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Author: Barriera, Gabrielle

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Taxonomy and nomenclature of South American Aquifoliaceae I: Ilex from Ecuador with the description of two new taxa

Gabrielle Barriera

Abstract

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Ilex L., the only genus of the family *Aquifoliaceae*, is represented by 500–600 species. It is distributed nearly worldwide but mainly in tropical and subtropical regions. In Ecuador it is mainly found in the Andean region, thriving in the montane forest and subparamo ecosystems. A revision of the Ecuadorian species was undertaken in the framework of the *Flora of Ecuador*. The taxonomic and nomenclatural results are presented here. Thirty-three (33) *Ilex* taxa (32 species and one variety) are recognized in Ecuador. Among all the taxa linked to Ecuador, holotypes for 51 names have been located, 23 names are lectotypified, one name is neotypified, and 26 new synonyms are proposed. Two new taxa are described and illustrated: *I. cochlearifolia* Schlüssel & Barriera and *I. laurina* var. *tenuifolia* Barriera.

Resumen

BARRIERA, G. (2023). Taxonomía y nomenclatura de Aquifoliaceae en Sudamérica I: Ilex del Ecuador con la descripción de dos nuevos táxones. *Candollea* 78: 53–78. En inglés, resúmenes en inglés y español. DOI: http://dx.doi.org/10.15553/c2023v781a6

Ilex L., el único género de la familia *Aquifoliaceae*, está representado por 500–600 especies. Se distribuye casi en todo el mundo, pero principalmente en las regiones tropicales y subtropicales. En Ecuador se encuentra principalmente en la región andina, creciendo en los ecosistemas de bosque montano y subpáramo. Se realizó una revisión de las especies ecuatorianas en el marco de la *Flora of Ecuador*. Los resultados taxonómicos y nomenclaturales se presentan aquí. Se reconocen 33 táxones (32 especies y una variedad) en Ecuador. Se han localizado los holotipos para 51 nombres, así como 23 nombres son lectotipificados, uno es neotipificado y 26 nuevos sinónimos propuestos. Se describen e ilustran dos táxones nuevos: *I. cochlearifolia* Schlüssel & Barriera e *I. laurina* var. *tenuifolia* Barriera.

Keywords

AQUIFOLIACEAE – *Ilex* – Ecuador – New synonyms – New taxa – Nomenclature – Typifications

Address of the author:

GB: Conservatoire et Jardin botaniques de Genève, C.P. 71, 1292 Chambésy, Switzerland. E-mail: **gabrielle.barriera@ville-ge.ch**

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Introduction

The family *Aquifoliaceae* comprises one genus (*Ilex* L.) and 500–600 species which are mainly present in tropical and subtropical regions of both hemispheres but also in temperate regions. In the Neotropics *Ilex* species occur from southern Mexico to northern Argentina and southern Brasil, as well as in the West Indies. In Ecuador they are mainly found in the montane forests and subparamos of the Andean region. In order to provide the treatment of *Ilex* for the *Flora of Ecuador* (Barriera, submitted), a nomenclatural and taxonomic revision of the family for Ecuador has been undertaken. The results published here include a new species to science (*I. cochlearifolia* Schlüssel & Barriera), a new variety (*I. laurina* var. *tenuifolia* Barriera), 23 lectotypifications, one neotypification, and 26 new synonyms, allowing thus to regulate the application of all the names published in the genus *Ilex* and linked to Ecuador.

Since Loesener (1901, 1942), no global taxonomic revision of South American *Aquifoliaceae* has been carried out. Regional treatments have been published by Loizeau (1994) on Peruvian *Ilex* and Steyermark & Berry (1995) for the *Flora of the Venezuelan Guayana*. Catalogs for Bolivia, Colombia, Ecuador, and Venezuela were also published (Loizeau & Barriera, 1999, 2008, 2011; Barriera et al., 2014, 2016). A taxonomic study englobing all *Ilex* species present in the Neotropical Andean region is lacking but under preparation by the author. This overview provides new elements of analysis to support a large number of questions at the taxonomic level and allows resolving unexpected disjoint distributions of some taxa.

This contribution treating the Ecuadorian species is the first part of a global revision of the species of *Ilex* occurring in the Andean countries. Upcoming parts will deal with the revision of Colombian species based on an update of the results obtained by Schlüssel (1992) to which the Venezuelan Andean species will be added, and secondly, an update of the Peruvian species published by Loizeau (1994) to which the Bolivian species will be included. As a final result, all the species of *Ilex* occurring in the Neotropical Andean countries will be taxonomically and nomenclaturally treated.

In conclusion, compared to the 32 species mentioned in Ecuador by Loizeau & Barriera (1999), three are newly synonymized with species present in Ecuador: *Ilex hualgayoca* Loizeau & Spichiger with *I. andicola* Loes., *I. kunthiana* Triana with *I. microphylla* Hook., and *I. macbrideana* Edwin with *I. quitensis* (Schult.) Loes.; five are synonymized with three species newly recorded in Ecuador: *I. weberlingii* Loizeau & Spichiger with *I. elliptica* Kunth, *I. amboroica* Loes. and *I. cuzcoana* Loes. with *I. hippocrateoides* Kunth, and *I. inundata* Poepp. ex Reissek and *I. vismiifolia* Reissek with *I. petiolaris* Benth. Furthermore, eight species are newly recorded in Ecuador: *I. amplifolia* Rusby, *I. crassifolioides* Loes., *I. elliptica*, *I. goudotii* Loes., *I. hippocrateoides*, *I. petiolaris*, *I. pustulosa* Triana, and *I. villosula* Loes. Ultimately, two species tentatively indicated in Ecuador by Loizeau & Barriera (1999), *I. maasiana* Loizeau & Spichiger and *I. teratopis* Loes., are excluded for the country. The genus *Ilex* is therefore currently represented in Ecuador by 32 species and one variety. A single species is endemic to the country: *I. rupicola* Kunth.

Finally, it should be noted that most Ecuadorian species are also present in the adjacent countries: from Colombia to Venezuela and/or Panama in the North, and from Peru to Bolivia and/or Brazil in the South. Therefore, for all taxa, their occurrences were compared to those published in the different catalogs or floras of the nearby countries (Schlüssel, 1992; Brako, 1993; Hahn, 1993; Loizeau, 1994; Steyermark & Berry, 1995; Loizeau & Barriera, 2008, 2011; Barriera et al., 2014, 2016). As a result, some species are newly recorded in Colombia (*Ilex amplifolia* and *I. hippocrateoides*) and Peru (*I. maxima* W.J. Hahn, *I. myricoides* Kunth, *I. rimbachii* Standl., *I. scopulorum* Kunth, and *I. yurumanguinis* Cuatrec.).

Material and methods

The results of this study are based on the analysis of more than 1,800 herbarium collections (Fig. 1) and their duplicates deposited in 22 herbaria. The morphological characters of each Ecuadorian taxon were coded in the free software DELTA [Description language for taxonomy] (Dallwitz et al., 1999). This allowed the processing of the data and lead, if necessary, to the description of new taxa as well as new identifications or new synonyms. Indeed, species of *Ilex* are often described based on incomplete material consisting only of female or male flowers, or specimens in fruit. In this regard it is important to note that the *Aquifoliaceae* are dioecious and have very similar small flowers between the different species. As far as fertile characters are concerned, very few are useful to discriminate species. Thus, the species separation is essentially based on the vegetative characters and on the structure of the inflorescences (Barriera, submitted).

The distribution range of each taxon in Central and South America is given, listing the countries in alphabetical order. Provinces are only indicated for Ecuador.

When specimens contain both male and female branchlets, [a] or [b] have respectively been added to the collection number for differentiating them (see for example the female specimen of the type of *Ilex crassifolioides* cited as *Spruce 4461[b]*). For each specimen cited, the locality is indicated as it appears on the label without any standardization and in quotation marks for the type specimens.

For those type specimens that have been analyzed via JSTOR Global Plants [https://plants.jstor.org], JACQ [https://www.jacq.org/#database], or the Berlin online database [http://ww2.bgbm.org/herbarium] websites, the barcodes or accession numbers are followed by "image!". If the image has not been analyzed only the barcodes or accession numbers are indicated.

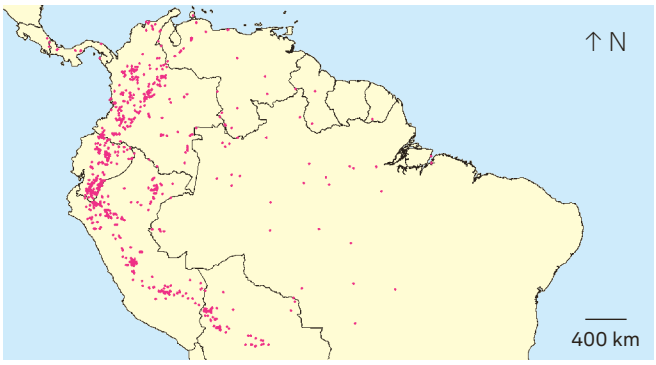

Fig. 1. – Map showing the distribution of the specimens of *Ilex* L. studied in this work.

When necessary, notes concerning nomenclature, typification, new synonyms or distribution are provided under each accepted taxon.

Collections and collectors

Loesener (1901) worked in Berlin when he published his worldwide monography of *Aquifoliaceae*. All the types he studied were destroyed during WWII (Hiepko, 1987) and are cited as B†. When necessary, photographs taken by James Francis Macbride (1892–1976) at B from 1929 to 1939 and deposited at F [https://www.fieldmuseum.org/node/5186] were consulted and are indicated.

The South American collections made by Aimé Jacques Alexandre Bonpland (1773–1858) during his travel with Friedrich Wilhelm Heinrich Alexander von Humboldt (1769–1859) are all standardized *Humboldt & Bonpland* and, depending on the case, with Bonpland's collection number or without any number. Duplicates at P-Bonpl. have all Bonpland indicated as collector, with or without a collection number whereas the duplicates at B-W, HAL, and W have Humboldt with no collection number or with Bonpland's collection number indicated.

The collections of José Jerónimo Triana (1834–1890) from Colombia have two different numbering. In the European herbaria, the duplicates of *Ilex* species are either unnumbered or have a collection number ranging from *3518* to *3524* (Fig. 2) corresponding to numbers *5705.1* to *5705.7* for the COL duplicates. The number *5705* corresponds to the genus *Ilex* by Endlicher (1840) in his *Genera Plantarum* followed by a dot and the species number. As suggested by Kirkbride (1982) both numbers are indicated in this work to allow the correspondence between the duplicates in the European herbaria and the specimens deposited in COL. Moreover, Triana worked on a flora colombiana in particular in Paris (Stafleu & Cowan, 1986), where the holotypes of the new Colombian taxa he described in *Annales des Sciences Naturelles* are deposited.

For Robert Schomburgk's collections from Roraima labelled as "British Guiana", Venezuela is the current country where they were collected (Steyermark, 1981).

Typification and nomenclature

1. ***Ilex amplifolia*** Rusby in Mem. Torrey Bot. Club 6: 20. 1896.

   Lectotypus (designated here): **Bolivia. La Paz:** "Tipuani-Guanai", XII.1892, *Bang 1682* (NY [NY00429151] image!; isolecto-: A [A00049393], BM [BM000796425]!, E [E00259108], F-166027, G [G00402448, G00402449]!, GH [GH00049392, GH00049394], K [K000588612, K000588613]!, MO-1916510 image!, NY [NY00429152] image!, PH [PH00015785], S!, US [US00095897]!, US [US00930519, US00930522] images!, Z [Z000001451]!). Fig. 3.

   = *Ilex anonoides* Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 164. 1901, **syn. nov. Holotypus: Peru. Puno:** "Tatanara! Ost Abhang der Cordillera n. Peru", VIII.1854, *Lechler 2624* (K [K00588618]!).

   Distribution. – Bolivia, Colombia, Ecuador (Morona-Santiago and Zamora-Chinchipe), and Peru.

   Notes. – The lectotype designated here is desposited at NY where Henry Hurd Rusby (1855–1940) worked. The isolectotype NY00429152 was deposited at NY in 1948, eight years after Rusby's death. This specimen originated from the College of Pharmacy herbarium of Columbia University where Rusby was professor of botany and was therefore most likely studied by him.

