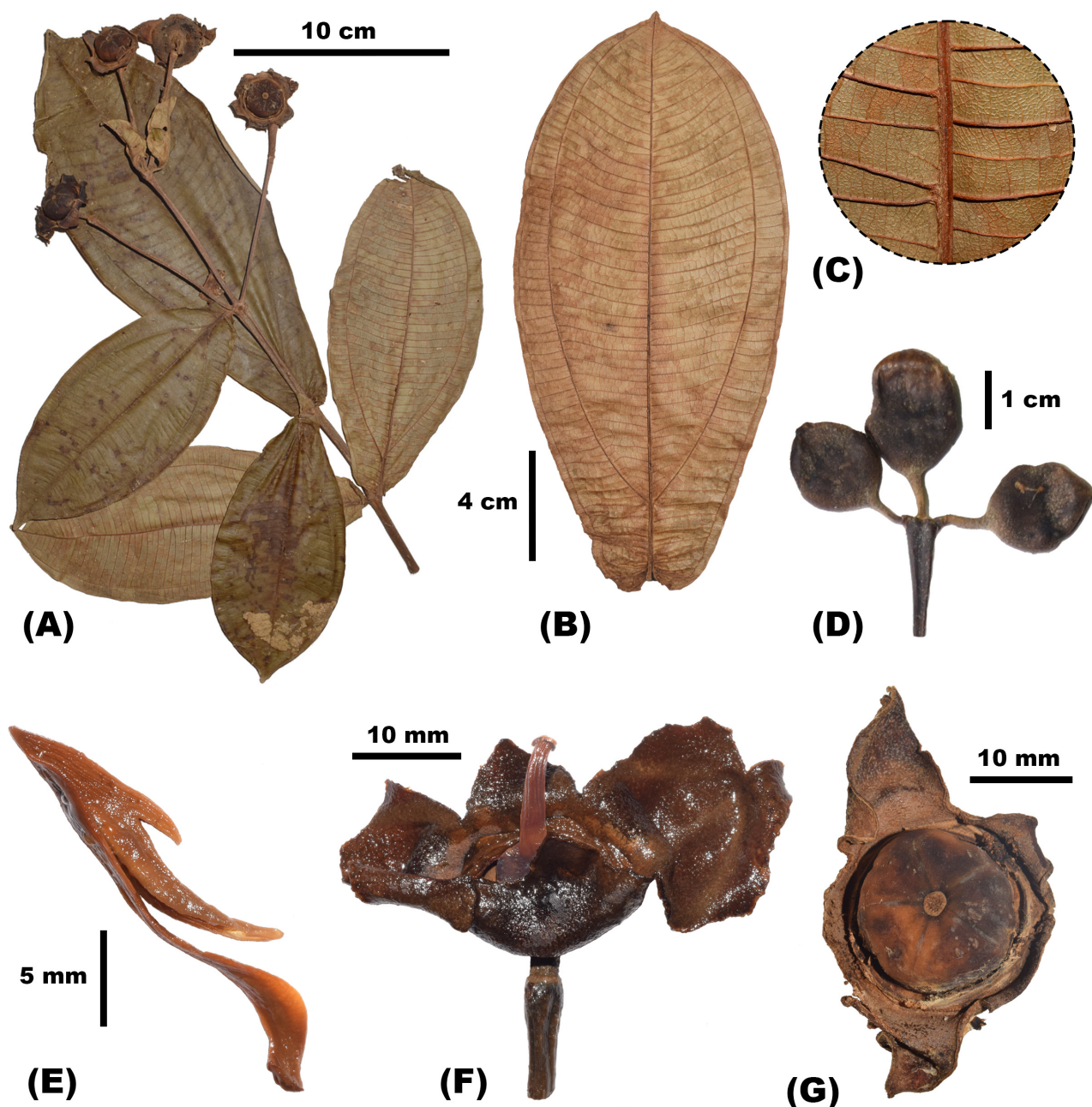


FIGURE 55. *Meriania sessilifolia*. **A.** Terminal fertile branch with infructescence. **B.** Leaf blade, abaxial view. **C.** Detail of the abaxial leaf surface. **D.** Inflorescence branch. **E.** Stamen, lateral view. **F.** Flower with petals and stamens removed. **G.** Fruit, apical view. A, C and G from R. Fernandez-Hilario et al. 2097; B from R. Fernandez-Hilario et al. 2424; D–F from J.G. Sánchez 302.

Available specimens of *M. sessilifolia* (Department of Piura) consist of the original material, three sterile sheets (Poortmann 223) with leaf blades $5.3\text{--}6.8 \times 1.8\text{--}2.3$ cm, and another one (Poortmann 484) with only one flower without stamens, and recent collections from Cajamarca. The specimens from the Department of Cajamarca have notably larger leaf blades $11.8\text{--}20.8 \times 4.8\text{--}7.5$ cm. However, all specimens share sessile leaves, leaf blades with auriculate bases and suprabasal venation (Fig. 55B), and calyptrate calyces (Fig. 55D). Although the Cajamarca population may correspond to an undescribed species, for the moment we consider it with reservations as *M. sessilifolia*.

The only other Peruvian species with sessile leaves is *M. amischophylla*, but it is easily differentiated from *M. sessilifolia* by its lobed calyces with claw-shaped dorsal projections (vs. calyptrate calyces with callose dorsal projections, Fig. 56B). *Meriania maguirei* Wurdack (endemic to Ecuador) is probably the species most closely related to *M. sessilifolia* by sharing calyptrate calyces with irregular dehiscence and spreading, reddish purple corollas. However, *M. maguirei* can be easily differentiated by petiolate leaves (vs. sessile in *M. sessilifolia*), leaf blades with acute bases (vs. auriculate), and glabrescent to glabrous hypanthia and calyces (vs. furfuraceous).

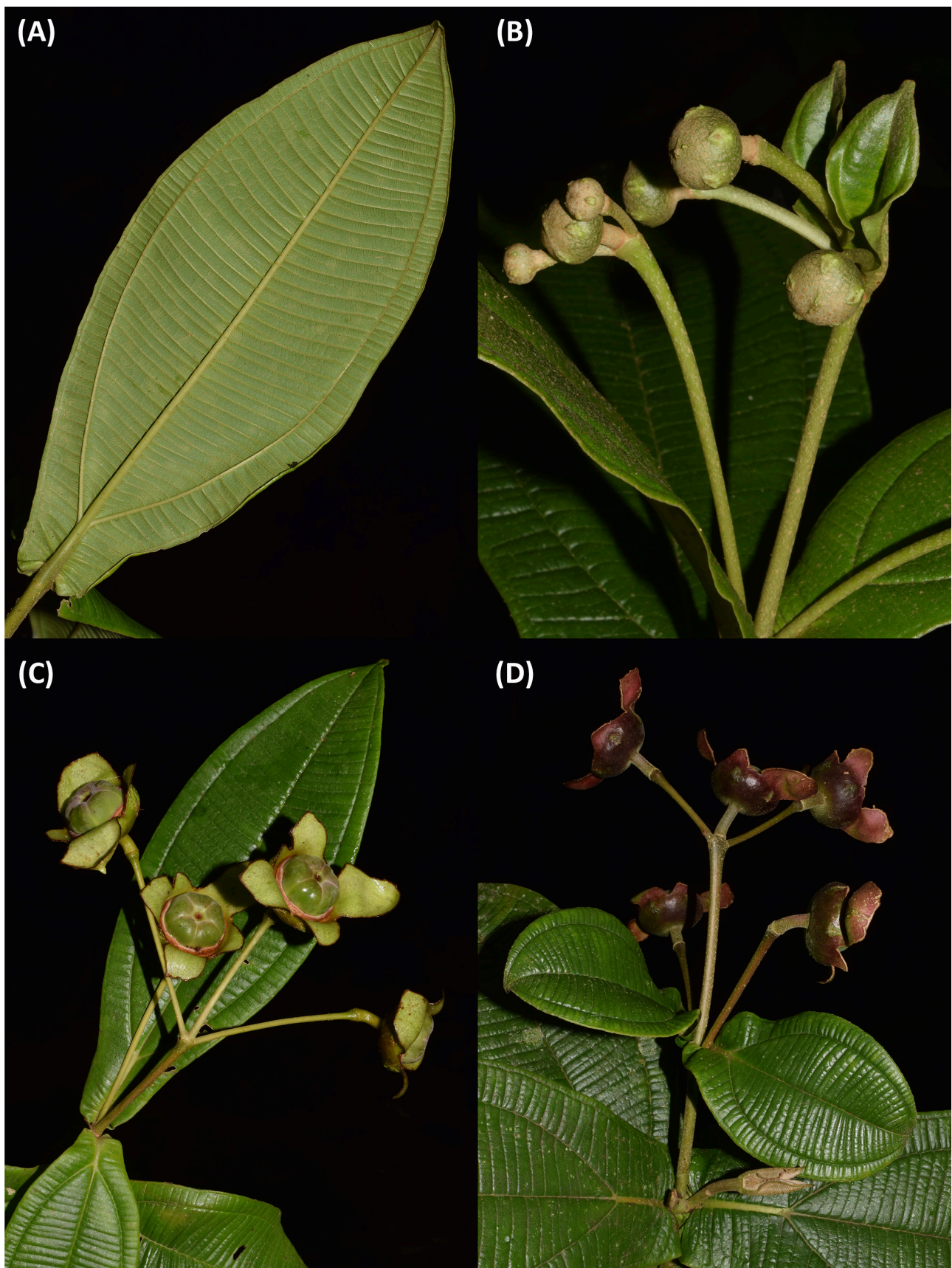


FIGURE 56. *Meriania sessilifolia*. **A.** Leaf blade, abaxial view. **B.** Flower buds. **C–D.** Terminal fertile branches with infructescences. A and C–D from R. Fernandez-Hilario *et al.* 2097; B from R. Fernandez-Hilario *et al.* 2424. Photos by Robin Fernandez-Hilario.

Nomenclatural notes:—Cogniaux (1891) cited as type “*Poortmann in hb. Drake*” in the protologue of *Centronia sessilifolia*. At Paris (P), three sheets, P00228659, P00228660 (both from *Poortmann 223*) and P00228661 (*Poortmann 484*) have labels indicating that they belonged to E. Drake’s herbarium, so these specimens must be considered as syntypes conforming with Art. 9.6 of the ICN (Turland *et al.* 2018). Therefore, according to Art. 9.3 and 9.12 of the ICN (Turland *et al.* 2018), we chose *Poortmann 223* for lectotypification, because it allows to observe the sessile leaves with auriculate bases that characterize *M. sessilifolia*.

Distribution and phenology:—*Meriania sessilifolia* is endemic to northern Peru (Departments of Piura and Cajamarca) and grows in montane forests at 2250–2690 m (Fig. 35). It has been collected in flower in January and October, and in fruit in October and November.

Specimens examined:—**PERU. Cajamarca:** Prov. Cutervo, Dist. Cutervo, CP San Cristobal del Nudillo, sector el Mirador y propiedad de Darwin Horna, 2690 m, 06°18’33.68”S, 78°51’40.71”W, 01–03 Oct 2012 (ster.), *L. Dávila 2479* (UNC!); Dist. San Andrés, Las Grutas, 2350 m, 13 Oct 1987 (fl., fr.), *J.G. Sánchez 302* (CPUN!, F!, US!); Dist. Santo Tomás, ceca al lugar Playa Grande, 2300 m, 14 Oct 1987 (fl.), *I. Sánchez-Vega 4531* (CPUN!, F!, US!), PN Cutervo, rumbo hacia Playa Grande, 2250 m, 06°11’25.35”S, 78°44’40.74”W, 27 Nov 2020 (fr.), *R. Fernandez-Hilario et al. 2097* (CUZ!, HOXA!, KUELAP!, MOLF!, NY!, UPCB!), same locality, 14 Nov 2022 (fl. bud, fr.), *R. Fernandez-Hilario 2424* (MOLF!).

26. *Meriania speciosa* (Bonpl.) Naudin, Ann. Sci. Nat., Bot., ser. 3, 18: 128 (1852). *Chaetogastra speciosa* (Bonpl.) DC., Prodr. 3: 131 (1828). Basionym: *Rhexia speciosa* Bonpl., Monogr. Melast. 2: 9, t. 4 (1806). Type:—**COLOMBIA. Cauca:** Prope Popayán, no date (fl.), *A. Bonpland 2027* (lectotype, designated by Mendoza-Cifuentes 2021: P! [barcode P00136460]; isoelectotypes: F! [accession no. 940290], P! [barcodes P00136461, P00136462], US! [barcode 00120188]). (Figure 57).

Meriania spruceana Cogn. in A.DC. & C.DC., Monogr. Phan. 7: 426 (1891). *Meriania longifolia* var. *spruceana* (Cogn.) Cuatr., Trab. del Mus. Nac. de Cienc. Nat. de Madrid 33: 93. 1936. *Meriania longifolia* var. *spruceana* (Cogn.) J.F.Macbr., Publ. Field Mus. Nat. Hist., Bot. Ser. 13(4/1): 309 (1941), *isonym*. Type:—**PERU. San Martín:** In monte Campana prope Tarapoto, Aug 1856 (fl.), *R. Spruce 4204* (lectotype, designated here: BR! [barcode 000005201327]; isoelectotypes: B-probably destroyed [negative at F], BR! [barcode 000005201624], C! [barcode C10014729], E! [barcode E00285763], F!-fragment [accession no. 869148], G! [barcode G00319573], GH! [barcode 00072679], K! [barcodes K000006312, K000006313], LD! [barcode 1683604], NY! [barcode 00228979], P! [barcode P02274656], TCD! [barcode TCD0000734]).

For other synonyms see Mendoza-Cifuentes (2021).

Comments:—The Peruvian specimens of *M. speciosa* are easily recognisable by their narrowly elliptic to lanceolate leaf blades 7.7–10 × 1.3–2.1 cm (Fig. 57B), solitary inflorescences or sometimes in 3-flowered dichasia, glabrous hypanthia and calyces, calyces with acute dorsal projections (Fig. 57E), spreading, reddish-purple corollas, isomorphic stamens, and stamen connectives with one triangular descending dorso-basal appendage (Fig. 57G). These characters are constant in all examined specimens. Historically, the Peruvian populations of *M. speciosa* have been recognized as a distinct entity, as *M. spruceana* (Cogniaux 1891, Brako & Zarucchi 1993) or *M. longifolia* var. *spruceana* (Macbride 1941). These populations have been considered related to *M. candollei* Cogn., *M. grandidens* Triana, *M. lindenii* Cogn., *M. longifolia* (Naudin) Cogn., *M. speciosa* (Bonpl.) Naudin and *M. umbellata* H.Karst., all endemic to Colombia, except *M. longifolia* (also in Venezuela) and *M. speciosa* (also in Ecuador). These species have been traditionally accepted in different works (Almeda *et al.* 2021; Brako & Zarucchi 1993; Wurdack 1973, 1980). However, Mendoza-Cifuentes (2021) considered in his taxonomic revision of *Meriania* for Colombia that all of them are synonyms of *M. speciosa*. In fact, there is a lot of variability in all the specimens from Colombia and Venezuela, and it is not possible to clearly determine the morphological limits between the entities. Also, Mendoza-Cifuentes (2021) reported the presence of intermediate forms in the Colombian populations. Therefore, we have chosen to consider *M. speciosa* as a highly variable species for the moment.

Among Peruvian species, *M. speciosa* could be confused with *M. prunifolia* due to the small leaves, sometimes elliptic leaf blades and solitary inflorescences. However, the former is easily distinguishable by its glabrous terminal branches and leaf blades (vs. moderately to densely furfuraceous in *M. prunifolia*), terete hypanthia (vs. slightly costate), and calyces with acute dorsal projections (vs. aciculate).

