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A taxonomic revision of Mexican and Central American *Symplocos* (Symplocaceae)

LAWRENCE M. KELLY[1], FRANK ALMEDA[2] & PETER W. FRITSCH[3]

[1]*New York Botanical Garden, 2900 Southern Boulevard, Bronx, NY 10458-5126, USA.*
Email: lkelly@nybg.org (corresponding author)
[2]*California Academy of Sciences, Institute for Biodiversity Science and Sustainability, Department of Botany, 55 Music Concourse Drive, San Francisco, CA 94118-4599, USA.*
Email: falmeda@calacademy.org
[3]*Botanical Research Institute of Texas, 1700 University Drive, Fort Worth, Texas 76107-3400, USA. Email: pfritsch@brit.org*

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Abstract

A taxonomic revision of the Mexican and Central American members of *Symplocos* is presented. Thirty two species are recognized for the region. Two of the species belong to *Symplocos* sect. *Hopea*, and 30 are members of *S.* sect. *Symplocos* series *Symplocos*. The species of *S.* ser. *Symplocos* are easily distinguished from those of *S.* sect. *Hopea* by their connate petals that are adnate to the androecium distinctly beyond the base (versus connate and adnate at the base only), and filaments that are tangentially flattened in cross section and apically constricted (versus terete and not apically constricted). Of the 32 recognized species, ten are endemic to Mexico, 13 are endemic to Central America, two are shared between Central America and South America, seven are shared between Mexico and Central America, and one is shared among Mexico, Central America, and Cuba. One new species, **S. nigridentata**, is described from Mexico, and lectotypifications or neotypifications are provided for **S. coccinea**, **S. coccinea** var. **hirta**, **S. costaricana**, **S. hartwegii**, **S. hartwegii** var. **opaca**, **S. limoncillo**, **S. prionophylla**, **S. pycnantha**, **S. schiedeana**, **S. serrulata**, **S. speciosa**, and **S. tomentosa**. The revision includes keys, full synonymy, descriptions, illustrations for those species not already illustrated elsewhere, distribution maps and assignment of conservation status for all species, and a complete list of exsiccatae.

Key words: Ericales, morphology, Neotropics

Introduction

The Symplocaceae are distributed in tropical and subtropical regions of the world excluding Africa. The family consists of two genera, *Cordyloblaste* Henschel ex Moritzi (1848: 606; two spp.) and *Symplocos* Jacquin (1760: 24; 318 spp.), comprising mostly small trees and shrubs that primarily grow in montane habitats (Fritsch *et al.* 2008). *Symplocos* is divided between America and Asia, with slightly more species in Asia. The genus is most easily recognized by its combination of ericalean vegetative and floral features, i.e., alternate, simple, estipulate leaves, and flowers with sympetalous corollas and numerous epipetalous stamens, along with the floral characters of inferior ovaries, solitary styles, and drupaceous fruits usually crowned by a persistent calyx. Phylogenetic analyses of DNA sequence data strongly support the Symplocaceae as monophyletic (Soejima & Nagamasu 2004; Wang *et al.* 2004; Fritsch *et al.* 2006).

The work of Brand (1901) stood as the only global treatment of the family until recent phylogenetic analyses of *Symplocos* (Wang *et al.* 2004; Fritsch *et al.* 2006, 2008) provided the basis for an infrageneric classification of the genus based on strict monophyly (Fritsch *et al.* 2008). *Symplocos* is divided into *S.* subg. *Symplocos* (317 species, widespread) and *S.* subg. *Palura* (G. Don) P.W. Fritsch in Fritsch *et al.* (2008: 842; one species, eastern Asia). *Symplocos* subg. *Symplocos* is in turn divided into three sections: *S.* sect. *Symplocos* (150 species, tropical America), *S.* sect. *Hopea* (L.) Candolle (1844: 253; *S.* sect. *Barberina* [Vell.] Candolle [1844: 253 as cited in Fritsch *et al.* [2008] but see Aranha Filho *et al.* [2010]; 25 species total, Americas and one in eastern Asia), and *S.* sect. *Lodhra* G.Don (1837: 2; 142 species, eastern Asia). *Symplocos* sect. *Symplocos* is divided into *S.* ser. *Symplocos* (143 species, widespread in tropical America) and *S.* ser. *Urbaniocharis* (Brand) P.W.Fritsch in Fritsch *et al.* (2008: 845; seven species, Greater Antilles). The taxa recognized by Fritsch *et al.* (2008) are readily distinguished by morphological characters. The single species of *S.* subgen. *Palura* is deciduous, whereas members of *S.* subg. *Symplocos* are evergreen (only rarely semi-deciduous). Furthermore, members of *S.* subg. *Symplocos* are recognized by their monadelphous stamens, which either have the androecium adnate only near the base of the corolla (*S.* ser. *Urbaniocharis*, which also has included stamens), or have the androecium adnate to the corolla well beyond its base (*S.* ser. *Symplocos*, which also has exserted stamens). In contrast, *S.* sects. *Hopea* and *Lodhra* both have stamens that are non-monadelphous; the most reliable distinction between these is that the fruits are usually unilocular in *S.* sect. *Hopea* versus mostly trilocular in *S.* ser. *Lodhra*.

Selected groups of *Symplocos*, either geographic or taxonomic, have been subjected to revisionary or floristic treatments. The most significant Old World treatments are those of Nooteboom (1975, 1977), Nagamasu (1993), and Liu & Qin (2013). Those for the New World include revisions of the South American endemic Neosymplocos clade (Aranha Filho *et al*. 2007), the South American species of *S.* sect. *Hopea* (Aranha Filho 2011), and regional treatments for the United States (Almeda & Fritsch 2009), Mesoamerica (Kelly & Almeda 2009), Costa Rica (Kriebel & Almeda, 2015), the Antilles (Fritsch & Almeda 2015), the Andes (Ståhl 1991, 1993, 1994, 1996, 2010), the Venezuelan Guayana (Steyermark & Berry 2005), Venezuela (Aristeguieta 1957), and Brazil (Bidá 1995).

Despite the recent progress in the taxonomy of *Symplocos*, many groups of Neotropical species in the genus still need a comprehensive treatment. One such group comprises the species of Mexico and Central America. At the time of Brand's (1901) revision, only ten species of *Symplocos* were known from this region; later, eight of these were incorporated into Standley's *Trees and Shrubs of Mexico* (1924). Thirty-two species are now recognized in the region of the current revision, with 12 described since 1980. Morphological and molecular phylogenetic analyses (Wang *et al.* 2006; Fritsch *et al.* 2006, 2008, 2015) have demonstrated that 30 of these species belong to *S.* ser. *Symplocos*, whereas the other two belong to *S.* sect. *Hopea*. The species of *S.* ser. *Symplocos* are easily distinguished from those of *S.* sect. *Hopea* by, e.g., petals connate and adnate to androecium distinctly beyond the base (versus connate and adnate at base only), and filaments tangentially flattened in cross section and apically constricted (versus terete and not apically constricted).

Since the early work of Brand (1901), several regional floristic treatments have been published for the species of *Symplocos* in Mexico and Central America, the two most substantial of which are the treatment for *Flora Mesoamericana* (Kelly & Almeda 2009), which provided coverage from Chiapas, Mexico through Central America, and that for the *Flora of Chiapas* (Kelly & Almeda 2005). Twenty-two species were recognized in the *Flora Mesoamerica* treatment, the two from *S*. sect. *Hopea* and 20 from *S*. ser. *Symplocos*. Nine species were recognized in the *Flora of Chiapas* treatment, one from *S*. sect. *Hopea* and eight from *S*. ser. *Symplocos*. These treatments, being floristic in nature, were by necessity relatively abbreviated and no detailed monograph of the genus has ever been published for the Mexican and Central American region.

Here we provide a comprehensive revision of *Symplocos* for all of Mexico and Central America. The revision includes keys, full synonymy, lectotypifications or neotypifications for 12 names, detailed descriptions, illustrations for those species not already illustrated elsewhere, and an extensive list of exsiccatae. Moreover, examination of type specimens for all Mexican and Central American names, in concert with a review of the literature, has resulted in significant nomenclatural and taxonomic changes. Thus, *S. matudae* Lundell (1938: 241), recognized in the previous treatments, is now treated as a synonym of *S. pycnantha* Hemsley (1881: 302); *S. bicolor* Williams (1967: 265) is now a synonym of *S. jurgensenii* Hemsley (1881: 301); the most commonly collected species in Hidalgo, Veracruz, and Oaxaca is now recognized as *S. speciosa* Hemsley (1881: 302); an older name was discovered for the species referred to in recent floras as *S. johnsonii* Standley (1927: 169); and the Oaxacan endemic that had previously been recognized as *S. speciosa* is here described as a new species. Finally, problematic specimens or variation within species or species alliances are discussed under several species.

Geographic distribution, endemism, and habitat

All 32 species treated in this revision are endemic to Mexico and Central America, except for three: *Symplocos jurgensenii* occurs from Mexico to Nicaragua and in Cuba, *S. panamensis* McPherson (1988: 375) from Central America to Colombia, and *S. serrulata* Bonpland (1808: 190) from Central America to Colombia and Ecuador. Of the 32 species treated here, ten are endemic to Mexico, 13 are endemic to Central America, two are shared between Central America and South America, and seven are shared between Mexico and Central America (Table 1).

Distributions of the species tend to be relatively restricted. For example, only *Symplocos limoncillo* Bonpland (1808: 196) is distributed throughout the entire region (Central Mexico to Panama); other species known to be widespread and relatively common in the region are *S. austin-smithii* Standley (1938: 915; Nicaragua, Costa Rica, Panama), *S. citrea* Lex. in La Llave & Lexarza (1824: 2; western Mexico), *S. costaricana* Hemsley (1881: 301; Guatemala to Panama), and *S. serrulata* (Costa Rica, Panama, Colombia, Ecuador). Rare and narrowly endemic species (i.e., known from only several populations and fewer than a dozen collections) are *S. abietorum* Standley & Steyermark (1947: 221; Guatemala), *S. austromexicana* Almeda (1976: 365; Mexico: Oaxaca), *S. elliptica* Kelly & Almeda (2002: 369; Costa Rica, Panama), *S. hintonii* Lundell (1969: 122; Mexico: Guerrero), *S. morii* Almeda & L.M.Kelly in Kelly & Almeda (2002: 371; Panama), *S. oreophila* Almeda (1982a: 109; Costa Rica), *S. povedae* Almeda (1982a: 320; Costa Rica), *S. striata* Kriebel & Zamora (2004: 171; Costa Rica), *S. tacanensis* Lundell (1939: 601; Mexico: Chiapas; Guatemala), and *S. vatteri* Standley & Steyermark (1947: 32; Guatemala).

Several distinct distribution patterns recur among the species. For example, six species are distributed in Panama and Costa Rica, seven are known from southern Mexico and northern Central America (= northern Mesoamerica), four occur exclusively in western Mexico, and four are found in eastern and southern Mexico. The greatest concentrations of species occur in the region of Oaxaca and Chiapas in Mexico, each state with nine species, and in Costa Rica and Panama, with 13 species total.

TABLE 1. Distribution of Mexican and Central American species of *Symplocos* by country, with numbers of species and endemics. * = endemic.

Country	No. species/ No. endemics	Species
Mexico	17/10	*S. austromexicana**, *S. breedlovei*, *S. citrea**, *S. coccinea**, *S. excelsa**, *S. hartwegii*, *S. hintonii**, *S. jurgensenii*, *S. limoncillo*, *S. longipes**, *S. nigridentata**, *S. pachycarpa**, *S. pycnantha*, *S. schiedeana, S. sousae**, *S. speciosa**, *S. tacanensis*
Guatemala	11/2	*S. abietorum**, *S. breedlovei*, *S. costaricana*, *S. culminicola*, *S. hartwegii*, *S. jurgensenii*, *S. limoncillo*, *S. pycnantha*, *S. schiedeana*, *S. tacanensis*, *S. vatteri**
Belize	2/0	*S. jurgensenii*, *S. limoncillo*
Honduras	5/0	*S. costaricana*, *S. culminicola*, *S. hartwegii*, *S. limoncillo*, *S. pycnantha*
El Salvador	6/0	*S. austin-smithii*, *S. costaricana*, *S. culminicola*, *S. hartwegii*, *S. limoncillo*, *S. pycnantha*
Nicaragua	4/0	*S. austin-smithii*, *S. jurgensenii*, *S. limoncillo*, *S. pycnantha*
Costa Rica	12/4	*S. austin-smithii*, *S. costaricana*, *S. elliptica*, *S. limoncillo*, *S. naniflora*, *S. oreophila**, *S. panamensis*, *S. povedae**, *S. retusa*, *S. serrulata*, *S. striata**, *S. tribracteolata**
Panama	9/1	*S. austin-smithii*, *S. costaricana*, *S. elliptica*, *S. limoncillo*, *S. morii**, *S. naniflora*, *S. panamensis*, *S. retusa*, *S. serrulata*

Most species of *Symplocos* in the region occur from 1000–3000 m in montane forest, including cloud forest, *Quercus*/*Pinus* forest, and montane rain forest. *Symplocos jurgensenii*, *S. panamensis*, and *S. striata* occur exclusively in lowland tropical rain forests, and *S. costaricana* spans elevations between lowland tropical rain forest and montane forests.

Morphology of Mexican and Central American *Symplocos*

Habit. Species of *Symplocos* are shrubs or small- to medium-sized trees that rarely attain more than 20 m in height (up to 50 m in *S. hartwegii* Candolle [1844: 252]). All species in Mexico and Central America are evergreen (only *S. paniculata* [Thunb.] Miquel [1867: 102] and *S. tinctoria* [L.] L'Héritier [1791: 176] are deciduous or semi-deciduous). The trees generally have a single trunk 20–40 cm dbh, and in mature plants the bark is usually pale and smooth.

Indument. Species of *Symplocos* may be glabrous or pubescent. Trichomes are simple, uniseriate, unbranched, and eglandular, and can occur on stems, buds, leaves, inflorescences, flowers, and fruits. The indument in the species of Mexico and Central America usually consists of short, soft trichomes and is most often characterized as sericeous, but hirsute surfaces are found in several species (e.g., *S. austin-smithii*, *S. coccinea* Bonpland [1808: 185], and *S. serrulata*). Unless otherwise noted, the trichome color that is described for juvenile branchlets and vegetative buds is the same as that on the inflorescence, hypanthium, and calyx (if trichomes are present on these structures).

Leaves. The leaves of *Symplocos* are simple, alternate, petiolate, and lack stipules. The leaf blades of some species are yellowish green when dry, which presumably indicates accumulation of aluminum (Nooteboom 2004; Jansen *et al.* 2004). Some species are described as concolorous, with similarly colored abaxial and adaxial surfaces;

others are bicolorous, with the adaxial surface darker than the abaxial surface (often dark green, brown, or black adaxially). Color differences between leaf surfaces are often most evident on dry specimens. The leaf margins range from entire to more commonly serrulate-denticulate or crenate-denticulate with vesicular or tooth-like glands that are yellow or brown when young and darken as they mature. The glands may be persistent or caducous, and generally are lacking in species with entire margins, at least at maturity. The leaf blades are usually coriaceous, but are occasionally thinner and membranaceous, as in, e.g., *S. hartwegii*, *S. naniflora* Kelly & Almeda (2002: 374), *S. panamensis*, and *S. vatteri*. The leaves can be glabrous or pubescent, but if pubescent are usually more notably and densely so on the petiole and abaxial leaf surface near the major veins.

Of the species of Mexico and Central America, the adaxial leaf surface is pubescent only in mature leaves of *Symplocos hintonii* and occasionally in *S. povedae*. The midvein is usually impressed adaxially, but flat with (i.e., in the same plane as) the surface or prominent adaxially, at least at the base, in the species of *S.* sect. *Hopea*. The secondary veins may be impressed or flat with the adaxial surface. The adaxial leaf surface is usually relatively smooth, except in *S. povedae*, which is conspicuously bullate.

Inflorescence. The inflorescences of the Mexican and Central American species of *Symplocos* are axillary, usually in the uppermost leaves. They most often are racemes or spikes (which often are branched), or they can be condensed and fasciculate (when inflorescence axes and pedicels are not evident). Some species have solitary flowers. The inflorescences are openly paniculate only in *S. culminicola* and *S. longipes* Lundell (1969: 123).

Bracts, bracteoles, and pedicel. Each flower in *Symplocos*, whether solitary or in an inflorescence, is closely subtended by 1–4 small bracteoles, with different numbers in different species. Bracts are often also present, occurring at inflorescence branch points, at the bases of pedicels, and occasionally along the pedicels. The number of bracts is usually the same as the number of flowers in an inflorescence, or nearly so (with extras if the inflorescence is branched). In all of the Mexican and Central American species, the pedicel is articulated between the bract and the bracteoles (normally the articulation is positioned immediately below the bracteoles). The bracts and bracteoles occasionally fall off before anthesis or during flowering or fruiting, or persist in fruit (with bracteoles often attached at the fruit base). Differences in size, shape, and pubescence of the bracts and bracteoles provide additional means of delimiting species.

Species with solitary flowers exhibit variable bract and bracteole morphology. In these species, the bracteoles are often inserted at the base of the flower, and one or more bracts (usually larger than bracteoles) may occur distally along the peduncle. In some cases, bracteoles are present and bracts are lacking. Bracts and bracteoles are occasionally indistinguishable from each other in position or size, e.g., when they are evenly distributed along the peduncle and gradually larger (or smaller) from the flower toward the base of the peduncle.