   No morphological character allows to distinguish the type specimen of *Ilex anonoides* from *I. amplifolia*, which confirms the suggestion by Rusby (1896: 20) about *I. amplifolia*: "perhaps the same as Lechler's no. 2624". Those two species are therefore considered here as synonyms.

   This species is newly recorded for Colombia and Ecuador. It was indicated in Peru under *Ilex anonoides* by Macbride (1951) and Brako (1993), and under the illegitimate name *I. crassifolia* Hook. non Salisb. by Loizeau (1994: 147). See further details below under *I. crassifolioides*.

2. ***Ilex andicola*** Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 161. 1901.

   Holotypus: Bolivia. La Paz: "Huaycani", 3000–3300 m, V.1866, *Pearce s.n.* (K [K000588621]!).

   = *Ilex hualgayoca* Loizeau & Spichiger in Boissiera 48: 183. 1994, **syn. nov. Holotypus: Peru. Cajamarca:** "Hualgayoc. Hacienda Taulis, Río La Quinua above La Playa", 2900 m, 4.IX.1964, *Hutchison & von Bismarck*

6507 (K [K000588674]!; iso-: F-1639311, MO-1839488 image!, NY!, US [US00433208], USM [USM000050]).

Distribution. – Bolivia, Ecuador (Loja and Morona-Santiago), and Peru.

Notes. – The careful examination of a large number of specimens showed that the type of *Ilex hualgayoca*, the single material known of that species, falls into the morphological circumscription of *I. andicola*. These two species are therefore considered here as synonyms.

The only specimen of *Ilex andicola* mentioned by Loizeau (1994: 144) from northern Ecuador close to the Colombian border (*Palacios & van der Werff 3908*, G) does not belong to *I. andicola* but to *I. uniflora* Benth. *Ilex andicola* is therefore distributed from southern Ecuador to Bolivia and it is not present in Colombia.

3. ***Ilex cochlearifolia*** Schlüssel & Barriera, **sp. nov.** (Fig. 4).

Holotypus: Ecuador. Carchi: "Tulcan Cantón. Parroquia Tobar Donoso. Reserva Indígena Awá. Centro El Baboso", 1800 m, 17–27.VIII.1992, *Tipaz et al. 1823* (G [G00032340]!; iso-: MO, QCNE).

Ilex cochlearifolia Schlüssel and Barriera is one of the few species of Ilex L. to have leaf blades almost as wide as long. It is a shrub, often sarmentose or scrambling, with leaf blades obovate, typically spoon shaped and retuse, and the inflorescences are thyrses.

Treelet or *shrub* often with sarmentose shoots, 1–5 m tall; young branchlets glabrous or pubescent, old branchlets glabrescent; stipules caducous, 0.1–0.2 mm long; petiole 3–7 mm long, glabrous or pubescent. *Leaf* blade 0.5–3 × 0.5–2.5 cm, obovate, orbicular, leathery, glabrous, not punctate or sparsely punctate abaxially, midvein adaxially impressed, abaxially raised, lateral veins abaxially unconspicuous, 2–3 pairs, reticulate veins abaxially unconspicuous, base acute or obtuse, margin recurved, entire or dentate on distal half, teeth conspicuous, 1 pairs of teeth, apex truncate, retuse or not, mucronate or not. *Inflorescences* in thyrse, rarely proliferating, axillary on current year's branchlets. *Male inflorescences* in cymes of order 1 or 2, peduncles glabrous or glabrescent, of order 1: 4–6 mm long, of order 2: 0.4–1.5 mm long; flowers 4-merous, calyx glabrous or glabrescent, corolla 1–1.5 mm long, white, petals connate on 10–20 % of their length, rudimentary ovary pyramidal or subglobular or flattened, glabrous. *Female inflorescences* in cymes of order 1(–2), peduncles glabrescent, of order 1: 4–7 mm long; flowers 4-merous, calyx glabrous, corolla 1.5 mm long, white, petals connate on 10 % of their length, staminodes glabrous, ovary ovoid, glabrous, stigma capitate, glabrous. *Fruits* globose, white or reddish-pink (on labels).

Etymology. – The epithet *cochlearifolia* refers to the spoon shape of the leaves.

Distribution, ecology and phenology. – From Panama to Ecuador (Carchi and Esmeraldas), at elevations from 1000–2000(–2900) m. The new species grows in humid submontane and montane, evergreen and semi-deciduous, primary and secondary forests and subparamos. The flowering period extends from May to August.

Notes. – *Ilex cochlearifolia* belongs to the Ecuadorian *Ilex* species with small leaves as *I. ericoides* Loes., *I. microphylla, I. ovalis* (Ruiz & Pav.) Loes., *I. quitensis*, and *I. suprema* Cuatrec., but none of them display spoon shaped leaves.

The leaf blade margin entire or with only one pair of teeth distinguishes *I. cochlearifolia* from *I. microphylla*, *I. ovalis*, and *I. suprema,* which have the leaf blade margin always dentate with 2–17 pairs of teeth. The new species can be distinguished from *I. ericoides*, *I. quitensis*, and *I. suprema* by the number of pairs of secondary veins (2–3 vs. 4–8).

Specimens examined. – **Colombia. Valle del Cauca:** Valle/Chocó border, Mpio. El Cairo, Correg. Boquerón, Vereda Las Amarillas, Serranía de Los Paraguas, along road to and beyond Cerro del Inglés, 17–23 km W of El Cairo, 04°45'N 76°20'W, 1750–2050 m, 13.V.1988, *Luteyn et al. 12282* (CUVC, NY). **Ecuador. Carchi:** Cerro Golondrinas area, access via Chamorro property above El Carmen, which is above Hualchán, on peak of Cerro 2840, probably first ascent, 00°50'N 78°12'W, 2850–2860 m, 24.VII.1993, *Boyle & Hibbs 2305* (G). **Esmeraldas:** Cantón San Lorenzo, road Lita to El Cristal, on finca of Dr. La Lama, 13.5 km S of Lita, 00°49'N 78°26'W, 1220–1350 m, 13.V.1992, *Luteyn & Quelal 14614* (G); límite con la provincia de Imbabura, cerca a Lita, margen izquierda del Río Lita, Sector El Cristal, 00°49'N 78°29'W, 1400–1500 m, 27.V.1990, *Palacios 5182* (G). **Panama. Coclé:** slopes and summit of Cerro Gaital, N of El Valle, 08°40'N 80°07'W, 1000–1400 m, 10.VII.1982, *Knapp et al. 5990* (G).

4. ***Ilex colombiana*** Cuatrec. in Lloydia 11: 207. 1949.

Holotypus: Colombia. Cauca: "Cordillera Central, vertiente occidental. Cabeceras del río Palo, quebrada del río López: Alto del Duende", 3300–3350 m, 1.XII.1944, *Cuatrecasas 18836* (F-1278888!; iso-: A [A00049400], COL [COL000002164] image!, CUVC, GH [GH00549701], P [P02142169]!). Fig. 5.

Distribution. – Colombia and Ecuador (Carchi and Pichincha).

5. ***Ilex crassifolioides*** Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 160. 1901.

Lectotypus (designated here): **Peru. San Martín:** "In monte Campana", 1500 m, XII.1855, *Spruce 4461[b]* (K [K000201370]!; isolecto-: BR [BR0000006973612]!, TCD [TCD0000973] image!).

Fig. 2. – Holotype of *Ilex laureola* Triana.
[*Triana 3519*] [P02142220; © Muséum national d'Histoire naturelle, Paris]

= *Ilex crassifolia* Hook. in Icon. Pl.: tab. 149. 1837 [nom. illeg., non Salisb. 1796], **syn. nov. Lectotypus** (designated here): **Peru. Amazonas:** "Prov. of Chachapoyas Peru", 1836, *Matthews 134* (K [K000588619]!; isolecto-: BM [BM000796405]!, K [K000588620]!).

Distribution. – Ecuador (Loja, Morona-Santiago, and Zamora-Chinchipe) and Peru.

Notes. – Lectotypification of *I. crassifolioides* is necessary because Loesener (1901: 161) cited two duplicates of the same collection deposited at BR and K. The most complete female specimen at K (*Spruce 4461[b]*) is designated here as the lectotype [K000201370]. The male specimen at K (*Spruce 4461[a]*) does not belong to the original material, since male flowers were not described in the diagnosis. The labels of the isolectotypes deposited at BR and TCD indicate "In monte Campana prope Tarapoto. August 1856" lacking the altitude.

Ilex crassifolia Hook. is a later homonym and illegitimate name. Its lectotypification is necessary since the illustration published in the protologue is part of the original material. The duplicate K000588619 originating from Hooker's herbarium is designated here as the lectotype. The isolectotype K000588620 originates from Bentham's herbarium. The duplicate deposited at BM [BM000796405] lacks the collection number.

Ilex crassifolia was accepted by Loizeau (1994: 147), who considered *I. anonoides* as a synonym. A careful study of the original material of those names allows to consider *I. crassifolioides* as the accepted name for the illegitimate *I. crassifolia* and *I. anonoides* as a synonym of *I. amplifolia* (see comments under the latter species).

Based on the identification of new collections (*Gentry 79969*, G, and *80469*, G; *Luteyn & Romoleraux 14477*, G; *Palacios 13021*, G; and *van der Werff & Palacios 8966*, AAU, G) that were not available when preparing the *Catalogue of the vascular plants of Ecuador* (Loizeau & Barriera 1999), *Ilex crassifolioides* is recorded here for the first time in Ecuador.

6. ***Ilex elliptica*** Kunth in Humb. et al., Nov. Gen. Sp. 7(fol. ed.): 54, (qu. ed.): 70. 1825.

Holotypus: Peru. Cajamarca: "Contumasey", [Contumazá], s.d., *Humboldt & Bonpland 3225* (P-Bonpl. [P00660072]!; iso-: HAL [HAL0118472] image!). Fig. 6.

= *Ilex weberlingii* Loizeau & Spichiger in Boissiera 48: 264. 1994, **syn. nov. Holotypus: Peru. Cajamarca:** "Prov. Contumazá, c. 12 km S of Contumazá on road to Cascas", 07°25'S 78°50'W, 2530 m, 2.II.1985, *Stein 2051* (G [G00402390]!; iso-: MO-3826600 image!).

Distribution. – Ecuador (Azuay, Loja, and Zamora-Chinchipe) and Peru.

Notes. – On the basis of more complete material, the type specimen of *Ilex weberlingii,* and the five collections from Ecuador (*Camp E415*, NY; *Hitchcock 21429*, NY; *Holm-Nielsen et al. 5119*, AAU, F, GB, S, U; *Wiggins 10811*, NY, and *10972*, NY) cited by Loizeau (1994: 267), and partly mentioned by Loizeau & Barriera (1999), are re-identified as *I. elliptica.* Then, *I. weberlingii* is reduced to a new synonym of *I. elliptica*.

Ilex elliptica, originally described from Peru and considered as endemic, is recorded for the first time in Ecuador based on new identifications of collections previously identify either as *I. kunthiana* (e.g. *Cerón & Ocampo 11918*, G) or *I. weberlingii* (collections cited above). The only collection indicated from Colombia (*Camargo 6831*, COL) by Loizeau (1994: 159) and Loizeau & Barriera (1999) is re-identified as *I. kunthiana* (= *I. microphylla*). *Ilex elliptica* is therefore currently not known in Colombia.

7. ***Ilex ericoides*** Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 176. 1901.

Holotypus: Peru. Puno: "Sachapata. Ost. Abh. der peruan Cordill.", VIII.1854, *Lechler 2591* (K [K000588635]!).

= *Ilex spinulosa* Cuatrec. in Lloydia 11: 207. 1949, **syn. nov. Holotypus: Colombia. Valle del Cauca:** "Cordillera Occidental: Los Farallones, filo de la cordillera, extremo N en el cerro Alto del Buey", 3500–3600 m, 11.X.1944, *Cuatrecasas 17890* (F-1278890!; iso-: COL [COL000002182] image!, P [P02142311]!, U [U0000602] image!, US [US00096010]!).

Distribution. – Colombia, Ecuador (Azuay and Loja), and Peru.