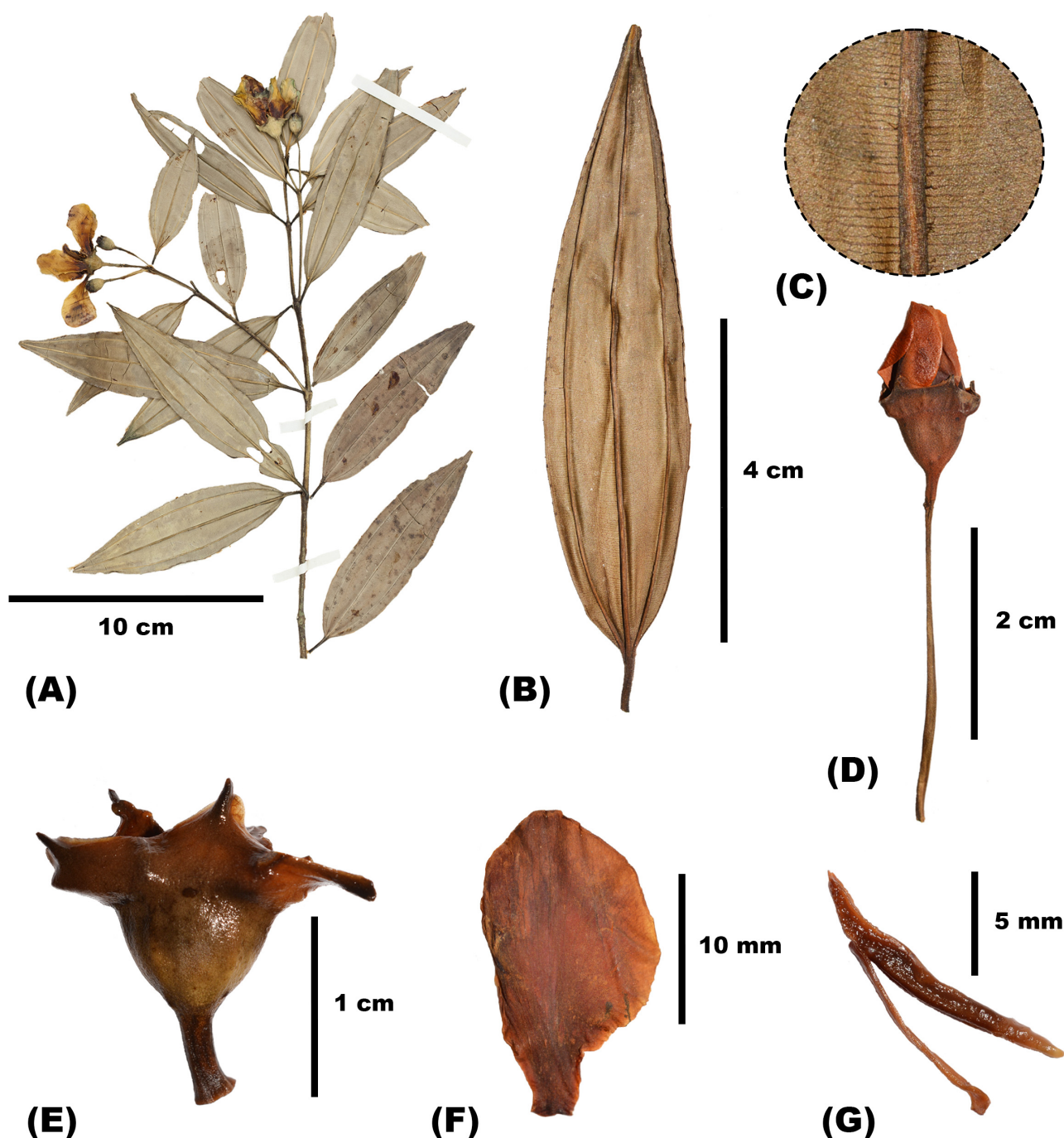


FIGURE 57. *Meriania speciosa*. **A.** Terminal fertile branch with inflorescences. **B.** Leaf blade, abaxial view. **C.** Detail of the abaxial surface. **D.** Flower bud. **E.** Flower with petals, stamens and style removed. **F.** Petal. **G.** Stamen, lateral view. **A** from *L. Williams 7010*; **B–G** from *V. Quipuscoa et al. 2036*.

Nomenclatural notes:—Cogniaux (1891) cited *Spruce 4204* as type in the protologue of *M. spruceana* but without indicating any herbarium, so it must be considered as a syntype conforming with Art. 9.6 of the ICN (Turland *et al.* 2018). Therefore, according to Art. 9.3 and 9.12 of the ICN (Turland *et al.* 2018), we chose as lectotype the sheet 000005201327 (BR) because contains a label indicating that it was part of A. Cogniaux’s herbarium and probably that was the material he examined for the description of *M. spruceana*.

Distribution and phenology:—*Meriania speciosa* is distributed from Venezuela to northern Peru, and occurs in the departments of Amazonas and San Martín in premontane and montane forests at 900–1850 m (Fig. 16). It has been collected in flower in January, February, April, May, August, and September, and in fruit in April.

Specimens examined:—**PERU. Amazonas:** Prov. Rodríguez de Mendoza, Dist. Chirimoto, entre Zrumilla y Achamal, borde del camino, 1100 m, 12 Sep 2001 (fl.), *V. Quipuscoa & M. Vilchez 2709* (F!, HUT!); Dist. Vista

Alegre, entre Valle Encantado y Salas, 1100–1853 m, 06°15'07.1"S, 77°16'23.2"W, 30 May 2008 (fl.), *V. Quipuscoa et al.* 4063 (HSP!, HUT!). **San Martín:** Zepelacio, near Moyobamba, 1100 m, May 1934 (fl.), *G. Klug* 3642 (F!, NY!, US!). Prov. Huallaga, Dist. Saposoa, alrededores de Monumentos Históricos de Buenos Aires (Zarumilla), 1440 m, 06°36'34"S, 77°21'30"W, 11 Aug 2000 (fl.), *V. Quipuscoa et al.* 2036 (F!, HUT!). Prov. Lamas, Dist. Alonso de Alvarado, San Juan de Pacayzapa, al este del puente (Carretera a Moyobamba), 900 m, 12 Apr 1973 (fl., fr.), *J. Schunke* *V.* 5906 (F!, NY!, U!, US!). Prov. San Roque, without locality, 1350–1500 m, Jan–Feb 1930 (fl.), *L. Williams* 7010 (F!, NY!, US!).

27. *Meriania sumatika* Rob.Fern., R.Goldenb. & Michelang., Willdenowia 52(1): 63 (2022). Type:—**PERU. Cusco:** Prov. Urubamba, Dist. Machupichu, Santuario Histórico de Machupicchu y en Camino Inca, 2060 m, 13°09'10"S, 72°31'00"W, 14–22 Oct 1987 (fl., fr.), *P. Núñez & J. Arque* 8369 (holotype: CUZ! [accession no. 15097]; isotypes: F! [accession no. 2028864], US! [barcode 02925646]). (Figure 58).

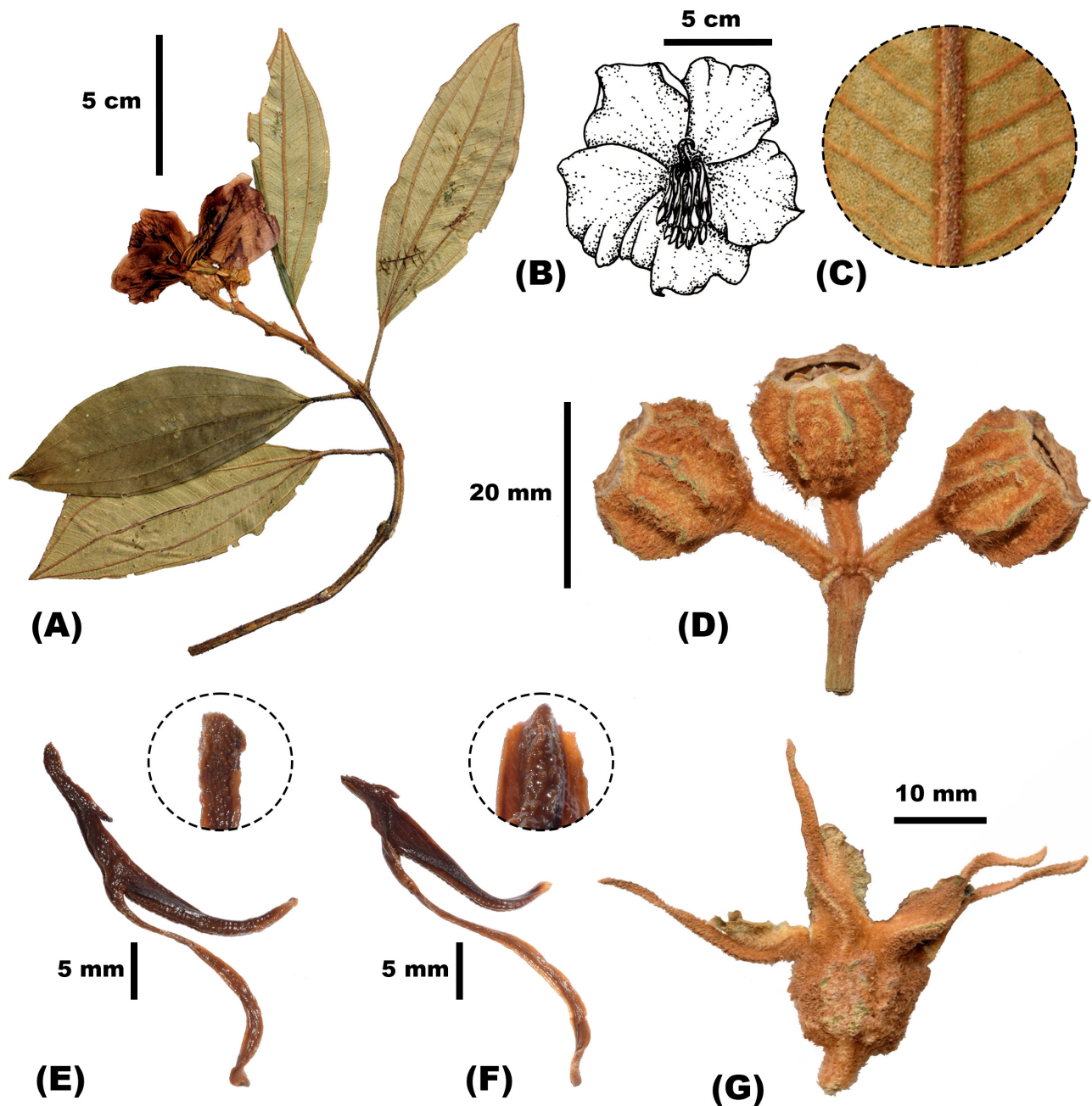


FIGURE 58. *Meriania sumatika*. **A.** Terminal fertile branch with inflorescence. **B.** Flower at anthesis, apical view. **C.** Leaf blade, abaxial view. **D.** Infructescence branch. **E.** Antepetalous stamen, lateral view, with detail of the dorso-basal appendage, frontal view (above). **F.** Antesepalous stamen, lateral view, with detail of the dorso-basal appendage, frontal view (above). **G.** Hypanthium and calyx in lateral view. A–C from *W. Galiano et al.* 6410; D–G from *P. Núñez & J. Arque* 8369. Drawing by Leticia Lajo (B).

Comments:—This species differs from other Peruvian species of *Meriania* by the combination of 10-costate hypanthium (ridges up to 4.5 mm high in fruit, Fig. 58D), calyx with large falcate dorsal projections (14.5–15.5 mm long) (Fig. 58G), spreading, reddish-purple corollas, large petals (46–55 mm long), dimorphic stamens, stamen connectives with two appendages, one descending dorso-basal appendage (laterally expanded in the antesealous stamens, Fig. 58F), and the other blunt ascending appendage. Among Peruvian species, *M. sumatika* most closely resembles *M. vargasii* but differs by the hypanthia shape (10-costate vs. terete), petal length (46–55 mm vs. 20–24 mm), and anther length (14–16 mm vs. 9–12 mm). A detailed comparison of *M. sumatika* with other related species can be found in Fernandez-Hilario *et al.* (2022).

Distribution and phenology:—*Meriania sumatika* is endemic to southern Peru and grows in montane forests at 1800–2950 m (Fig. 21). It has been collected in flower in February, May and October, and in fruit in May, June and October.

Specimens examined:—PERU. Cusco: Prov. Urubamba, Dist. Machupichu, Intipata, Santuario Histórico de Machu Picchu, 2950 m, 10 Feb 1990 (fl.), *A. Cano et al.* 2874 (HUT!), Wiñay-Wayna, Machupichu, 2850–2900 m, 21 May 1991 (fr.), *H. Dueñas* 27 (CUZ!), Microcuenca Wiñaywayna, Wiñaywayna-Intipunku, 2700 m, 13°10'23.04"S, 72°32'03.44"W, 24 Jun 2001 (fr.), *R. Tupayachi et al.* 4926 (CUZ!), camino Inca, entre Wiñay Wayna e Intipunku, quebrada Wacraytambo, 2737 m, 13°10'42"S, 72°32'02"W, 24 May 2004 (fl., fr.), *W. Galiano et al.* 6410 (CUZ!, NY!); Prov. La Convención, Dist. Santa Ana, Potrero, 1800 m, 13°53'56"S, 72°43'50"W, 27 May 2002 (fl. bud), *I. Huamantupa et al.* 2060 (MO!, USM!).

28. *Meriania tetragona* (Cogn.) Wurdack, *Phytologia* 9(7): 411 (1964). Basionym: *Axinaea tetragona* Cogn., Bot. Jahrb. Syst. 42(1): 137 (1908). Type:—PERU. Amazonas: Ad orientem a Chachapoyas versus, inter Tambo Almirante et Tambo Bagazán, 2700–2800 m, 30 Jul 1904 (fl.), *A. Weberbauer* 4430 (lectotype, designated by Burke & Michelangeli 2013: BR! [barcode 000008438300]; isolectotypes: B-probably destroyed [negative at F]). (Figures 59–60).

Meriania raimondii Markgr., Notizbl. Bot. Gart. Berlin-Dahlem 13(119): 461 (1937). Type:—PERU. Cajamarca: Cutervo, Apr 1879 (fl.), *A. Raimondi* 5727 (lectotype, designated here: USM! [accession no. 27390]). Remaining syntype:—PERU. Cajamarca: Cutervo, Apr 1879, *A. Raimondi* 3156 (not located).

Comments:—*Meriania tetragona* belongs to the *M. radula* complex (see comments under *M. radula* for diagnostic characteristics) and is recognisable within the complex by the combination of quadrangular-winged internodes, nodes with interpetiolar flaps (Fig. 60B), glabrous to sparsely puberulent leaves, and abaxial tuberculate projections on the transition zone from the petiole to the midvein (Fig. 60C). All examined specimens show stable characteristics, except Fernandez-Hilario *et al.* 2092 which has abaxial horn-shaped projections instead of tuberculate.

Due to internode morphology, *Meriania tetragona* could be confused with *M. penningtonii*, but the former differs in its campanulate, deep red corollas (vs. spreading, reddish-purple) and the presence of the interpetiolar flap (vs. absent). Also, *M. tetragona* could be confused with some red-flowered species of *Axinaea*, but these species have pendulous inflorescences (vs. erect in *M. tetragona*, Fig. 60A) and 4-merous flowers (vs. 5-merous).

Nomenclatural notes:—Markgraf (1937) cited *Raimondi* 3156 and 5727 as types in the protologue of *M. raimondii*, so both specimens must be considered as syntypes conforming with Art. 9.6 of the ICN (Turland *et al.* 2018). The A. Raimondi collection housed in USM corresponds to the specimens that were sent on loan to Berlin in 1926 (Anonymous 1939, 1942), so they may have been seen by F. Markgraf and apparently *Raimondi* 3156 was the only one of the specimens that did not return to Peru. Therefore, according to Art. 9.3 and 9.12 of the ICN (Turland *et al.* 2018), we chose as lectotype *Raimondi* 5727.

Distribution and phenology:—*Meriania tetragona* is distributed in Ecuador and Peru, and it occurs from the department of Amazonas to Lambayeque in montane forests, elfin forests and subparamos at 2200–3300 m (Fig. 30). It has been collected in flower almost year-round except in September and December, and in fruit almost year-round except in April and September.

Specimens examined:—PERU. Amazonas: Leimebamba-Balsas road, km 415, 28 Mar 1977 (fl., fr.), *J. Boeke* 1822 (MO!, NY!); Path Chachapoyas-Moyobamba, 2700–3300 m, Jan 1930 (fr.), *L. Williams* 7579 (F!); 18 kms SW of Leimebamba along road towards Balsas, 3000 m, 06°45'S, 77°48'W, 13 Feb 1985 (fl.), *J. Luteyn & E. Cotton* 11379 (MO!, NY!, USM!). Prov. Bongará, Dist. Florida, Tierras de la Comunidad San Lorenzo, 3000 m, 06°45'21.89"S, 78°02'00.74"W, 17 Feb 2020 (fl., fr.), *R. Fernandez-Hilario et al.* 1888 (HOXA!, KUELAP!, MOLFI!, NY!, UPCB!). Prov. Chachapoyas, Passim 20–17 km down E slope of Cerro Calla-Calla, 02 Jun 1966 (fl.), *G. Edwin & J. Schunke* V. 3653 (F!, NY!); Cerros Calla-Calla, east side, 19 km above Leimebamba on the road to balsas, 3100 m, 04 Jun 1964

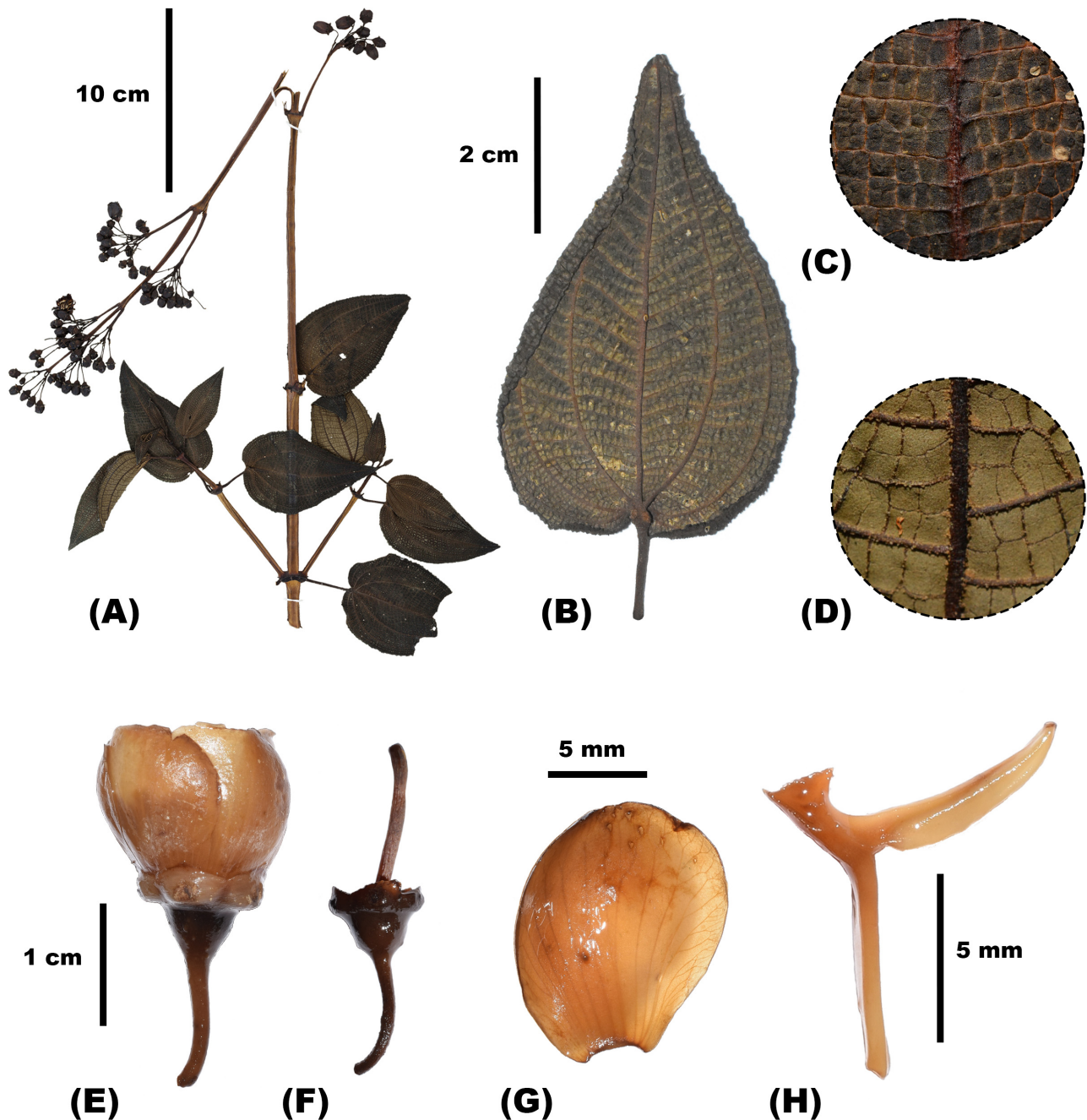


FIGURE 59. *Meriania tetragona*. **A.** Terminal fertile branch with inflorescence. **B.** Leaf blade, abaxial view. **C.** Detail of the adaxial leaf surface. **D.** Detail of the abaxial leaf surface. **E.** Flower at anthesis. **F.** Flower with petals and stamens removed. **G.** Petal. **H.** Stamen, lateral view. A from *J. Luteyn & E. Cotton 11379*; B from *T. Pennington et al. 17701*; C–H from *R. Fernandez-Hilario et al. 2092*.