Flowers. The flowers of the Mexican and Central American species of *Symplocos* are perfect. Dioecy is reported for some species of *S.* sect. *Hopea* (Aranha Filho *et al.* 2010; Wang & Hu 2011), but none of these occur in the region of this revision. Most species treated here are described on specimen labels as having fragrant flowers. We have confirmed this for the flowers of all species that we have studied in the field, which have a subtle to strikingly sweet jasmine-like odor.

Hypanthium. All species of *Symplocos* have an inferior ovary surrounded by a fully adnate hypanthium, which can be glabrous or variously pubescent.

Calyx. All species in this revision have a 5-merous calyx with imbricate sepal lobes (Figures 1, 2). Any tube formed by basal connation of the sepals distal to the hypanthium is generally not evident. The calyx lobes are normally ciliate, and brown vesicular glands are occasionally present marginally.

Corolla. The petals are mostly uniformly white or pink but can be lavender, purple, or red, and variation within species is not unusual (Figures 1, 2). In *Symplocos hintonii*, the corolla is pink but the tip of each lobe is white. The corollas are sympetalous. In the species of *S.* ser. *Symplocos*, the margins of the petals remain distinct for most of the corolla length even though the longitudinally median portions of the petals are connate (and adnate to the androecium) in the proximal half. As such, the petal margins are imbricate even though the corolla is sympetalous. The petals are connate only at the base in the two species of *S.* sect. *Hopea*. Most species have 5-lobed corollas, but species or even individuals occasionally exhibit variation around this number (e.g., 4–7-lobed), and several species are consistently other than strictly 5-merous (*S. austromexicana*, 6–7-lobed; *S. coccinea*, 5–15-lobed; *S. striata*, 8–9-lobed; and *S. tribracteolata* Almeda [1982a: 322], 6-lobed). The corollas of *Symplocos povedae* are consistently 10-lobed.

FIGURE 1. Flowers of some species of Mexican and Central American *Symplocos*. **a.** *S. longipes* (photograph by Victor Steinman). **b.** *S. austromexicana*. **c.** *S. breedlovei*. **d.** *S. coccinea*. **e.** *S. costaricana* (photograph by Daniel Solano). **f.** *S. hartwegii*. **g.** *S. nigridentata*. **h.** *S. povedae*.

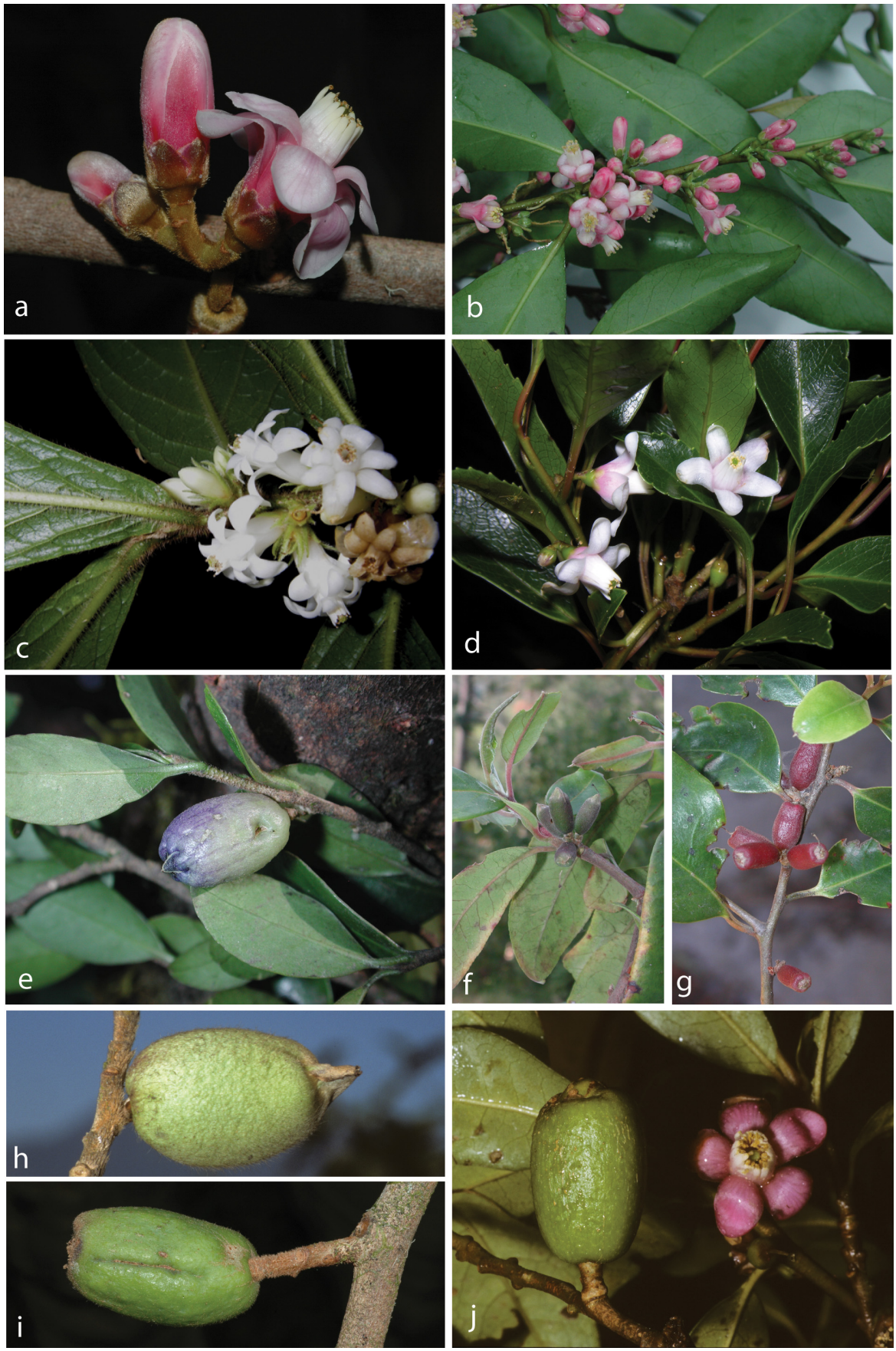

FIGURE 2. Flowers and fruits of some species of Mexican and Central American *Symplocos*. **a.** *S. serrulata*. **b.** *S. speciosa*. **c.** *S. striata*. **d.** *S. tribracteolata*. **e.** *S. austromexicana*. **f.** *S. citrea*. **g.** *S. pycnantha*. **h.** *S. coccinea*. **i.** *S. serrulata*. **j.** *S. hartwegii*.

Stamens. All flowers of *Symplocos* except the males of some dioecious species have numerous stamens (usually 40–100) with rounded dorsifixed anthers and latrorse dehiscence. The stamens are always epipetalous, but variation in the degree of adnation occurs between stamens and corolla and in the degree of stamen connation. In species of *S.* ser. *Symplocos*, the stamen filaments form a conspicuous monadelphous tube distal to the adnation between the corolla and the androecium, with the distal portions of the filaments distinct. The distinct portions of the filaments are flattened and have slightly different lengths, with anthers at different levels. Although the stamens thus often appear to be arranged in several series in *S.* ser. *Symplocos*, the number of series is difficult to accurately quantify and the number provided in descriptions should be interpreted loosely. The Mexican and Central American species of *S.* ser. *Symplocos* also have stamen filaments that are abruptly constricted distally with anthers borne on a narrow stipe. In the two species of *S.* sect. *Hopea*, the stamens are attached near the base of the corolla and are little if at all connate (occasionally appearing basally connate for several mm into epipetalous fascicles). The filaments are terete in cross section and are not apically constricted.

Disk. All species of *Symplocos* have a nectary disk on top of the inferior ovary. The disk surrounds the apical portion of the ovary at anthesis, and is often evident in fruit as a light-colored pulviniform proliferation that occasionally projects beyond the persistent sepals. It varies from flat to pulviniform or coroniform at anthesis, and may be angled or lobed. The disk can be glabrous or pubescent with uniseriate multicellular trichomes. The nectary tissue is highly vascularized and densely cytoplasmic, with an abundance of stomata.

Style. Species of *Symplocos* have fully connate and uniformly cylindrical styles, with an expanded, capitate, and irregularly lobed apex. In the Symplocaceae and in closely related families, the styles are hollow and fluted in alignment with the locules of the ovary. In the species of *S.* ser. *Symplocos* thus far studied (*S. austromexicana*, *S. breedlovei* Lundell [1969: 122], *S. coccinea*, *S. hartwegii*, and *S. serrulata*), the receptive surface of the stigmas is located below the apex of the style; this is a wet stigma and the cells produce copious densely staining lipid-positive exudate (Kelly & Nicholson 2009; Kelly, unpubl. data). In other species of *Symplocos*, e.g., *S. paniculata*, stigmas are terminal on the style and do not produce copious exudate, with the stigmatic papillae barely distinguishable from the other cells on the stylar surface.

Ovary. All species of *Symplocos* have a syncarpous gynoecium with inferior ovaries. The ovary is small enough at anthesis such that its inferior position may not become obvious until fruit development. The ovaries are 2–5-locular, with 2–4 ovules per locule. Placentation is axile even though the ovary is unilocular in the upper portion through continuity between the style canal and the locules (Stevenson & Owens 1978).

Ovules. The ovules are anatropous, unitegmic, and tenuinucellar, and the chalazal or subchalazal megaspore develops into a polygonum-type embryo sac (Davis 1966).

Fruit. The drupaceous fruit (Figure 2) has a thin to fleshy mesocarp and a thin or usually thick, hard 2–5-locular endocarp. Fruits mature from green to dark bluish purple, except in *Symplocos morii*, which reportedly has white fruits. The sepals persist on the fruit, and the size and shape of the fruit provide good taxonomic characters to distinguish species and species groups. The fruit apex of the Mexican and Central American species can take three different forms. *Symplocos austin-smithii*, *S. excelsa* Williams (1970: 204), and *S. serrulata* have shallow lobes that surround a crateriform depression; in these cases, the marcescent calyx lobes are absent or small and enclosed or infolded in the apical depression. *Symplocos povedae* has a truly rostrate fruit apex, with the rostrum formed by the apex of the fruit, rather than just by the calyx lobes. Most species have a rounded or truncate unlobed fruit apex with persistent and prominent calyx lobes; the orientation of the calyx lobes lends a distinctive appearance to the apex of the fruit. The calyx lobes can be spreading, erect, incurved, or incurved-appressed (enclosing and covering the disk). The shape and size of the disk, and whether it is enclosed by the calyx lobes, lend other distinctive aspects to the apex of the fruit. The disk can be flat, convex, pulviniform, or broadly to narrowly conical. It can be completely covered by the calyx lobes, visible between but not surpassing the calyx lobes, or exposed and surpassing the calyx lobes.

Seed and embryo. In *Symplocos*, the seed and embryo can be straight, curved, u-shaped, or twice curved in two planes (Nooteboom 1975). All of the species treated in this revision have straight seeds and embryos (Wood & Channell 1960; Nooteboom 1975; Nagamasu 1993).

Material and methods

Type specimens and general collections were examined from A, BIEL, C, CAS, COL, CR, DS, DUKE, F, IEB, INB, GH, GOET, HNT, JE, LL, LSCR, MEXU, MO, NY, PMA, S, TEX, US, USJ, and XAL. Additional type

specimens examined as digital images are cited as "online images" when they are available through online resources (such as the JSTOR Global Plants web site [http://plants.jstor.org]); several that were received directly on request from herbarium staff are cited as "digital images." In some cases, mounted photographs are also cited for type specimens. More than 1372 separate collections (i.e., not including duplicates) and 39 photographs were examined for this study. Type specimens of nearly all names were studied, mostly through direct examination, or occasionally through online image databases or physical photographic images. Field work was conducted in January 2003 by all authors (Mexico) and previously over an extended time starting in 1972 by Frank Almeda. A list of species recognized in this work and an index to specimens studied are provided in Appendices I and II. Extralimital specimens (one per political subdivision) are cited for species that extend beyond the geographic bounds of this revision.

All descriptions are based on herbarium specimens and field observations, with more than half (18) of the species having been seen and collected in the field by the authors. Flowering and fruiting periods, vernacular names, elevational ranges, distribution, habit, and habitat information were derived from herbarium specimen label data in combination with field observations. Herbarium specimen data were also used to verify consistency or document variation in characters observable only in the field, such as flower and fruit color. The geographic coordinates of specimens whose label data did not indicate precise coordinates were estimated from label information as supplemented by data from maps, online gazetteers (http://www.biolink.csiro.au/gazfiles.html; ttp://gnswww.mil/geonames/gns/index.jsp), and Google Earth (https://www.google.com/earth/). In the lists of specimens cited, geographic coordinates that were estimated *ex post facto* are shown in brackets, specimen label data with errors in spelling and diacritical marks have been corrected, and standard abbreviations have been used for some terms.

We have delimited the species in this revision by the presence of unique combinations of consistent (i.e., fixed) morphological characters, in accordance with the phylogenetic species concept (Nixon & Wheeler 1990). We do not recognize taxa at infraspecific ranks.

Leaf colors are stated for dry specimens. When bracts and bracteoles are not distinguishable from each other in position or size, the number and measurements are provided for only "bracts and bracteoles." Bracts and bracteoles that fall off prior to anthesis are "caducous," those that fall off during anthesis or early fruiting are "deciduous," and those that remain attached through fruiting (and occasionally remaining attached to the fallen fruit) are "persistent." Bract and bracteole pubescence is described for the abaxial surface; the adaxial surfaces of these organs generally are glabrous. Flower colors indicated in the species descriptions are taken from specimen label information and are also based on field observations for the species we have seen. Flowering phenology was derived from the collection dates of herbarium specimens at anthesis. Calyx lobe pubescence is described for the abaxial surface; the adaxial surface is always glabrous. Calyx lobe width was measured at the base of the lobes. Petal pubescence is described for the abaxial surface; the adaxial petal surface is always glabrous. Connation of petals and filaments, and adnation between the androecium and corolla, were both measured from the bases of these organs. Fruits were measured on dry specimens. Fruit color is stated for mature fruits, with data taken from field observations and specimen labels. Fruit length refers to the body of the fruit and does not include the persistent calyx lobes. Fruit locule number and perimeter shape were measured by making medial cross sections of mature fruits. Fruiting times were derived from the collection dates of mature fruiting herbarium specimens.

The conservation status of each species was assessed under IUCN guidelines and criteria (IUCN 2001, 2016) on the basis of georeferenced data from documented collections. GeoCAT (Bachman *et al.* 2011) was used to calculate extent of occurrence (EOO) and area of occupancy (AOO) for each species by using a user-defined cell width of 2 km².

Taxonomic treatment of the Mexican and Central American species of *Symplocos*

Symplocos Jacquin (1760: 24). Type:—*Symplocos martinicensis* Jacquin (1760: 24)

Shrubs or trees, evergreen (in Mexico and Central America) or rarely deciduous or semideciduous. Leaves simple, alternate, spirally (in Mexico and Central America) or distichously arranged, estipulate, penninerved, blades with midvein flat, prominent, or sulcate adaxially, margins often with caducous or persistent vesicular glands.

Inflorescences axillary, bracteate, racemose, spicate, occasionally condensed and appearing fasciculate, rarely paniculate or 1-flowered. Flowers actinomorphic, perfect (in Mexico and Central America) or rarely unisexual (plants then dioecious), bracteolate. Calyx 5-lobed; lobes imbricate in bud, abaxially glabrous or pubescent, adaxially glabrous. Corolla sympetalous; petals connate only at base or distinctly beyond base; lobes (4–)5(–15), imbricate in bud, 1–2-seriate, abaxially glabrous or pubescent, adaxially glabrous. Stamens numerous, monadelphous or loosely pentadelphous, often ± multiseriate, adnate to corolla only at base or distinctly beyond base; anthers basifixed, rotund-ovate, bilocular, dehiscent by longitudinal slits. Gynoecium 2–5-carpellate; ovary 2–5-locular proximally, unilocular distally with locules opening into stylar canal, inferior, apex crowned by a nectariferous disk; placentation axile; ovules 2–4 per carpel, anatropous; style 1, simple, straight, hollow, internally fluted in alignment with septa; stigmatic region terminal or lateral, irregularly lobed or with lobes equal to carpel number. Fruit a drupe crowned by persistent calyx lobes; mesocarp fleshy, corky, or leathery; endocarp 1–5-locular, woody, outer wall rounded, undulate, or irregularly angled in cross section. Seeds 0–1(2) per locule, straight (in Mexico and Central America) or curved; endosperm copious.

Key to the sections and series of *Symplocos* in Mexico and Central America

1. Leaf midvein flat or prominent adaxially, at least at base; petals connate at base only; androecium adnate to corolla at base only; filaments terete in cross section, apically not constricted; endocarp 1-locular (rarely 2–3-locular in *S. longipes*, then septa thin and delicate) ..... I. *S.* section *Hopea*
1. Leaf midvein sulcate adaxially, at least at base; petals connate distinctly beyond base; androecium adnate to corolla distinctly beyond base; filaments tangentially flattened in cross section, apically constricted; endocarp (2–)3–5-locular, septa thick and firm ..... II. *S.* [section *Symplocos*] series *Symplocos*

I. *Symplocos* section ***Hopea*** (L.) Candolle (1844: 253). ≡ *Hopea* Linnaeus (1767: 105), *nom. rej.,* non Roxburgh (1811: 7), *nom. cons*. ≡ *Protohopea* Miers (1879: 289). ≡ *Symplocos* subg. *Hopea* (L.) C.B.Clarke in Hooker (1882: 572). Type:—*Hopea tinctoria* Linnaeus (1767: 105) (≡*Symplocos tinctoria* [L.] L'Héritier [1791: 176])

= *Barberina* Vellozo (1825: 235). ≡ *Symplocos* sect. *Barberina* (Vell.) Candolle (1844: 253). ≡ *Symplocos* subsect. *Barberina* (Vell.) Bentham & Hooker (1876: 668). Type:—*Barberina hirsuta* Vellozo (1825: 235) (≡*Symplocos hirsuta* (Vell.) Candolle [1844: 253]).