Notes. – The study of a large number of specimens from Colombia, Ecuador, and Peru made it possible to conclude that *Ilex spinulosa* Cuatrec. described from Colombia was the same species as *I. ericoides* described from Peru. There are no relevant morphological characters to distinguish more than a single species.

8. ***Ilex gabinetensis*** Cuatrec. in Lloydia 11: 210. 1949.

Holotypus: Colombia. Huila: "Comisaría del Caquetá; Cord. Or.; Gabinete, sobre el filo divisorio de la Cordillera", 2300–2450 m, 22.III.1940, *Cuatrecasas 8500[b]* (F-1280340!; iso-: COL [COL000002171] image!).

Distribution. – Colombia, Ecuador (Carchi, Loja, Morona-Santiago, Pichincha, and Zamora-Chinchipe), and Peru.

Notes. – The holotype is a female specimen, *Cuatrecasas 8500[b]*, as Cuatrecasas (1949) did not describe male flowers

Fig. 3. – Lectotype of *Ilex amplifolia* Rusby.
[*Bang 1682*] [NY00429151; © New York Botanical Garden]

in the diagnosis. Consequently, the male specimen, *Cuatrecasas 8500[a]*, cannot be considered as original material.

9. ***Ilex gabrielleana*** Loizeau & Spichiger in Boissiera 48: 167. 1994.

Holotypus: Peru. Loreto: "Prov. Maynas. Dtto. Alto Nanay. In the bahial along the trail leading north from the north end of Santa Maria de Nanay", 03°28'S 73°15'W, 5.III.1968, *Simpson 790* (G [G00402450]!; iso-: F-1871044!, NY!, US [US00433205] image!).

Distribution. – Bolivia [?], Ecuador (Morona-Santiago, Napo, Pastaza, and Zamora-Chinchipe), and Peru.

Notes. – A species vegetatively similar to *Ilex amplifolia,* but distinguished by the low order of the male cymes (1º to 2º vs. 4º) and the type of inflorescence: thyrse vs. thyrsoid (cf. Weberling 1989).

Even if it was not indicated by Barriera et al. (2014), this species is probably present in Bolivia, based on two gatherings (*Young & Stratton 184*, MO and *Hartshorn 2424*, F, MO) that come from southernmost Peru (Madre de Dios department).

10. ***Ilex goudotii*** Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 400. 1901.

Holotypus: Colombia. Quindío: "Chessgal redondo", XII.1844, *Goudot s.n.* (K [K000588659]!). Fig. 7.

Distribution. – Bolivia, Colombia, Ecuador (Carchi), and Peru.

Notes. – Loesener (1901) used the specimen at K for describing the male flowers. *Goudot s.n.* at P [P03274948] does not belong to original material since it contains female branchlets not described in the diagnosis.

This species has been probably overlooked in its northern distribution range as it is known only from the type collection in Colombia and a single collection in Ecuador (*Boyle et al. 3411*, G) which make it a new record for the latter country.

11. ***Ilex guayusa*** Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 310. 1901.

Neotypus (designated here): **Ecuador. Napo:** "Cantón Archidona. South slopes of Volcán Sumaco. 5 km east of Huamaní. Ridge above west side of valley of Río Pucuno; new road to Galeras under construction", 00°44'S 77°35'W, 1100 m, 19.X.1989, *Neill & Palacios 9068* (G [2-part specimen: G00402601]!; isoneo-: MO-05035690). Fig. 8.

= *Ilex utilis* Moldenke in Phytologia 1: 8. 1933. **Holotypus: Colombia. Boyacá:** "Region of Mt. Chapon, extreme western part of Dept. Boyaca, north-west of Bogota. El Umbo region", 1200 m, 4.XI.1932, *Lawrance 559* (NY [NY00429238] image!; iso-: BM [000796398]!, E [E00259101], F-702109, F-1499342, G [G00402602]!, GH [GH00049415], K [K000588648] image!, MO-1039187 image!, NY [NY00429238] image!, S!, US [US00433215] image!).

Distribution. – Bolivia, Colombia, Ecuador (Morona-Santiago, Napo, and Zamora-Chinchipe), Peru, and Venezuela.

Notes. – When describing this species, Loesener (1901) was not totally convinced that it was an *Ilex* species because neither of the two syntypes he mentioned had flowers. Nevertheless, he described the vegetative parts and compared the new species to *I. paraguariensis* A. St.-Hil. and *I. nitida* (Vahl) Maxim.

Both syntypes, *Lagerheim s.n.* and *Warszewicz s.n.*, were destroyed during WWII at B and no duplicates were located in any consulted herbaria. Only a photo of *Warszewicz s.n.* at B is available at F [F0BN0B13215]. Neotypification is therefore necessary. Most specimens seen are sterile, and only a few have well developed flowers with duplicates present in several herbaria. One of them, *Lawrance 559*, is designated here as the neotype.

Indicated in Brazil by Loizeau (1994: 179–180) on the basis of a single collection (*Prance et al. 7502*, NY, S, U) that belongs to the family *Celastraceae*.

12. ***Ilex hippocrateoides*** Kunth in Humb. et al., Nov. Gen. Sp. 7(fol. ed.): 56, (qu. ed.): 72. 1825.

≡ *Prinos obtusatus* Willd. ex Schult. & Schult. f., Syst. Veg. 7: 62. 1829 [nom. illeg. superfl.].

Holotypus: Peru: sine loco, s.d., *Humboldt & Bonpland s.n.* (P-Bonpl. [P00660077]!; iso-: B-W [B-W06916-010] image!, P [P02142204]!).

= *Ilex boliviana* Britton in Mem. Torrey Bot. Club 3(3): 15. 1893, **syn. nov.** ≡ *Ilex boliviana* var. *rusbyana* Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 155. 1901 [nom. inval.]. **Lectotypus** (first-step designated by Loizeau, 1994: 145; second-step designated here): **Bolivia. La Paz:** "Yungas", 1890, *Bang 450* (NY [NY00429160] image!; isolecto-: BM [BM000796408]!, C [C10005932], GH [GH00049398], CORD [CORD00003211], F-77446, K [K000588615]!, LD [LD1762738], MIN [MIN1001397], NY [NY00429160, NY00429161] image!, PH [PH00015779], PUL [PUL00000370], US [US00930523, US00930524, US00095910!], W-1890-0001228 image!, WU-0069161 image!, Z!). **Syntypi: Bolivia:** sine loco, 1839, *Pentland s.n.* (K!, P [P02142155]!). **Santa Cruz:** sine loco, 1800 m, XII.1864, *Pearce s.n.* (K [K000588616]!).

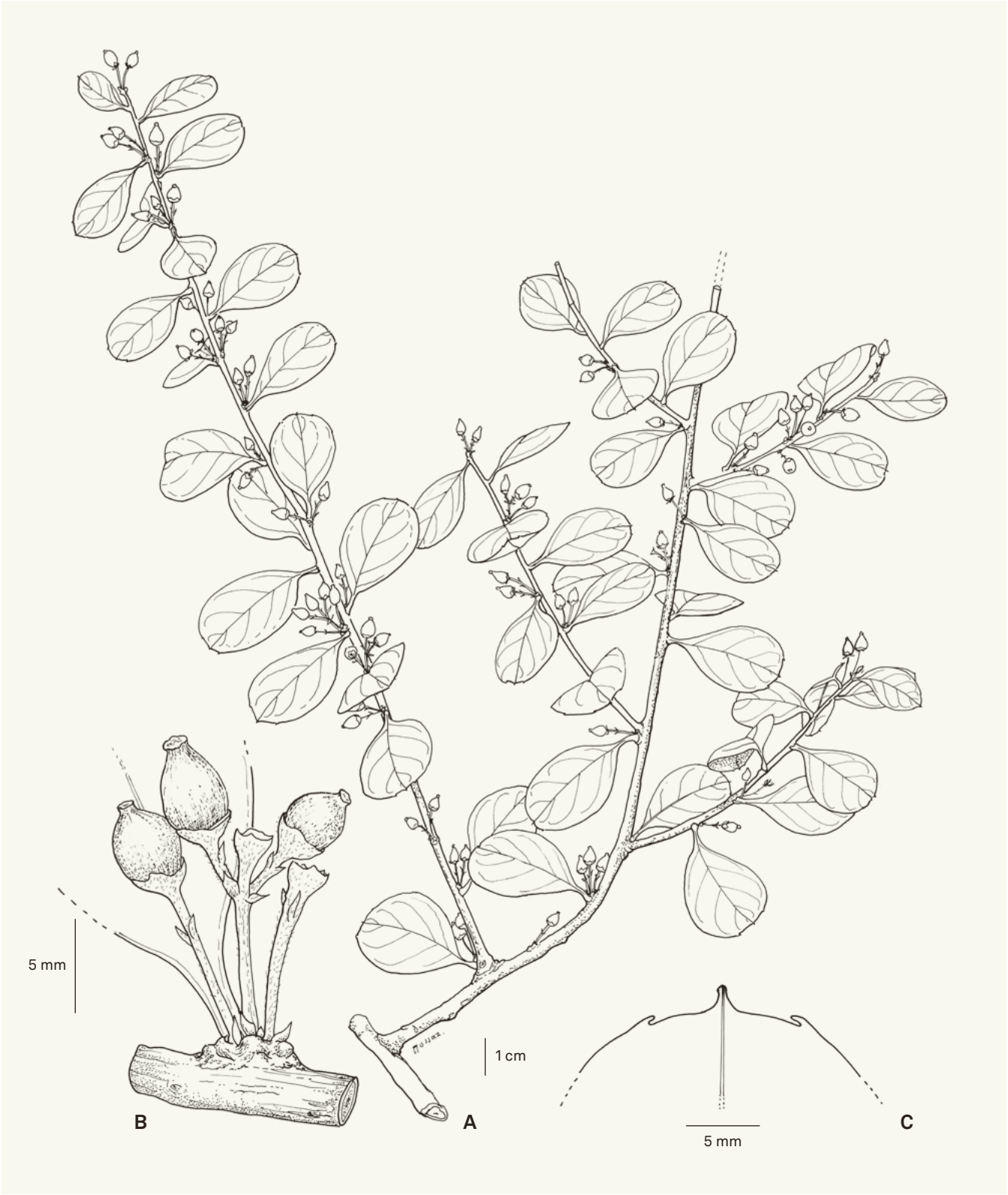

Fig. 4. – *Ilex cochlearifolia* Schlüssel & Barriera. **A.** Female branchlet; **B.** Detail of a thyrse (corollas dropped); **C.** Leaf apex. [*Tipaz et al. 1823*, G] [Drawings: Maya Mossaz]

= *Ilex boliviana* var. *acutata* Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 155. 1901**, syn. nov. Holotypus: Bolivia:** sine loco, 1839, *Pentland s.n.* (P [P02142155]!; iso-: K!).

= *Ilex boliviana* var. *brittoniana* Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 155. 1901, **syn. nov. Holotypus: Bolivia. Santa Cruz:** sine loco, 1800 m, XII.1864, *Pearce s.n.* (K [K000588616]!).

= *Ilex cuzcoana* Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 89: 273. 1908, **syn. nov**. **Lectotypus** (designated here): **Peru. Cuzco:** sine loco, s.d., *Weberbauer 5067* (F-642567 fragm. image!). Holotypus: B†.

= *Ilex amboroica* Loes. in Repert. Spec. Nov. Regni Veg. 7: 61. 1909, **syn. nov. Lectotypus** (designated here): **Bolivia. Santa Cruz:** "Cerro Amboró (Ostcordillera)", 1300–1400 m, X.1907, *Herzog 312* (Z [Z000001450]!). Holotypus: B†.

Distribution. – Bolivia, Colombia, Ecuador (Loja, Morona-Santiago, and Zamora-Chinchipe) and Peru.

Notes. – In the protologue of *Prinos obtusatus* Schult. & Schult. f. the locality "In monte Quindiu" is indicated, which is in Colombia, an error already mentioned by Loesener (1901: 156) and to be corrected.

Loizeau (1994: 145) selected *Bang 450* as the "isotype" of *Ilex boliviana* Britton and listed three herbaria acronyms without selecting one of them. Therefore, a second-step lectotypification is provided. The two remaining syntypes were further described as two varieties by Loesener (1901). Both varieties as well as *I. amboroica* have already been considered as synonyms of *I. boliviana* by Loizeau (1994: 145) and Barriera et al. (2014).