(fl., fr.), *P. Hutchinson & J. Wright 5507* (F!, MO!, NY!, P!, US!, USM!); Entre Leymebamba y Calla-Calla, 3100 m, 07 May 1970 (fl.), *I. Sánchez V. & W. Ruiz 537* (CPUN!, F!, NY!); Middle eastern Calla-Calla slopes, near kms 416–419 of Leimebamba-Balsas road, 2900–3100 m, 09 Jul 1962 (fl., fr.), *J. Wurdack 1250* (F!, NY!, US!, USM!); Jalca de Calla - Calla (Leymebamba - Balsas), 2800 m, 23 Oct 1965 (fr.), *A. Sagástegui 6057* (HUT!), same locality, 3100 m, 07 May 1970 (fl.), *A. Sagástegui 7462* (HUT!); Camino Chachapoyas - Celendín, entre Leymebamba y Calla - Calla, 3000 m, 06°45'S, 77°49'W, 27 May 1984 (fr.), *D. Smith & J. Cabanillas 7181* (MO!, USM!); Cordillera Calla - Calla, entre Leymebamba y Balsas, 3200–3300 m, 21 Aug 1963 (fl., fr.), *R. Ferreyra & C. Acleto 15311* (US!, USM!); Dist. Leymebamba, km 407 de la carretera, 19 km de Leymebamba, 3050–3095 m, 06°42'33.3"S, 77°51'09.7"W, 13 Mar 2012 (fr.), *F. A. Michelangeli et al. 1739* (NY!, USM!), km 408 on Leymebamba-Balsas road, 3000–3080 m, 06°45'S, 77°48'W, 21 Feb 1984 (fl.), *D. Smith 6121A* (MO!), A unos 12 km de Leymebamba, ruta Laguna de los Cóndores, borde del camino, 2500–3000 m, 06°44'S, 77°47'W, 19 Aug 1998 (fl.), *V. Quipuscoa et al. 1364* (F!, HUT!), Calla-Calla,



FIGURE 60. *Meriania tetragona*. **A.** Terminal fertile branch with inflorescence. **B.** Interpetiolar flap. **C.** Abaxial projections on the apex of the petiole. **D.** Flowers at anthesis, apical view. A and D from *R. Fernandez-Hilario et al. 2092*, B and C from *R. Fernandez-Hilario et al. 1888*. Photos by Robin Fernandez-Hilario.

Las Palmeras, 3000 m, 15–24 Nov 2004 (fl.), *T. Pennington et al.* 17701 (MOLF!); Dist. San Isidro de Maino, ACP Tilacancha, tierras de la comunidad campesina San Isidro de Maino, 2970–3050 m, 06°20'55"S, 77°48'31"W, 13–16 Nov 2021 (fl.), *R. Fernandez-Hilario et al.* 2119 (MOLF!), same locality, 3000–3050 m, 06°20'50"S, 77°48'14"W, 23–27 Mar 2022 (fl. bud, fr.), *R. Fernandez-Hilario et al.* 2177 (HOXA!, MOLF!). Prov. Luya, Las Palmas, entre Calla-Calla y Leymebamba, 2900 m, 14 May 1967 (fl.), *I. Sánchez* 365 (CPUN!, F!, MO!); Dist. Camporendon, Tullanya, cerro Hiucsocunga, 3200 m, 06°04'29"S, 78°18'44"W, 08 Dec 1996 (fr.), *R. Vásquez & R. Rojas* 21977 (NY!, USM!). Prov. Rodríguez de Mendoza, Dist. Vista Alegre, Sector a una hora del campamento Ruinas quebrada Salas, 2834 m, 06°07'42.73"S, 77°26'06.42"W, 13 Aug 2012 (ster.), *J.L. Marcelo-Peña et al.* 6785 (MOLF!). Prov. Utcubamba, Dist. Cajaruro, Comunidad de Capollín, 2850 m, 05°38'27.02"S, 78°14'38.58"W, 12 Jan 2009 (fl.), *M. Chocce et al.* 5262 (USM!). **Cajamarca:** Prov. Chota, Near village of El Campamento, ca. 21 km of Huambos, 2870 m, 06°24'23"S, 79°01'19"W, 20 Apr 1993 (fl.), *M. Dillon et al.* 6433 (CPUN!, F!, US!). Prov. Cutervo, Cerros de Cutervo 2500–2600 m, 31 Jul 1946 (ster.), *R. Ferreyra* 823 (USM!); without locality, no date (ster.), *A. Raimondi* 5847 (USM!), without locality, no date (ster.), *A. Raimondi* 6546 (USM!); Dist. Cutervo, Apr 1879 (ster.), *A. Raimondi* 6507 (USM!), Comunidades de La Culluna y Chipuluc, bosque El Lambidero, faldas del Cerro Ilucan, 3060 m, 06°21'26.61"S, 78°50'05.57"W, 28–30 Feb 2011 (fl.), *L. Dávila et al.* 1493 (UNC!); Dist. San Andrés de Cutervo, Entre el Molina y la Pucarilla, 2200 m, 15 Oct 1987 (fl.), *J. Sánchez* 337 (CPUN!, F!, US!), PN Cutervo, “Jalca” camino a la laguna “El Pileo”, 2680 m, 15 Mar 1989 (fl.), *C. Díaz et al.* 3321 (MO!); Dist. Santo Tomás, PN Cutervo, Sector Santa Rosa, 2700 m, 06°10'46.81"S, 78°46'02.20"W, 26 Nov 2020 (fl.), *R. Fernandez-Hilario et al.* 2092 (MOLF!, UPGB!). Prov. Jaen, Cerro el Paramillo de Pomahuaca, 2670 m, 06 Nov 1999 (fr.), *C. Díaz* 10891 (MOLF!, NY!, USM!); Dist. Sallique, El Espino, 3000 m, 05°41'S, 79°16'W, 11 Jul 2004 (fr.), *J.L. Marcelo-Peña et al.* 1661 (MOLF!), El Páramo, 3200 m, 05°40'50"S, 79°16'20"W, 23 Jun 1998 (fl.), *C. Campos et al.* 5058 (MO!, NY!, USM!). Prov. Santa Cruz, Dist. Pulan, Cerro Campamento, alrededores de la catarata La Cuda - Margen izquierdo de la quebrada El Cedro, 3015 m, 03–04 Jul 2004 (fl.), *G. Iberico et al.* 765 (CPUN!), La Zaina, 2700 m, 12 Feb 2007 (fl.), *L. Santa Cruz* 1036 (USM!), same locality, 31 Jul 2007 (fl.), *L. Santa Cruz* 1993 (HUT!, USM!). **Lambayeque:** Prov. Ferreñafe, Dist. Cañaris, 3212 m, 29 Apr 2010 (fl.), *M. Chocce et al.* 5726 (USM!). **Piura:** Prov. Huancabamba, Dist. El Carmen de la Frontera, Rosarios bajos, Proyecto Minero Río Blanco, Quebrada Parramata, 2500–2800 m, 04°53'27.5"S, 79°22'04.8"W, 14 Jul 2004 (fl.), *A. Cano et al.* 14767 (USM!).

29. *Meriania tetraquetra* Triana, Trans. Linn. Soc. London 28(1): 66 (1871) [1872]. Type:—**PERU. Amazonas:** Prov. Chachapoyas, without locality, no date (fl.), *M. Mathews s.n.* (holotype: K! [barcode K000329445]; isotypes: BR! [barcode 000005201983], F!-fragment [accession no. 1026686], G-probably destroyed [negative at F]). (Figures 61–62).

Comments:—In the protologue of this species, J. J. Triana described it as glabrous (“*glaberrimus*”) but it is sparsely to densely puberulent (Fig. 61C). *Meriania tetraquetra* is characterized by its quadrangular internodes, nodes without interpetiolar flaps, ovate to oblong and slightly bullate leaf blades (9.3–)13–35 × (4.7–)9.1–19.7 cm, venation with two pairs of secondary veins and an additional pair of faint submarginal veins (Fig. 61D), calyces with small conic dorsal projections (Fig. 61E–F), spreading, reddish-purple corollas, isomorphic stamens, and stamen connectives with one triangular descending dorso-basal appendages (Fig. 61H). The most closely related Peruvian species is *M. rugosa*, but it is distinguished by its elliptic leaf blades 10.3–25.4 × 4.2–10.6 cm and venation with one pair of secondary veins.

Macbride (1941), in his treatment of *Meriania* for Peru, placed *Weberbauer 7048* (which we have published as *M. megaphylla*) under *M. tetraquetra*. However, this specimen has quadrangular and winged internodes, and nodes with interpetiolar flaps. Probably because of this misidentification he considered *M. tetraquetra* related to *M. radula* (“*nearly the same as M. radula and perhaps not specifically separable*”). Nevertheless, *M. tetraquetra* and *M. megaphylla* are not related to the *M. radula* complex, because of their flowers with spreading, reddish-purple corollas (vs. campanulate, deep red) and stamen connectives with descending dorso-basal appendages (vs. perpendicular to the thecae).

Distribution and phenology:—*Meriania tetraquetra* is endemic to northern Peru (Departments of Amazonas and San Martín) and grows in montane forests at 2240–3000 m (Fig. 44). It has been collected in flower in May, August and September, and in fruit in September.

Specimens examined:—**PERU. Amazonas:** Prov. Chachapoyas, Dist. Leymebamba, alrededores de la Fila de la Culebra, 2246 m, 06°43'03.18"S, 77°37'26.76"W, 05 Sep 2004 (fl.), *V. Quipuscoa et al.* 3268 (HUT!). Prov. Rodríguez de Mendoza, Dist. Vista Alegre, Área de Conservación Regional Vista Alegre, camino hacia Cedrushco, a una hora del campamento Quebrada Salas, 2403 m, 06°06'24.01"S, 77°25'04.36"W, 17 Aug 2012 (fl.), *R. Fernandez-Hilario*

et al. 251 (MOLF!, NY!, UPCB!), a media hora del campamento Cedrushco, quebrada Salas, 2361 m, 06°06'23.66"S, 77°24'41.22"W, 21 Aug 2012 (fl.), *J.L. Marcelo-Peña et al.* 7103 (MOLF!). **Cajamarca:** Prov. Celendín, Dist. Pallán, La Succha, 2878 m, 06°37'58.23"S, 78°22'02.90"W, 02 Jun 2017 (ster.), *L. Dávila* 3309 (UNC!). Prov. Chota, Dist. Chadín, La Unión – Bosque la Playa y alrededores, 2688–2720 m, 06°26'07.11"S, 78°23'38.79"W, 22 Jul 2010 (ster.), *L. Dávila et al.* 1309 (UNC!); Dist. Paccha, CP Quidén y Rejopampa, 2500 m, 06°30'20.28"S, 78°24'09.31"W, 19 May 2012 (fl.), *L. Dávila* 2368 (UNC!). Prov. Cutervo, Dist. Cutervo, CP San Cristóbal del Nudillo, sector el Mirador y propiedad de Darwin Horna, 2690 m, 06°18'33.68"S, 78°51'40.71"W, 01–03 Nov 2012 (ster.), *L. Dávila* 2502 (UNC!). **San Martín:** Prov. Mariscal Cáceres, PN Río Abiseo, across river from La Playa camp, 2600 m, 01 Sep 1985 (fr.), *K. Young* 1531 (MOLF!). Prov. Huallaga, Dist. Bolivar, Surrounding “Pampa Hermosa” around old Chacha and Inca settlement, 3000 m, 07°02'07"S, 77°40'29"W, 24 May 2011 (fl.), *R. Bussmann et al.* 17071 (F!, HAO!, MO!, NY!, US!).

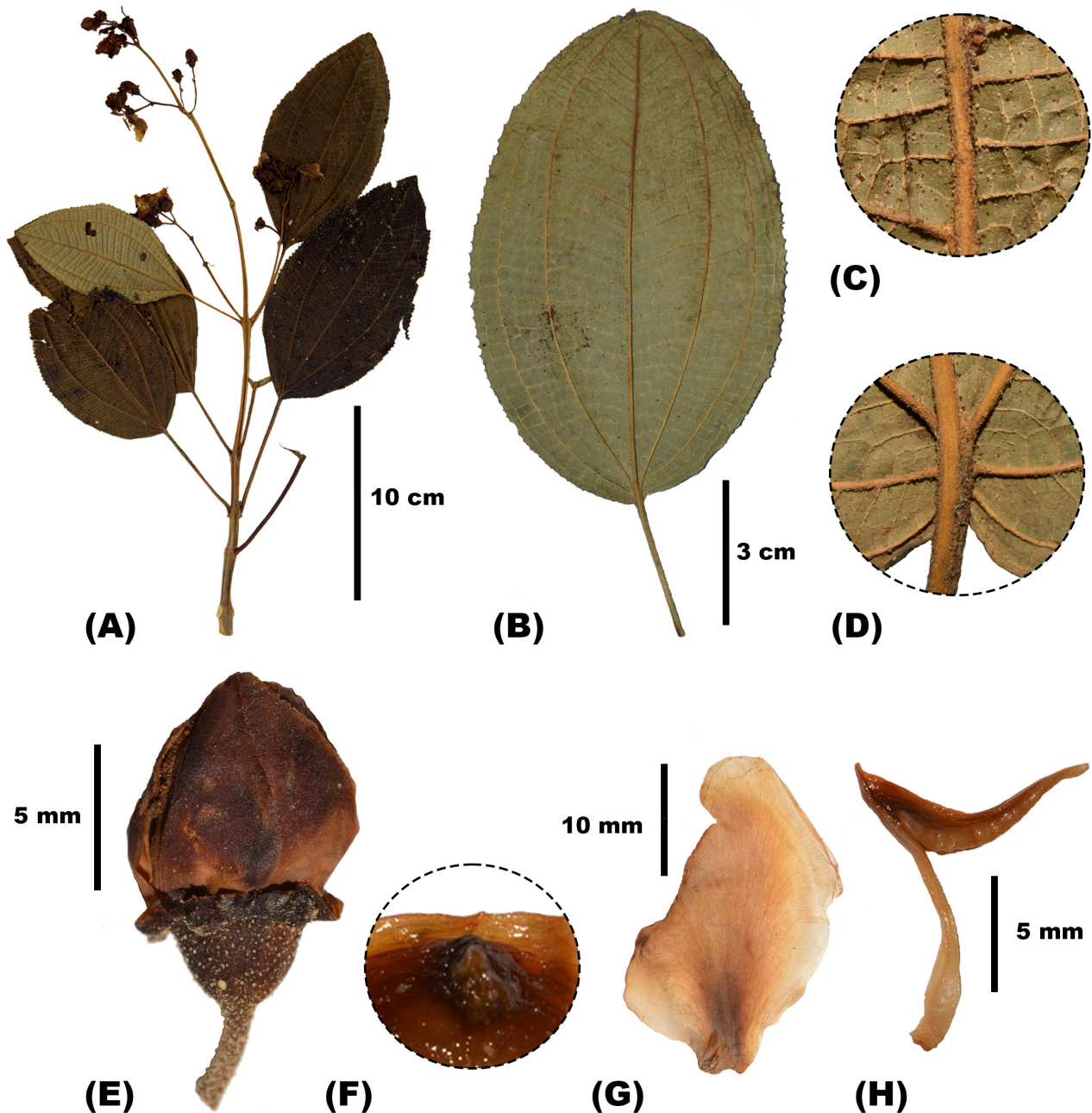


FIGURE 61. *Meriania tetraquetra*. **A.** Terminal fertile branch with inflorescence. **B.** Leaf blade, abaxial view. **C.** Detail of the abaxial leaf surface. **D.** Detail of the leaf base, abaxial view. **E.** Flower bud. **F.** Detail of the dorsal projection of the calyx. **G.** Petal. **H.** Stamen, lateral view. A from *J. L. Marcelo-Peña et al.* 7103; B–H from *R. Fernandez-Hilario et al.* 251.