= *Epigenia* Vellozo (1825: 183). ≡ *Symplocos* subg. *Epigenia* Brand (1901: 26). Lectotype (designated by Fritsch *et al.* 2008):—*Epigenia crenata* Vellozo (1825: 184).

= *Symplocos* sect. *Pseudosymplocos* Brand (1901: 30). Lectotype (designated by Fritsch *et al.* 2008):—*Symplocos salicifolia* Grisebach (1866: 168).

Trees, evergreen (in Mexico and Central America) or rarely deciduous or semi-deciduous. Mature current-year branchlets usually green, or rarely brown. Leaf midvein flat or prominent adaxially, at least at base. Hermaphroditic (in Mexico and Central America) or dioecious. Bracts and bracteoles caducous at anthesis. Petals connate at base only. Androecium adnate to corolla at base only; filaments terete in cross section, apically not constricted. Gynoecium 3-carpellate; disk glabrous (in Mexico and Central America) or pubescent; stigma terminal. Endocarp usually 1-locular, rarely also 2–3-locular with thin and delicate septa, usually rounded or rarely fluted.

The Mexican and Central American species of *Symplocos* section *Hopea*

1. Mature current-year branchlets brown; peduncles 0.9–2.4 mm wide; calyx lobes 2.8–4.5 × 3.9–5 mm; fruits 2.5–3.3 × 1.2–1.4 cm, calyx lobes erect to recurved, not covering disk; endocarp perimeter 5-fluted ..... 1. *S. culminicola*
1. Mature current-year branchlets green; peduncles 0.3–1.2 mm wide; calyx lobes 1–1.8 × 2–3 mm; fruits 1.5–2.2 × 0.6–0.7 cm, calyx lobes incurved-appressed, covering disk; endocarp perimeter rounded ..... 2. *S. longipes*

1. *Symplocos culminicola* Standley & Steyermark (1947: 222). Type:—GUATEMALA. Chiquimula: summit of Volcán de Quezaltepeque, ca. 2000 m, [14°38′08″N, 89°26′29″W], 8 November 1939, *J. A. Steyermark 31489* (holotype F!)

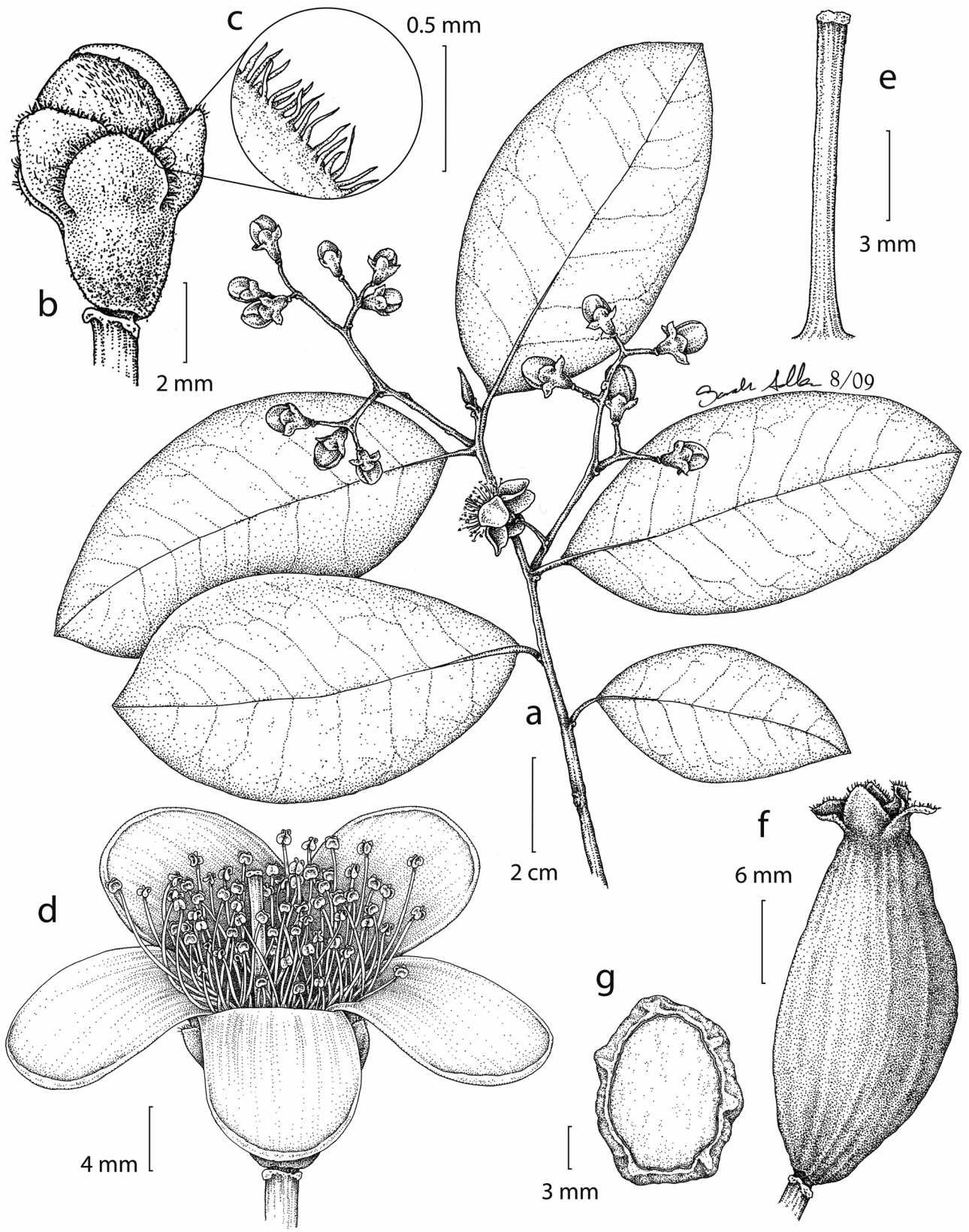

FIGURE 3. *Symplocos culminicola*. **a.** Branchlet with inflorescences. **b.** Flower bud. **c.** Close-up of (b) showing ciliate calyx lobe margin. **d.** Flower. **e.** Style and stigma. **f.** Fruit. **g.** Fruit, cross section. (a–e drawn from *C. L. Lundell & E. Contreras et al. 21092*, CAS; f, g drawn from *T. Hawkins 583*, CAS.)

Trees 7–12 m (35 m fide *T. Hawkins 583*) tall; juvenile branchlets and vegetative buds glabrous; mature current-year branchlets brown. Petioles 5–11 mm long; leaf blades concolorous, elliptic-oblong, 8–14 × 2.5–6.2 cm, coriaceous, glabrous, secondary veins not adaxially impressed, base rounded to cuneate or obtuse and decurrent on the petiole, margins entire, ± revolute, apex broadly rounded. Inflorescences racemose cymes 5.5–22.5 cm long, 2–5-flowered; peduncle 0.4–2 cm long, 0.9–2.4 mm wide; rachis 2.5–18.5 cm long, glabrous; bracts caducous (not seen); bracteoles caducous (not seen), 2 or 3 (evident from scars); pedicels absent. Hypanthium glabrous or densely to irregularly covered with ferruginous vesicular trichomes. Calyx lobes 5, rounded, 2.8–4.5 × 3.9–5 mm, glabrous to rarely sparsely sericeous, margins ciliate. Corolla white, 5-lobed, 1.2–1.4 cm long; tube ca. 2 mm long, adnate to filaments for ca. 1 mm; lobes oblong, glabrous or distally sericeous. Stamens multiseriate, filaments 8–14 × 0.25 mm, distinct or connate for ca. 1 mm, filiform. Disk glabrous; style 8–9 mm long, glabrous; stigma inconspicuously lobed. Fruits green maturing to dark bluish purple, ovoid to ellipsoid, 2.5–3.3 cm × 1.2–1.4 cm, glabrous, apex gradually narrowed to base of irregularly spreading calyx lobes; disk ± flat, apex barely visible, surpassed but not covered by calyx; endocarp 1-locular, perimeter 5-fluted.

Vernacular name—None.

Illustration—Figure 3.

Phenology—Flowering May and June; fruiting February, March, and November.

Distribution and habitat—Guatemala, Honduras, and El Salvador, in cloud forests at 1700–3350 m elev. Figure 4.

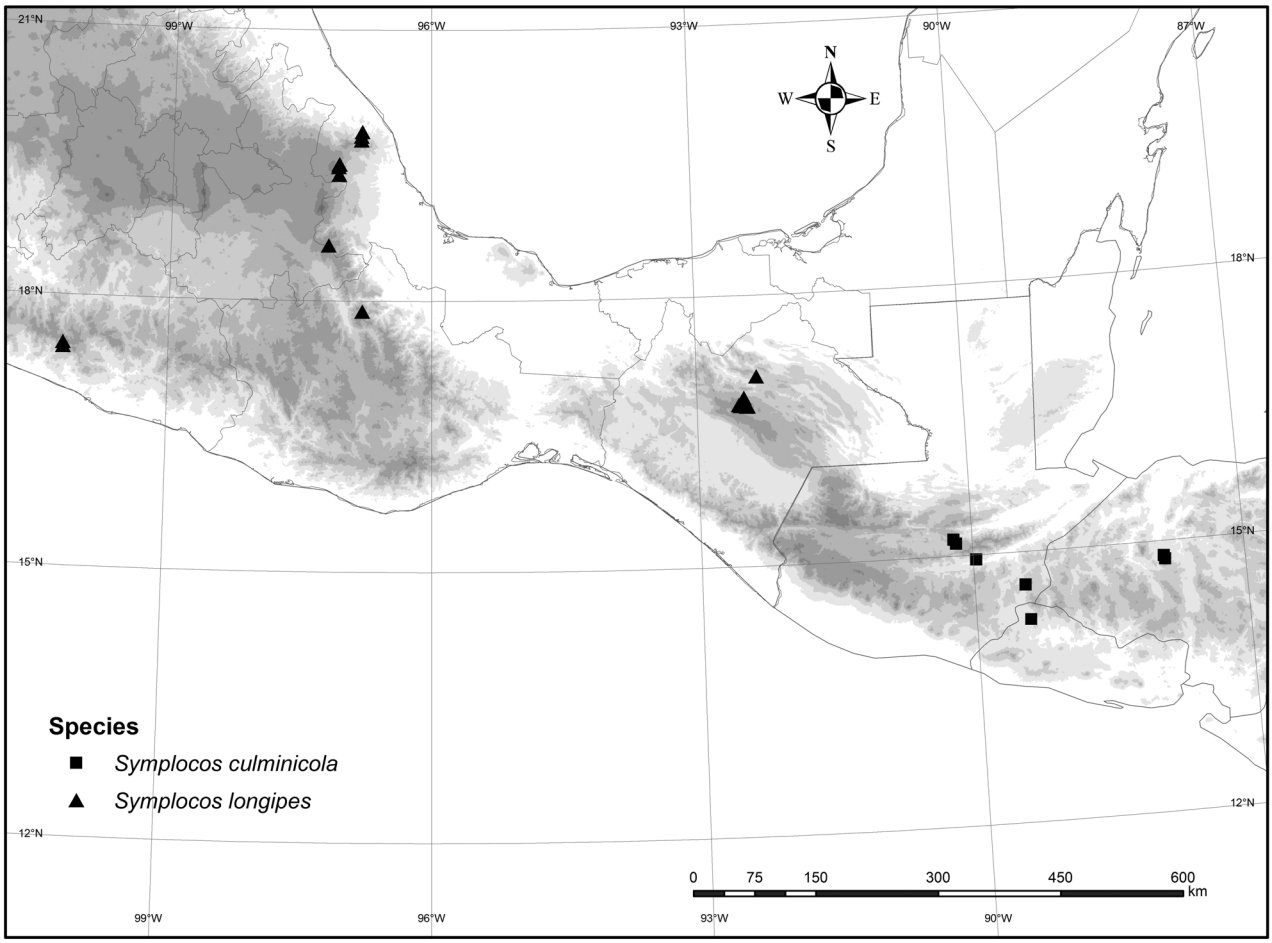

FIGURE 4. Geographic distribution of *Symplocos culminicola* and *S. longipes*.

Conservation status—This species is known from eight populations, only two of which are protected (Parque Nacional Montecristo in El Salvador and Parque Nacional Cerro Azul Meámbar in Honduras). Thus the area, extent, and quality of habitat is projected to decline. The EOO is 10,358 km² and the AOO is 28 km². Based on these data, we assign a classification of Endangered (EN): B2ab(iii) to this species.

Discussion—*Symplocos culminicola* has the largest inflorescences of any species in this revision. Remnant branches of the inflorescences often persist on the plants after flowering and fruiting, and these can be useful for vegetative identification of this species.

Additional specimens examined—**GUATEMALA. Baja Verapaz:** Unión Barrios on Salama/Cobán rd on top of hill ca. 3 km W, [15°11′01″N, 90°12′16″W], 8 February 1975, *Lundell & Contreras 18969* (LL-2!); Niño Perdido, Quebrada Seca in high forest, 6 km N, [15°08′15″N, 90°10′40″W], 31 May 1977, *Lundell & Contreras 21048* (LL!); Niño Perdido, Cerro Verde, [15°08′15″N, 90°10′40″W], 13 June 1977, *Lundell & Contreras 21092* (CAS!, LL-2!). **El Progreso:** San Agustín Acasaguastlán, Albores, Finca Las Nubes, 2385 m, [14°57′N, 89°58′W], 29 March 1994, *Oliva 29 M-2* (MEXU!); San Agustín Acasaguastlán, Albores, Finca Las Nubes, 2385 m, 26 March 1994, *Oliva 74* (MEXU!); N of Finca Piamonte, between Finca Piamonte and summit of Volcán Santa Luisa, 2400–3333 m, 5 February 1942, *Steyermark 43504* (F!, US-2!); Sierra de Las Minas, summit of Montaña Canahui, 1600–2300 m, 10 February 1942, *Steyermark 43808* (F!).

HONDURAS. Comayagua: Cerro Azul de Meámbar, 1700 m, [14°50′15″N, 87°53′43″W], 11 August 1974, *Hazlett 1904* (CR!); ridge leading to Cerro Azul peak, 10.5 km E of Lago Yojoa, 1870 m, 14°48′N, 87°53′W, 12 March 1993, *Hawkins et al. 583* (CAS!, MO!).

EL SALVADOR. Santa Ana: P. N. Montecristo, Transecto 1, entrada al Plan de Los Helechos, 2400 m, 13°21′N, 89°24′W, 29 October 2007, *Flores & Carranza s.n.* (LAGU, photo!); P. N. Montecristo, Municipio Metapán, Plan del Aguacate, 2400 m, 14°21′N, 89°24′W, 28 November 2007, *Rodríguez et al. 1103* (LAGU, photo!).

2. *Symplocos longipes* Lundell (1969: 123). Type:—MEXICO. Chiapas: Mpio. Tenejapa, slope with *Quercus*, *Pinus* and *Liquidambar*, paraje of Shohleh, 7800 ft, [16°52′12″N, 92°28′12″W], 2 October 1965, *D. E. Breedlove 12716* (holotype LL!, isotypes DS!, F!, MO!, US!, WIS-n.v., online image!)

Trees 3–20 m tall; juvenile branchlets and vegetative buds glabrous; mature current-year branchlets green. Petioles 6–9 mm long; leaf blades concolorous, elliptic to oblong, 7–12(–14) × 3.5–5 cm, coriaceous, abaxially glabrous or sparsely strigillose on midvein, adaxially glabrous, secondary veins not adaxially impressed, base acute to obtuse, margins entire or irregularly serrate distally, plane to slightly revolute, apex acuminate. Inflorescences panicles 2.5–9.5 cm long, 4–10-flowered; peduncle 0.5–3 cm long, 0.3–1.2 mm wide; rachis 1–5 cm long, glabrous; bracts caducous, ovate, 0.75–1.25 × 1–1.5 mm, glabrous, margins ciliate; bracteoles caducous, 1(2), linear, 2–2.5 × 0.5–0.75 mm, glabrous, margins ciliate; pedicels 0.7–2.5 cm long. Hypanthium glabrous. Calyx lobes 5, suborbicular, 1–1.8 × 2–3 mm, glabrous, margins ciliate. Corolla white, 5-lobed, 7–10 mm long; tube ca. 1 mm long, adnate to filaments for ca. 1 mm; lobes broadly oblong, glabrous to minutely sericeous. Stamens ± 3-seriate; filaments distinct or connate for ca. 1 mm, 8–10 × 0.2–0.3 mm. Disk glabrous; style 8–10 mm long, glabrous; stigma conspicuously and irregularly lobed. Fruits green maturing to dark bluish purple, cylindrical to ellipsoid, 1.5–2.2 × 0.6–0.7 cm, glabrous, apex obtuse to truncate, with incurved-appressed calyx lobes; disk flat to slightly convex, apex partly visible, surpassed and covered by calyx; endocarp 1(2–3)-locular, septa (when present) thin and delicate, perimeter rounded.