The lectotype of *Ilex cuzcoana*, which has been designated here, is a fragment taken from the holotype at B destroyed during WWII. It is composed of one leaf and few flowers. It is completed by a photo of the B specimen deposited at F [F0BN013206]. This material shows no morphological differences with *I. hippocrateoides*, and therefore it is considered a synonym.

Theodor Carl Julius Herzog's (1880–1961) original collections made in Bolivia from 1907 to 1912 were deposited at B (Stafleu & Cowan, 1979) and destroyed during WWII. The isotype of *Ilex amboroica* at Z bearing the species name in Loesener's hand and dated 1908 is designated here as the lectotype. No duplicates were found in the database of Herzog's collections at Jena.

Ilex boliviana, described from Bolivia, shows no relevant morphological differences compared to *I. hippocrateoides*. These two species are then considered here as synonyms.

The specimens cited by Loizeau (1994: 156–157) under *Ilex* cf. *cuzcoana,* along with the illustration (Loizeau 1994: fig. 59), do not belong to *Aquifoliaceae* but *Celastraceae*; they probably belong to genus *Maytenus* Molina.

13. ***Ilex laureola*** Triana in Ann. Sci. Nat. Bot., sér. 5, 16: 377. 1872.

≡ *Ilex laureola* var. *genuina* Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 440. 1901 [nom. inval.].

Holotypus: Colombia. Cundinamarca: "Prov. de Bogota. Cundai", 1200 m, IX.1855, *Triana 3519* [*5705.2*] (P [P02142220]!; iso-: BM [BM000796424)]!, COL[COL000002172] image!, G [G00402326]!, K [K000588669]!, W-0049315 image!). Fig. 2.

= *Ilex casiquiarensis* Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 437. 1901. **Lectotypus** (designated here): **Venezuela. Amazonas:** "Prope San Carlos, ad Rio Negro", 1853–1854, *Spruce 3471[a]* (G [G00402302]!; isolecto-: BM [BM000796403]!, BR [BR0000006973582]!, G [G00402303]!, K [K000588665, K000588666] images!, W-1889-0002731 image!). **Syntypus: Venezuela. Amazonas:** "Ad flum. Guainia v. Rio Negro supra ostium fluminis Casiquiari", 1854, *Spruce 3471[b]* (G [G00402304]!, GOET [GOET000219]!, K [K000588664] image!).

= *Ilex laureola* var. *neglecta* Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 440. 1901. **Lectotypus** (first-step designated by Loizeau, 1994: 199; second-step designated here): **Venezuela. Bolívar:** "Roraima, Brit. Guiana", 1842–1843, *R.H. Schomburgk 555* [*ser. II*] (G [G00402429]!; isolecto-: BM [BM000796412, BM000796413]!, G [G00402430]!, K [K000588565]!, P [P02142221, P02142222]!).

= *Ilex macrolaurus* Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 438. 1901. **Holotypus: Brazil. Amazonas:** "Prope Panurè ad Rio Uaupès", X.1852–I.1853, *Spruce 2494* (K [K000588668]!; iso-: K [K000588667] image!, P [P02142236]!, W-1889-0002736!).

= *Ilex fructiclipeata* Cuatrec. in Fieldiana, Bot. 27(2): 81. 1951. **Holotypus: Colombia. Caquetá:** "Comisaria del Vaupés, Cerro de Chiribiquete, a un lado del río Macaya", 17.I.1944, *Gutiérrez & Schultes 680* (MEDEL [MEDEL000031] image!; iso-: COL [COL000002170] image!, GH [GH00049402]).

= *Ilex humbertii* Cuatrec. in Notul. Syst. (Paris) 15: 238. 1956. **Holotypus: Colombia. Vaupés:** "Bassin de l'Amazone: Rio Cubiyu, affluent du Rio Vaupes",

Fig. 5. – Isotype of *Ilex colombiana* Cuatrec.
[*Cuatrecasas 18836*] [COL000002164; © Universidad Nacional de Colombia]

350 m, 9–10.XI.1952, *Humbert & Schultes 27366* (P [P02142205]!; iso-: F-1496244!).

Distribution. – Bolivia [?], Brazil, Colombia, Ecuador (Morona-Santiago, Napo, and Zamora-Chinchipe), Guyana, Peru, and Venezuela.

Notes. – In the protologue of *Ilex casiquiarensis* Loes., Loesener (1901) indicated eight duplicates of *Spruce 3471*; a lectotypification is therefore necessary. Furthermore, these duplicates contain male and female branchlets. The male specimen deposited at G is designated here as the lectotype, *Spruce 3471[a]*. These specimens are erroneously indicated in Brazil in the protologue (see Steyermark, 1981).

Schomburgk 555 and *882* were indicated by Loesener (1901) in the protologue of *Ilex laureola* var. *neglecta* Loes. as deposited in B, G, K, and W. Loizeau (1994: 199) mentioned five duplicates of *Schomburgk 555* as isotypes, a second-step lectotypification is therefore provided. The duplicate at G is designated here as the second-step lectotype. These specimens were erroneously indicated from Guyana in the protologue (see Maguire et al., 1953), but they come from Venezuela. *Robert H. Schomburgk 555* is the same gathering as *M. Richard Schomburgk 882* (see Dam, 2002).

Concerning *Ilex macrolaurus* Loes., Loesener (1901: 439) wrote "Habitat in Ecuador". The type locality "Prope Panurè ad Rio Uaupès" [Panure, Vaupés] is located in Brazil next to the border with Colombia.

Even if not mentioned by Barriera et al. (2014), *Ilex laureola* most likely occurs in Bolivia as there is a gathering collected near the border with Peru (*Alban & Foster 6901*, F).

14. ***Ilex laurina*** Kunth in Humb. et al., Nov. Gen. Sp. 7(fol. ed.): 57, (qu. ed.): 73. 1825.

Holotypus: Patria ignota: sine loco, s.d., *Humboldt & Bonpland s.n.* (P-Bonpl. [P00660078]!).

= *Ilex caliana* Cuatrec. in Lloydia 11: 213. 1949. **Holotypus: Colombia. Valle del Cauca:** "Cordillera Occidental, vertiente oriental, Hoya del río Cali, Pichindé: Alto de Las Brisas", 2160 m, 27.X.1944, *Cuatrecasas 18281* (F-1280341!; iso-: COL [COL000002163] image!, F-1280342!, G [G00402431]!, P [P02142160], US [US00095915]!, WIS [WIS00000630MAD]).

Notes. – So far, only one specimen was collected in Bolivia (*Zenteno 1530*, G). *Fonnegra et al. 5612* (G) mentioned under *Ilex laurina* Kunth by Barriera et al. (2016) to illustrate the presence of this species in Colombia belongs to *Ilex laurina* var. *tenuifolia* (see below).

This species was indicated in Brazil by Loizeau (1994: 203) but no specimens were cited.

14a. ***Ilex laurina*** var. ***laurina***

Distribution. – Bolivia, Colombia, Ecuador (Azuay, Carchi, Loja, Napo, Tungurahua, and Zamora-Chinchipe), Peru, and Venezuela.

14b. ***Ilex laurina*** var. ***tenuifolia*** Barriera, **var. nov.** (Fig. 9).

Holotypus: Ecuador. Loja: "Road Loja–Zamora, close to pass "El Tiro", ridges on eastern slope", 2600 m, 21.X.2004, *Homeier et al. 1420* (G [G00032330]!; iso-: BIEL, LOJA, MO, QCNE).

Ilex laurina var. tenuifolia Barriera differs from the typical variety by its smaller female flowers (2 mm vs. 2.5–4 mm in length) and leaves (3.5–7 cm vs. 9.5–20 cm in length), the margin of the leaf blades (crenate with conspicuous teeth vs. unconspicuously dentate), and the shorter blade acumen (when present) (2.5–4 mm vs. 5–15 mm in length).

Treelet or *shrub*, sometimes *tree*, evergreen, 2–10(–20) m tall; young and old branchlets glabrous; stipules caducous, 2–4 mm long; petiole (5–)8–9(–10) mm long, glabrous. *Leaf* blade 3.5–7(–10) × 1.5–2.5(–3) cm, elliptic or obovate, oblong, leathery, punctate abaxially, glabrous on both surfaces, midvein adaxially and abaxially raised and glabrous, lateral veins 6–8 pairs, abaxially unconspicuous, reticulate veins abaxially unconspicuous, base acute or obtuse, margin recurved, crenate or dentate, teeth conspicuous, on distal two third, (7–)8–11 pairs of teeth, apex rounded, acuminate, acumen 0.25–0.4 cm long, not mucronate. *Inflorescences* in non proliferating, axillary on current year's branchlets. *Male inflorescences* in cymes of order 1(–2), peduncles glabrous, of order 1: 5–7 mm long.; flowers 4-merous, calyx glabrous, corolla 2 mm long, white, cream or greenish, petals connate on 5–10 % of their length, rudimentary ovary subpyriform, glabrous. *Female inflorescences* in cymes of order 1, peduncles glabrous, of order 1: 3–5 mm long; flowers 4-merous, calyx glabrous, corolla 2 mm long, white, cream or greenish, petals connate on 5–10 % of their length, ovary globose, glabrous, stigma columnar or rarely capitate, glabrous. *Fruits* globose, 7–8 mm in diam., 7–8 mm long, black.

Etymology. – The epithet *tenuifolia* refers to the size of the leaf blade much smaller than in the typical variety.

Distribution, ecology and phenology. – Colombia, Ecuador (Imbabura, Loja, Morona-Santiago, and Zamora-Chinchipe) and Peru, at elevations from 1300–3100 m. The new variety grows in humid submontane and montane, evergreen and semi-deciduous, primary and secondary forests. The flowering period extends from January to December.

Fig. 6. – Holotype of *Ilex elliptica* Kunth.
[*Humboldt & Bonpland 3225*] [P00660072; © Muséum national d'Histoire naturelle, Paris]

Notes. – This new variety belongs to the Ecuadorian species group of *Ilex* with prominent midvein on adaxial leaf blades. These are *Ilex crassifolioides, I. guayusa, I. laurina, I. maxima*, and *I. yurumanguinis*, all of which have a leaf blade generally larger than *I. laurina* var. *tenuifolia* (3–40 × 2–15 cm vs. 3.5–7 × 1.5–2.5 cm in var. *tenuifolia*). *Ilex guayusa* can be further distinguished by its wider leaf blades (2.5–7.5 cm), which are not punctate abaxially. *Ilex laurina* and *I. maxima* are distinguished by their much larger leaf blade (9.5–40 × 3–15 cm), their longer male peduncle of order 1º (7–17 mm vs. 5–7 mm), and their longer female corolla (2.2–4 mm vs. 2 mm). *Ilex crassifolioides* and *I. yurumanguinis* differ in the number of lateral veins, respectively 7–11 and 4–5 (vs. 6–8), the order of the male cymes 3º–5º and 2º (vs. 1º), and the smaller female corolla for *I. yurumanguinis* (1.5–2 mm long) and larger for *I. crassifolioides* (2.5–3 mm long) vs. 2 mm long in *I. laurina* var. *tenuifolia*.