FIGURE 62. *Meriania tetraquetra*. **A.** Terminal fertile branch with inflorescence. **B.** Detail of the base of the leaf blade, abaxial view. **C.** Detail of the inflorescence. **D.** Flower at anthesis, apical view. A and D from *R. Fernandez-Hilario et al. 251*, B and C from *R. W. Bussmann et al. 17071*. Photos by Robin Fernandez-Hilario (A and D) and Rainer W. Bussmann (B and C).

30. *Meriania tomentosa* (Cogn.) Wurdack, *Phytologia* 35(1): 4 (1976). Basionym: *Centronia tomentosa* Cogn., Bull. Acad. Roy. Sci. Belgique ser. 3, 14: 943 (1887). Type:—**ECUADOR**: Ad margines sylvarum primæ in Andibus central æquadorensibus rara, 3000 m, 1876 (fl.), *E. André 4475* (lectotype, designated by Wurdack 1980: BR! [barcode 000005187867]; isoelectotypes: CAS! [barcode 0001923], K! [barcodes K000329483, K000329484], NY! [barcode 00221501]). (Figures 63–64).

Rhexia excelsa Bonpl., in Humboldt & Bonpland, Monogr. Melast. 2: 90, t. 34 (1813). *Osbeckia excelsa* (Bonpl.) Spreng., Syst. Veg. 2: 312. 1825. *Graffenrieda excelsa* (Bonpl.) DC., Prodr. 3: 106 (1828). *Brachycentrum excelsum* (Bonpl.) Meissn., Pl. Vasc. Gen. 2: 81 (1838). *Centronia excelsa* (Bonpl.) Triana, Trans. Linn. Soc. London 28(1): 70, t. 5 (1871) [1872]. Type:—**ECUADOR**: Loxa, 1852 (fl.), *A. Bonpland 3335* (lectotype, first step designated by Wurdack 1980, second step designated by Mendoza-Cifuentes 2021: P! [barcode P00136435]; isoelectotypes: F!-fragment [accession no. 937280], P! [barcode P00136436]).

Centronia tungurahuae S.F.Blake, Proc. Biol. Soc. Washington 35: 118 (1922). Type:—**ECUADOR. Tungurahua**: Pondo, on slopes of Mt. Tungurahua, 2745 m, 10 Mar 1921 (fl.), *W. Popenoe 1296* (holotype: US! [barcode 00120322]).

Centronia peruviana J.F.Macbr., Publ. Field Mus. Nat. Hist., Bot. Ser. 13(4/1): 327 (1941). Type:—**PERU. Huánuco**: Carpish, banks of a mountain stream, 2850 m, 09 Nov 1938 (fl.), *H.E. Stork & O.B. Horton 9928* (holotype: F! [accession no. 1052336]).

Comments:—*Meriania tomentosa* is the second most widely distributed *Meriania* species in Peru, and it is recognisable by its calyptrate calyces with irregular dehiscence and without dorsal projections, campanulate, reddish-orange corollas, isomorphic stamens, and cream anthers. In Peru there are three other species with calyptrate calyces (*M. acida*, *M. escalerensis* and *M. sessilifolia*), and two with subcalyptrate calyces (*M. juanjil* and *M. vasquezii*). Within these groups only *M. acida* shares similar calyces and corollas with *M. tomentosa*. However, *M. acida* has smaller flowers than *M. tomentosa*, hypanthia ca. 4.5 mm long vs. 8.5–9 mm long and petals 9–10 mm vs. 20–24 mm long.

The original material of *M. tomentosa* exhibits indumentum covering the entire abaxial leaf blades, short trichomes on the hypanthium and calyx, linear bracteoles, and calyptrate calyces with a prolonged apiculum. Although most of the Peruvian specimens have the same indumentum on the leaves and shape of the bracteoles (Fig. 64B), there is variability among populations. The calyx apices vary from acute to moderately apiculate. Also, most specimens distributed from the department of Amazonas to Huánuco (e.g., *Wurdack 1661*) show denser indumentum and longer trichomes than the typical form (Fig. 63A). On the other hand, some specimens from the department of Amazonas (e.g., *Fernandez-Hilario et al. 1905*) have broadly elliptic bracteoles, even completely covering the flower buds (Fig. 63D). In the department of Pasco there are two clearly distinguishable forms, the former (e.g., *Michelangeli et al. 2884*) has ferrugineous tomentose indumentum evenly covering abaxial leaf blades, and the latter (e.g., *Cárdenas & Francis 450*) has setulose indumentum sparsely to moderately covering the abaxial leaf blades.

Although we have been able to find these different forms within *M. tomentosa*, in sterile or fruiting specimens is not possible to identify them. This is because it is necessary to examine the calyces and bracteoles, which are usually early deciduous. For this reason, for the moment we have chosen to consider all Peruvian examined specimens under *Meriania tomentosa* s.l.

Nomenclatural notes:—Cogniaux (1887) cited *André 4473* as type in the protologue of *C. tomentosa* but without indicating any herbarium, so it must be considered as a syntype conforming with Art. 9.6 of the ICN (Turland *et al.* 2018). Mendoza-Cifuentes (2021) erroneously chose as lectotype the sheet K000329483 because, according to Art. 9.10 and 9.19 of the ICN (Turland *et al.* 2018), we must consider that Wurdack (1980) made an inadvertent lectotypification of *C. tomentosa* when he wrote “*André 4475 (BR, holotype)*” in his treatment of Melastomataceae for the Flora of Ecuador.

Humboldt & Bonpland (1813) did not cite any specimens in the protologue of *R. excelsa* but the specimen *Bonpland 3335* is original material because it is associated with the taxon, and so it must be considered as a syntype conforming with Art. 9.4 and 9.6 of the ICN (Turland *et al.* 2018). According to Art. 9.10 of the ICN (Turland *et al.* 2018), we have to consider that Wurdack (1980) made an inadvertent lectotypification (first-step) of *R. excelsa* when he wrote “*Bonpland 3335 (P, holotype)*” in his treatment of Melastomataceae for the Flora of Ecuador. However, there are two sheets of *Bonpland 3335* housed in P. Therefore, when Mendoza-Cifuentes (2021) chose the sheet K000329439 as the lectotype he made a second-step lectotypification, conforming with Art. 9.17 (Turland *et al.* 2018).

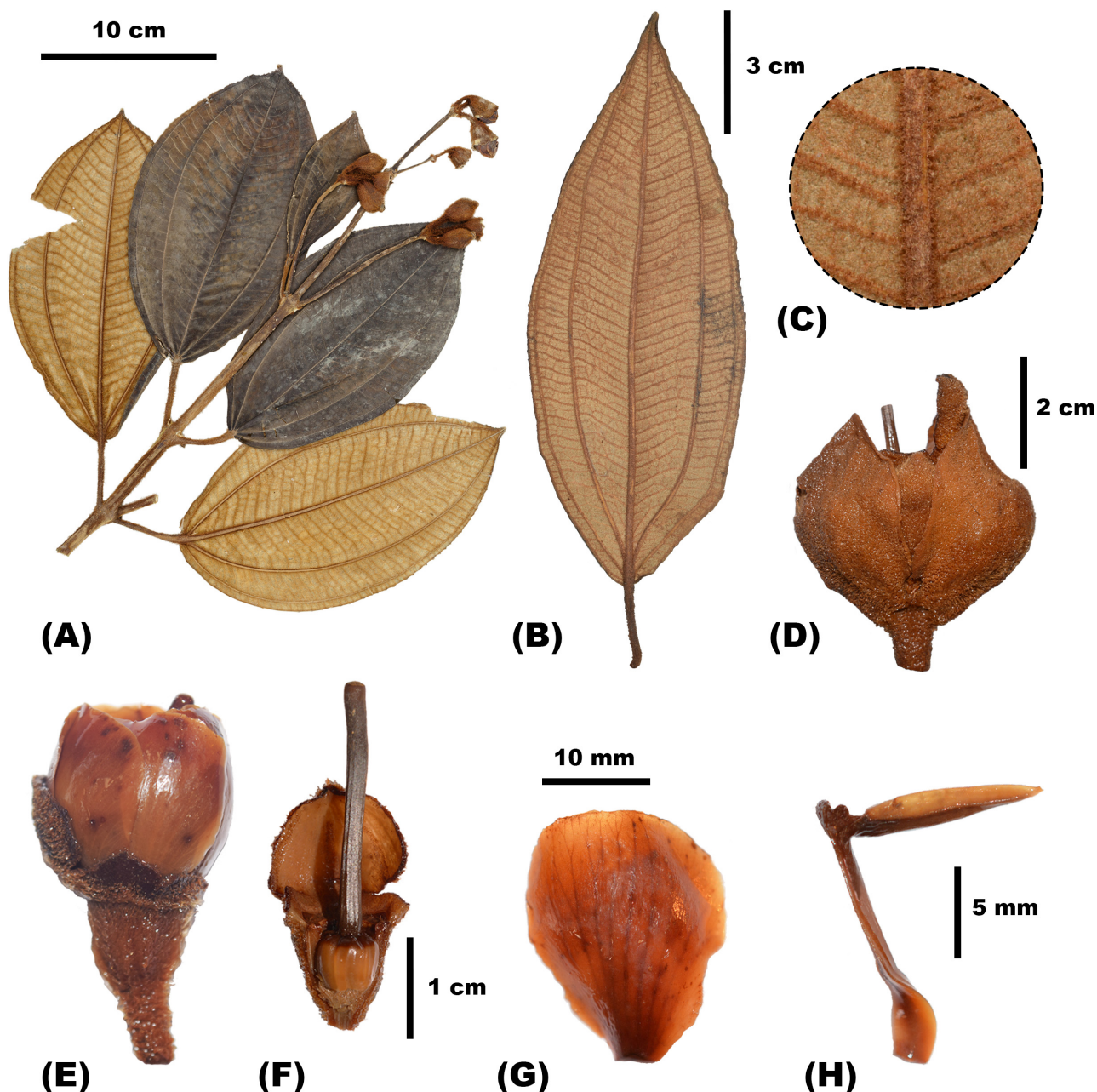


FIGURE 63. *Meriania tomentosa*. **A.** Terminal fertile branch with inflorescence. **B.** Leaf blade, abaxial view. **C.** Detail of the abaxial leaf surface. **D.** Bracteoles completely covering the flower buds. **E.** Flower at anthesis. **F.** Longitudinal section of the flower with petals and stamens removed. **G.** Petal. **H.** Stamen, lateral view. A from B. Maguire & C. Maguire 44432; B–H from R. Fernandez-Hilario *et al.* 1905.

Distribution and phenology:—*Meriania tomentosa* is widely distributed in the Andes from Venezuela to southern Peru, and occurs from the department of Amazonas to Cusco in montane forests at 2100–3300 m (Fig. 38). It has been collected in flower almost all year round except in January and March, and in fruit almost all year round except in January, May, November and December.

Specimens examined:—**PERU. Amazonas:** Prov. Bongará, Dist. Florida, desde toma de agua en San Lorenzo hacia CP Vista Alegre, 2840 m, 05°48'17.71"S, 78°01'36.70"W, 17–18 Feb 2020 (fl.), R. Fernandez-Hilario *et al.* 1905 (HOXA!, KUELAP!, MOLFI!, NY!, UPCB!), trocha rumbo a CP Perlamayo, 2320 m, 05°47'10"S, 77°54'49"W, 30 Aug 2022 (fl. Bud, fr.), R. Fernandez-Hilario *et al.* 2274 (MOLFI!); Dist. Jumbilla, Along road to Tialango, 2100 m, 05°52'31"S, 76°46'36"W, 04 Nov 2012 (fl.), H. van der Werff *et al.* 25013 (HOXA!, HUT!, NY!); Dist. Pomacochas, Caserío San Lorenzo, 2800–3500 m, 05°48'25.76"S, 78°00'25.13"W, 28–31 Dec 2011 (fl.), L. Dávila 2180 (UNC!); Dist. Yambrasbamba, Ruta desde CP La Florida hacia finca de Don Ilario, 2150 m, 05°40'17.71"S, 77°56'58.73"W, 12

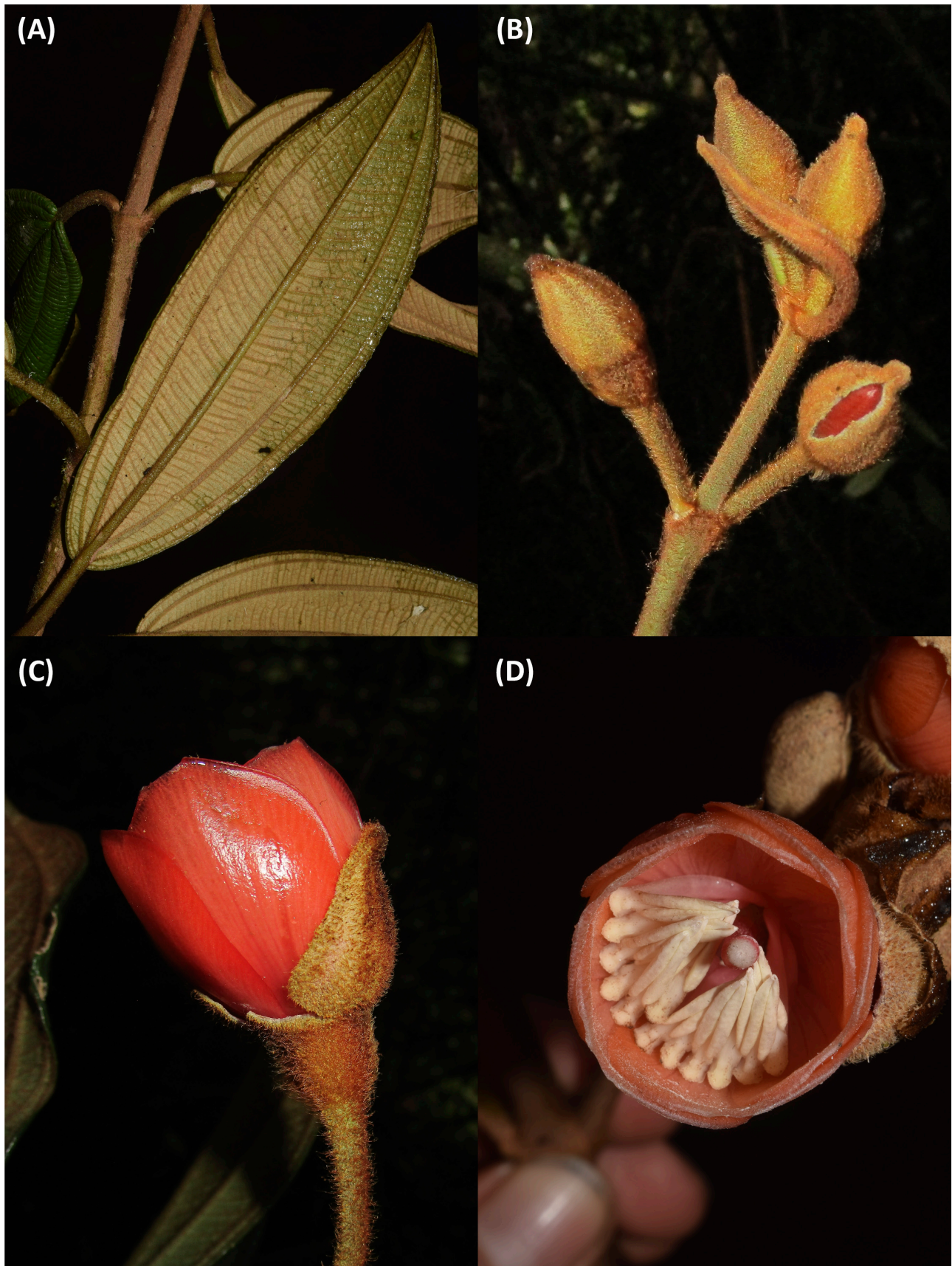


FIGURE 64. *Meriania tomentosa*. **A.** Leaf blade, abaxial view. **B.** Detail of the inflorescence with flower buds. **C.** Flower at anthesis, lateral view. **D.** Flower at anthesis, apical view. A and D from R. Fernandez-Hilario *et al.* 1905, B and C from R. Villanueva-Espinoza 546. Photos by Robin Fernandez-Hilario (A and D) and Rosa Villanueva-Espinoza (B and C).