Vernacular name—None.

Illustration—Figure 5.

Photographic image—Figure 1a.

Phenology—Flowering January, April through June, August, October, and December; fruiting January, April, and September through November.

Distribution and habitat—Mexico (Veracruz, Guerrero, Oaxaca, Chiapas), uncommon in cloud forests at 2000–2800 m elev. Figure 4.

Conservation status—This species is known from about ten different scattered populations in southern Mexico, none of which occurs in a protected area. The EOO is 135,586 km² and the AOO is 64 km². The quality of its habitat is threatened by deforestation throughout its range and thus is projected to be in decline. We assign a classification of Endangered (EN): B2ab(iii) to this species.

Discussion—*Symplocos longipes* is similar to *S. culminicola* in that both combine the distinctive (mostly floral) features of *S.* sect. *Hopea* with predominantly glabrous vegetative and floral structures. The green color of the mature current-year branchlets provides the most reliable vegetative distinction between *S. longipes* and *S. culminicola* (which has brown branchlets).

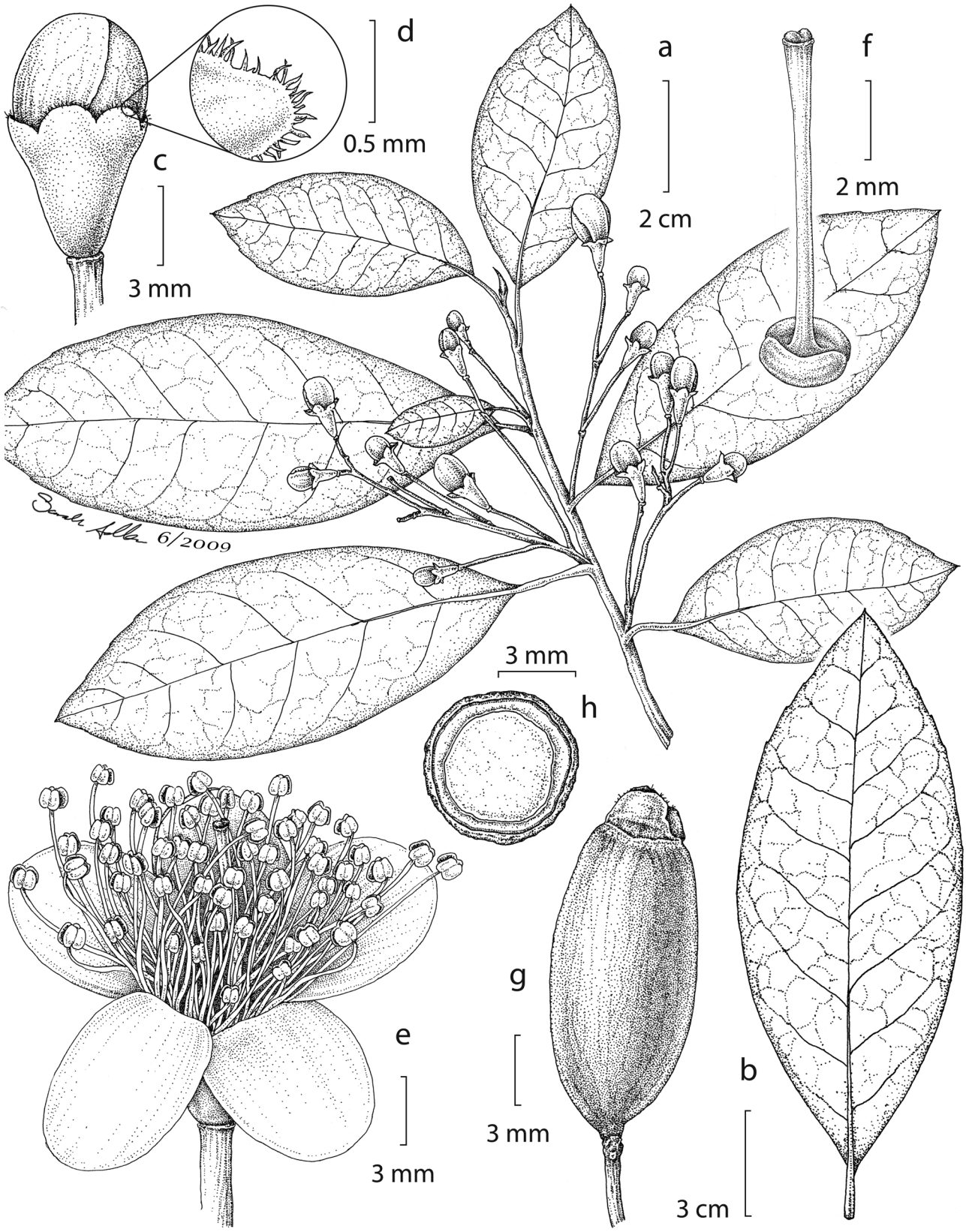

FIGURE 5. *Symplocos longipes.* **a.** Branchlet with inflorescences. **b.** Leaf, adaxial surface. **c.** Flower bud. **d.** Close-up of (b) showing ciliate calyx lobe margin. **e.** Flower. **f.** Dissected flower showing disk, style, and stigma. **g.** Fruit. **h.** Fruit, cross section. (a, c drawn from *A. Ton 2364*, DS; b drawn from *Y. Ramírez-Amezcua et al. 958*, CAS; e, f drawn from *D. E. Breedlove 50675*, CAS; g, h drawn from *D. E. Breedlove 53390*, CAS.)

Additional specimens examined—**MEXICO. Chiapas:** Tenejapa, Paraje Balum Kanul, 2700 m, [16°47′24″N, 92°31′48″W], 3 April 1981, *Breedlove 50675* (CAS!, GH!, NY!); Tenejapa, Paraje Banabil, 2713 m, [16°46′48″N, 92°30′36″W], 8 October 1981, *Breedlove 53390* (CAS!, GH!, MEXU!, MO!, NY!); Tenejapa, Paraje Balun K'anal, 2500 m, [16°47′24″N, 92°31′48″W], 22 November 1981, *Breedlove & Bartholomew 55700* (CAS!, MEXU!); Tenejapa, Paraje Balum K'anal, 2440 m, 29 January 1982, *Breedlove & Almeda 58075* (CAS!, MEXU!); Tenejapa, Colonia Chalam, 2700 m, [16°46′12″N, 92°26′24″W], 23 May 1988, *Breedlove 68604* (CAS!); Tenejapa, Camino Chalam–Ashlum, Km 10, 2000 m, [16°46′20″N, 92°25′41″W], 23 May 1988, *Palacios E. & Breedlove 436* (CAS!); Tenejapa, near Tenejapa center, 6700 ft, [17°06′N, 92°19′12″W], January–March 1964, *Ton 215* (DS!); Tenejapa, Paraje Shohleh, 8400 ft, [16°52′12″N, 92°28′12″W], 12 January 1966, *Ton 585* (DS!, F!); Tenejapa, colonia of 'Ach'lum, 9100 ft, [16°47′01″N, 92°27′05″W], 15 May 1967, *Ton 2364* (DS!). **Guerrero:** below Puerto El Gallo along rd to Atoyac, 1980 m, [17°25′39″N, 100°11′42″W], 10 October 1986, *Breedlove & Almeda 65152* (CAS!); 10 km al SO de Puerto del Gallo, sobre el camino a Atoyac, 2100 m, 17°28′18″N, 100°11′49″W, 13 March 2007, *Ramírez-Amezcua et al. 958* (CAS!). **Oaxaca:** Cuicatlán, Cerro Ferrene (?), Cuyamecalco, 2800 m, [17°58′09″N, 96°47′38″W], 8 September 1909, *Conzatti 2516* (F!, US!). **Veracruz:** Ayahualulco, Abajo de carrizal rumbo a Monte Grande, 2300 m, [19°23′57″N, 97°04′20″W], 25 June 1986, *Cházaro B. & Acosta 3749* (MO!); Coatepec, Abajo de Ingenio del Rosario rumbo a Tierra Grande, 2600 m, [19°30′41″N, 97°04′21″W], 18 July 1986, *Cházaro B. & Robles H. 3805* (MO!); Coatepec, abajo de mesa de los laureles rumbo a Tierra Grande, 2500 m, [19°30′42″N, 97°04′03″W], 30 August 1986, *Cházaro B. & Hernández de C. 3992-B* (MO!); Huatusco, a medio camino siguiendo la brecha entre Elotepec, Veracruz, y Rancho Nuevo, Puebla, 2200 m, [18°36′57″N, 97°11′04″W], 28 October 1986, *Cházaro & Hernández de C. 4132* (MO!); Xico, entre Corral de Rojas y Buenavista, 2400 m, [19°29′10″N, 97°04′45″W], 28 December 1986, *Cházaro B. & Oliva 4300* (MO!); Coatepec, Cerro Juilotepec, entre Mesa de los Laureles y Tierra Grande, 2600 m, [19°30′42″N, 97°04′03″W], 19 April 1987, *Cházaro B. & Hernández de C. 4677* (CAS!, MEXU!, MO!); Xico, abajo de Corral de Rajas rumbo a Buenavista, 2500 m, [19°29′10″N, 97°04′45″W], 12 October 1987, *Cházaro B. & Hernández de C. 5069* (MO!); Coatepec, Cerro Huilotepec entre Mesa de los Laureles y Tierra Grande, 2500 m, [19°30′42″N, 97°04′03″W], 27 November 1987, *Cházaro B. et al. 5267* (MO!); Santa Rita ca. 10 km antes de Misantla carretera Xalapa-Misantla, [19°52′32″N, 96°48′26″W], 2 May 1972, *Dorantes L. 590* (F!); Mpio. Yacuatla, El Clarín, 800 m al E de Santa Rita, 1300 m, [19°49′27″N, 96°48′59″W], 3 April 1990, *Gutiérrez B. 3980* (MEXU!); Yecuatla, Los Capulines, near Paz de Enriquez, ca. 8 km (by air) N of Chiconquiaco, 1400–1600 m, 19°47′N, 96°49′W, 13 January 1984, *Taylor et al. 143* (F!, MO!, NY!).

II. *Symplocos* (section ***Symplocos***) series ***Symplocos***

= *Ciponima* Aublet (1775: 567). Lectotype (designated by Nooteboom 1975):—*Ciponima guianensis* Aublet (1775: 567). (≡*Symplocos guianensis* [Aubl.] Gürke [1891: 172]).

= *Alstonia* Mutis ex Linnaeus f. (1782: 39), non Scopoli (1777: 198), *nom. rej., nec* Brown (1811: 75), *nom. cons. Praealstonia* Miers (1879: 291). Lectotype (designated by Nooteboom 1975):—*Alstonia theiformis* Linnaeus f. (1782: 264) (≡*Symplocos theiformis* [L.f.] Gürke [1891: 172]).

= *Mongezia* Vellozo (1825: 229). Lectotype (designated by Fritsch *et al.* 2008):—*Mongezia pilosa* Vellozo (1825: 229) (≡*Symplocos pubescens* Klotzsch ex Bentham [1839: 233]).

= *Stemmatosiphum* Pohl (1831: 86). Lectotype (designated by Fritsch *et al.* 2008):—*Stemmatosiphum platyphyllum* Pohl (1831: 87) (≡*Symplocos platyphylla* [Pohl] Bentham [1839: 233]).

= *Hypopogon* Turczaninow (1858: 246). Lectotype (designated by Nagamasu 1993):—*Hypopogon brevipes* Turczaninow (1858: 246) (≡*Symplocos coccinea* Bonpl. [1808: 185]).

= *Symplocos* sect. *Neosymplocos* Brand (1901: 70). Lectotype (designated by Fritsch *et al.* 2008):—*Symplocos tenuifolia* Brand (1901: 71).

= *Symplocos* subsect. *Pseudoalstonia* Brand (1901: 73). Lectotype (designated by Fritsch *et al.* 2008):—*Symplocos mapiriensis* Brand (1901: 74).

Shrubs or trees, evergreen. Mature current-year branchlets brown. Leaf midvein sulcate adaxially. Hermaphroditic. Bracts and bracteoles caducous, deciduous, or persistent. Petals connate distinctly beyond base. Androecium adnate to corolla distinctly beyond base; filaments tangentially flattened in cross section, apically constricted (in Mexico and Central America). Gynoecium 3–5-carpellate (in Mexico and Central America); disk glabrous or pubescent; stigma lateral (in Mexico and Central America). Endocarp (2)3–5-locular (in Mexico and Central America) with thick and firm septa, surface smooth, grooved, undulate, or rarely fluted.

The Mexican and Central American species of *Symplocos* (section *Symplocos*) series *Symplocos*

Superscripts indicate that the species falls out more than once in the key.

1. Inflorescence bracts (if present) and bracteoles mainly caducous or deciduous 2
- Inflorescence bracts (if present) and bracteoles mainly persistent (with deciduous bracts and persistent bracteoles in *S. pycnantha*)..... 17
2. Inflorescences 1-flowered (rarely 1–4-flowered in *S. hartwegii* and 1–3-flowered in *S. retusa*)..... 3
- Inflorescences > 1-flowered (rarely 1-flowered in *S. austin-smithii*, *S. limoncillo*, and *S. serrulata*)..... 8
3. Calyx lobes and corolla glabrous; corolla 6–7 mm long; fruits 0.5–1.2 cm long 4
- Calyx lobes and corolla pubescent; corolla 0.7–2 cm long; fruits 1.8–3 cm long 6
4. Petioles (1–)2–3(–4) mm long; leaf blades (0.6–)1–1.7(–2.6) × 0.5–0.9(–1.1) cm; peduncles 2–4 mm long; fruits 9–12 × 4–8 mm..... 5. *S. austromexicana*
- Petioles 5–27 mm long; leaf blades 3.9–8.5 × 1.1–4.3 cm; peduncles 4–15 mm long; fruits 5–8 × 3–5 mm..... 5
5. Leaf blades concolorous, typically yellowish green on both surfaces (rarely slightly bicolorous); leaf margins entire, apex retuse ..... 24. *S. retusa*
- Leaf blades bicolorous; leaf margins crenate distally, apex acuminate ..... 31. *S. tribracteolata*[1]
6. Corolla 10–15-lobed, red; petioles 3–5 mm long..... 8. *S. coccinea*
- Corolla 5-lobed, pink; petioles (3–)5–15 mm long..... 7
7. Vegetative buds, juvenile branchlets, and inflorescences with trichomes 0.4–0.8 mm long; leaf blades 3.5–5.5(–8) cm long; peduncles 1–7 mm long; calyx lobes 2–4 × 2–3 mm; corolla 0.7–1.2 cm long..... 12. *S. hartwegii*
- Vegetative buds, juvenile branchlets, and inflorescences with trichomes 1.5–2 mm long; leaf blades 7–17 cm long; peduncles 2–3.8 cm long; calyx lobes 4–5 × 5–6 mm; corolla 1.5–2 cm long..... 32. *S. vatteri*
8. Leaf blades typically concolorous, yellowish green (rarely slightly bicolorous) 9
- Leaf blades at least slightly bicolorous 11
9. Hypanthium, calyx lobes, and style glabrous; fruit 1.2–1.8 cm long..... 15. *S. limoncillo*
- Hypanthium, calyx lobes, and style pubescent; fruit 0.8–1.0 cm long 10
10. Petioles 5–6 mm long; leaf margins serrulate-denticulate; pedicels 0–1 mm long; style 7–10 mm long; Chiapas and Guatemala ..... 6. *S. breedlovei*
- Petioles 6–10 mm long; leaf margins entire or less commonly undulate-subcrenulate; pedicels 3–4 mm long; style 6–7 mm long; Puebla, Hidalgo, Veracruz, Guerrero, and Oaxaca..... 28. *S. speciosa*[1]
11. Fruits 3–7 mm wide 12
- Fruits 8–20 mm wide 14
12. Juvenile branchlets and vegetative buds with trichomes to 0.75–1.5 mm long; style 8–10 mm long; fruits 1.3–1.6(–2) cm long..... 7. *S. citrea*
- Juvenile branchlets and vegetative buds with trichomes 0.1–0.5 mm long; style 6–7 mm long; fruits 0.8–1 cm long 13
13. Leaf margins entire or occasionally undulate-subcrenulate or rarely serrulate, rarely with minute, narrow, black deciduous glands on youngest leaves; inflorescences 3–5-flowered; pedicels 3–4 mm long; calyx lobes broadly ovate, 1.5–2 × 1.2–1.5 mm..... 28. *S. speciosa*[2]
- Leaf margins with black (brown when young), persistent, sharp, narrowly conical glands ca. 0.5 mm long; inflorescences 5–9-flowered; pedicels 0–1 mm long; calyx lobes lanceolate-ovate, 2–3 × 1.5–2.5 mm..... 18. *S. nigridentata*
14. Trichomes of juvenile branchlets, vegetative buds, and inflorescences mostly 1.5–2.5 mm long; leaf blade rounded to cordate at base; calyx lobes lanceolate; fruiting calyx lobes erect or slightly incurved..... 30. *S. tacanensis*
- Trichomes of juvenile branchlets, vegetative buds, and inflorescences mostly 0.2–1.5 mm long; leaf blade cuneate to rounded at base; calyx lobes triangular-ovate to oblong or rotund; fruiting calyx lobes strongly incurved-appressed or not evident 15
15. Fruit apex obtuse or truncate with erect or infolded calyx lobes; disk ± conical, often projecting beyond calyx lobes ..... 26. *S. serrulata*
- Fruit apex with pronounced to obscure fleshy lobes, the calyx lobes not evident; disk flat to convex, calyx and disk enveloped by fleshy fruit apex 16
16. Leaf blades 9–17 × 4–5.5 cm, elliptic to oblanceolate-elliptic, margins serrulate or rarely subentire; calyx lobes 4–5 × 3–4 mm; corolla 12–15 mm long; Chiapas, Oaxaca, and Veracruz ..... 11. *S. excelsa*
- Leaf blades (5.5–)6–7(–15) × 2.8–4(–5.5) cm, narrowly elliptic or occasionally elliptic to obovate-elliptic, margins often entire (occasionally serrulate); calyx lobes 2–3 × 2–3 mm; corolla 7–14 mm long; Nicaragua to Panama ..... 4. *S. austin-smithii*
17. Calyx lobes narrowly lanceolate or subulate-lanceolate..... 18
- Calyx lobes lanceolate or narrowly elliptic to ovate, elliptic, obovate-elliptic or subrotund 19
18. Leaf blades 3.5–9 cm long, secondary veins adaxially impressed; corolla pink, 2–2.5 cm long, 5-lobed, lobes pubescent and acute apically; Mexico..... 13. *S. hintonii*
- Leaf blades 9.5–21 cm long, secondary veins not adaxially impressed; corolla white, 1–1.6 cm long, 8–9-lobed, lobes gla-