Additional specimens examined – **Colombia. Antioquia:** Estación Experimental Forestal de "Piedras Blancas", 2550 m, 18.IX.1957, *Cabrera 230* (COL); Mun. de Caldas, Vereda La Corrala, bosque muy perturbado de la finca La Zarza, 2440 m, 14.IV.1987, *Escobar & Velásquez 7530* (MO!); cerca al Alto de San Luis, 2550 m, 21.VIII.1963, *Espinal et al. 1270* (COL); Municipios Medellín y Guarne, Parque Ecológico Piedras Blancas, parajes La Soledad y Piedras Blancas, quebrada Piedras Blancas, 06°18'N 75°29'W, 2350 m, 20.V.1995, *Fonnegra et al. 5612* (G). **Boyacá:** Páramo de Chita, vertiente oriental, sitio Piedras Negras, 2900 m, 15.VII.1967, *Jaramillo & van der Hammen 2740* (COL). **Cauca:** ad pag. El Tambo, 17.I.1933, *Sneidern 30* (S). **Chocó:** Mun. San José del Palmar, Cerro del Torrá, hacia la base del cerro, en la trocha, entre el helipuerto y la cima del Torrá, vertiente oriental, vereda de Río Negro, 04°46'N 76°29'W, 2000 m, 31.VIII.1988, *Ramos et al. 1655* (MO). **Cundinamarca:** Sibaté, San Miguel, 2700 m, 13.V.1964, *Huertas & Camargo 5890* (COL); Fusagasugá, quebrada la Aguadita, 1680 m, 17.XI.1968, *Idrobo 6041* (COL). **Nariño:** Municipio de Barbacoas, Reserva Natural Río Ñambí, 01°19'N 78°05'W, 1300 m, 9.VIII.1992, *Arias 157* (G). **Ecuador. Imbabura:** Pimampiro Canton, Parroquia Chugá, San Francisco de los Palmares, al este de Pimampiro, 00°22'N 77°52'W, 3100 m, 17.I.1992, *Tipaz et al. 621* (G). **Morona-Santiago:** Limón Indanza, Cordillera del Cóndor, Cerro Chankinias, South of Río Warintza, east of main ridge of Cordillera, 03°15'S 78°19'W, 2500 m, 16.XII.2002, *Neill et al. 14178* (G); Limón Indanza, Cordillera del Cóndor, Cerro Maka naint a 6 km al suroeste del Centro Shuar Warints, área de exploración minera, 03°11'S 78°18'W, 1600 m, 7.X.2002, *Toasa 8938* (G). **Zamora-Chinchipe:** El Pangui, Cordillera del Cóndor, cerca del destacamento militar Cóndor Mirador, en la frontera Ecuador-Perú, 03°38'S 78°23'W, 1800 m, 15.XII.2000, *Miranda et al. 155* (G); Nangaritza Canton Ridge crest of Cordillera del Cóndor, above Pachicutza, on disputed Peru-Ecuador border, 04°06'S 78°35'W, 1800 m, 5.XII.1990, *Neill & Palacios 9522* (G); Nangaritza, Cordillera de Nanguipa, Cerro Colorado, about 8 km by air SSE of Nambija, 20 km ESE of Zamora, highest summit on ridge, 04°07'S 78°46'W, 2740 m, 17.II.2002, *Neill et al. 13710* (G); Nangaritza Canton Cima del Cordillera del Cóndor, arriba de Pachicutza, 04°07'S 78°34'W, 1850 m, 5.XII.1990, *Palacios & Neill 6507* (G); El Pangui, Cordillera del Cóndor, cerca a la cresta de la cordillera, 1 km al oeste del destacamento militar Cóndor Mirador, cuenca alta del río Tundayme, 03°38'S 78°24'W, 1750 m, 15.XII.2000, *Ramírez et al. 72* (G); El Pangui, Cordillera del Cóndor, cerca a la cresta de la Cordillera, 1 km. al oeste del destacamento militar Cóndor Mirador, cuenca alta del río Tundayme, 03°38'S 78°24'W, 1750 m, 16.XII.2000, *Ramírez et al. 74* (G). **Peru. Amazonas:** Reserva Alto Mayo, 05°40'S 77°46'W, 1940 m, 8.XI.2012, *van der Werff et al. 25348* (G). **Cajamarca:** San Ignacio, San José de Lourdes, Cordillera entre bajo Picorana y Picorana, 04°58'S 78°53'W, 2420–2470 m, 19.VIII.1998, *Campos et al. 5608* (G). **Pasco:** Dist. Oxapampa, Parque Nacional Yanachaga Chemillén, Abra Esperanza, 10°32'S 75°21'W, 2790 m, 17.XII.2010, *Briceno & Rivera 510* (G); Oxapampa, Puerto Bermúdez, alturas del cerro Ariapo, cabecera del Río Chinchihuani, afluente del Río Apurucayali, cuenca del Río Pichis, Reserva Comunal El Sira, 09°29'S 74°35'W, 2000 m, 27.III.2018, *Graham 12529* (G); Distrito Oxapampa, Parque Nacional Yanachaga Chemillén, Abra la Esperanza, 10°31'S 75°20'W, 2800 m, 23.III.2003, *Monteagudo et al. 4796* (G); Dist. Oxapampa, Parque Nacional Yanachaga-Chemillén, Abra Esperanza., 10°32'S 75°21'W, 2750 m, 16.X.2006, *Monteagudo et al. 12873* (G); Dist. Oxapampa, Sector San Alberto, Parque Nacional Yanachaga-Chemillen, Refugio El Cedro, Abra Esperanza, trocha hacia el bosque esclerófilo, 10°32'S 75°21'W, 2811 m, 19.XI.2010, *Perea & Santiago 4760* (G). **Ucayali:** Coronel Portillo, Iparia, cabecera de la cuenca (oeste) del Río Ariapo, afluente del Río Ucayali, alturas del cerro Ariapo, Reserva Comunal el Sira, 09°29'S 74°35'W, 2000–2050 m, 15.XII.2009, *Graham 5732* (G).

15. ***Ilex macarenensis*** Cuatrec. in Trop. Woods 101: 13. 1955.

Holotypus: Colombia. Meta: "Cordillera La Macarena (extremo nordeste), macizo Renjifo, cumbre y alrededores", 1300–1900 m, 6–20.I.1951, *Idrobo & Schultes 1154* (US [US00095967]!; iso-: COL [COL000002173] image!, F-1760240A, MO-2172110 image!, NY [NY00429188] image!, US [US00930526] image!). Fig. 10.

Distribution. – Colombia, Ecuador (Loja, Morona-Santiago, Pastaza, and Zamora-Chinchipe), Peru [?], and Venezuela.

Notes. – Probably present in Peru as two specimens (*Gentry 80387*, MO and *Ramírez et al. 92*, G) were collected in southernmost Ecuador near the Peruvian department of Amazonas.

16. ***Ilex maxima*** W.J. Hahn in Novon 3: 43. 1993.

Holotypus: Panama. Coclé: "La Mesa, 4 km N of El Valle", 875 m, 12.II.1974, *Nee & Hale 9626* (MO-3821595 image!; iso-: BM [BM000583365]!, G [G00402444]!, MEXU [MEXU00924345], PMA [PMA636], US [US00603727], WIS [WIS0255063]).

Distribution. – Costa Rica, Panama, Colombia, Ecuador (Bolívar, Carchi, Esmeraldas, Imbabura, Morona-Santiago, Napo, and Zamora-Chinchipe), and Peru.

Notes. – This species is newly recorded for Peru following the identification of two gatherings (*Jaramillo et al. 460*, G and *Díaz et al. 7226*, G) collected in Amazonas department, which extends the southern range of this species to northern Peru.

17. ***Ilex microphylla*** Hook. in Icon. Pl.: tab. 139. 1837.

≡ *Ilex minutifolia* J.F. Macbr. in Publ. Field Mus. Nat. Hist., Bot. Ser. 13(3A): 281. 1951 [nom. illeg. superfl.].

Lectotypus (designated here): **Peru. Amazonas:** "Prov. of Chachapoyas Peru", 1836, *Matthews s.n.* (K [K000588632]!; isolecto-: BM [BM000796477]!, G [G00439975]!,

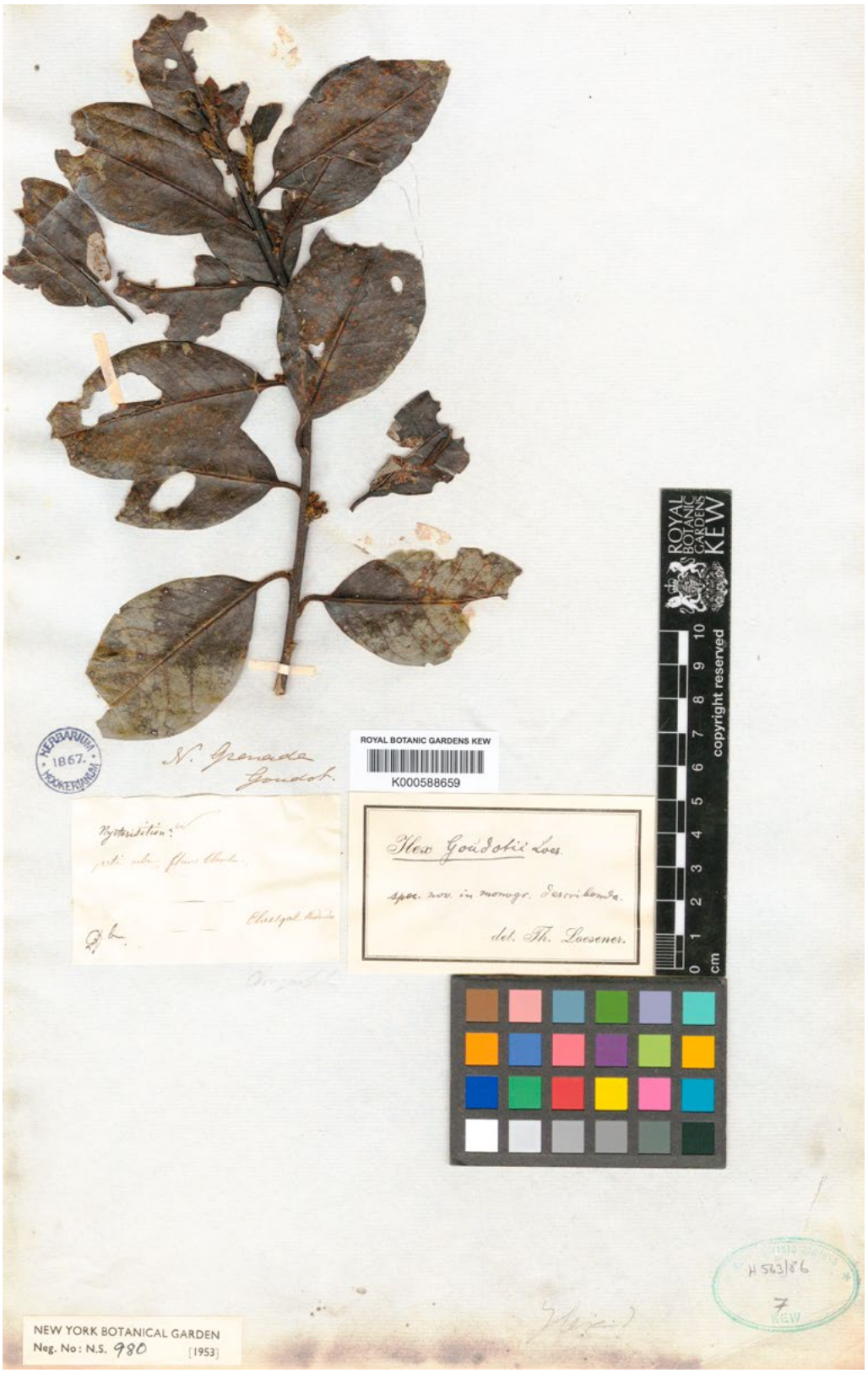

Fig. 7. – Holotype of *Ilex goudotii* Loes.
[*Goudot s.n.*] [K000588659; © Royal Botanic Gardens, Kew]

K [K000588633, K000588634]!, M!, TCD [TCD0000972], US [US00095974]!).

= *Ilex kunthiana* Triana in Ann. Sci. Nat. Bot., sér. 5, 16: 375. 1872, **syn. nov.** ≡ *Ilex kunthiana* f. *genuina* Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 181. 1901 [nom. inval.]. **Lectotypus** (designated here): **Colombia. Cundinamarca:** "Prov. de Bogota. Cord. de Bogota", 3000 m, VIII.1853, *Triana 3518* [*5705.1*] (P [P02142216]!; isolecto-: BM [BM000796489]!, BR [BR000006973643]!, COL-20158!, COL-20159!, G [G00032329]!, E [E00259106], K [K000588639] image!). **Syntypus: Colombia:** sine loco, s.d., *Humboldt & Bonpland s.n.* (P [P03275183, P03275186] images!).

= *Ilex kunthiana* f. *funckii* Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 182. 1901, **syn. nov. Holotypus: Venezuela:** sine loco, s.d., *Funck & Schlim 848* (P [P02142217]!; iso-: G [G00032331]!).