Nov 2020 (fl.), *R. Fernandez-Hilario et al.* 2070 (HOXA!, MOLF!, NY!, UPCB!). Prov. Chachapoyas, Middle slopes of Cerro Yama-uma (Cerro Carán) above Taulia, 4–8 km south-southeast of Molinopampa, 2700–3000 m, 11 Aug 1962 (fl.), *J. Wurdack* 1661 (F!, NY!, P!, US!, USM!); Dist. Leymebamba, alrededor de la laguna de Los Cóndores, parte sur, 2500–2700 m, 06°51'05.28"S, 77°46'25.61"W, 16 Aug 1998 (fl.), *V. Quipuscoa et al.* 1267 (F!, NY!). **Cajamarca:** Prov. Chota, Dist. Chadín, CP La Palma, 2530–2707 m, 06°27'12.67"S, 78°24'31.63"W, 24 Nov 2013 (fl.), *L. Dávila* 2705 (UNC!); Dist. Paccha, Rejo pampa, 2450 m, 21 Jul 1993 (fl.), *J. Sánchez* 826 (CPUN!, F!). Prov. Hualgayoc, Dist. Chugur, Sector Las Quinas, Ramírez, El Chéncho, 3186 m, 06°41'19.44"S, 78°42'44.68"W, 01–02 Sep 2018 (fl.), *L. Dávila* 3856 (UNC!). Prov. San Miguel, Bosque natural de Quellahorco, al noreste de la localidad de Tongod, 2700 m, 14 Sep 1991 (fl., fr.), *I. Sánchez V. & A. Briones* 5788 (CPUN!, F!, NY!, UNC!, US!). Prov. Santa Cruz, Dist. Pulán, El Progreso, 2700 m, 31 Jan 2006 (fl. bud), *L. Santa Cruz* 184 (USM!), 04 Sep 2006 (fl.), *L. Santa Cruz* 560 (USM!), Chilal, 2700 m, 04 Sep 2006 (fl.), *L. Santa Cruz* 605 (USM!), 31 Jul 2007 (fl.), *L. Santa Cruz* 1964 (USM!), La Zaina, 2700 m, 04 Sep 2006 (fl., fr.), *L. Santa Cruz* 611 (USM!), Sector Pampa Verde, 2920 m, 06°48'6.19"S, 78°54'28.05"W, 16 Oct 2004 (fl.), *G. Iberico et al.* 950 (CPUN!, UNC!), Sector San Pedro, 3300 m, 05 Jun 2004 (fl.), *G. Iberico & L. Dávila* 606 (UNC!). **Cusco:** Prov. La Convención, Dist. Huayopata, Inkatambo, 2630 m, 13°04'07"S, 72°26'49"W, 24 Apr 2007 (fl.), *L. Valenzuela* 9551 (CUZ!), Incatambo, quebrada Curcur, 2490–2570 m, 13°04'05"S, 72°26'49"W, 21 Nov 2004 (fl.), *L. Valenzuela et al.* 4477 (CUZ!); Dist. Santa Ana, Tunquimayo, 2800 m, 13°03'S, 72°56'W, 13 Jun 2003 (fr.), *E. Suelli & V. Chama* 965 (CUZ!, NY!), 2000–2200 m, 12°54'34"S, 72°48'36"W, 20 Oct 2002 (fl.), *L. Valenzuela et al.* 742 (CUZ!); Dist. Quellouno, Lacco, 2741 m, 12°36'44"S, 72°14'37"W, 16 Jun 2006 (fr.), *L. Valenzuela et al.* 6896 (NY!, USM!); Dist. Vilcabamba, frente a Yupancca, 2560–2640 m, 13°03'15"S, 72°55'59"W, 03 Jun 2002 (fl.), *W. Galiano et al.* 4298 (CUZ!, NY!). Prov. Paucartambo, EB Wayqecha, 3000 m, 13°10'S, 71°35'W, Mar 2010 (fr.), *P. Chambi s.n.* (USM!). Prov. Quishpicanchi, Dist. Marcapata, Sitio Culebrayoc, marca 1550 m en la trocha, 2463 m, 13°29'41.2"S, 70°53'16.2"W, 05 Jun 2012 (fr.), *F. A. Michelangeli et al.* 1799 (NY!, USM!), Comunidad de Unión Arasa, 2150 m, 13°29'40.92"S, 70°52'23.16"W, 26 Apr 2011 (fr.), *J. Wells & P. Centeno* 980 (USM!). **Huánuco:** Prov. Huánuco, Dist. Chinchao, Carpish, 2750 m, 09 Sep 1948 (fl. bud), *R. Scolnik* 1075 (NY!), ca. 47 km NNE of Huánuco on road to Tingo María, just below the Carpish pass, 2500–2600 m, 14 Jul 1981 (fl.), *M. Dillon* 2602 (F!), Trail from S entrance of Carpish tunnel to crest of ridge, 2740 m, 27 Feb 1978 (fr.), *J. Luteyn & M. Lebron-Luteyn* 5477 (NY!), West side of Carpish pass, 2800 m, 22 Oct 1959 (fl.), *B. Maguire & C. Maguire* 44432 (F!, NY!, US!). Prov. Pachitea, above La Molina near Panao, 12 Sep 1940 (fl.), *E. Asplund* 13691 (US!). **Junín:** Prov. Chanchamayo, Dist. San Ramón, Puyu Sacha, 2500 m, 11°05'46"S, 75°26'05"W, 01–11 Apr 2021 (fl.), *R. Villanueva-Espinoza* 546 (MOLF!). **Pasco:** Prov. Oxapampa, Cordillera Yanachaga, road over shoulder of Cerro Pajonal to Villa Rica drainage, 12 km SE of Oxapampa, 2300–2500 m, 10°35'S, 75°20'W, 09 Oct 1982 (fl.), *R. Foster & D. Smith* 9072 (F!, NY!, US!, USM!); Road to Chacos, 2400–2700 m, 10°35'S, 75°06'W, 17 Jul 2003 (fl.), *H. van der Werff et al.* 18569 (NY!); Dist. Huancabamba, PN Yanachaga Chemillén, la Colmena-trocha Erica, 2300 m, 10°26'37"S, 75°26'15"W, 22 Aug 2008 (fl., fr.), *L. Valenzuela et al.* 11612 (HOXA!, NY!, USM!), PN Yanachaga Chemillén, sector Quebrada Yanachaga, 2265 m, 10°23'45"S, 75°28'55"W, 19 Aug 2004 (fl.), *R. Vásquez et al.* 30405 (HOXA!, NY!), Zona de amortiguamiento del PN Yanachaga Chemillén, 2407 m, 10°23'38"S, 75°28'36"W, 20 Sep 2004 (fl.), *J. Perea & J. Mateo* 1794 (HOXA!, NY!), Fundo Osobamba. PN Yanachaga Chemillén, 2243 m, 10°23'34.7"S, 75°28'28.1"W, 25 Jun 2016 (fl.), *L. Valenzuela et al.* 30448 (USM!), PN Yanachaga Chemillén, Quebrada Yanachaga, 2420 m, 10°23'21.6"S, 75°28'20.1"W, 20 Feb 2018 (fr.), *F. A. Michelangeli & S. Riva* 2973 (HOXA!, USM!), Sector Oso Playa. Camino a la parcela Oso Playa, 2565 m, 10°19'05"S, 75°36'28"W, 25 Jun 2006 (fl.), *L. Cárdenas et al.* 469 (CUZ!), Sector Oso Playa, Trocha a la parcela Oso Playa, 2370–2475 m, 10°19'20"S, 75°36'06"W, 24 Jun 2006 (fl.), *L. Cárdenas & R. Francis* 450 (HOXA!, USM!), Sector Oso Playa, margen izquierda del río, 2370–2475 m, 10°19'20"S, 75°36'06"W, 17 Jun 2006 (fl.), *L. Cárdenas et al.* 350 (MO!); Dist. Oxapampa, Chacos "Rincón Chacos", proyecto Apícola, 2750 m, 10°37'25"S, 75°17'43"W, 23 Jul 2010 (fl.), *R. Rojas et al.* 7361 (HOXA!, NY!), PN Yanachaga Chemillén, cercanías del refugio El Cedro, 2440–2500 m, 10°32'S, 75°21'W, 17 Aug 2002 (fl., fr.), *A. Monteagudo et al.* 3701 (HOXA!, NY!, USM!), same locality and date (fl., fr.), 4429 (HOXA!, MOLF!, NY!, USM!), PN Yanachaga Chemillén, flanco oriental del valle de Palcazu, a 20 minutos del Abra Esperanza, 2720 m, 10°31'56"S, 75°20'54"W, 19 Oct 2006 (fl.), *A. Monteagudo & R. Francis* 12900 (HOXA!, NY!), PN Yanachaga Chemillén, Sector San Alberto, 2450 m, 10°32'43"S, 75°21'30"W, 14 Mar 2019 (fr.), *R. Vásquez et al.* 43050 (HOXA!), PN Yanachaga Chemillén, sector San Alberto, alrededores del refugio El Cedro, 2240 m, 10°32'42.4"S, 75°21'04.3"W, 22 Mar 2016 (fr.), *F. A. Michelangeli et al.* 2750 (NY!, USM!), PN Yanachaga Chemillén, sector San Alberto, camino del refugio El Cedro al Abra Esperanza, 2420–2700 m, 10°32'43"S, 75°21'30"W, 03 Oct 2007 (fl., fr.), *L. Hernani & A. Peña* 383 (HOXA!, NY!, USM!), PN Yanachaga Chemillén, sector San Alberto; claro alrededor del refugio El Cedro, 2415 m, 10°32'43.2"S, 75°21'29.8"W, 20 Jul 2017 (fl. bud, fr.), *F. A. Michelangeli et al.* 2884 (HOXA!, USM!),

Sector San Alberto, camino al Abra Esperanza, 2400–2600 m, 10°32'43"S, 75°21'30"W, 15 Aug 2006 (fl., fr.), *L. Cárdenas et al.* 693 (CUZ!, F!, HOXA!, MO!, MOLF!, NY!), Sector San Alberto. Cercano al Refugio, 0.5 km, 2468 m, 10°32'45"S, 75°21'24"W, 18 Aug 2006 (fl.), *L. Cárdenas et al.* 733 (CUZ!), same locality and date (fl.), 734 (HOXA!), Sector San Alberto. Zona superior al refugio aprox. 4 km, 2878 m, 10°31'45"S, 75°21'08"W, 12 Aug 2006 (fl.), *L. Cárdenas et al.* 661 (CUZ!), same locality and date (fl.), 669 (HOXA!, MO!, USM!), Zona de amortiguamiento PN Yanachaga Chemillén, parte media de la quebrada San Luis, 2200–2350 m, 10°33'55"S, 75°20'43"W, 18 Sep 2007 (fl., fr.), *A. Monteagudo et al.* 15094 (HOXA!, MOLF!, NY!). **Piura:** Prov. Huancabamba, Loma Redonda (Sapalache-Chinguela), 2400 m, 15 Sep 1981 (fl., fr.), *A. Sagástegui et al.* 10188 (HUT!, NY!, US!); El paso de Huascar Rey (límite entre Dp. De Piura y Cajamarca, ruta Huancabamba a Tabaconas), 2700 m, 11 Jul 1961 (fl.), *C. Friedberg* 322 (P!, US!, USM!); Dist. El Carmen de la Frontera, Carretera Sapalache-Cerro Chingelas, 9.5 km después de Sapalache, 3035 m, 05°08'23.6"S, 79°23'45.4"W, 03 Sep 2016 (fr.), *F. A. Michelangeli et al.* 2620 (NY!, USM!), same locality and date (fr.), 2623 (NY!, USM!). Prov. Morropón, Dist. Chalaco, Bosque Mijal, 2900 m, 30 Aug 2004 (ster.), *A. Córdova* 512 (MOLF!). **San Martín:** Prov. Huallaga Dist. Bolivar, Surrounding "Pampa Hermosa" around old Chacha and Inca settlement, 2400 m, 06°59'32"S, 77°39'16"W, 24 May 2011 (fl.), *R. Bussmann et al.* 17068 (F!, MO!, NY!, US!), same locality and date, 07°02'07"S, 77°40'29"W, (fl.), *R. Bussmann et al.* 17069 (F!, MO!, NY!, US!). Prov. Mariscal Cáceres, Near Mirador, Río Abiseo National Park, 3000–3100 m, 14 Jul 1988 (fl.), *B. León* 2175 (US!); Dist. Huicungo, ACP Los Chilchos, borde de la Laguna de los Condores, 2870 m, 06°51'07"S, 77°42'03"W, 27 Jun 2022 (fl.), *F. A. Michelangeli et al.* 3206 (NY!, USM!).

31. *Meriania urceolata* Triana, Trans. Linn. Soc. London 28(1): 67 (1871) [1872]. Type:—**PERU. San Martín:** Prope Tarapoto, Peruvia orientalis, 1855–1856 (fl., fr.), *R. Spruce* 4439 (lectotype, designated by Chiavegato & Baumgratz 2011: K! [barcode K000006311]; isolectotypes: B-probably destroyed [negative at F], BR! [barcode 00000641173], E! [barcode E00504628], G! [barcodes G00074119, G00074120], GH! [barcode 00072680], K! [barcode K000006309], NY! [barcode 00228981], P! [barcode P00539048], W! [accession no. 1889-0012092]). Remaining syntypes:—**BRAZIL:** Prope Panuré ad Rio Vaupés, Oct 1852–Jan 1853 (fl.), *R. Spruce* 2757 (BR! [barcode 00000641172], C! [barcode C10014730], K! [barcode K000006310], NY! [barcodes 00228982, 00228983], P! [barcodes P00539049, P00539050] W! [accession nos. 1889-0012082, 1889-0111908]. **GUYANA:** without locality, no date (fr.), *Parker s.n.* (K! [barcode K000329423]). (Figure 65).

Meriania paraensis Ducke, Arch. Jard. Bot. Rio de Janeiro 3: 224 (1922). Type:—**BRAZIL. Pará:** Campos do Ariramba, 150 m, 23 Set 1913 (fl.), *A. Ducke* 14854 (lectotype, designated by Wurdack 1993: RB! [barcode 00541448]; isolectotypes: MB [n.s.], MG [n.s.], US! [barcode 00120382]).

Comments:—This species is easily recognisable by the combination of ferrugineous indumentum (Fig. 65C–D), ovate leaf blades with flat surfaces, spreading, fuchsia corollas, strongly dimorphic stamens, and stamen connectives with developed ascending dorsal appendages (Fig. 65E–F). The only Peruvian species of *Meriania* with similar appendages in the stamen connectives is *M. microflora*. However, it can be differentiated by its liguliform projections on the apex of the petioles (vs. absent in *M. urceolata*), white petals 4–4.5 mm long (vs. fuchsia and 14–20 mm long in *M. urceolata*) and antepetalous stamen connectives with apically trilobed ascending dorsal appendages (vs. sagittate, Fig. 65F).

Distribution and phenology:—*Meriania urceolata* is widely distributed from Venezuela to northern Peru and western Brazil. In Peru it occurs in the department of San Martín in premontane forests at 800–1600 m (Fig. 16). It has been collected in flower in January, November and December.

Nomenclatural notes:—Triana (1871) [1872] cited as types the specimens *Spruce* 2757 and 4439 in the protologue of *M. urceolata*, so both specimens were considered as syntypes conforming with Art. 9.6 of the ICN (Turland *et al.* 2018). For this reason, *M. urceolata* was lectotypified by Chiavegato & Baumgratz (2011). Ducke (1922) cited *Ducke* 14854 as type in the protologue of *M. paraensis* but without indicating any herbarium, so it must also be considered as a syntype conforming with Art. 9.6 of the ICN (Turland *et al.* 2018). According to Art. 9.10 of the ICN (Turland *et al.* 2018), we must consider that Wurdack (1993) made an inadvertent lectotypification of *M. paraensis* when he wrote "*Ducke* 14854 (*holotype* RB)" in his treatment of Melastomataceae for the Flora of the Guianas.

Specimens examined:—**PERU. San Martín:** Prov. Moyobamba, Habana, cerca de Moyobamba, 800–900 m, no date (fl.), *A. Weberbauer* 4570 (MOL!), Habana, campo experimental INRENA, 820 m, 16 Nov 1996 (fl.), *I. Sánchez* 8694 (F!, US!), Río Negro, 1400 m, 18 Jan 1961 (fl.), *F. Woytkowski* 6222 (US!), Zepelacio, near Moyobamba, 1200–1600 m, Dec 1933 (fl.), *G. Klug* 3451 (F!, NY!, US!).