brous and rounded apically; Costa Rica ..... 29. *S. striata*
19. Inflorescences 1- or rarely 2-flowered 20
- Inflorescences ≥ 2-flowered (rarely 1-flowered in *S. povedae*) 23
20. Bracts and bracteoles not distinguishable, 5–9 per peduncle; calyx lobes 3.5–6 × 3–4.5 mm; corolla 0.9–1.6 cm long; fruits ≥ 1.5 cm long 21
- Bracteoles 3 or 4 per peduncle, bracts present or absent; calyx lobes 1–3 × 1–2 mm; corolla 0.6–0.9 cm long; fruits ≤ 1.2 cm long 22
21. Leaf blades 5–11 × 2.3–5.8 cm; calyx lobes 3.5–5 mm long; corolla 1.2–1.6 cm long; style 7–11 mm long, glabrous ..... 27. *S. sousae*
- Leaf blades 3–5 × 1.8–2.5 cm; calyx lobes 5–6 mm long; corolla 0.9–1.1 cm long; style 6–7 mm long, pilose basally ..... 3. *S. abietorum*
22. Leaf blades (3.3–)5.5–8.5 × 1.8–4.3 cm, broadly elliptic to obovate; bracts 3 or 4; style pilose basally; fruits 4–6 mm wide ..... 10. *S. elliptica*
- Leaf blades 3.9–6.4 × 1.1–2.1 cm, elliptic to elliptic-oblanceolate; bracts absent; style glabrous; fruits 3–4 mm wide ..... 31. *S. tribracteolata*[2]
23. Corolla 0.9–2.7 cm long; fruits 1.7–3.5 × 0.8–1.5 cm 24
- Corolla 4–9(–11) mm long; fruits 0.6–1.2 × 0.3–0.7 cm 26
24. Juvenile branchlets and inflorescences with trichomes 1–1.5 mm long; leaf blades adaxially ± bullate, secondary veins adaxially impressed; calyx lobes 5–8 × 2–3 mm; corolla 10-lobed, 2–2.7 cm long ..... 22. *S. povedae*
- Juvenile branchlets and inflorescences glabrous or with trichomes mostly to 0.2–0.3 mm long; leaf blades adaxially flat, secondary veins not impressed adaxially; calyx lobes 1–2 × 1–2.5 mm; corolla (4)5(6)-lobed, 9–15 mm long 25
25. Juvenile branchlets, vegetative buds, and inflorescences glabrous; leaf blades subcoriaceous, apex obtuse or abruptly short-acuminate; inflorescence rachis 5–15 mm long ..... 25. *S. schiedeana*
- Juvenile branchlets, vegetative buds, and inflorescences usually at least sparsely pubescent, occasionally glabrous; leaf blades membranaceous, apex acuminate; inflorescence rachis 2–3 cm long ..... 21. *S. panamensis*
26. Hypanthium glabrous 27
- Hypanthium pubescent 31
27. Juvenile branchlets with trichomes 0.5–1 mm long 28
- Juvenile branchlets glabrous or with trichomes to 0.2–0.3 mm long 29
28. Leaf blades elliptic, abaxially glabrous (rarely sparsely strigillose along midvein); calyx lobes 5–8(–10) mm long; style glabrous or sparsely pubescent at base; fruits 0.6–1 cm long ..... 14. *S. jurgensenii*
- Leaf blades oblanceolate or rarely narrowly elliptic, abaxially pilose (densely so along midvein); calyx lobes 0.8–1.5 cm long; style densely pubescent for most of its length; fruits 1–1.2 cm long ..... 17. *S. naniflora*
29. Juvenile branchlets with coarse antrorsely spreading trichomes; leaf blades 1.7–3.6 cm × 1–1.9 cm, margins crenulate-denticulate, marginal glands persistent ..... 19. *S. oreophila*
- Juvenile branchlets glabrous or with fine appressed trichomes; leaf blades 5.5–9 × 2–5 cm, margins entire or rarely subcrenate distally, marginal glands generally caducous 30
30. Leaf margins plane or occasionally slightly revolute; leaf apex shortly blunt-acuminate to obtuse; filaments connate for 5–6 mm; style 7–8 mm long; fruits dark blue or purple, 8–10 mm long, ellipsoid to obconic ..... 9. *S. costaricana*
- Leaf margins usually strongly revolute, rarely plane; leaf apex rounded; filaments connate for 2–3 mm; style 1.8–2 mm long; fruits white, 6–8 mm long, ovoid to ellipsoid ..... 16. *S. morii*
31. Juvenile branchlets and vegetative buds densely sericeous to tomentose, trichomes 0.5–0.8 mm long, reddish brown; inflorescences fascicles, 10–16-flowered; corolla 8–11 mm long ..... 20. *S. pachycarpa*
- Juvenile branchlets and vegetative buds glabrous to sericeous, trichomes (when present) < 0.5 mm long, white; inflorescences racemes or spikes, 2–7-flowered; corolla 6–9 mm long 32
32. Leaves concolorous (yellowish green on both surfaces; refers to individuals that have persistent bracteoles); fruits 9–10 × 3–4 mm, apex of fruit body curved continuously into calyx lobes ..... 28. *S. speciosa*[3]
- Leaves bicolorous; fruits 6–9 × 4–6 mm, apex of fruit body truncate outside of calyx lobes ..... 23. *S. pycnantha*

3. *Symplocos abietorum* Standley & Steyermark (1947: 221). Type:—GUATEMALA. Dept. Huehuetenango: moist cool mixed cloud forest, with *Pinus ayacahuite* and *Abies guatemalensis*, around Rancho de Teja, 3 mi W of San Mateo Ixtatán, Sierra de los Cuchumatanes, 3330 m, [15°49′42″N, 91°29′42″W], 9 July 1942, *J. A. Steyermark 48482* (holotype F!, isotype US!)

Shrubs or trees 2–9 m tall; juvenile branchlets and vegetative buds sparsely to moderately stiff-pilose, trichomes 0.75–1.5 mm long, spreading, brownish. Petioles 2–6 mm long; leaf blades bicolorous, elliptic to oval or obovate, 3–5 × 1.8–2.5 cm, coriaceous, abaxially glabrous to sparsely pilose (more densely so on midvein), adaxially glabrous, secondary veins not adaxially impressed, base obtuse, margins serrulate-denticulate distally, entire in proximal 1 cm, apex obtuse to rounded (rarely acute or abruptly short-acuminate). Inflorescences 1-flowered; peduncles 3–4 mm long,

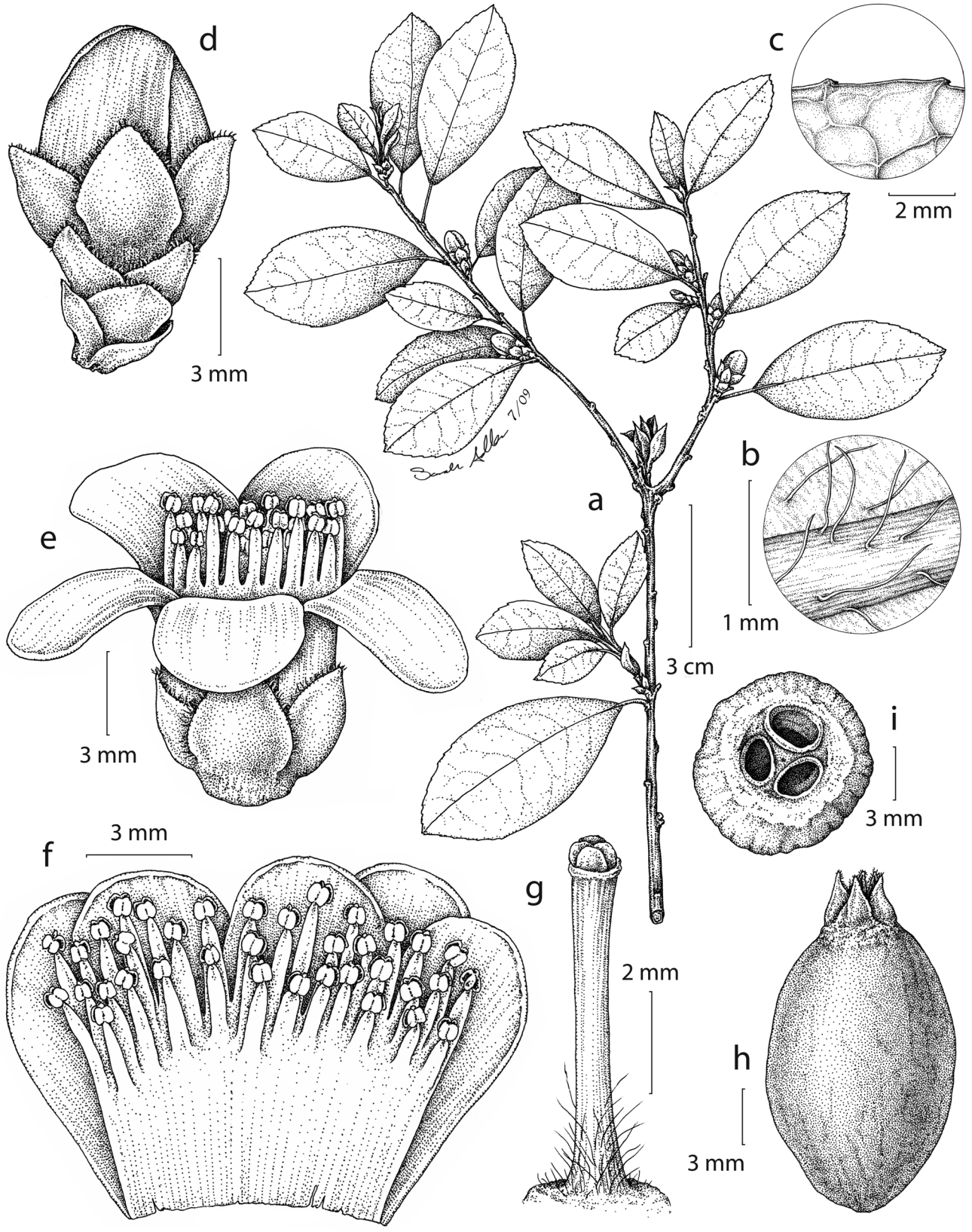

FIGURE 6. *Symplocos abietorum*. **a.** Branchlet with flowers. **b.** Close-up of (a) showing pubescence of abaxial leaf surface. **c.** Close-up of (a) showing leaf blade margin. **d.** Flower bud. **e.** Flower. **f.** Corolla opened with attached stamens. **g.** Style and stigma. **h.** Fruit. **i.** Fruit, cross section. (a–c drawn from *D. E. Breedlove 8645*, DS; d–i drawn from *L. Holdridge 2346*, F.)

glabrous; bracts and bracteoles not readily distinguishable, persistent, 6–8, distributed from the base of the flower and further down along peduncle, ovate to broadly ovate, 3–5 × 2–3 mm, glabrous, margins ciliate. Hypanthium glabrous. Calyx lobes 5, ovate, 5–6 × 3–4 mm, glabrous, margins ciliate. Corolla pink, 5-lobed, 9–11 mm long; tube 2–3 mm long; lobes adnate to filament tube for 3–4 mm, obovate, glabrous. Stamens 3-seriate; filament tube 4–5 mm long; distinct portions of filaments 1.5–2.5 × 0.6–0.8 mm. Disk sparsely villous; style 6–7 mm long, pilose basally; stigma conspicuously and irregularly lobed. Fruits green maturing to dark bluish purple, ellipsoid to globose, 1.5–1.8 × 1.1–1.3 cm, glabrous, apex rounded to base of erect calyx lobes; disk convex, apex surpassed by calyx lobes but slightly exposed between them; endocarp 3-locular, perimeter rounded.

Vernacular name—Manzanote (*Steyermark 48482* [F, US]).

Illustration—Figure 6.

Phenology—Flowering February and April; fruiting February, April, and August.

Distribution and habitat—Western Guatemala (Sierra de los Cuchumatanes), in cool montane forests with *Abies*, *Quercus*, and *Pinus* at 2900–3350 m elev. Figure 7.

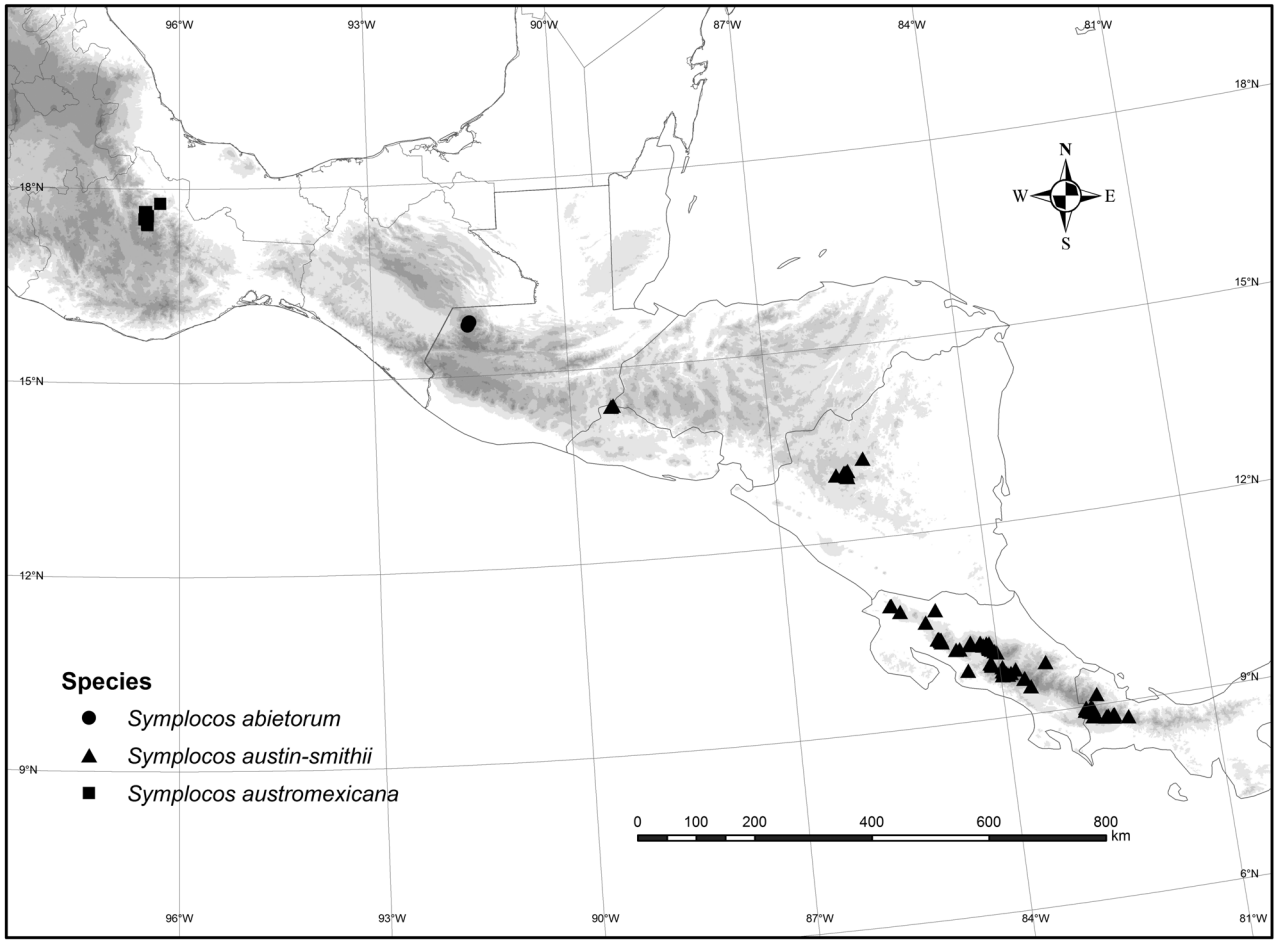

FIGURE 7. Geographic distribution of *Symplocos abietorum*, *S. austin-smithii*, and *S. austromexicana*.