= *Ilex kunthiana* f. *purdiei* Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 182. 1901, **syn. nov. Holotypus: Colombia. Cundinamarca:** "N. Grenada. Paramo de Jusagasuga", II.1846, *Purdie s.n.* (K [K000588640]!; iso-: TCD [TCD0000971]).

= *Ilex minimifolia* Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 174. 1901, **syn. nov. Holotypus: Bolivia. Santa Cruz:** "Quitar", II.1867, *Pearce s.n.* (K [K000588631]!).

= *Ilex trichoclada* Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 178. 1901, **syn. nov. Holotypus: Bolivia. La Paz:** "Huaycani", 3600–4000 m, V.1866, *Pearce s.n.* (K [K000588636]!).

= *Ilex weberbaueri* Loes. in Repert. Spec. Nov. Regni Veg. 1: 165. 1905. **Lectotypus** (designated by Brako 1993: 71): **Peru. Junín:** "Prov.: Tarma. Cerros al oeste de Huacapistana", 3000–3100 m, s.d., *Weberbauer 2091* (MOL [MOL00002493] image!).

= *Ilex imbricata* Rusby, Descr. S. Amer. Pl.: 52. 1920, **syn. nov. Lectotypus** (designated here): **Bolivia. La Paz:** "Región: andina. Unduavi, Nordyungas", 3300 m, XI.1910, *Buchtien 2934[a]* (US [US00095952]!; isolecto-: LPB [LPB0000459, LPB0000460] images!, NY!). **Syntypus: Bolivia. La Paz:** "Región: andina. Unduavi, Nordyungas", 3300 m, XI.1910, *Buchtien 2934[b]* (GH [GH00049403] image!, LPB [LPB0000459, LPB0000460] images!, NY!, US [US00095952]!).

Distribution. – Bolivia, Colombia, Ecuador (Azuay and Loja), Peru, and Venezuela.

Notes. – *Ilex minutifolia* J.F. Macbr. is illegitimate on account of its superfluity for *I. microphylla* Hook. (1837), which is valid and legitimate as *I. microphylla* DC. (1825) is a *nomen nudum*.

Lectotypification of *Ilex microphylla* is necessary since the illustration published in the protologue is part of the original material. The duplicate K000588632 originating from Hooker's herbarium is designated here as the lectotype.

The specimen at US of *Ilex imbricata* Rusby has three branchlets mounted on the same sheet, the central one is female (*Buchtien 2934[b]*) whereas the others are male (*Buchtien 2934[a]*). The latter is designated as the lectotype because it is more complete than the female branchlet and it is the only duplicate with an original determination in Rusby's hand bearing the date and elevation mentioned in the protologue. The isolectotype at NY differs in altitude (3200 m) and date of collection (Feb. 1914).

The two forms of *Ilex kunthiana*, i.e., *funckii* Loes. and *purdiei* Loes., were already considered as synonyms of *I. kunthiana* by Galle (1997). Similarly, *I. minimifolia* Loes. and *I. imbricata* have both been considered as synonyms of *I. trichoclada* Loes. by Barriera et al. (2014). Following the study of a large number of specimens, *I. kunthiana* and *I. trichoclada* could not be morphologically distinguished from *I. microphylla* and are here also considered as synonyms of the latter name.

18. ***Ilex myricoides*** Kunth in Humb. et al., Nov. Gen. Sp. 7(fol. ed.): 56, (qu. ed.): 72. 1825.

≡ *Myginda myricoides* Willd. ex Schult. & Schult. f., Mant. 3: 349 1827 [nom. illeg. superfl.]. ≡ *Prinos myricoides* Schult. & Schult. f., Syst. Veg. 7: 62. 1829 [nom. illeg. superfl.]. ≡ *Ilex myricoides* var. *trianiana* Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 190. 1901 [nom. inval.].

Holotypus: Colombia. Nariño: sine loco, s.d., *Humboldt & Bonpland 2151* (P-Bonpl. [P00660076] image!; iso-: B-W [B-W03223-010, B-W06917-010] images!, P [P02142245] image!, W-0060206 image!).

= *Ilex polyphylla* Benth., Pl. Hartw.: 167. 1845. ≡ *Ilex myricoides* var. *polyphylla* (Benth.) Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 191. 1901. ≡ *Ilex myricoides* f. *genuina* Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 191. 1901 [nom. inval.]. **Holotypus: Colombia. Cauca:** "Mountains of Pitayo. Province of Popayan", s.d., *Hartweg 938* (K [K000588643]!; iso-: BM!, G [G00439976, G00439977]!, K [K000588642]!, LD [LD1421038], P [P02142246, P02142247]!, W image!).

= *Ilex truxillensis* Turcz. in Bull. Soc. Imp. Naturalistes Moscou 31(1): 455. 1858, **syn. nov. Holotypus: Venezuela. Trujillo:** "Agua de Obispo", 3000 m, VII.1843, *Linden 1452* (KW [KW001001093] image!;

Fig. 8.– Neotype of *Ilex guayusa* Loes.
[*Neill & Palacios 9068*] [G00402601 part 1 of 2 ; Conservatoire et Jardin botaniques de Genève]

iso-: G [G00402446, G00402488]!, K [K000588617]!, P [P02142326]!, W-0060448, W-1889-0002729 images!).

= *Ilex myricoides* f. *euryterophylla* Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 191. 1901. **Holotypus: Ecuador:** "Andes of Equador", 2700–3000 m, s.d., *Pearce s.n.* (K [K000588641]!).

= *Ilex myricoides* var. *meridensis* Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 191. 1901. **Holotypus: Venezuela. Mérida:** "Salto de Carache", s.d., *Karsten s.n.* (W-0056512 image!).

Distribution. – Bolivia, Colombia, Ecuador (Azuay, Cañar, Carchi, El Oro, Loja, Pichincha, and Zamora-Chinchipe), Peru, and Venezuela.

Notes. – For the type locality of *Ilex myricoides*, the Colombian department of Nariño was taken from the protologue as no locality is indicated on the label of the type specimen.

The holotype of *Ilex polyphylla* Benth. at K [K000588643] originates from Bentham's herbarium while the isotype [K000588642] originates from Hooker's herbarium.

Ilex truxillensis Turcz., which is known only from the type, shows no morphological differences with *I. myricoides* and is therefore considered as a synonym.

This species is newly recorded for Peru, which fills a gap since it is found from northwest Venezuela to Bolivia. It was probably overlooked in Peru because the two known gatherings come from northern Peru (*Llatas Quiroz 2630*, F and *Wurdack 1366*, K, S) and the next southernmost locality is in northern Bolivia.

19. ***Ilex nervosa*** Triana in Ann. Sci. Nat. Bot., sér. 5, 16: 377. 1872.

≡ *Ilex nervosa* var. *genuina* Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 363. 1901 [nom. inval.].

Holotypus: Colombia. Cundinamarca: "Prov. de Bogotá. Gachala & Batatas, 2000 m", VIII.1855, *Triana 3521* [*5705.4*] (P [P02142250]!; iso-: BM [BM000796505]!, COL [COL000002178] image!).

= *Ilex nervosa* var. *aequatoriensis* Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 364. 1901. **Lectotypus** (first-step designated by Loizeau, 1994: 225; second-step designated here): **Ecuador:** "In Andibus Ecuadorensibus", 1857–1859, *Spruce 5076* (G [G00402361]!; isolecto-: BM!, C [C10005988] image!, E [E00259104], G [G00402362]!, GH [GH00049407], GOET!, K [K000201368, K000201369]!, LD [LD1014901], MPU [MPU020411], NY [NY00429196, NY00429197] images!, P [P02142251]!, TCD [TCD0000963], W-1889-0002740 image!).

= *Ilex nervosa* var. *glabrata* Steyerm. in Fieldiana, Bot. 28: 324. 1952, **syn. nov. Holotypus: Venezuela. Mérida:** "Above 'La Isla,' above Tabay", 2285–2745 m, 18.V.1944, *Steyermark 56653* (F-1251569 image!; iso-: NY [NY00429198] image!, US [US00095983], VEN [VEN33968] image!).

Distribution. – Bolivia, Colombia, Ecuador (Carchi, Napo, Pichincha, Sucumbíos, and Zamora-Chinchipe), Peru, and Venezuela.

Notes. – Loizeau (1994: 225) indicated *Spruce 5076* as the "isotype" of *Ilex nervosa* var. *aequatoriensis* Loes. but did not formally selected a specimen. A second-step lectotypification is therefore provided. The specimen deposited at G originating from the Barbey-Boissier herbarium, and suggested by Loizeau (1994: 227), is designated.

In *Ilex nervosa* Triana, the young leaves blades are pubescent abaxially whereas the old leaves are glabrous. Except for this character, which responds to the stage of development of the plant, there are no morphological differences with *I. nervosa* var. *glabrata* Steyerm. This latter name is therefore placed in synonymy.

20. ***Ilex ovalis*** (Ruiz & Pav.) Loes. in Engl. & Prantl, Nat. Pflanzenfam. Nachtr. 1: 219. 1897.

≡ *Paltoria ovalis* Ruiz & Pav., Fl. Peruv. Chil. 1: 54, tab. 84, fig. b. 1798. ≡ *Ilex paltoria* Pers., Syn. Pl. 1: 152. 1805 [nom. illeg. superfl.]. ≡ *Ageria ovalis* (Ruiz & Pav.) Raf., Sylva Tellur.: 48. 1838.

Lectotypus (designated here): **Peru:** sine loco, XII.1779, *Ruiz & Pavón s.n.* (MA [MA812972] image!; isolecto-: BM [BM000796500, BM000796501]!, G [G00439978, G00439979]!, MA [MA812973, MA812974] images!, MO-1605964, MO-1608226 images!, MPU [MPU013903] image!, P [P02142256]!).

= *Ilex lechleri* Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 177. 1901. **Lectotypus** (designated here): **Peru. Puno:** "Sachapata inter virgulta", VIII.1854, *Lechler 2607* (K [K000588638]!; isolecto-: G [G00439980, G00439981]!, GOET [GOET000222]!, P [P02142223]!).

= *Ilex matthewsii* Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 176. 1901. **Lectotypus** (designated here): **Peru. Amazonas:** "Chachapoyas", s.d., *Matthews s.n.* (G [G00439982]!; isolecto-: BM!, G [G00439983]!, K [K000588637]!).

Distribution. – Ecuador [?] and Peru.

Fig. 9. – *Ilex laurina* var. *tenuifolia* Barriera. **A.** Female branchlet; **B.** Details of the inflorescences (corollas dropped). [*Neill et al. 13710*, G] [Drawings: Gabriela Loza]

Notes. – The respective lectotypes designated here for *Ilex lechleri* Loes., *I. matthewsii* Loes., and *Paltoria ovalis* Ruiz & Pav. are the most representative specimens for each of the species.

Loizeau & Barriera (1999) mentioned *Madsen 85704* (AAU, G) to illustrate the presence of *Ilex ovalis* (Ruiz & Pav.) Loes. in Ecuador but this collection represents *Ilex rupicola*. *Ilex ovalis* is nevertheless probably present in Ecuador since it is found in northern Peru (*Sagástegui & Cabanitias 8653*, G; *Beltrán & Foster 1444*, G) near the border with Ecuador (departments of Piura and Amazonas, respectively).

This species is absent in Colombia; the only specimen (*Rusby & Pennell 747*, NY) indicated from Colombia by Loizeau (1994) belongs to *Ilex microphylla*.

21. ***Ilex pernervata*** Cuatrec. in Lloydia 11: 209. 1949.

Holotypus: Colombia. Putumayo: "Alta cuenca del río Putumayo, en el Valle de Sibundoy, extremo E, junto a San Francisco", 2200 m, 1.I.1941, *Cuatrecasas 11566* (F-1280337!; iso-: COL [COL000002179, COL000002180] images!, US [US00095994]!).

Distribution. – Colombia and Ecuador (Azuay and Sucumbíos).

22. ***Ilex petiolaris*** Benth. in Hooker's J. Bot. Kew Gard. Misc. 4: 11. 1852.