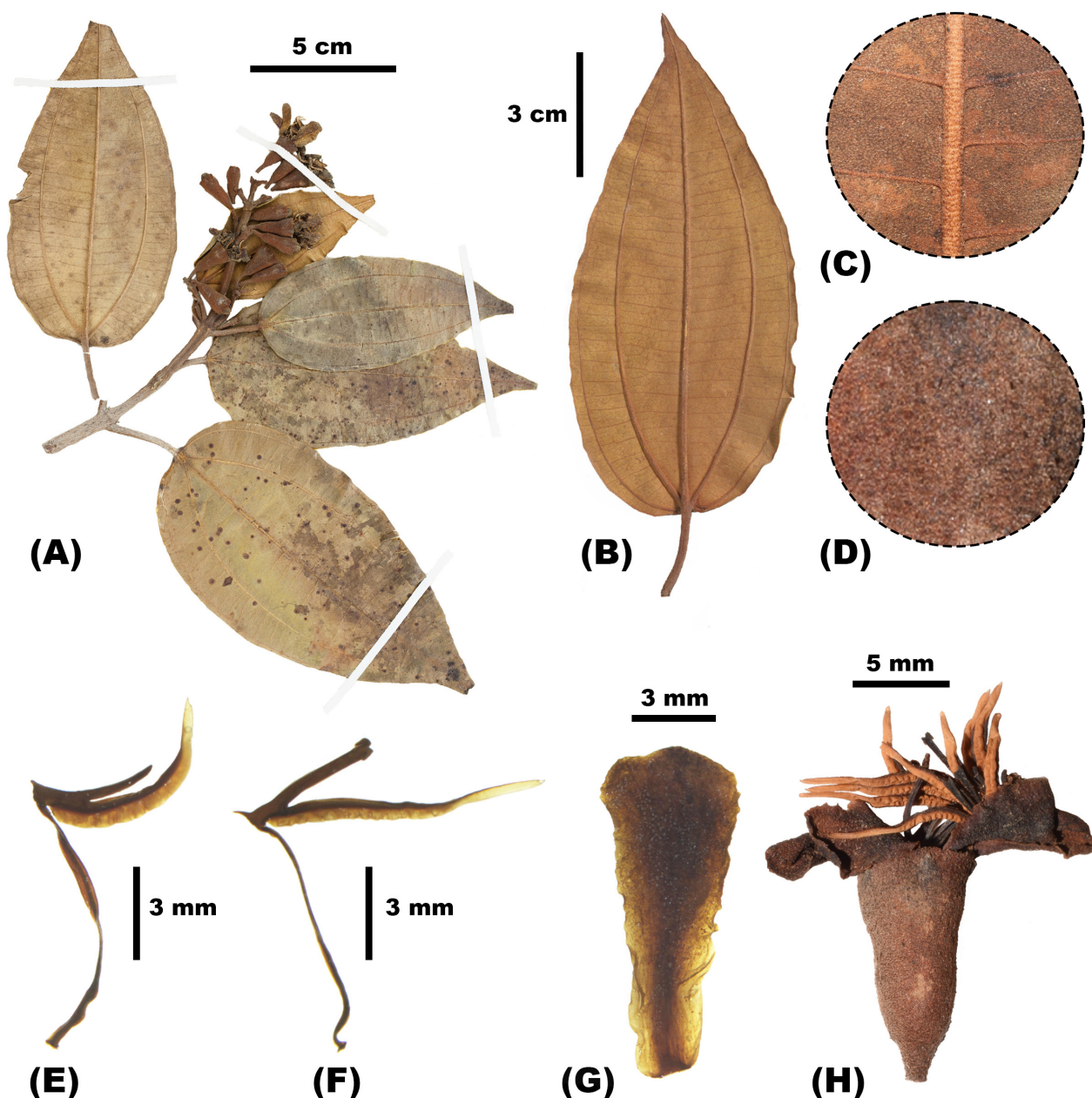


FIGURE 65. *Meriania urceolata*. Terminal fertile branch with inflorescence. **B.** Leaf blade, abaxial view. **C.** Detail of the abaxial leaf surface. **D.** Detail of the hypanthium outer surface. **E.** Antesepalous stamens, lateral view. **F.** Antepetalous stamens, lateral view. **G.** Petal. **H.** Flower at anthesis, lateral view. A and B from *G. Klug 3451*; C–H from *A. Weberbauer 4570*.

32. *Meriania vargasii* Wurdack, *Phytologia* 13(2): 72 (1966). Type:—**PERU. Cusco:** Prov. La Convención, Hacienda Guayanay, 1800 m, 15 May 1960 (fl.), *C. Vargas 13240* (holotype: US! [barcode 00120390]; isotype: CUZ!). (Figure 66).

Comments:—*Meriania vargasii* is related to a group of Peruvian species (*M. amischophylla*, *M. sumatika* and *M. weberbaueri*) that share densely tomentose to villose hypanthia and calyces, calyces with claw-shaped dorsal projections (Fig. 66E), spreading, fuchsia to reddish-purple corollas, and antesepalous stamen connectives with laterally expanded descending dorso-basal appendages (Fig. 66F). However, *M. amischophylla* has sessile leaves (vs. petiolate in *M. vargasii*) and *M. weberbaueri* has inflorescences with flowers in (3–)4–6(–7)-flowered umbels in the branchlet ends (vs. in regular dichasia in *M. vargasii*). On the other hand, some specimens of *M. sumatika* have been erroneously identified as *M. vargasii*, but the former differs by its 10-costate hypanthia (vs. terete in *M. vargasii*), petals 46–55 mm long (vs. 20–24 mm long) and anthers 14–16 mm long (vs. 9–12 mm long).

Meriania boliviensis Cogn., endemic to Bolivia, is related to *M. vargasii* by sharing similar indumentum, dorsal projections on the calyces, and petal length. Nevertheless, *M. vargasii* is easily differentiated by its petioles 0.8–1.5 cm long (vs. 1.1–4.4 cm long in *M. boliviensis*) and venation with the innermost pair of secondary veins distant 0.6–1.7 cm from the base of the leaf blades (vs. 0.9–3.9 cm).

All examined specimens have conspicuous claw-shaped dorsal projections on the calyces, except *Vargas 10644* which has small projections that do not exceed the length of the calyx lobes (Fig. 66D). Wurdack (1966) considered that this specimen might be a different variety because of its smaller flowers. For this reason, we include *Vargas 10644* under *M. vargasii* with reservations.

Distribution and phenology:—*Meriania vargasii* is endemic to southern Peru (Department of Cusco) and grows in montane forests at 1400–2800 m (Fig. 21). It has been collected in flower from March to June, and in fruit in March, May and June.

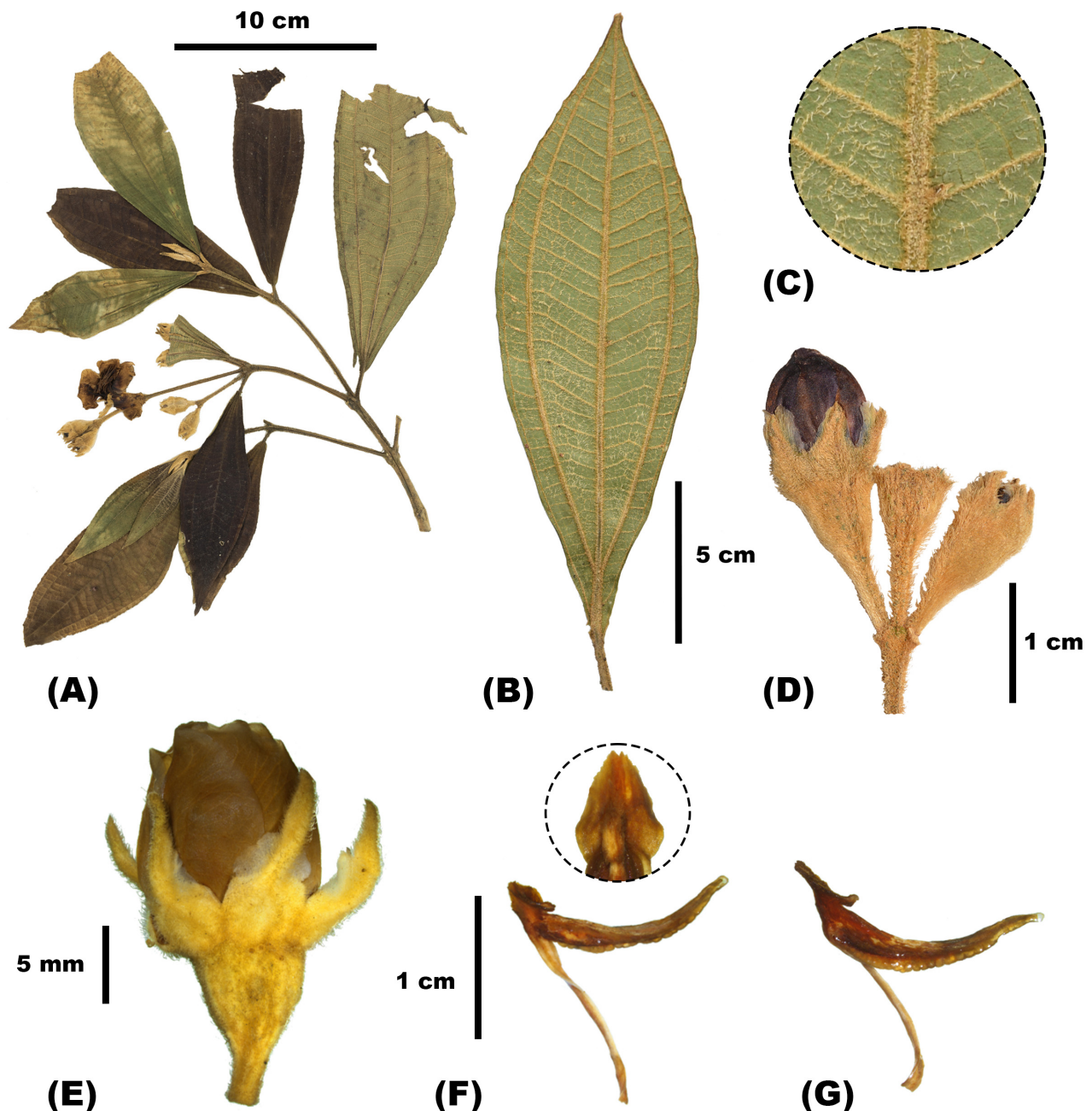


FIGURE 66. *Meriania vargasii*. **A.** Terminal fertile branch with inflorescence. **B.** Leaf blade, abaxial view. **C.** Detail of the abaxial leaf surface. **D.** Inflorescence branch. **E.** Flower bud. **F.** Antesepalous stamen, lateral view, with detail of the dorso-basal appendage, frontal view (above). **G.** Antepetalous stamen, lateral view. A from *G. Calatayud et al.* 2255; B–D from *C. Vargas 10644*; E from *L. Valenzuela et al.* 152; F–G from *W. Galiano et al.* 6156.

Specimens examined:—**PERU. Cusco:** Prov. La Convención, Dist. Echarate, alturas de Papelpata, 2082 m, 12°45'06"S, 72°36'37"W, 21 May 2007 (fr.), *G. Calatayud et al.* 3979 (NY!); Dist. Huayopata, localidad Amaybamba, Qda. Quinsapuncuyoc, 1690 m, 12°35'S, 72°18'W, 18 May 2005 (fl.), *G. Calatayud et al.* 3181 (CUZ!, NY!), Balconpata, 2200 m, 12°51'01"S, 72°32'46"W, 16 Apr 2004 (fl.), *G. Calatayud et al.* 2255 (CUZ!, NY!), San Cristóbal, 2120 m, 12°58'51"S, 72°32'58"W, 06 May 2006 (fl.), *H. van der Werff et al.* 21425 (CUZ!, NY!); Dist. Maranura, Mesa pelada, 2536 m, 12°33'S, 72°22'W, 21 Apr 2005 (fl.), *L. Valenzuela et al.* 5600 (NY!), Mesapelada, 2400 m, 12°54'39"S, 72°37'25"W, 19 Apr 2004 (fl.), *W. Galiano et al.* 6156 (CUZ!, NY!); Dist. Ocobamba, Mesa pelada, 1451 m, 12°57'06"S, 72°38'29"W, 25 Mar 2004 (fl., fr.), *L. Valenzuela et al.* 3243 (CUZ!, NY!); Dist. Santa Ana, alrededores de Tunquimayo, 1800 m, 21 Apr 1952 (fl.), *C. Vargas* 10644 (CUZ!, US!), Tunquimayo, 2800 m, 13°03'S, 72°56'W, 15 Jun 2003 (fr.), *E. Suelli & V. Chama* 1015 (NY!); Dist. Vilcabamba, Paltaybamba, quebrada Fuentes Mayo, 1400 m, 13°01'38"S, 72°44'16"W, 08 Jun 2002 (fl.), *L. Valenzuela et al.* 152 (CUZ!, NY!).

33. *Meriania vasquezii* Rob.Fern., R.Villanueva & Michelang., Willdenowia 52(1): 66 (2022). Type:—**PERU. Pasco:** Prov. Oxapampa, Dist. Chontabamba, Ulcumano Lodge, 2244 m, 10°38'08"S, 75°25'39"W, 23 Feb 2021 (fl.), *R. Vásquez, L. Valenzuela, E. Pinche & C. Rojas* 45480 (holotype: HOXA! [accession no. 077441]; isotypes: MO!, MOLFI! [barcode 000009], UPCB! [accession no. 99426]). (Figures 67–68).

Comments:—*Meriania vasquezii* differs from other Peruvian species of *Meriania* by the combination of leaf blades with dense tomentose indumentum on the abaxial surfaces, evenly covering the entire surfaces (Fig. 67B–C), inflorescences with flowers in regular dichasia in the branchlet ends, subcalyptrate calyces with small claw-shaped dorsal projections (3 mm long) and irregular dehiscence (Fig. 67D and G), campanulate, fuchsia corollas, dimorphic stamens, and antesealous stamen connectives with laterally expanded descending dorso-basal appendages (Fig. 67E). *Meriania juanjil* is the only Peruvian species shares subcalyptrate calyces with *M. vasquezii* but differs by the leaf blades size (10.8–12.7 × 2.7–3 cm vs. 16.5–23.5 × 9.3–10.7 cm), arrangement of flowers in branchlet ends (5–7-flowered umbels vs. regular dichasia), and length and color of the petals (11–13.5 mm long and pink-orange vs. 25–31 mm long and fuchsia). A detailed comparison of *M. vasquezii* with other related species can be found in Fernandez-Hilario *et al.* (2022).

Distribution and phenology:—Known only from two specimens, *Meriania vasquezii* is endemic to central Peru (Department of Pasco) and grows in montane forests at 2200–2244 m (Fig. 11). It has been collected in flower in February and March.

Specimen examined:—**PERU. Pasco:** Prov. Oxapampa, Dist. Chontabamba, margen de la carretera a Ulcumano Ecolodge, 2200 m, 09 Mar 2022 (fl.), *B. García* 210 (MOLFI!).

34. *Meriania vilcabambensis* Wurdack, Phytologia 21(6): 353 (1971). Type:—**PERU. Cusco:** Prov. La Convención, Cordillera Vilcabamba, Knox's Cascade, c. 1 km north of Camp 2 ½, NE 14 km walking distance from the Hacienda Luisiana and the Apurimac River, 1730 m, 12°35'S, 73°35'W, 28 Jun 1968 (fl.), *T. Dudley* 10595 (holotype: US! [barcode 00120393]; isotype: US! [barcode 02925667]). (Figure 69).

Comments:—*Meriania vilcabambensis* is a poorly known species, and only the type has flowers at anthesis. It is characterized by its lobed calyces with small claw-shaped dorsal projections (ca. 3 mm long; Fig. 69E–F), dimorphic stamens, stamen connectives with ascending dorsal appendages, and antesealous stamen connectives with laterally expanded descending dorso-basal appendages (Fig. 69G). *Meriania axinioides* Gleason, a species endemic to Bolivia, has leaves similar to *M. vilcabambensis*, but the former differs by its glabrous flowers (vs. furfuraceous in *M. vilcabambensis*, Fig. 69C), calyces with conical dorsal projections not exceeding the apex of the lobes (vs. small claw-shaped dorsal projections exceeding the apex of the lobes), and petals 9–10 mm long (vs. ca. 16 mm long).

Distribution and phenology:—*Meriania vilcabambensis* is endemic to southern Peru (Department of Cusco) and grows in montane forests at 1100–1730 m (Fig. 21). It has been collected in flower in June.

Specimens examined:—**PERU. Cusco:** Prov. La Convención, Camp 2 ½, ca. 14 km walking distance NE from Hacienda Luisiana and the Apurimac River, 1730 m, 12°30'S, 73°30'W, 28 Jun 1968 (fl. bud), *T. Dudley* 10583 (US!); Dist. Echarate, Km 59 al 61 del Derecho de Via del Gaseoducto Camisea, margen izquierdo del río Poyentimari, 1100–1150 m, 09 Apr 2007 (fl. bud), *S. Baldeón et al.* 6719 (USM!), Santa Ana, Kepashiato, 1167 m, 12°44'02"S, 73°22'03"W, 19 Aug 2006 (fl. bud), *L. Valenzuela et al.* 7494 (MOLFI!, NY!, USM!).

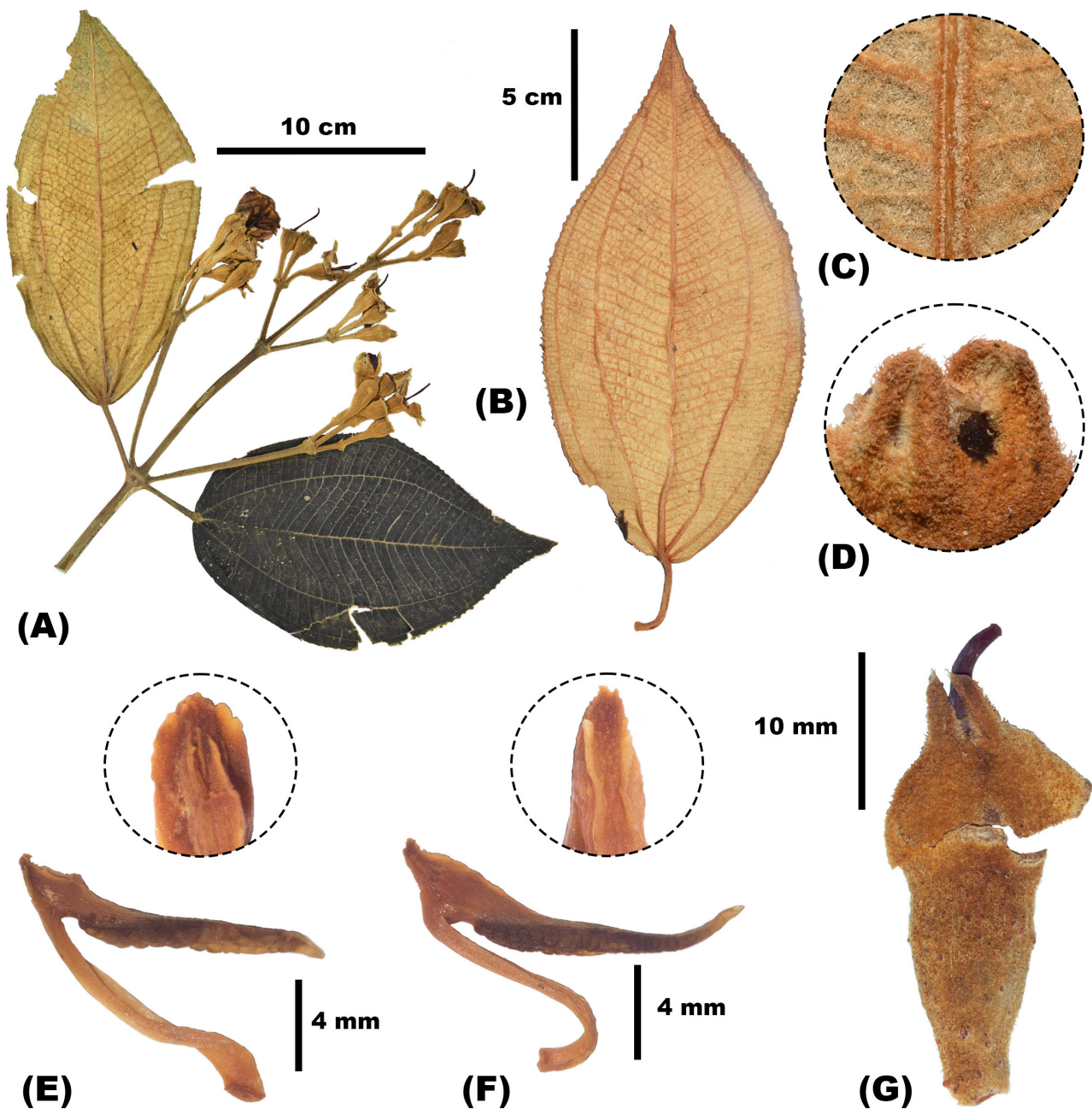


FIGURE 67. *Meriania vasquezii*. **A.** Terminal fertile branch with inflorescence. **B.** Leaf blade, abaxial view. **C.** Detail of the abaxial leaf surface. **D.** Detail of the apex of the calyx. **E.** Antesepalous stamen, lateral view, with detail of the descending dorso-basal appendage (above). **F.** Antepetalous stamen, lateral view, with detail of the descending dorso-basal appendage (above). **G.** Flower with petals and stamens removed. A and C–G from R. Vásquez et al. 45480; B from B. García 210.