Conservation status—This Guatemalan endemic is restricted to a narrow high elevation belt in the western mountains. None of the known populations occur in a protected area and the area, extent, and quality of habitat is projected to be in decline. The EOO is 2.6 km² and the AOO is 12 km². We classify this species as Critically Endangered (CR): B1ab(iv).

Discussion—This infrequently collected Guatemalan endemic is easily recognized by the combination of relatively small leaves with serrulate-denticulate margins, solitary flowers with glabrous sepals and petals, and large fruits (1.5–1.8 cm long) with persistent erect sepals.

Additional specimens examined—**GUATEMALA. Huehuetenango:** Santa Eulalia, 6 mi N of Santa Eulalia along rd to San Mateo Ixtatán, 9200 ft, [15°47′09″N, 91°30′43″W], 5 February 1965, *Breedlove 8584* (DS!, F!);

San Mateo Ixtatán, 3 mi NW of San Mateo Ixtatán along rd to San Pedro Soloma, 9600 ft, [15°50′02″N, 91°28′57″W], 6 February 1965, *Breedlove 8645* (DS!, F!); San Mateo Ixtatán, along rd to San Pedro Soloma, 3 mi SW of San Mateo Ixtatán, 9600 ft, [15°49′42″N, 19°29′42″W], 5 August 1965, *Breedlove 11551* (DS!, F!); E of Toequia, Sierra Cuchumatanes, 3200 m, 27 April 1948, *Holdridge 2346* (F!, US!); Rancho de Teja, 3 mi W of San Mateo Ixtatán, Sierra de los Cuchumatanes, 3333 m, [15°49′42″N, 19°29′42″W], 9 July 1942, *Steyermark 48467* (F!, US!); San Mateo Ixtatán, Aldea Pet., 3100 m, [15°50′02″N, 91°28′57″W], 15 February 2005, *Véliz 15671* (MO!).

4. *Symplocos austin-smithii* Standley (1938: 915). Type:—COSTA RICA. Zarcero, 1650 m, [10°11′N, 84°24′W], *A. Smith A380* (holotype F!, isotypes CR-2!, EAP-n.v., online image!, F!, NY!)

= *Symplocos brenesii* Standley (1938: 916). Type:—COSTA RICA. La Palma de San Ramón, 1130 m, [10°08′N, 84°33′W], *A. M. Brenes 4456* (holotype F!, isotypes A!, CR-2!, NY!).

Trees 3–20 m tall; juvenile branchlets and vegetative buds glabrous or glabrate to densely hirsute, trichomes mostly 0.5–1.5 mm long, antrorsely to widely spreading, whitish or ferruginous. Petioles 5–12 mm long; leaf blades slightly bicolorous, narrowly elliptic or occasionally elliptic to obovate-elliptic, (5.5–)6–7(–15) × 2.8–4 cm, subcoriaceous to coriaceous, abaxially glabrous to sparsely appressed-pilose or moderately to densely hirtellous, adaxially glabrous (rarely hispid when young), secondary veins ± adaxially impressed but not deeply so, base acute to obtuse, margins entire or occasionally serrulate, apex acuminate. Inflorescences racemes or fascicles 0.8–2.2 cm long, 3–9-flowered or rarely 1–2-flowered; peduncle 0–5 mm long; rachis 2–6 mm long, glabrous or sparsely to densely hirsute, trichomes 0.5–1 mm long; bracts deciduous, oblong to oblong-ovate or oblong-elliptic, 2–4 × 1.5–2.5 mm, glabrous to densely hirsute, margins ciliate to densely hirsute; bracteoles deciduous, 5–8, oblong to oblong-ovate or oblong-elliptic, 1.5–2 × 1.5–2 mm, glabrous to densely hirsute, margins ciliate to densely hirsute. Pedicels to 3 mm long. Hypanthium densely sericeous or occasionally glabrous. Calyx lobes 5, triangular-ovate to rotund, 2–3 × 2–3 mm, densely sericeous or occasionally glabrous, margins ciliate to sericeous. Corolla white, red, or pink, 5-lobed, 7–14 mm long; tube 3–6 mm long; lobes adnate to filament tube for 6–9 mm, oblong to obovate, glabrous or sparsely (rarely densely) sericeous. Stamens 3–4-seriate; filament tube 6–9 mm long; distinct portions of filaments 2–4 × 0.25–0.5 mm. Disk pilose; style 5–12 mm long, pilose basally; stigma deeply 5-lobed. Fruits green maturing to dark bluish purple, cylindrical or short-cylindric to broadly ellipsoid, 1.5–2.5 × 0.8–1.4 cm, strigillose or occasionally glabrous, apex with pronounced to obscure fleshy lobes, the calyx lobes not evident; calyx and disk enveloped by fleshy fruit apex, disk flat to convex; endocarp 3–5-locular, perimeter irregularly undulate to repand.

Vernacular name—None.

Illustration—Figure 8.

Phenology—Flowering April through January, with peak flowering September through November; fruiting throughout the year.

Distribution and habitat—El Salvador, Nicaragua, Costa Rica, and Panama, in cloud forests at 1000–2900 m elev. Figure 7.

Conservation status—Numerous collections of *Symplocos austin-smithii*, many gathered in the last three decades, are known from throughout its range in four Central American countries. Based on this information coupled with its broad elevational distribution, we assign a classification of Least Concern (LC) to this species.

Discussion—Typical *Symplocos austin-smithii* has glabrescent branchlets, leaves 8–10 cm long and 3–4 cm wide, congested inflorescences, flowers ca. 1 cm long, and glabrous or sparsely pubescent petals. In Costa Rica and Panama, *S. austin-smithii* has leaves that are moderately pubescent or, more commonly, nearly glabrous; material from Nicaragua has densely ferruginous-pubescent branchlets and leaves.

See also the discussion under *Symplocos serrulata*.

Additional specimens examined—**EL SALVADOR. Santa Ana:** San José Ingenio, Parque Nacional Montecristo, Falda de Miramundo, 2200 m, 14°24′N, 89°23′W, 25 February 2003, *Carballo 655* (MO!); San José Ingenio, P. N. Montecristo, El Trifinio, 2400 m, 14°25′N, 89°21′W, 10 January 2002, *Martínez 362* (MO!); San José Ingenio, P. N. Montecristo, arriba del parqueo de monte nuevo, 2100 m, 14°25′N, 89°21′W, 24 January 2002,

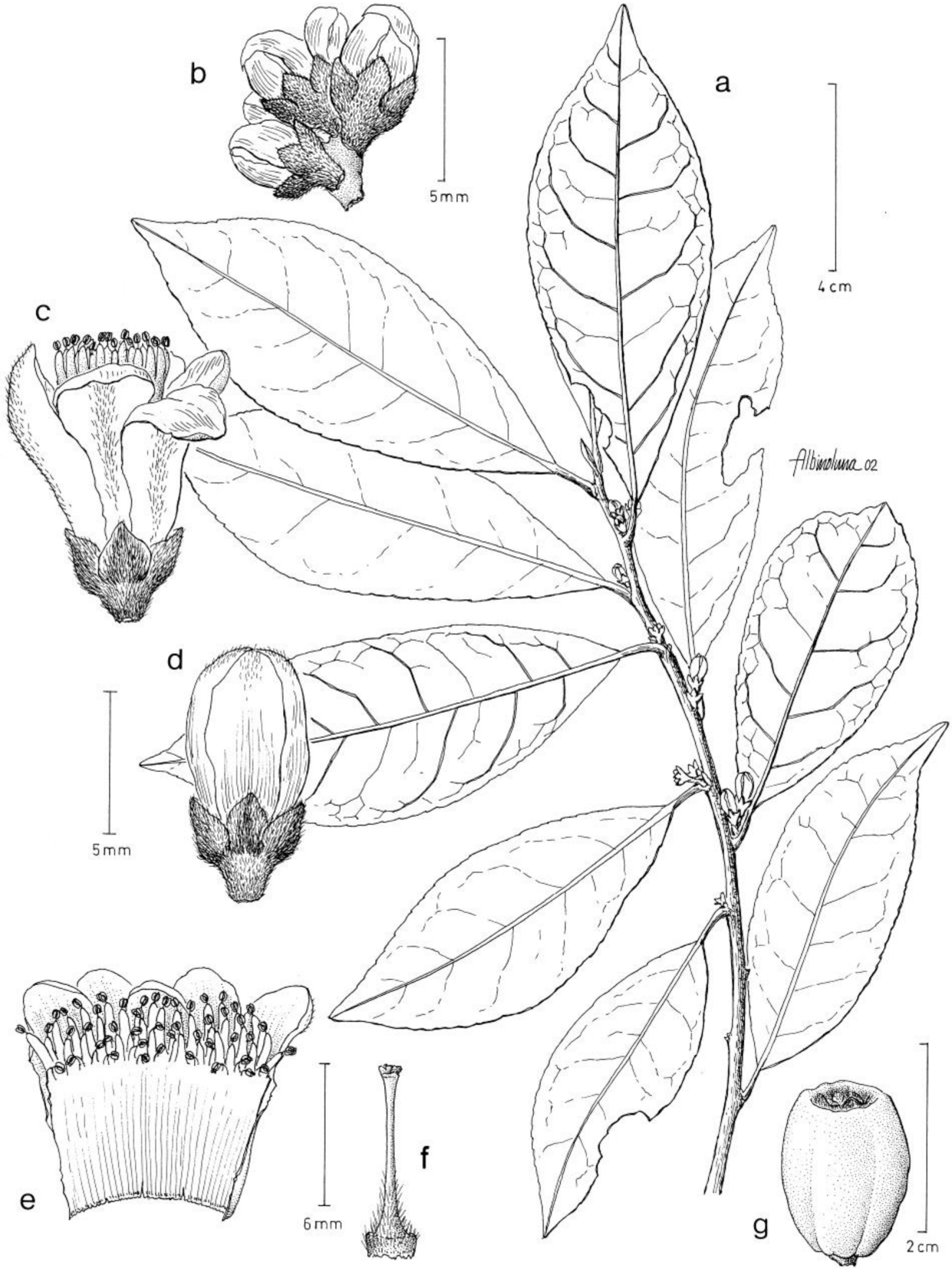

FIGURE 8. *Symplocos austin-smithii*. **a.** Branchlet with inflorescences. **b.** Inflorescence with flower buds. **c.** Flower. **d.** Flower bud. **e.** Corolla opened with attached stamens. **f.** Disk, style, and stigma. **g.** Fruit. (a, b drawn from *A. Smith A380*, F; c–f drawn from *A. Smith A499*, F; g drawn from *G. L. Hartshorn 1614*, F.)

Martínez 638 (MO!); San José Ingenio, P. N. Montecristo, la quebrada del parqueo, 2000 m, 14°25′N, 89°21′W, 8 March 2002, *Martínez 796* (MO!); San José Ingenio, P. N. Montecristo, el trifinio, 2418 m, 14°25′N, 89°21′W, 9 March 2002, *Martínez 803* (MO!); San José Ingenio, P. N. Montecristo, saliendo a la cima de Miramundo, 2418 m, 14°25′N, 89°21′W, 10 May 2002, *Martínez 1047* (MO!); bosque nebuloso de la Montaña de Montecristo, 2200 m, [14°24′29″N, 89°22′02″W], 23 November 1976, *Reyna 909* (EAP, photo!).

NICARAGUA. Jinotega: rd to La Fundadora, entering at Km 142 from Managua, region of Santa María de Ostuma, 1400 m, 7 December 1958, *Hawkes et al. 2204* (C!, S!); carretera entre Matagalpa y Jinotega, Km 146, 1200–1400 m, [13°02′N, 85°55′W], 25 May 1980, *Moreno 562* (CAS!, MEXU!, MO!); carretera Matagalpa–Jinotega, entre los Km 146 y 147, a 3 km N de la entrada a Aranjuez, 1400–1450 m, 13°03′N, 85°57′W, 20 August 1980, *Moreno 1855* (CAS!, MO!); Km 146–147, a 3 km de la entrada a Aranjuez, 1400 m, 8 December 1980, *Moreno 4969* (MO!); carretera entre Matagalpa y Jinotega, Km 146, 1320 m, 13°01′N, 85°55′W, 27 May 1985, *Moreno 25704* (MO!); entre Santa Lastenia y entrada a Aranjuez, 1200–1250 m, 13°02′N, 85°55′W, 19 January 1984, *Sandino 4703* (CAS!, MO!); along Hwy 3 ca. 1.9 km NW of Aranjuez Rd entrance, 1460–1480 m, 13°02′N, 85°56′W, 24 December 1977, *Stevens 5616* (CAS!, MEXU!, MO!); ca. 1.5 km from Hwy 3 on rd to Aranjuez, 1360–1380 m, 13°02′N, 85°55′W, 14 January 1978, *Stevens 5990* (CAS!, MEXU!, MO!); along Hwy 3 ca. 1.9 km NW of Aranjuez rd entrance, 1460–1480 m, 13°02′N, 85°56′W, 30 June 1978, *Stevens 9212* (CAS!, MO!); along rd from Hwy 3 through La Fundadora, between La Salvadora and La Palestina, 1100–1150 m, 13°04–05′N, 85°53–54′W, 31 October 1979, *Stevens & Grijalva 15388* (CAS!, MO!); along Hwy 3 between Matagalpa and Jinotega, ca. 1.9 km NW of Aranjuez rd entrance, near Km 145, 1460–1480 m, 13°02′N, 85°55′W, 7 May 1980, *Stevens et al. 16968* (CAS!, MO!); along Hwy 3 between Matagalpa and Jinotega, ca. 4 km NW of Aranjuez entrance, 1400 m, 28 September 1982, *Stevens 21881* (MO!); along rd from Hwy 3 to La Fundadora, 1200–1400 m, 13°02–04′N, 85°54–55′W, 28 September 1982, *Stevens et al. 21857* (CAS!, MEXU!, MO!); Santa María de Ostuma, Cordillera Central de Nicaragua between Matagalpa and Jinotega, 1300–1500 m, [13°02′N, 85°56′W], 8–15 January 1963, *Williams et al. 23436* (F!, NY!, S!, US!). **Matagalpa:** behind La Selva Negra Hotel, slopes of Cerro Picacho, near the border with Dept. Jinotega, 1200–1540 m, [13°N, 85°55′W] 23–25 May 1985, *Davidse et al. 30430* (CAS!, MO!); El Arenal between Aranjuez and Santa Martha, 1400 m, [13°01′11″N, 85°55′36″W], 7 March 1967, *Molina R. 20331* (F!, MO!, NY!, US!); Cordillera Central of Nicaragua between Aranjuez and Peores Nada, 1500 m, [13°01′40″N, 86°04′20″W], 1 November 1968, *Molina R. 22961* (DS!, F!, MO!, NY!); cloud forest at Santa María de Ostuma, 1400–1500 m, [13°N, 85°55′W], 22 September 1976, *Neill 861* (CAS!, MEXU!, MO!); Mpio. Matagalpa, carretera a Jinotega, a 1 km de la Hacienda Valparaíso, 1350 m, 13°02–04′N, 85°56′W, 22 May 2002, *Rueda et al. 17161* (MO!); Hacienda La Hamonia, N del Hotel Selva Negra, 1200–1300 m, [12°59′N, 85°54′W], 26 May 1983, *Sandino & Martínez 4341* (CAS!, MO!); Macizos de Peñas Blancas, SE side, drainage of Quebrada El Quebradon, slopes N and W of Had. San Martín, 1000–1400 m, 13°14–15′N, 85°38–39′W, 18–20 January 1982, *Stevens et al. 21051* (CAS!, MEXU!, MO!); rd to La Fundadora, Cordillera Central de Nicaragua, 1400 m, [13°03′N, 85°55′W], 8 January 1967, *Williams & Molina 20125a* (F!, NY!); rd to Aranjuez, Cordillera Central de Nicaragua, 1400 m, [13°01′30″N, 85°55′W], 8 January 1967, *Williams & Molina 20145* (F!, NY!, US!); between Disparate de Potter and Aranjuez, Cordillera Central de Nicaragua, 1300 m, [13°01′30″N, 85°55′W], 12 January 1963, *Williams et al. 23683* (F!, NY!, US!); rd to La Fundadora, N of Santa María de Ostuma, Cordillera Central de Nicaragua, 1300–1500 m, [13°03′N, 85°55′W], February 1963, *Williams et al. 24831* (F!, US!); along rd to La Fundadora ca. 5 km N of Santa María de Ostuma, Cordillera Central de Nicaragua, 1400 m, 16 January 1965, *Williams et al. 27700* (F!, MO!, NY!, US!); rd to Aranjuez, Cordillera Central de Nicaragua, 1400 m, 5 December 1973, *Williams & Molina 42792* (F!).