Holotypus: Brazil. Amazonas: "Barra. Capoeiras", III.1851, *Spruce 1396* (K [K000588552]!; iso-: BM!, C [C10005991] image!, G [G0402373]!, GOET!, K [K000588553]!, M!, NY!, P [P00541813, P00541814]!).

= *Ilex parviflora* Benth. in Hooker's J. Bot. Kew Gard. Misc. 4: 11. 1852. **Holotypus: Brazil. Amazonas:** "Barra", XII.1850, *Spruce 1141* (K [K000588551]!; iso-: BM!, C [C10005990] image!, G [G00402368, G00402369, G00402370]!, GOET!, K [K000588554]!, M!, NY [NY00429201, NY00429202] images!, P [P02142262, P02142263] images!).

= *Ilex cuiabensis* Reissek in Mart., Fl. Bras. 11(1): 71. 1861, **syn. nov. Lectotypus** (designated here): **Brazil. Mato Grosso:** sine loco, s.d., *Riedel s.n.* (W-0001219 image!; isolecto-: K [K000035198]!, M fragm.!, P [P02142182, P02142183]!).

= *Ilex inundata* Poepp. ex Reissek in Mart., Fl. Bras. 11(1): 43. 1861, **syn. nov. Lectotypus** (first-step designated by Loizeau, 1994: 188; second-step designated here): **Brazil. Amazonas:** "Flor amazon. In sylvis insularum flum. Teffé hieme inundatis", XII.1831, *Poeppig 2860* (W-0049316 image!; isolecto-: F-875272!, G [G00402305, G00402306]!, GOET!, M!, NY!, P [P02142213]!).

= *Ilex riparia* Reissek in Mart., Fl. Bras. 11(1): 43. 1861, **syn. nov. Lectotypus** (designated here). **Brazil. Pará:** "Habitat in sylvis secum flum. Amazonum. Provinciae Paraënsis", XI.?, *Martius 2966* (M!; isolecto-: M!). **Syntypus: Brazil. Amazonas:** "Habitat in ripae flum. Yapura Sylvis ad Maribi. Provinciae RN", XII.?, *Martius 2966* (M!).

= *Ilex vismiifolia* Reissek in Mart., Fl. Bras. 11(1): 59. 1861, **syn. nov. Lectotypus** (first-step designated by Loizeau, 1994: 260; second-step designated here): **Brazil. Amazonas:** "Prope Panurè ad Río Uaupès", s.d., *Spruce 2630[b]* (BR!; isolecto-: BM!, G [G00439999, G00440000]!, NY!, P [P00541817, P02142333]!). **Syntypus: Brazil. Amazonas:** "Prope Panurè ad Río Uaupès", s.d., *Spruce 2630[a]* (BR!, C [C10006313] image!, G [G00439999, G00440000]!, P [P00541818, P02142334]!).

= *Ilex andarensis* Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 394. 1901. ≡ *Ilex reisseckiana* T.R. Dudley in F.C. Galle, Hollies, The Genus Ilex: 231. 1997 [nom. illeg. superfl.], **syn. nov. Lectotypus** (designated here): **Peru. San Martín:** "In monte Andara. Tarapoto", s.d., *Spruce s.n.[a]* (K [K000201364] image!; isolecto-: K [K000201365] image!). **Syntypus: Peru. San Martín:** "Montis Andara. Tarapoto [K]", s.d., *Spruce s.n.[b]* (BM!, BR!, K [K000201365 upper right fragm.] image!, W!).

= *Ilex andarensis* f. *psila* Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 89: 289. 1908, **syn. nov. Lectotypus** (first-step designated by Loizeau, 1994: 262; second-step designated here): **Peru. Loreto:** "Canela Ucsha", 1000 m, II.1903, *Ule 6718* (G [G00402388]!).

Distribution. – Bolivia, Brazil, Colombia, Ecuador (Morona-Santiago, Napo, Pastaza, and Sucumbíos), French Guiana, Guyana, and Peru.

Notes. – Loizeau (1994) indicated a lectotype at K for *Ilex petiolaris* and a probable lectotype at K for *I. parviflora* Benth. These two species were described by Bentham (1852) and the two specimens originating from his herbarium now at K are considered here as the holotypes.

Only the holotypes of *Ilex petiolaris* and *I. parviflora* Benth. and one of the two isotypes at P, respectively P00541814 and P02142263, have collection number indicated.

The lectotype of *Ilex cuiabensis* Reissek has only "Brasilia" mentioned on the label, whereas the isolectotype at K has an additional label with printed "Ex herbario horti Petropolitani" and handwritten the locality "In ripa rivi Guaporé pr. Matto-Grosso", the date "December 1827" and a collection number "*Riedel 1226*".

Fig. 10 – Isotype of *Ilex macarenensis* Cuatrec.
[*Idrobo & Schultes 1154*] [US00930526; © Smithsonian Institution]

In the discussion following his treatment, Loizeau (1994: 190) explains that, not having located any duplicates at W, he designates, by analogy with *Ilex riparia*, the specimen at M as lectotype. A second-step typification is needed to correct the herbarium of the lectotype from M to W, because it is the latter herbarium that is originated from Poeppig's herbarium and, unlike the specimen at M, it contains the species name and a handwritten sheet with the entire description as published by Reissek. Furthermore, this specimen is in much better condition. A duplicate in B (photo deposited at F [F0BN013219]), that Reissek identified ("*Ilex inundata* Poepp. / (teste Reiss)"), was destroyed during WWII.

There are two isolectotypes at M of *Ilex riparia* Reissek both with only "Pará" indicated on the label.

Loizeau (1994) designated the lectotype at BR for *Ilex vismiifolia*. A second-step typification is provided to select only the female specimen (*Spruce 2630[bf]*) which is more complete and represented by many duplicates.

A second-step typification was provided for *I. andarensis* f. *psila* Loes. to correct lectotypification from B to G, the specimen at B having been destroyed during WWII.

Loesener (1901) already synonymized *Ilex riparia* with *I. inundata*. Loizeau (1994) synonymized *I. andarensis* and its forma *psila* with *I. vismiifolia*. We consider that *I. cuiabensis, I. inundata,* and *I. vismiifolia* cannot be discriminated from *I. petiolaris*. In addition, they have the same ecology. Consequently, they are all reduced here to synonyms of *I. petiolaris*.

Among the collections we studied, only one specimen of *Ilex petiolaris* was collected in French Guiana, in the South at the border with Brazil (Amapá).

The specimen (*Kappler 2115*, P) indicated in Surinam by Loizeau (1994: 238) belongs to *Ilex guianensis*.

23. ***Ilex pustulosa*** Triana in Ann. Sci. Nat. Bot., sér. 5, 16: 378. 1872.

Holotypus: Colombia. Cundinamarca: "Prov. de Bogota. Fusagasuga & Pasca", 2000 m, VII.1855, *Triana 3520* [*5705.3*] (P [P02142291]!; iso-: BM!, COL-20160!).

Distribution. – Colombia and Ecuador (Carchi).

Notes. – This species is newly recorded for Ecuador. It is uncommon and represented by only two specimens (*Palacios & Rubio 7242*, G and *7250*, G) collected in the same locality at Carchi at the border with Colombia.

24. ***Ilex quitensis*** (Schult.) Loes. in Engl. & Prantl, Nat. Pflanzenfam. Nachtr. 1: 219. 1897.

≡ *Rhamnus quitensis* Schult., Syst. Veg. 5: 295. 1819. ≡ *Ilex bumelioides* Kunth in Humb. et al., Nov. Gen. Sp. 7(fol. ed.): 56, (qu. ed.): 71. 1825 [nom. illeg. superfl.].

Holotypus: Ecuador. Pichincha: "Quito", s.d., *Humboldt & Bonpland 3332* (B-W [B-W04651-010] image!; iso-: P-Bonpl. [P00660075]!).

= *Ilex quitensis* f. *glabra* Loes. in Repert. Spec. Nov. Regni Veg. 1: 166. 1905, **syn. nov. Lectotypus** (designated by Loizeau, 1994: 239): **Peru. Amazonas:** "Molinopampa, al este de Chachapoyas", 2000–2300 m, s.d., *Weberbauer 4329* (MOL image!).

= *Ilex macbrideana* Edwin in Brittonia 17: 284. 1965, **syn. nov. Holotypus: Peru. Amazonas:** "Provincia de Chachapoyas. Jalca zone 1–5 km west of Molinopampa", 06°11'S 77°37'W, 2400–2450 m, 18.VII.1962, *Wurdack 1364* (US [US00095968]!; iso-: F-1601339, K!, NY [NY00429189] image!, S!).

Distribution. – Ecuador (Azuay, Loja, Pichincha, and Zamora-Chinchipe) and Peru.

Notes. – The syntypes indicated by Loesener (1905) for *Ilex quitensis* f. *glabra* Loes. were destroyed in B herbarium during WWII. By indicating *Weberbauer 4329* at MOL as isotype, Loizeau (1994: 239) proposed an indirect typification, which is accepted here and corrected to lectotype (Turland et al., 2018: ICN Art. 7.11 and 9.10).

The collection (*Valencia 183*, AAU, WIS) indicated under *Ilex macbrideana* by Loizeau & Barriera (1999) does not belong to *Aquifoliaceae* family.

No discriminant morphological characters were found to differentiate *Ilex quitensis* f. *glabra* and *I. macbrideana* from *I. quitensis*. They are therefore considered here as synonyms.

25. ***Ilex rimbachii*** Standl. in Publ. Field Mus. Nat. Hist., Bot. Ser. 17: 198. 1937.

Holotypus: Ecuador. Bolívar: "W. Cordillera. Region above Balsapampa", 2600 m, VIII.1936, *Rimbach 789* (F-863704!; iso-: G [G00402401 the branchlet on the right and the fragm. in the beige envelope]!, NY [NY00429208 the fruiting branchlet on the left] image!, S!, WIS [WIS-00000634MAD] image!).

Distribution. – Ecuador (Bolívar, Loja, and Zamora-Chinchipe) and Peru.

Notes. – The holotype was collected in fruit in August 1936. A second gathering was collected from the same tree than the holotype but in flowers in July 1937 (*Rimbach 789*[bis]). The duplicates at G [G00402401 two branchlets on the left and the fragments in the white envelope], NY [NY00429208 central branchlet in flower], S and WIS [WIS00000633MAD] are not mentioned in the protologue and therefore does not belong to original material.

This species is newly recorded for Peru, represented so far by a single gathering in Pasco (*van der Werff et al. 17623*, G).

26. ***Ilex rupicola*** Kunth in Humb. et al., Nov. Gen. Sp. 7(fol. ed.): 55, (qu. ed.): 71. 1825.

≡ *Ilex orbicularis* Schult. & Schult. f., Mant. 3: 338. 1827 [nom. illeg. superf.].

Holotypus: Ecuador. Loja: "Saraguru", s.d., *Humboldt & Bonpland s.n.* (P-Bonpl. [P00660074]!; iso-: B-W [B-W03181-010] image!, P [P02142297] image!).

= *Ilex rupicola* var. *pleiomera* Loes. in Bot. Jahrb. Syst., Beibl. 78: 13. 1904. **Lectotypus** (designated here): **Ecuador. Tungurahua:** "in silv. suband. vulc. Tungurahua", s.d., *Sodiro s.n.* (P [P03322470] image!). Holotypus: B†.

Distribution. – Ecuador (Azuay, Loja, Morona-Santiago, Tungurahua, and Zamora-Chinchipe) and Peru [?].

Notes. – For *Ilex rupicola* var. *pleiomera* Loes., no duplicate of *Sodiro s.n.* was located in QPLS where most Sodiro's collections are deposited. The single duplicate extant at P is designated here as the lectotype.

This species is known only from southern Ecuador so far. However, its presence in northern Peru is expected because of the Ecuadorian populations near the border. Awaiting further collections, *Ilex rupicola* is currently considered as the only endemic species to Ecuador.

27. ***Ilex scopulorum*** Kunth in Humb. et al., Nov. Gen. Sp. 7(fol. ed.): 55, (qu. ed.): 70. 1825.

≡ *Ilex crassifolia* Schult. & Schult. f., Mant. 3: 337. 1827 [nom. illeg., non Salisb. 1796]. ≡ *Ilex scopulorum* var. *crassifolia* Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 172. 1901 [nom. inval.].