FIGURE 68. *Meriania vasquezii*. **A.** Terminal fertile branch with inflorescence. **B.** Leaf blade, adaxial view. **C.** Detail of the inflorescence. **D.** Flower at anthesis, apical view. A and C from *R. Vásquez et al.* 45480; B and D from *B. García* 210. Photos by Rodolfo Vásquez (A and C) and Bernardo García (B and D).

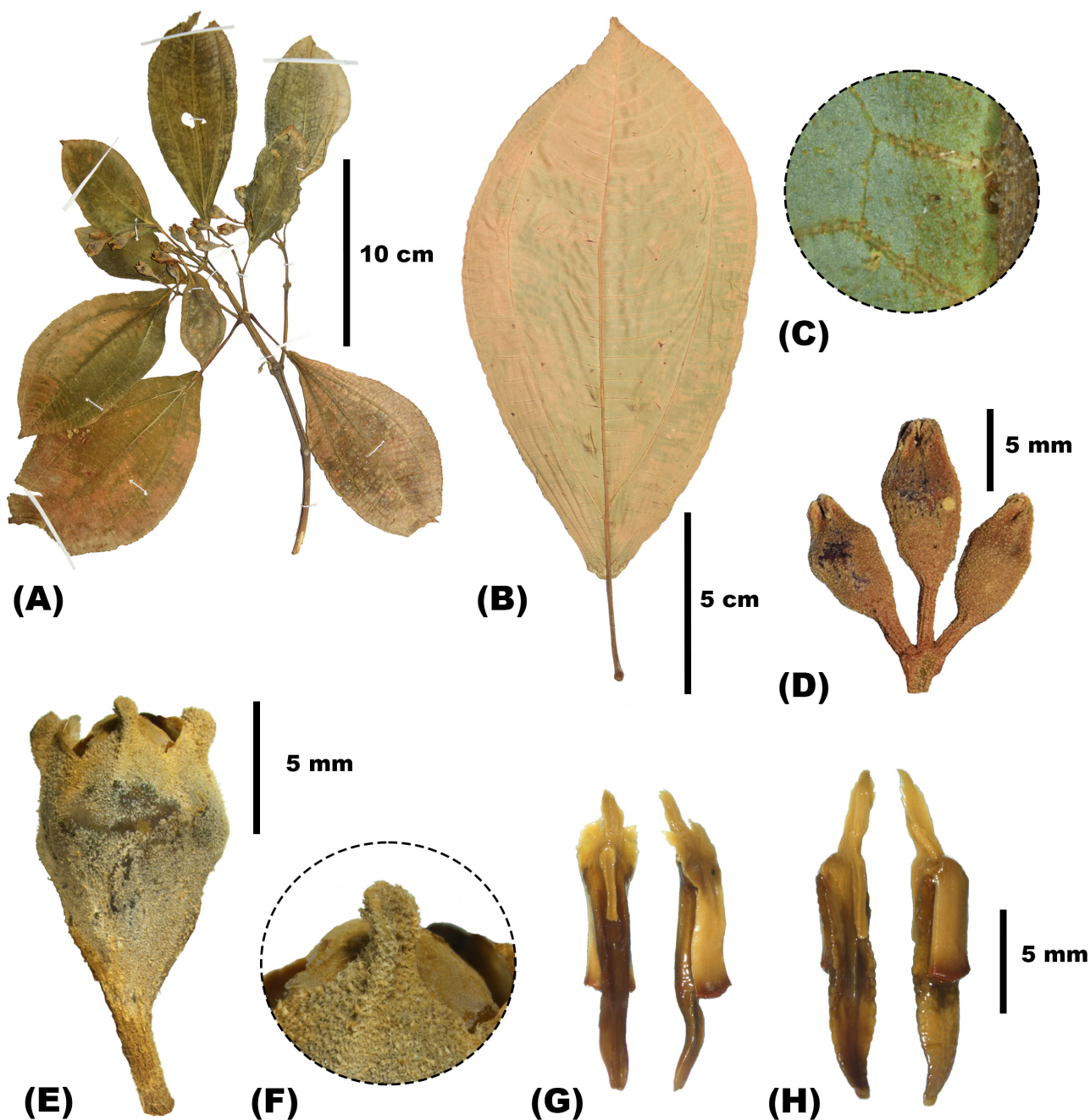


FIGURE 69. *Meriania vilcabambensis*. **A.** Terminal fertile branch with inflorescence. **B.** Leaf blade, abaxial view. **C.** Detail of the abaxial surface. **D.** Inflorescence branch. **E.** Flower bud. **F.** Detail of the dorsal appendage of the calyx. **G.** Antesepalous stamen, frontal (left) and posterior (right) view. **H.** Antepetalous stamen, frontal (left) and posterior (right) view. A–C and E–H from L. Valenzuela 7494; D from S. Baldeón et al. 6719.

35. *Meriania weberbaueri* J.F. Macbr., Publ. Field Columb. Mus., Bot. Ser. 4(7): 176 (1929). Type:—**PERU. Junín:** Prov. Jauja, Valley of the Rio Masamerich, tributary of the Rio Pangao, abajo del tambo Calabaza, 1700–1800 m, 07 May 1913 (fl.), A. Weberbauer 6659 (holotype: F! [accession no. 548841]; isotypes: CAS! [barcode 0003308], GH! [barcode 00443873], MICH! [barcode 1111855], MOL! [accession nos. 00441, 00442, 00443, 00444], NY! [barcode 00228985], S! [accession nos. S05-3272, S09-12904], US! [barcodes 00120394, 00946246, 02925664]). (Figures 70–71).

Comments:—*Meriania weberbauerii* is related to *M. amischophylla* and *M. sumatika* by sharing densely tomentose to villose hypanthia and calyces, calyces with claw-shaped dorsal projections (Fig. 71C), spreading, fuchsia to reddish-purple corollas, and antesepalous stamen connectives with laterally expanded descending dorso-basal appendages (Fig.

70F). However, *M. weberbaueri* differs from *M. amischophylla* by its 1.3–5.1 cm long petiolate leaves (Fig. 70B) (vs. subsessile) and antesepalous stamen connectives without dorsal appendages (vs. a mere hump), and *M. weberbaueri* differs from *M. sumatika* by its terete hypanthia (vs. 10-costate) and petals 20–25 mm long (vs. 46–55 mm long).

Meriania weberbaueri inhabits montane forests on the central Peruvian Andes (Huánuco, Pasco and Junín). In this region there are two other species (*M. tomentosa* and *M. vasquezii*) that can be confused with *M. weberbaueri*. In sterile or fruiting specimens, it is almost impossible to differentiate these three species. *Meriania tomentosa* and *M. vasquezii* have calyptrate and subcalyptrate calyces, respectively, and both with irregular dehiscence, while *M. weberbaueri* has lobed calyces with regular dehiscence. However, in all three species the fruits have deciduous calyces. On the other hand, *M. weberbaueri* has inflorescences with flowers in (3–)4–6(–7)-flowered umbels in the branchlet ends (vs. in regular dichasia in *M. tomentosa* and *M. vasquezii*) and spreading corollas (vs. campanulate in *M. tomentosa* and *M. vasquezii*).

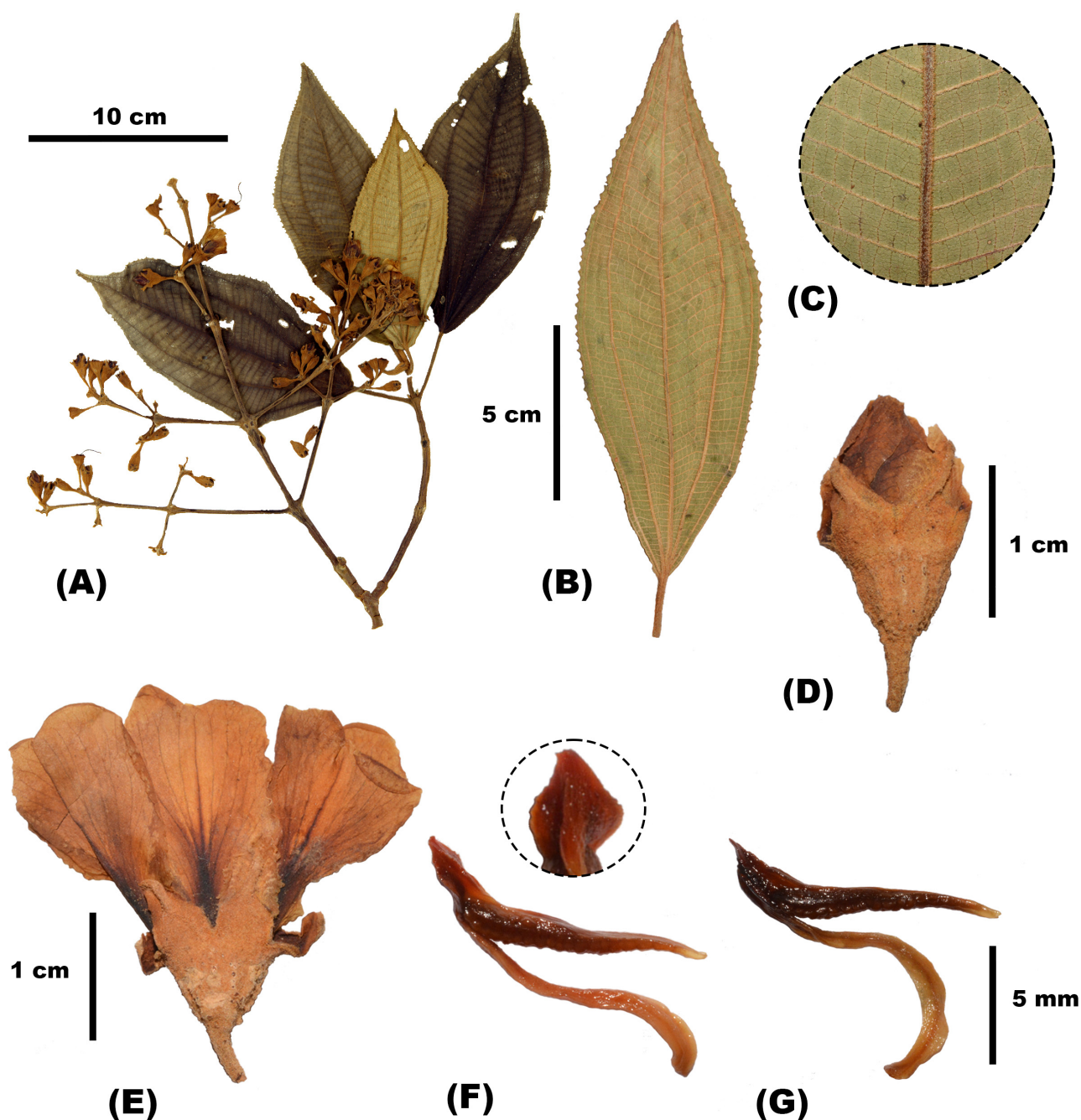


FIGURE 70. *Meriania weberbaueri*. **A.** Terminal fertile branch with inflorescence. **B.** Leaf blade, abaxial view. **C.** Detail of the abaxial leaf surface. **D.** Flower bud. **E.** Flower at anthesis. **F.** Antesepalous stamen, lateral view, with detail of the dorso-basal appendage, frontal view (above). **G.** Antepetalous stamen, lateral view. A from A. Daza *et al.* 2056; B–C and F–G from S. Terreros & R. Villanueva-Espinoza 191; D–E from A. Weberbauer 6659.



FIGURE 71. *Meriania weberbaueri*. **A.** Leaf blade, abaxial view. **B.** Inflorescence with flower buds. **C.** Flower bud, lateral view. **D.** Flower at anthesis, apical view. A–C from S. Terreros & R. Villanueva-Espinoza 191, D from R. Vásquez *et al.* 35159. Photos by Rosa Villanueva-Espinoza (A–C) and Rodolfo Vásquez (D).

Distribution and phenology:—*Meriania weberbaueri* is endemic to central Peru (Department of Huánuco, Junín and Pasco) and grows in montane forests at (910–)1700–2780 m (Fig. 11). It has been collected in flower almost all year round except in January, April, July and November, and in fruit in March, April, July, August and September.

Specimens examined:—**PERU. Huánuco:** Carpish, entre Acomayo y Chinchao, 2600–2700 m, 11 Feb 1950 (fl.), *R. Ferreyra* 6847 (MOLF!, US!, USM!). **Junín:** Prov. Chanchamayo, Dist. San Ramón, Alto Pichita Fundo “Vista Alegre” - APRODES, 2200 m, 11°05′42″S, 75°25′57″W, 27–30 Mar 2002 (fl.), *A. Daza & A. Reyna* 2249 (MOLF!), same locality and date (fl.), 2252 (MOLF!), same locality and date (fl.), 2257 (MOLF!), 08–10 Dec 2002 (fl.), *A. Daza et al.* 2056 (MOLF!), Puyu Sacha, 2240 m, 11°05′41.77″S, 75°26′44.89″W, 13 Mar 2018 (fl.), *A. Daza* 6522 (MOLF!), 2230 m, 11°05′39.33″S, 75°26′43.44″W, 10–14 Mar 2020 (fl.), *S. Terreros & R. Villanueva-Espinoza* 191 (MOLF!, UPCB!), 2230 m, 11°05′26″S; 75°26′45″W, 14 Mar 2020 (fl.), *R. Villanueva-Espinoza & S. Terreros* 470 (MOLF!), 2100 m, 11°05′25″S; 75°26′00″W, 28 May to 04 Jun 2021 (fl.), *R. Villanueva-Espinoza* 610 (MOLF!). Prov. Satipo, Dist. Río Tambo, Parque Nacional Otishi, Comunidad Nativa Pichiquia, 2060 m, 11°22′28″S, 73°59′28″W, 11 Jul 2013 (fr.), *L. Valenzuela et al.* 24853 (HOXA!, MO!). Prov. Tarma, Agua Dulce, 1800 m, 08 Mar 1948 (fl.), *F. Woytkowski* 35430 (F!, MO!). **Pasco:** Prov. Oxapampa, PN Yanachaga Chemillén, 913 m, 10°19′48″S, 73°23′17.16″W, 18 Aug 2010 (fl.), *X. Ge et al.* 361 (USM!); Dist. Chontabamba, Uclumano Ecolodge, camino a la parcela OXA3, 2200 m, 07 Dec 2022 (fl.), *B. García* 29 (MOLF!); Dist. Huancabamba, PN Yanachaga Chemillén, Quebrada Yanachaga, 2380 m, 10°23′36.6″S, 75°28′28.9″W, 20 Feb 2018 (fl. bud), *F. A. Michelangeli & S. Riva* 2976 (HOXA!, USM!), PN Yanachaga Chemillén, sector Quebrada Yanachaga, 2265 m, 10°23′45″S, 75°28′55″W, 19 Aug 2004 (fl., fr.), *R. Vásquez et al.* 30433 (HOXA!, NY!, USM!), PN Yanachaga Chemillén, Sector Tunqui (Quebrada Muchuymayo), 1923 m, 10°17′53″S, 75°30′54″W, 11 Feb 2009 (fl. bud), *R. Vásquez et al.* 35159 (HOXA!, MO!, USM!), Zona de amortiguamiento del PN Yanachaga Chemillén (Quebrada Yanachaga), 2347 m, 10°23′49″S, 75°28′36″W, 16 Sep 2004 (fl., fr.), *J. Perea & J. Mateo* 1769 (HOXA!, NY!); Dist. Oxapampa, Carretera al sector San Alberto del PN Yanachaga Chemillén, cerca de la planta hidroeléctrica, ca. 5 km de Oxapampa, 2150 m, 10°32′57″S, 75°22′27″W, 20 Mar 2016 (fl., fr.), *F. A. Michelangeli et al.* 2714 (NY!, USM!), Localidad La Suiza Neva, 2200 m, 10°45′01″S, 75°30′01″W, 17 Apr 2010 (fr.), *R. Vásquez et al.* 36471 (HOXA!, NY!, USM!), PN Yanachaga Chemillén, quebrada Yanachaga, 2370 m, 10°23′S, 75°28′W, 10 Jun 2003 (fl.), *R. Vásquez et al.* 28104 (HOXA!, NY!), Sector Llamaquizú - La Colina, 2109 m, 10°35′56.4″S, 75°21′49.9″W, 02 Dec 2015 (fl.), *L. Valenzuela et al.* 29236 (HOXA!), PN Yanachaga Chemillén, Sector San Alberto, en el Abra Esperanza y alrededores, 2780 m, 10°31′55″S, 75°20′59″W, 02 Oct 2007 (fl.), *C. Arias et al.* 335 (HOXA!).