COSTA RICA. Alajuela: La Palma de San Ramón, [10°08′N, 84°33′W], 10 November 1927, *Brenes 5821* (CR!, F!, NY!, S!); La Palma de San Ramón, 24 July 1928, *Brenes 6204* (NY!); La Palma de San Ramón, 29 September 1925, *Brenes 7605* (CR!, S!); La Palma de San Ramón, 29 September 1925, *Brenes 21455* (CR!); La Palma de San Ramón, 10 November 1927, *Brenes 21456* (CR!); bosque sobre colina vecina de Palmira, 1900 m, [10°12′39″N, 84°22′56″W], 13 November 1964, *Jiménez M. 2553* (CR!, F!, MO!, NY!); Monteverde, ascending along second plateau on rd to Cerro Amigos, 1700–1800 m, 10°19′11″N, 84°48′07″W, 29 April 2002, *Penneys 1509* (CAS!); Zarcero, 1900 m, [10°11′N, 84°24′W], 13 July 1937, *Austin Smith 136* (DS!, F!, MO!, NY!); Palmira, 5700 ft, 27 September 1937, *Austin Smith A499* (F!); Zarcero, Cantón Alfaro Ruíz, 1850 m, [10°11′N, 84°24′W], 31 October 1939, *Austin Smith P1973* (A!); La Ventolera, on the S slope of the Volcán Poás, 1700 m, [10°11′N, 84°14′W], 17–18 February 1924, *Standley 34591* (US!); vicinity of Fraijines, 1500–1700 m, [10°09′N,

84°12′W], 12–13 February 1926, *Standley & Torres R. 47439* (US!); Finca Poasita, slopes of Volcán Poás, 2200 m, [10°11′41″N, 84°14′23″W], 1 May 1949, *Williams 16657* (F!). **Alajuela-Puntarenas-Guanacaste:** Cordillera de Tilarán, Monteverde, ca. 1 km S of Cloud Forest Reserve Field Station, 1460 m, [10°18′N, 84°48′W], 23 February 1986, *Almeda et al. 5086* (CAS!, CR!, INB!, NY!); Monteverde, Cordillera de Tilarán, en potrero abierto, 1400–1500 m, [10°18′N, 84°48′W], 15 August 1976, *Dryer 602* (F!, MO!); Monteverde, Cordillera de Tilarán, en orilla de bosque y camino a la Reserva, 1520–1560 m, [10°18′N, 84°48′W], 16 November 1976, *Dryer 956* (F!); Monteverde, Cordillera de Tilarán, en orilla de potrero y bosque, 1400–1500 m, [10°18′N, 84°48′W], 26 November 1976, *Dryer 979* (F!, MO!). **Cartago:** along crest of ridge S of Alto Patillos, ca. 6 km SE of Tapantí, 1800 m, 9°43′00″N, 83°46′30″W, 9 October 1986, *Grayum & Herrera 7734* (CAS!, MEXU!, MO!); above Santa María de Dota, 2500 m, [09°39′12″N, 83°58′13″W], 1 April 1975, *Holdridge 6825* (CR!); Estrella Hills S of Cartago, [09°46′36″N, 83°57′36″], 23 May 1952, *Lankester & Stork 4684* (NY!); Entrada Río Chorizo, cerca de Empalme-la Hermita, 2400 m, [09°43′08″N, 83°56′56″W], 29 August 1966, *Madríz V. AMV-8* (CR!); Cantón de Cartago, R. F. Río Macho, Cordillera de Talamanca, La Chonta, 2450 m, 09°42′07″N, 83°56′31″W, 10 April 1994, *Morales et al. 2665* (CAS!, MO!); San Lucas de Santa María de Dota, [09°39′12″N, 11°58′13″W], 31 December 1974, *Salas M. & Poveda s.n.* (CR!); ca. 14 km SE of El Empalme, 2600 m, [09°40′12″N, 83°51′W], 18 July 1977, *Wilbur et al. 22884* (CAS-2!, DUKE!, MO!). **Guanacaste:** Parque Nacional Guanacaste, Estación Biológica Volcán Cacao, Sendero a Casa Frank (después del derrumbe), 1200 m, 10°55′38″N, 85°29′11″W, 3 December 1989, *Chávez & Blanco 17* (F!, MEXU!, MO!, NY!); Parque Nacional Guanacaste, Estación Cacao, 1100 m, 10°55′45″N, 85°28′15″W, 22 November 1990, *Chávez 392* (F!, MO!); Parque Nacional Guanacaste, Estación Cacao, 1100 m, 10°55′45″N, 85°28′15″W, 21 November 1990, *Espinoza 39* (F!, MO!); Z. P. Tenorio, Tilarán, Cordillera V. Tilarán, Tierras Morenas, Río San Lorenzo, 1050 m, 10°36′40″N, 84°59′45″W, 29 April 1993, *Rodríguez 255* (MO!); Parque N. Rincón de la Vieja, bosque cercano a la casona, [10°49′18″N, 85°21′W], 22 November 1987, *Sánchez & Poveda 1292* (F!). **Heredia:** P. N. Braulio Carrillo, Sendero de Transecto, descent from Cerro Las Marías, 2230 m, 10°10′07″N, 84°06′48″W, 30 May 1992, *Boyle 884* (CAS!, MEXU!, MO!); above San José de la Montaña, on W slope of Volcán Barva, 1950 m, [10°05′06″N, 84°06′32″W], 17 May 1966, *Fosberg et al. 47794* (NY!); vicinity of Porrosatí, S slope Volcán Barva, 1960–2000 m, 10°06′N, 84°07′W, 3 April 1987, *Grayum et al. 8237* (F!, MO!); Cantón de Barva, Cordillera Central, entre Porrosatí y Sacramento, faldas del Volcán Barva, 2000 m, 10°05′22″N, 84°06′22″W, 24 January 1996, *Hammel 20132* (MEXU!, MO!); Hatheway farm pasture, W slope of Volcán Barva, 1600 m, [10°08′N, 84°06′W], 13 March 1970, *Hartshorn 839* (F!); along rd to Volcán Barva, 2 km S of Sacramento, 2050 m, [10°05′22″N, 84°06′22″W], 29 December 1974, *Hartshorn 1614* (F-2!, MO!, NY!); S slope of Volcán Barva, 1950 m, [10°06′N, 84°06′W], 6 June 1965, *Hatheway 1419* (CR!, DS!, F!, GH!, NY!, US!); above Santa Elena de San Isidro de Heredia, 1500 m, [10°02′11″N, 84°02′44″W], 13 April 1979, *Hartshorn & Holdridge 2247* (F!, MO!, NY!); Volcán Barba, above San José de la Montaña, 1800–2000 m, [10°08′N, 84°06′W], 14 November 1971, *Holdridge 6597* (CR-2!); Río Choriso, 2400 m, 29 August 1966, *Madriz V. 8* (F!); Monte de la Cruz, 1900 m, [10°04′N, 84°05′W], 9 March 1972, *McCaffrey DMC184* (CR!); Cantón de Barva, Montaña La Isla, 3 km al N de Porrosatí, 2380 m, 10°06′48″N, 84°06′14″W, 21 April 1990, *Rivera 237* (MEXU!, MO!); P. N. Braulio Carrillo, Orillo carretera, 100 m N de Soda La Campesina, 1 km de Sacramento, 2400 m, 10°07′00″N, 84°07′20″W, 7 July 1990, *Rivera 406* (MO!); Cantón de Barva, Cuenca del Tárcoles, San José de la Montaña, Paso Llano, a orilla de la carretera, 1900 m, 10°05′10″N, 84°06′40″W, 10 July 1997, *Rodríguez et al. 1965* (MO!); Río Macarron, San Rafael, Río Macarron, N cabecera Río La Hoja, Los Angeles de S. Rafael, de Heredia, 1700 m, 2 October 1960, *San Román s.n.* (CR!); vicinity of Vara Blanca, N slope of Central Cordillera, between Poás and Barva volcanoes, 1710 m, [10°10′12″N, 84°09′W], May 1938, *Skutch 3777* (MO!, NY!, S!, US!). **Limón:** Almirante, fila divisoria entre la cuenca superior del Río Xichiari y la cuenca superior del Río Boyei, 1300 m, 09°45′50″N, 83°19′45″W, 12 August 1995, *Herrera 8420* (F!, MO!). **Puntarenas:** Zona protectora Las Tablas, Estación Las Alturas, Las Alturas de Coto Brus, 1500 m, 08°57′20″N, 82°50′20″, 10 December 1991, *Aguilar 713* (CAS!, MEXU!, MO!); upper Río Negro Valley, 1500–1600 m, 10°20′N, 84°50′W, 9 September 1985, *Bello C. 3023* (CAS-2!, MO!); Cantón de Coto Brus, Las Mellizas, cabeceras de Río Negro, 1600 m, 08°55′30″N, 82°45′40″W, 17 August 1989, *Chacón 346* (MO!); Cantón de Liberia, P. N. Guanacaste, Cordillera de Guanacaste, Cerro Cacao, Estación Cacao, 1100 m, 10°55′45″N, 85°28′15″W, 14 July 1991, *Chávez 577* (MO!); foothills of the Cordillera de Talamanca, Sitio Coto Brus, 1800–1900 m, 08°59′N, 82°46′W, 3 September 1983, *Davidse 24505* (C!, CAS!, MEXU!, MO!); Cordillera de Talamanca, trail between headwaters of the Río Bella Vista and Sitio Cotón (Cotonsito) on the Río Cotón, 1800–2200 m, 09°49′–57′N, 82°46′–49′W, [08°49–57′N, 82°46–49′W], 11

March 1984, *Davidse et al. 25525* (CAS!, MEXU!, MO!); Cantón de Puntarenas, Cordillera de Tilarán, San Luis, Cerro Amapola, Monteverde, 1100 m, 10°16′33″N, 84°47′45″W, 23 November 1993, *Fuentes & Fuentes 581* (MEXU!, MO!); Cantón de Coto Brus, Z. P. Las Tablas, Cuenca Térraba–Sierpe, 8 km NE del Progresso, 1960 m, 08°58′30″N, 82°46′15″W, 19 February 1997, *Gamboa R. & Picado 1043* (MO!); Cantón de Coto Brus, Cuenca Térraba–Sierpe, Estación Biológica Las Alturas, 1540 m, 08°56′31″N, 82°50′07″W, 18 October 1997, *Gamboa R. 1886* (MO!); Monteverde, 1450–1550 m, [10°20′N, 84°50′W], 21 August 1984, *Gentry & Haber 48735* (C!, CAS!, MO!); Monteverde, upper community, 1500 m, [10°18′34″N, 84°48′15″W], 17 October 1978, *Haber 218* (CAS!, MO!); Monteverde, upper community, 1500 m, 24 October 1984, *Haber 761* (CAS!, MO!); Monteverde, upper community, 1500–1550 m, 21 December 1984, *Haber 1154* (MO!); Monteverde, upper community, 1550 m, 25 September 1985, *Haber 2777* (CAS!, MO!); Monteverde, 1550 m, 25 September 1985, *Haber 3109* (CAS!, MO!); Monteverde, rd to TV towers, Pacific slope, 1500 m, [10°18′N, 84°48′W], 14 November 1986, *Haber ex Bello 6239* (CAS!, F!, MEXU!, MO!); Monteverde, 1450 m, 18 December 1988, *Haber 8918* (CAS!, MO!); in Mata's pasture, Monteverde, 1550 m, [10°18′N, 84°48′W], 26 July 1977, *Hartshorn 1896* (F!, MO!, NY!); 5 km NW of Santa Elena, along high rd to Tilarán, 1500 m, [10°19′48″N, 84°51′W], 21 February 1978, *Hartshorn 2131* (F!, MO!); Coto Brus, Reserva de la biósfera La Amistad, Estación Biológica Las Alturas de Coton, 1455–2100 m, 08°57′00″N, 82°49′56″W, 8 July 1994, *Kress & Calderon 94-3880* (US!); Coto Brus, Reserva de la Biósfera de la Amistad, cerca Estación Biológica Las Alturas de Cotón, 1455–2100 m, 08°57′00″N, 82°49′56″W, 8 July 1994, *Kress & Runk 94-4657* (US!); rd to Las Alturas, 1400 m, 08°56′N, 82°51′W, 10 July 1972, *Lent 2738* (CR!, F!, NY!); Cantón de Coto Brus, Cuenca Térraba–Sierpe, Pie Quijada Diablo, 1640 m, 08°53′51″N, 82°45′30″W, 26 April 1997, *Navarro V. 727* (MO!); Cantón de Coto Brus, Z. P. Las Tablas, Cuenca Térraba–Sierpe, Sitio Tablas, 1850 m, 08°57′03″N, 82°44′38″W, 25 July 1997, *Navarro V. 767* (MO!); Cantón de Coto Brus, Z. P. Las Tablas, Cuenca Térraba–Sierpe, Zona Protectora Las Tablas, 1500–2000 m, 08°58′42″N, 82°50′14″W, 1 November 1996, *Quesada et al. 1741* (F!, MO!); Cantón de Coto Brus, Z. P. Las Tablas, Cordillera de Talamanca, Quijada del Diablo, San Vito, 1200 m, 08°54′40″N, 82°47′10″W, 25 September 1990, *Ramírez 126* (MO!). **San José:** Cantón de Pérez Zeledón, P. N. Chirripó, Cuenca Térraba–Sierpe, sendero a Chucuyo, 1650 m, 09°25′33″N, 83°35′08″W, 20 September 1997, *Alfaro et al. 1449* (MO!); Cantón de Dota, Cordillera de Talamanca, La Cima, 2500 m, 09°40′36″N, 83°55′01″W, 20 May 1993, *Chavarría 507* (NY!, MO!); Hänge in der Umgebung von Tarbaca an der Straße San José–San Ignacio, etwa 5 km südlich Aserrí, 1800 m, 17 August 1988, *Döbbeler 744* (MEXU!, MO!); San Jerónimo de Moravia, [10°01′N, 84°01′W], 29 September 1946, *Echeverria 670* (CR!, F!); Cantón de Pérez Zeledón, Cuenca Térralba–Sierpe, Estación Cuericí, en orillas de quebrada Los Leones, 2560 m, 09°33′20″N, 83°40′15″W, 11 October 1996, *Gamboa R. 798* (MO!); Cantón de Pérez Zeledón, Cuenca Térraba–Sierpe, Estación Cuericí, sendero El Carbón, 5 km E of Villa Mills, 2800 m, 09°33′48″N, 83°39′50″W, 1 December 1996, *Gamboa R. & Picado 929* (MO!); Dota, camino entre La Trinidad 6 Copey, a la vera del Río Pirrís (Parrita), 2000 m, 09°39′N, 83°53′30″W, 29 June 1992, *Gómez L. 12257* (F!); off the Pan Am. Hwy, 0.9 km above La Chonta, 2460 m, [09°41′24″N, 83°55′48″W], 11 May 1969, *Lent 1676* (F!, MEXU!, MO!); near Río Parrita Chiquita, 5 km N of Santa María de Dota, 2000 m, 09°43′N, 83°58′W, 10 October 1976, *Lent 3945* (F!); Z. P. Cerros de Escazú Cedral, vereda entre Alto Hierba Buena y Poas de Aserrí, 1600–2000 m, 09°51′34″N, 84°07′44″W, 28 March 1992, *Morales 233* (CAS!, MO!); Cantón de Aserrí, Z. P. Cerros de Escazú, Cuenca del Río Grande de Tárcoles, el Cedral, Alto Hierbabuena, 2150 m, 09°50′30″N, 84°06′35″W, 6 November 1993, *Morales 1966* (CAS-2!, F!, MO-2!); Finca Madre Selva, Trinidad de Dota, 2400 m, 28 December 1989, *Wiemann 272* (F!); Z. P. Cerros de Turrabares, Sitio Llano Caite, 1500 m, 09°47′30″N, 84°27′50″W, 1 April 1990, *Zúñiga et al. 183* (F!, MO!). **Province unknown:** San Cristóbal Rd, 8000 ft, 27 May 1928, *Stork 2206* (F!, MEXU!, MO!).

PANAMA. Bocas del Toro: Caribbean slopes of Cerro Fábrega at foot of "Falso Fábrega" in Palo Seco Reserve, second northernmost tributary (on map) of Culubre River, Pavón Camp, 1300 m, 09°09′51″N, 82°39′41″W, 23 March 2005, *Monro & Cafferty 4914* (MO!). **Chiriquí:** Dist. Renacimiento, Jurutungo, alrededores de la finca Los Quetzales, 1935 m, 08°54′N, 82°44′W, 23 September 1996, *Galdames et al. 3384* (MO!, NY!); Boquete, 5000 ft, [08°47′N, 82°28′W], 27 June 1938, *Davidson 803* (A!, F!, MO!, US!); Boquete, Volcán de Chiriquí, 7000 ft, [08°48′31″N, 82°32′32″W], 12 July 1938, *Davidson 887* (A!, F!, US!); Cerro Horqueta, 1500 m, [08°49′N, 82°27′W], 2 August 1967, *Duke et al. 13614* (MO!); vicinity of Fortuna Dam, along trail near Río Hornito, 1100 m, [08°45′N, 82°15′W], 8 August 1986, *McPherson 9875* (CAS!, MO!); near border with Costa Rica, ca. 13 rd-km from Río Sereno, Finca Hartmann, 1400–1800 m, 08°50′N, 82°45′W, 12 May 1991, *McPherson 15306* (CAS!, F!, MO!); vicinity of Boquete, Finca Collins, 5800–6700 ft, [08°48′25″N, 82°27′50″W],

13 March 1963, *Stearn et al. 2028* (MO!, US!); Dist. Boquete, Alto Quiel, Finca Lerida, [08°48′27″N, 82°27′59″W], 5 November 1994, *Quiroz & Garrido 168* (F!, NY!); Dist. Bugaba, Santa Clara, 1300 m, 08°50′N, 82°44′W, 26 February 1985, *van der Werff & Herrera 7106* (CAS!, MO!); valley of the upper Río Chiriquí Viejo, [08°48′N, 82°34′W], 20 March 1940, *White 339* (F!, GH!, MO!).