Holotypus: Ecuador. Azuay: "Paramo de Alpachaca", s.d., 3300 m, *Humboldt & Bonpland 3304* (P-Bonpl. [P00660073]!; iso-: B-W [B-W03178-010] image!, W image!).

Distribution. – Ecuador (Azuay, Loja, Morona-Santiago, and Zamora-Chinchipe) and Peru.

Notes. – The isotype at W has no collector indicated on the label.

This species is newly recorded for Peru based on the identification of new collections (e.g. *Campos et al. 5844,* G; *Hernani & Peña 428* and *440*, G; *Rodríguez & Cruz 2048*, G; *van der Werff 19890* and *25223,* G; *Woytkowski 8138,* MO).

28. ***Ilex sessiliflora*** Triana in Ann. Sci. Nat. Bot., sér. 5, 16: 378. 1872.

≡ *Ilex sessiliflora* v. *genuina* Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 167. 1901 [nom. inval.].

Holotypus: Colombia. Tolima: "Quindío, Prov. de Mariquita", 2900 m, s.d., *Triana 3522* (P [P02142305]!; iso-: BM [BM000796447]!).

= *Ilex sessiliflora* var. *pearcei* Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 168. 1901. **Lectotypus** (first-step designated by Loizeau, 1994: 243; second-step designated here): **Bolivia. Santa Cruz:** "Quitar", 3600 m, II.1867, *Pearce s.n.* (K [K000588622]!).

Distribution. – Colombia, Ecuador [?], Peru, and Bolivia.

Notes. – The isotype of *Ilex sessiliflora* at BM originates from Triana's herbarium and has number 491 added in black ink on the original label along with "Quindio / Antioquia" as locality.

Loizeau (1994: 241) designated *Pearce s.n.* as the type of *Ilex sessiliflora* var. *pearcei* Loes. but did not formally selected a duplicate in the discussion following his treatment (Loizeau, 1994: 243). A second-step lectotypification is therefore provided. The specimen deposited at K, and suggested by Loizeau (1994: 243), is designated here.

In Colombia, this species is known only from the type. It is most likely also present in Ecuador since it has been collected in Peru and Bolivia.

29. ***Ilex suprema*** Cuatrec. in Lloydia 11: 205. 1949.

Holotypus: Colombia. Valle del Cauca: "Cordillera Occidental, Los Farallones, vertiente oriental bajo el filo de la Cordillera en el cerro de La Torre: La Laguna", 3500–3550 m, 1.VIII.1946, *Cuatrecasas 21894* (F-1280960!; iso-: COL [COL000002183] image!, P [P02142315]!, US [US00096015]!).

Distribution. – Colombia, Ecuador (Loja and Zamora-Chinchipe), and Peru.

Notes. – The specimen *Espinosa E976* (NY), which was indicated from Bolivia by Loizeau (1994: 246), was actually collected in Ecuador. No Bolivian collections are known thus far.

30. ***Ilex uniflora*** Benth., Pl. Hartw.: 217. 1846.

≡ *Ilex uniflora* f. *pitayensis* Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 169. 1901 [nom. inval.].

Holotypus: Colombia. Cauca: "In the woods of Pitayo, Prov. Popayan", s.d., *Hartweg 1196* (K [K000588626]!;

iso-: BM [BM000796469]!, BR [BR0000006962159]!, E [E00259102], FI [FI006628], G [G00439997, G00439998]!, K [K000588625]!, LD [LD1403457], NY [NY00429236], P [P02142329, P02142330]!, W-1889-0002773 image!).

= *Ilex uniflora* f. *pastoënsis* Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 169. 1901. **Lectotypus** (first-step designated by Cuatrecasas 1949: 206; second-step designated here): **Colombia. Cauca:** "Central Andes of Popayan. Paramo de Guanacas", 3000–3400 m, III.?, *Lehmann 5570* (LE; isolecto-: F-570860!, F-662530!, K [K000588624]!, US [US00433214] image!). **Syntypus: Colombia. Nariño:** "Pasto", s.d., Karsten s.n. (W image!).

= *Ilex caniensis* J.F. Macbr. in Publ. Field Columbian Mus., Bot. Ser. 8: 122. 1930. **Holotypus: Peru. Huánuco:** "Cani. Pueblo 7 miles N.E. of Mito", 2600 m, 16–26.IV.1923, *Macbride 3455* (F-534530!; iso-: G [G00439996]!, US [US00095916]!).

= *Ilex uniflora* var. *paramensis* Cuatrec. in Lloydia 11: 206. 1949. **Holotypus: Colombia. Valle del Cauca:** "Cordillera Central, vertiente occidental; Hoya del río Bugalagrande, Barragán: Páramo de Bavaya, Corrales", 3400–3550 m, 10.IV.1946, *Cuatrecasas 20565* (F [2-part specimen: F-1278893, F-1278895] images!; iso-: COL [COL000002184, COL000002185] images!, P[P02142331]!, US [US00096023]!, WIS [WIS-00000635MAD]).

Distribution. – Colombia, Ecuador (Carchi, Imbabura, Loja, and Zamora-Chinchipe), and Peru.

Notes. – Cuatrecasas (1949) indicated *Lehmann 5570* as type of *Ilex uniflora* f. *pastoënsis* Loes. mentioning no herbarium specimen. A second-step lectotypification is therefore provided. The specimen deposited at LE and mentioned in the protologue by Loesener is designated here as the lectotype.

31. ***Ilex villosula*** Loes. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 366. 1901.

Lectotypus (designated by Loizeau, 1994: 257): **Peru. Amazonas:** "Yambrasbamba", 1835, *Matthews 1565* (G [G00402447]!; isolecto-: E [E00259100], K [K000588650, K000588651] images!).

Distribution. – Ecuador (Zamora-Chinchipe) and Peru.

Notes. – The two isolectotypes at K bear a label where the locality and the year of collection are indicated, whereas the lectotype at G has a label with Mexico as country and Karvinski as collector indicated, which corresponds to an error.

This species is newly recorded for Ecuador, so far by a single gathering (*Neill et al. 15310*, G) in Zamora-Chinchipe near the border with Peru.

32. ***Ilex yurumanguinis*** Cuatrec. in Lloydia 11: 210. 1949.

Holotypus: Colombia. Valle del Cauca: "Costa del Pacífico; río Yurumanguí: Veneral", 5–50 m, 10.II.1944, *Cuatrecasas 16156* (F-1280331!; iso-: BC [BC624109], COL [COL000002186, COL000002187, COL000002188] images!, G [G00402391]!, MA [MA418371], P [P02142339]!, U [U0000604] image!, US [US00096032]!).

Distribution. – Colombia, Costa Rica, Ecuador (Carchi, Morona-Santiago, Napo, Pastaza, Pichincha, Tungurahua, and Zamora-Chinchipe), Panama, and Peru.

Notes. – This species is recorded for the first time in Peru based on specimens not seen by Loizeau (1994: 208) or mentioned under *Ilex laurina* (*Boissier s.n.*, G; *Wallnöfer 232888*, *11026388*, and *11516888*, G).

Species excluded from Ecuador

Ilex maasiana Loizeau & Spichiger

Notes. – Tentatively indicated in Ecuador by Loizeau & Barriera (1999) but the specimen mentioned (*Neill & Palacios 9522*, G) belongs to *Ilex laurina* var. *tenuifolia*.

Ilex teratopis Loes

Notes. – Tentatively indicated in Ecuador by Loizeau & Barriera (1999) but the specimen indicated (*Brandbyge 42333*, AAU, G) belongs to *Ilex gabinetensis* Cuatrec.

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Index of scientific names

Names in bold are accepted names; the number in brackets corresponds to the number of the accepted species in the treatment.

Ilex andarensis f. *psila* = ***Ilex petiolaris*** [22]
Ilex andicola [2]
Ilex anonoides = ***Ilex amplifolia*** [1]
Ilex boliviana = ***Ilex hippocrateoides*** [12]
Ilex boliviana var. *acutata* = ***Ilex hippocrateoides*** [12]
Ilex boliviana var. *brittoniana* = ***Ilex hippocrateoides*** [12]
Ilex boliviana var. *rusbyana* = ***Ilex hippocrateoides*** [12]
Ilex bumelioides ≡ ***Ilex quitensis*** [24]
Ilex caliana = ***Ilex laurina*** [14]
Ilex caniensis = ***Ilex uniflora*** [30]
Ilex casiquiarensis = ***Ilex laureola*** [13]
Ilex cochlearifolia [3]
Ilex colombiana [4]
Ilex crassifolia Hook. = ***Ilex crassifolioides*** [5]
Ilex crassifolia Schult. & Schult. f. ≡ ***Ilex scopulorum*** [27]
Ilex crassifolioides [5]
Ilex cuiabensis = ***Ilex petiolaris*** [22]
Ilex cuzcoana = ***Ilex hippocrateoides*** [12]
Ilex elliptica [6]
Ilex ericoides [7]
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Ilex gabinetensis [8]
Ilex gabrielleana [9]
Ilex goudotii [10]
Ilex guayusa [11]
Ilex hippocrateoides [12]
Ilex hualgayoca = ***Ilex andicola*** [2]
Ilex humbertii = ***Ilex laureola*** [13]
Ilex imbricata = ***Ilex microphylla*** [17]
Ilex inundata = ***Ilex petiolaris*** [22]
Ilex kunthiana = ***Ilex microphylla*** [17]
Ilex kunthiana f. *funckii* = ***Ilex microphylla*** [17]
Ilex kunthiana f. *genuina* = ***Ilex microphylla*** [17]
Ilex kunthiana f. *purdiei* = ***Ilex microphylla*** [17]
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Ilex laurina [14]
Ilex laurina var. ***laurina*** [14a]
Ilex laurina var. ***tenuifolia*** [14b]
Ilex lechleri = ***Ilex ovalis*** [20]
Ilex macarenensis [15]
Ilex macbrideana = ***Ilex quitensis*** [24]
Ilex macrolaurus = ***Ilex laureola*** [13]
Ilex matthewsii = ***Ilex ovalis*** [20]
Ilex maxima [16]
Ilex microphylla [17]
Ilex minimifolia = ***Ilex microphylla*** [17]
Ilex minutifolia ≡ ***Ilex microphylla*** [17]
Ilex myricoides [18]
Ilex myricoides f. *euryterophylla* = ***Ilex myricoides*** [18]
Ilex myricoides f. *genuina* = ***Ilex myricoides*** [18]
Ilex myricoides var. *meridensis* = ***Ilex myricoides*** [18]
Ilex myricoides var. *polyphylla* = ***Ilex myricoides*** [18]
Ilex myricoides var. *trianiana* ≡ ***Ilex myricoides*** [18]
Ilex nervosa [19]
Ilex nervosa var. *aequatoriensis* = ***Ilex nervosa*** [19]
Ilex nervosa var. *genuina* ≡ ***Ilex nervosa*** [19]
Ilex nervosa var. *glabrata* = ***Ilex nervosa*** [19]
Ilex orbicularis ≡ ***Ilex rupicola*** [26]
Ilex ovalis [20]
Ilex paltoria ≡ ***Ilex ovalis*** [20]
Ilex parviflora = ***Ilex petiolaris*** [22]
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Ilex reisseckiana = ***Ilex petiolaris*** [22]
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Ilex uniflora [30]
Ilex uniflora f. *pastoënsis* = ***Ilex uniflora*** [30]
Ilex uniflora f. *pitayensis* ≡ ***Ilex uniflora*** [30]
Ilex uniflora var. *paramensis* = ***Ilex uniflora*** [30]
Ilex utilis = ***Ilex guayusa*** [11]
Ilex villosula [31]
Ilex vismiifolia = ***Ilex petiolaris*** [22]
Ilex weberbaueri = ***Ilex microphylla*** [17]
Ilex weberlingii = ***Ilex elliptica*** [6]
Ilex yurumanguinis [32]
Myginda myricoides ≡ ***Ilex myricoides*** [18]
Paltoria ovalis ≡ ***Ilex ovalis*** [20]
Prinos myricoides ≡ ***Ilex myricoides*** [18]
Prinos obtusatus ≡ ***Ilex hippocrateoides*** [12]
Rhamnus quitensis ≡ ***Ilex quitensis*** [24]