36. *Meriania zunacensis* D.Fernández & Dellinger, Phytotaxa 458(1): 7 (2020). Type:—**ECUADOR. Tungurahua:** Cantón Baños, Parroquia Río Negro, Sector El Topo, Estación Científica Río Zuñac, Fundación EcoMinga, 1568 m, 01°22.593′S, 78°09.213′W, 26 May 2018 (fl., fr.), *L. Jost, F. Recalde & S. Recalde* 10600 (holotype: QCNE! [barcodes 243978 – 1/2, 243977 – 2/2]; isotype: QCNE! [barcode 243976]). (Figures 72–73).

Comments:—Among Peruvian species of *Meriania*, it is distinguishable by combination of quadrangular and ribbed internodes, nodes with interpetiolar flaps (Fig. 72D), an adaxial projection (scutum) on the transition zone from the petiole to the midvein (Fig. 73A), leaf blades with flat adaxial surfaces, spreading, reddish-purple corollas, isomorphic stamens, and pyriform mature ovaries (Fig. 73D). Among Peruvian species, *M. zunacensis* most closely resembles *M. callosa* and *M. megaphylla* (see comments under these species for differences). A detailed comparison of *M. zunacensis* with other related species can be found in Fernández-Fernández *et al.* (2020) and Fernandez-Hilario *et al.* (2022).

Distribution and phenology:—*Meriania zunacensis* occurs in Ecuador and northern Peru (Department of Amazonas in montane forests at 1500–2280 m) (Fig. 35). It has been collected in flower in February, June and July, and in fruit in February and July.

Specimens examined:—**PERU. Amazonas:** Prov. Amazonas, Dist. Vista Alegre, entre Vista Alegre y La Ventana a Nacimiento del Río Negro, 1500–1640 m, 06°08′S, 77°18′W, 02 Jul 1998 (fl., fr.), *I. Sánchez et al.* 9610 (CPUN!, F!); Prov. Bagua, La Peca, 1850–1900 m, 14 Jun 1978 (fl. bud), *A. Gentry et al.* 23012 (USM!, US!); Prov. Bongará, Dist. Yambrasbamba, inmediaciones de la Estación Biológica Abra Patricia, trochas cercanas a la estación, 2280 m, 05°41′43.40″S, 77°48′47.91″W, 19–20 Feb 2020 (fl., fr.), *R. Fernandez-Hilario et al.* 1920 (HOXA!, KUELAP!, MOLF!, NY!, UPCB!), trocha Lechuza en la Estación Biológica Abra Patricia, 2123 m, 05°41′18.89″S, 77°48′23.68″W, 21 Feb 2020 (fl.), *R. Fernandez-Hilario et al.* 1938 (HOXA!, MOLF!, UPCB!).

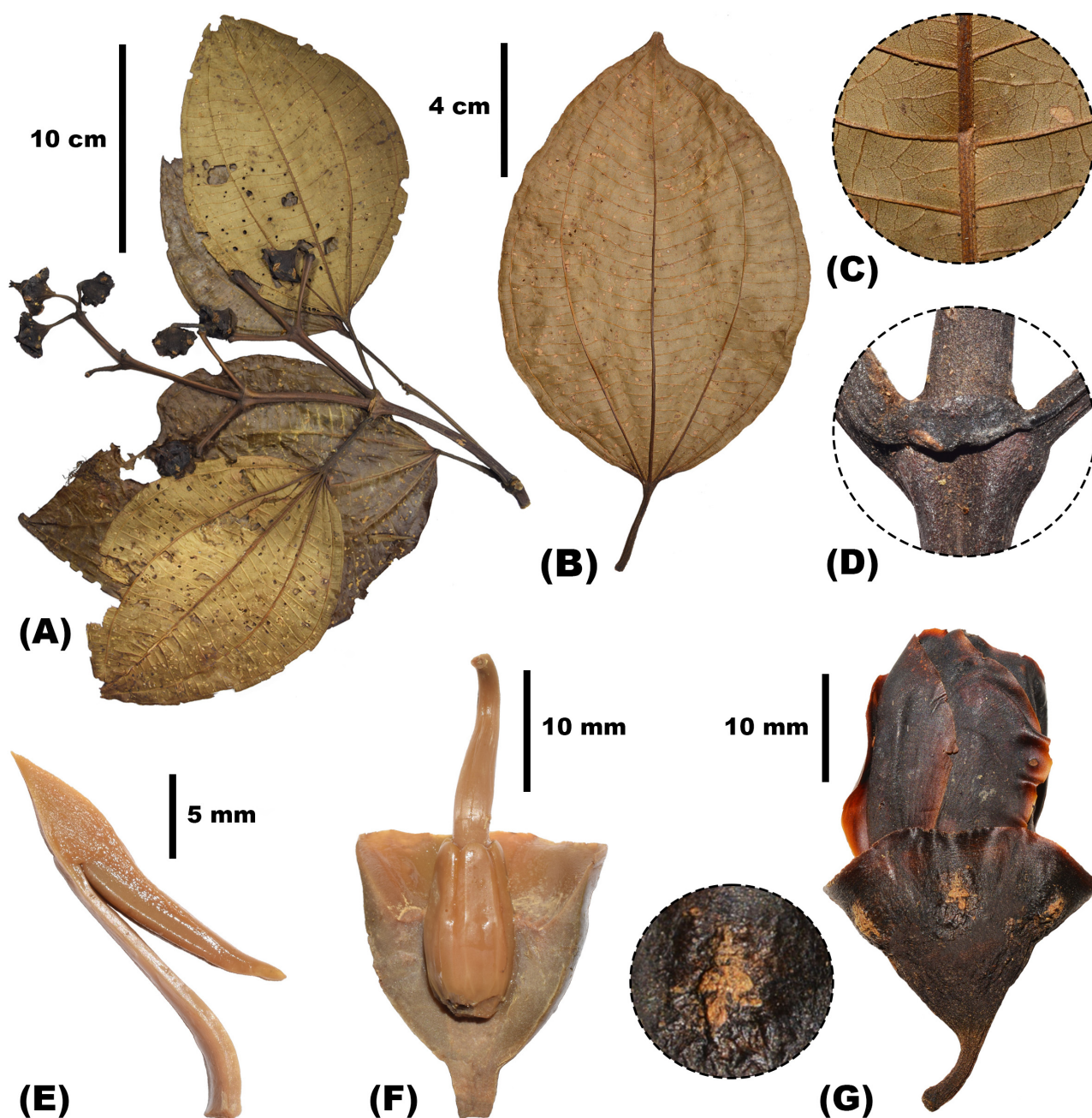


FIGURE 72. *Meriania zunacensis*. **A.** Terminal fertile branch with infructescence. **B.** Leaf blade, abaxial view. **C.** Detail of the abaxial leaf surface. **D.** Detail of the interpetiolar flap. **E.** Stamen in lateral view. **F.** Longitudinal section of the flower with petals and stamens removed. **G.** Flower bud with detail (left) of the dorsal projection on the calyx. A–G from *R. Fernandez-Hilaro et al. 1920*.



FIGURE 73. *Meriania zunacensis*. **A.** Node with interpetiolar flap and adaxial projection on the petiole apex. **B.** Terminal fertile branch with inflorescence. **C.** Flower at anthesis, apical view. **D.** Immature fruits. A–D from R. *Fernandez-Hilario et al.* 1920. Photos by Robin Fernandez. Reproduced with permission from Willdenowia.

Excluded specimens

The following specimens could not be assigned to any of the species recognized in this synopsis due to the lack of critical structures. Most specimens have only fruits or flowers with stamens in poor condition. Probably some of the specimens may correspond to undescribed species:—**PERU. Amazonas:** Prov. Bagua, ca. 20 km (by trail) E of La Peca, 2020 m, 13 Aug 1978 (fl. bud), *P. Barbour* 2943 (MO!, US!). Prov. Bongará, Dist. Yamborasbamba, alrededores del CP La Florida, 2100 m, 05°40'21"S; 77°57'16"W, 03 Jul 2022 (fl.), *R. Fernandez-Hilario & W. Chuquitucto* 2233 (HOXA!, MOLF!), alrededores del CP Miraflores, 2100 m, 05°42'05"S; 77°55'35"W, 03 Jul 2022 (fl.), *R. Fernandez-Hilario & W. Chuquitucto* 2234 (HOXA!, MOLF!), Inmediaciones de CP Miraflores, 2050 m, 05°42'03.74"S; 77°55'36.03"W, 10 Nov 2020 (fr.), *R. Fernandez-Hilario et al.* 2031 (HOXA!, KUELAP!, MOLF!, UPCB!, NY!), Ruta desde CP La Florida hacia finca de Don Ilario, 2150 m, 5°40'21.68"S; 77°57'16.02"W, 12 Nov 2020 (fr.), *R. Fernandez-Hilario et al.* 2062 (HOXA!, KUELAP!, MOLF!, UPCB!, NY!). Prov. Luya, Dist. Camporendondo, Tullanya, Pascana, Pájaro Tigre, 2370 m, 06°06'33"S, 78°20'55"W, 4 Dec 1996 (fr.), *R. Vásquez & R. Rojas* 21935 (NY!, USM!), same locality and data, (fr.), *R. Vásquez & R. Rojas* 21943 (USM!). **Cajamarca:** Prov. Cutervo, Dist. Cutervo, CP San Cristobal del Nudillo, sector el Mirador y propiedad de Darwin Horna, 2690 m, 06°18'33.68"S, 78°51'40.71"W, 01-03 Nov 2012 (fl.), *L. Dávila et al.* 2487 (UNC!); Dist. San Andrés de Cutervo, Parque Nacional Cutervo, 2230 m, 06°10'S, 78°40'W, 10 Sep 1991 (fr.), *A. Gentry et al.* 74649 (MO!, USM!). Prov. Hualgayoc, Hacienda Taulis, 2500 m, 13 Oct 1954 (fl.), *W. Rauh* 2202 (US!), Hacienda Taulis, below Palmito on the road to the Casa Hacienda., 2500 m, 06°54'S, 79°03'W, 31 Aug 1964 (fl.), *P. Hutchison & K. von Bismarck* 6393 (F!, MO!, NY!, USM!, US!). Prov. Jaén, Dist. Jaén, San José de la Alianza y Nueva Jerusalén, 25 May 2012 (fl. bud), *L. Davila* 2427 (UNC!). Prov. Santa Cruz, Dist. Catache, CP Udimá, Zona de Amortiguamiento de la ZR Udimá, 2688 m, 06°53'04.91"S, 79°00'56.40"W, 13 Mar 2013 (fr.), *L. Dávila et al.* 2587 (UNC!). Prov. San Ignacio, Selva Andina, 2020 m, 04°59'22"S, 78°53'03"W, 19 Nov 1999 (fr.), *S. Flores & R. Vásquez* 288 (NY!, USM!); Dist. Huarango, Nuevo Mundo, quebrada Santa Rosa (a dos horas de Pisaguas), 1700 m, 05°10'05"S; 68°32'00"W, 10 Nov 1997 (fr.), *J. Campos & S. Nuñez* 4581 (MOLF!, USM!, HUT!, NY!); Dist. San José de Lourdes, Campamento "Tomas", 2100 m, 04°59'37"S, 78°53'35"W, 16 Jun 2001 (fl. bud), *E. Vicuña et al.* 291 (USM!, HUT!). Prov. Santa Cruz, ca. 4 km (por aire) ENE Monteseco, 2350 m, 06°51'26.28"S, 79°06'44.44"W, 16 Jun 1987 (fl.), *J. Santisteban & J. Guevara* 182 (F!, HUT!, US!). **Cusco:** Prov. Calca, Dist. Yanatile, Estrella, 1567 m, 12°26'50"S; 72°30'05"W, 20 Oct 2005 (fr.), *E. Suelli et al.* 2570 (CUZ!, NY!). Prov. La Convención, Dist. Echarati, Tingkanari, 2179 m, 12°15'46"S, 72°05'53"W, 11-12 May 2004 (fl. bud), *N. Salinas et al.* 7251 (USM!); Dist. Huayopata, Abra Malaga, km 151 de la carretera, 3380 m, 13°06'8.61"S; 72°22'26.70"W, 28 Feb 2020 (ster.), *R. Fernandez-Hilario & S. Bejar* 1997 (HOXA!, KUELAP!, MOLF!, UPCB!), Carretera Quillabamba-Abra Malaga, km 151 en la carretera, 3362 m, 13°05'49.1"S; 72°22'37.5"W, 21 Jun 2012 (fr.), *F. A. Michelangeli et al.* 1991 (NY!, USM!), Huayanay, 1047–1200 m, 12°50'S, 72°40'W, 13 Apr 2003 (fl.), *W. Galiano et al.* 4924 (CUZ!), Inkatambo, 2630 m, 13°04'07"S, 72°26'49"W, 24 Apr 2007 (fl.), *L. Valenzuela* 9560 (CUZ!); Dist. Maranura, Rio Blanco, 2300 m, 12°55'23"S, 72°36'50"W, 29 Nov 2006 (fr.), *L. Valenzuela et al.* 8254 (CUZ!); Dist. Santa Ana, Bosque de Chuyapi, 2236 m, 12°56'55"S, 72°47'07"W, 17 Jul 2006 (fr.), *L. Valenzuela et al.* 7237 (USM!). Prov. Paucartambo, Dist. Kosñipata, San Pedro, bosque en el borde de la carretera., 2210 m, 13°07'41"S; 71°34'39"W, 28 Oct 2007 (fl.), *R. Vásquez et al.* 32932 (CUZ!, NY!). Prov. Quispicanchi, Dist. Camanti, Community of Vitobamba. Trocha Jeferson, 1596 m, 13°19'47.28"S, 70°48'2.88"W, 17 Mar 2011 (fl.), *J. Wells et al.* 697 (USM!). Prov. Urubamba, Dist. Machupicchu, Aguas Calientes, Quebrada Alccamayo, 2050-2200 m, 13°09'02"S; 72°30'28"W, 28 Aug 2002 (fl., fr.), *I. Huamantupa & G. Calatayud* 2185 (NY!, USM!, CUZ!), Cerro Alcamayo, 2200 m, 13°09'S, 72°30'W, 19 Nov 2003 (fr.), *I. Huamantupa et al.* 3748 (CUZ!), in the streambed of the Rio Mandor 2.5 km from Machu Pichu (plot #69), 2055 m, 02 Jun 1982 (fl. bud), *B. Peyton & S. Tilney* 384 (MO!, US!). **Loreto:** Prov. Alto Amazonas, Dist. Balsapuerto, Cordillera Escalera, Field Museum Inventario Rápido #26, Campamento Cumbre - Alto Cachiyacu, 1930 m, 05°52'02.1"S; 76°46'29.3"W, 22 Sep 2013 (fl.), *M. Ríos et al.* 3318 (AMAZ!, F!). **Pasco:** Prov. Oxapampa, Dist. Huancabamba, Mallampampa, 2400 m, 75°45'W, 10°2'S, 22 Jan 1984 (fl.), *D. Smith & J. Canne* 5809 (MO!, USM!, US!). **Piura:** Prov. Huancabamba, Dist. El Carmen de la Frontera, Caserio Sagrado Corazón de Jesús, 1979 m, 4°57'07.55"S, 79°21'09.02"W, 29 Oct 2015 (fr.), *D. Paredes et al.* 570 (NY!, USM!).

Doubtful names and excluded taxa

Meriania dependens (Ruiz & Pav. ex D.Don) Naudin = *Axinaea dependens* Ruiz & Pav. ex D.Don. Notes:—This Peruvian species was treated as *M. dependens* by Naudin (1852) in his revision of the family. However, it has characteristics typical of *Axinaea* (see additional comments under *M. rubriflora*) and has been treated in that genus by Eves (1936), Macbride (1941) and Cotton *et al.* (2014).

Meriania intonsa Gleason = *Adelobotrys intonsus* (Gleason) Wurdack. Notes:—Species cited by Macbride (1941) in his treatment of *Meriania* for Peru. However, Wurdack (1969) transferred it to *Adelobotrys* because of the presence of malpighiaceae trichomes.

Meriania nobilis Triana. Notes:—Species cited by Macbride (1941) in his treatment of *Meriania* for Peru based in Ruiz & Pavón *s.n.* We have not been able to locate the specimen to verify the identification. Nevertheless, Macbride (1941) also indicated that the specimen was probably misidentified. *Meriania nobilis* is endemic to Colombia (Mendoza-Cifuentes 2021).

Meriania oblongifolia Cogn. = *Axinaea oblongifolia* (Cogn.) Wurdack. Notes:—Species cited by Macbride (1941) in his treatment of *Meriania* for Peru. However, Wurdack (1970) transferred it to *Axinaea* because of the presence of stamen connectives with inflated (bulbous) dorso-basal appendages. This species has been treated under *Axinaea* by Cotton *et al.* (2014).

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