5. *Symplocos austromexicana* Almeda (1976: 365). Type:—MEXICO. Oaxaca: ca. 27 mi N of Ixtlán de Juárez off of Hwy. 175 in wet pine-hardwood forests, ca. 2575 m, [17°27′15″N, 96°30′28″W], 20 December 1972, *F. Almeda & J. Luteyn 1659* (holotype DUKE!, isotype CAS!)

Shrubs 1–4 m tall; juvenile branchlets and vegetative buds sparsely strigillose, trichomes 0.2–0.4 mm long, antrorsely appressed, light brown or whitish. Petioles (1–)2–3(–4) mm long; leaf blades slightly bicolorous, ovate to elliptic-ovate, (0.6–)1–1.7(–2.6) × 0.5–0.9(–1.1) cm, coriaceous, glabrous, secondary veins not adaxially impressed, base acute, margins entire, apex obtuse to rounded. Inflorescences 1-flowered; peduncles 2–4 mm long; bracts and bracteoles not readily distinguishable, caducous, 3–5, distributed from the base of the flower and farther down along peduncle, oval or oblong (rarely triangular or subulate), 1–1.5 × 0.5–1 mm, glabrous, margins finely ciliate. Hypanthium sparsely to moderately strigillose or occasionally glabrous. Calyx lobes 4 or 5, ovate to suborbicular, 2–3 × 1–2 mm, glabrous, margins finely ciliate, often glandular. Corolla purple or lavender, 6–7-lobed, 6–7 mm long; tube ca. 1 mm long; lobes adnate to filament tube for 2–3 mm, oblong, glabrous. Stamens triseriate; filament tube 2–4 mm long; distinct portions of filaments 0.5–2 mm × 0.25–0.5 mm. Disk pilose; style 5–7 mm long, glabrous; stigma shallowly to deeply 3-lobed. Fruits green maturing to dark bluish purple, broadly ovoid to oblong-ellipsoid, 9–12 × 4–8 mm, glabrous, apex gradually narrowed to base of erect calyx lobes; disk pulvinate, apex partly visible, surpassed by calyx; endocarp 3-locular, perimeter slightly undulate.

Vernacular name—None.

Illustration—Almeda (1976: 23).

Photographic images—Figures 1b, 2e.

Phenology—Flowering January, July, August, October, and November; fruiting March, May, July, and August.

Distribution and habitat—Mexico (north-central Oaxaca), in *Quercus-Pinus* forests and cloud forests at 2575–2880 m elev. Figure 7.

Conservation status—This species is known only from about 12 localities in a narrow elevational band in the mountains north of Oaxaca, Mexico. The EOO is 352 km² and the AOO is 44 km². The area of occurrence is experiencing habitat destruction and deforestation and is therefore inferred to be in decline. We assign a classification of Endangered (EN): B1ab(iii).

Discussion—This Oaxacan endemic is easily distinguished from all other Mexican and Central American species by the combination of small leaves, solitary, glabrous flowers, and small fruits (9–12 mm long).

Additional specimens examined—**MEXICO. Oaxaca:** between Oaxaca and Valle Nacional, 44 km N of Ixtlán de Juárez, 2750 m, [17°33′33″N, 96°31′05″W], 22 October 1985, *Bartholomew et al. 3308* (CAS!, GH!, MEXU!, MO!, NY!); Mpio. Comaltepec, to the right of Hwy 175, just beyond first major switchback on descent from mirador below Cerro Humo Chico, 2740–2760 m, 17°35′15″N, 96°31′30″W, 1 November 1993, *Boyle & Massart 2482* (CAS!, MO!); NW slope of Cerro Humo Chico, 43 km N of Ixtlán de Juárez jct. on rd to Valle Nacional, 2870 m, [17°35′07″N, 96°30′44″W], 9 November 1983, *Breedlove & Almeda 59968* (C!, CAS!, F!, GH!); NW slope of Cerro Humo Chico, 43 km N of Ixtlán de Juárez jct. on rd to Valle Nacional, 2870 m, [17°35′07″N, 96°30′44″W], 9 November 1983, *Breedlove & Almeda 60011* (CAS!, MEXU!, MO!, NY!); Sierra de Juárez, carretera Oaxaca a Tuxtepec, cerca de Cerro Pelón, a 300 m antes de la desviación a San Pedro Yolox, 2850 m, [17°34′33″N, 96°30′35″W], 19 January 1989, *Cházaro B. et al. 5810* (CAS!, MEXU!); 10.8 km en línea recta al S de Santa Cruz Tepetotutla, 2660 m, 17°38′48″N, 96°31′26″W, 21 May 1994, *Gallardo H. et al. 1127* (MEXU!); 11.2 km en línea recta al S de Santa Cruz Tepetotutla, 2800 m, 17°38′49″N, 96°32′26″W, 12 July 1994, *Gallardo H. et al. 1138* (MEXU!); 2 km S of the summit of Cerro Pelón, ca. 46 km N of Ixtlán de Juárez, along hwy to San Pedro Yolox, ca. 100 m W of jct. with hwy from Valle Nacional to Oaxaca City, 2878 m, 17°34.510′N, 96°30.586′W, [17°34′41″N, 96°30′39″W], 11 January 2003, *Kelly et al. 1304* (CAS!, MEXU!, NY!). Cerro de Humo Chico–Comaltepec, 3000 m, [17°33′12″N, 96°31′20″W], 27 January 1963, *MacDougall s.n.* (CAS-2!, MEXU!); Cerro de Humo Chico, near Paso Cerro Pelón, 9500 ft, [17°35′N, 96°30′33″W], 2 September 1966, *MacDougall 15* (NY!, US!); Dist. Ixtlán, Cerro Humo Chico, Comaltepec, 9500 ft, [17°34′51″N, 96°29′40″W], 27

January 1967, *MacDougall s.n.* (CAS!); Cerro de Humo Chico, [17°34′22″N, 96°30′22″W], 8 February 1966, *MacDougall 19* (NY!, US!); Mpio. Comaltepec, Dist. Ixtlán, Cerro Pelón, 14 November 1968, *MacDougall 484S* (NY!); Llano de las Flores, Sierra de Juárez, [17°26′42″N, 96°30′06″W], 3 January 1960, *Miranda 9239* (MEXU!); sobre la brecha 290, Macuiltianguis, 2950 m, [17°32′02″N, 96°33′04″W], 20 March 1980, *Pérez C. 67* (MEXU!); Sierra Juárez, above Valle Nacional, 9000 ft, [17°46′30″N, 96°18′11″W], 26 December 1970, *Sharp 717* (NY!); Cerro Pelón, desv. a San Juan Yolox, 2800 m, [17°34′54″N, 96°30′55″W], 18 January 1989, *Tenorio L. et al. 15452* (F!, MEXU!); Sierra Madre Oriental, ca. 0.5 mi S of Cerro Pelón, 3000 m, [17°34′45″N, 96°30′37″W], 30 August 1975, *Webster et al. 20292* (MEXU!).

6. *Symplocos breedlovei* Lundell (1969: 122). Type:—MEXICO. Chiapas: Tenejapa, slope with *Quercus* at Pokolum, paraje of Sibanilha, 5200 ft, [16°50′15″N, 92°22′34″W], 11 August 1965, *D. E. Breedlove 11747* (holotype LL-n.v., online image!, isotypes CAS!, MO!)

Shrubs or trees 0.5–10 m tall; juvenile branchlets and vegetative buds moderately to sparsely sericeous, trichomes 0.2–0.3 mm long, appressed to antrorsely spreading, whitish. Petioles 5–6 mm long; leaf blades concolorous, yellowish green or light green, elliptic to lanceolate-elliptic, 4.5–8(–10) × 1.7–3(–4) cm, subcoriaceous to coriaceous, abaxially sparsely strigose (more densely so along midvein), occasionally moderately pilose, then densely so along midvein, adaxially glabrous, secondary veins not adaxially impressed, base acute, margins serrulate-denticulate, with minute, narrow, black deciduous glands, apex acuminate. Inflorescences racemes 1.2–2.2 cm long, 5–10-flowered; peduncle 1–3 mm long; rachis 2–10 mm long, sparsely to moderately sericeous, trichomes 0.2–0.3 mm long; bracts caducous, ovate to triangular, 1–2 × 1.5–2.5 mm, sericeous, margins densely ciliate; bracteoles caducous, 2–4, ovate, 1.5–2 × 1–1.5 mm, sericeous, margins densely ciliate; pedicels 0–1 mm long. Hypanthium densely sericeous. Calyx lobes 5, triangular, 1–1.5 × 1–1.5 mm, sparsely sericeous (more densely so medially), margins ciliate, usually with scattered yellow, brown, or black glands of irregular shape. Corolla pink, 5–7-lobed, 9–11 mm long; tube 3–5 mm; lobes adnate to filament tube for 5–6 mm, ± oblong, glabrous. Stamens 3-seriate; filament tube 8–9 mm long; distinct portions of filaments 1–2 × 0.25–0.5 mm. Disk moderately to densely sericeous; style 7–10 mm long, pilose basally; stigma conspicuously 6-lobed. Fruits green maturing to dark bluish purple, ellipsoid, 8–10 × 3–4 mm, sparsely strigillose, apex acute with calyx lobes forming a conical beak; disk ± flat, covered by calyx lobes; endocarp 3-locular, perimeter rounded.

Vernacular name—None.

Illustration—Figure 9.

Photographic image—Figure 1c.

Phenology—Flowering May and September through March; fruiting March, April, June, July, October, and November.

Distribution and habitat—Mexico (Chiapas) and Guatemala (Sierra de los Cuchumatanes), in cloud forests at 2200–3000 m elev. Figure 10.

Conservation status—This species is known from over 20 populations centered in the mountains east of Tuxtla Gutiérrez in Chiapas. None of these occur in a protected area. Most areas in which this species occurs have experienced deforestation over the past three decades, and thus the area, extent and quality of habitat is inferred to be in decline. Efforts to locate this species in Chiapas in 2003 were met with very limited success, and it seems likely that this species is now extirpated from many of the localities cited below. The EOO is 1526 km² and the AOO is 100 km². We assign a classification of Endangered (EN): B2ab(iv) to this species.

Discussion—*Symplocos breedlovei* is one of the most historically well-collected species of *Symplocos* in Chiapas, and can be recognized by the combination of somewhat small, yellowish green, predominately elliptic leaves with serrulate-denticulate margins.

Additional specimens examined—**MEXICO. Chiapas:** Mpio. Chamula, NW slope of Zontehuitz near the summit, 9300 ft, [16°29′24″N, 92°26′24″W], 2 December 1964, *Breedlove 7815* (DS!, F!); Mpio. Chamula, in the paraje of Las Ollas, 8200 ft, [16°48′11″N, 92°38′39″W], 20 December 1964, *Breedlove 8010* (DS!, F!); Mpio. San Cristóbal de las Casas, SW slope of Zontehuitz, 9100 ft, [16°50′N, 92°38′W], 21 June 1965, *Breedlove 10437* (DS!, F!, LL!); Mpio. Tenejapa, barrio of Tuk, paraje of Matsab, 7500 ft, [16°46′48″N, 92°28′12″W], 30 September 1965, *Breedlove 12464* (CAS!, DS!, F!, LL!); Mpio. Tenejapa, barrio of Tuk, paraje of Matsab, 7500 ft, 30 September 1965, *Breedlove 12563* (DS!, F!, LL!); Mpio. Tenejapa, near crest of ridge in the paraje of Banabil, 9100 ft, [16°46′48″N,

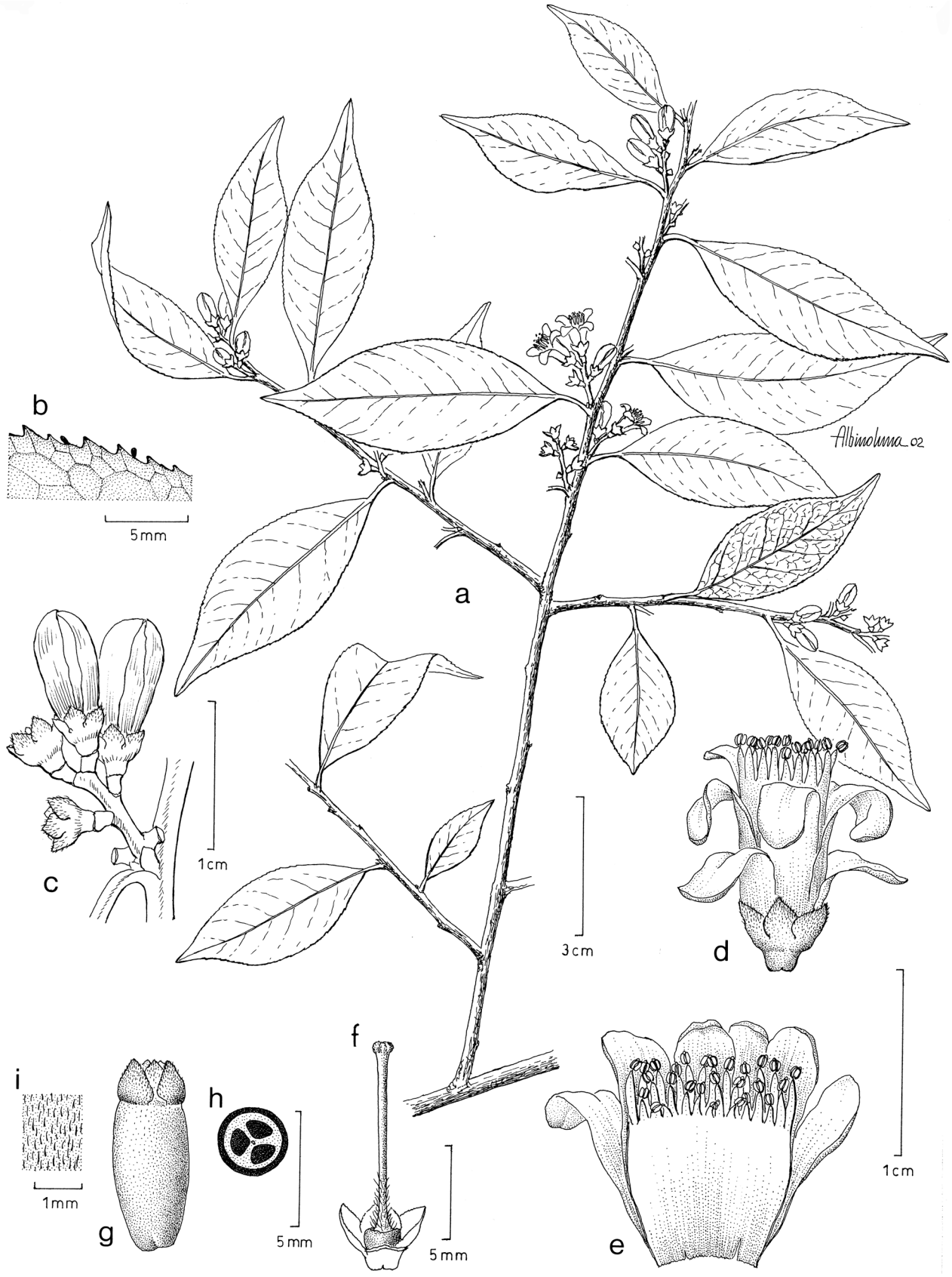

FIGURE 9. *Symplocos breedlovei*. **a.** Branchlet with inflorescences. **b.** Leaf margin. **c.** Section of branchlet and attached inflorescence with flower buds. **d.** Flower. **e.** Corolla opened with attached stamens. **f.** Calyx (partly cut away), disk, and gynoecium. **g.** Fruit. **h.** Fruit, cross section. **i.** Pubescence on surface of fruit. (a–f drawn from *P. Tenorio & L. Clark 1555*, MEXU; g–i drawn from *A. Ton & M. Concepción de López 9652*, MEXU.)

92°30′36″W], 10 October 1965, *Breedlove & Raven 12938* (DS!, F!, LL!); Mpio. Tenejapa, Paraje Banabil, 2700 m, [16°46′48″N, 92°30′36″W], 7 November 1971, *Breedlove & Smith 22030* (CAS!, DS!, MEXU!, MO!, NY!); Mpio. Tenejapa, Paraje Kurus ch'en, 2200 m, [16°49′12″N, 92°28′12″W], 29 September 1972, *Breedlove 28202* (DS!, MO!, NY!); Mpio. San Cristóbal de las Casas, E side of Zontehuitz near summit, 2800 m, [16°48′54″N, 92°34′44″W], 19 December 1972, *Breedlove & Thorne 30432* (DS!, F!, MEXU!, MO!, NY!); Mpio. San Cristóbal de las Casas, rd to Chana, 16–20 km E of Chilil, 2380 m, [16°44′24″N, 92°22′48″W], 10 November 1976, *Breedlove 41406* (DS!, MEXU!, MO!); Mpio. Zinacantán, paraje Pij, 2460 m, 9 March 1981, *Breedlove 50049* (CAS!, NY!); Mpio. Tenejapa, near Paraje Banabil, 2713 m, [16°46′48″N, 20°30′36″W], 8 October 1981, *Breedlove 53382* (CAS!, GH!, MEXU!, MO!); Mpio. San Cristóbal de las Casas, W side of Zontehuitz near summit, 2743 m, [16°50′N, 92°38′W], 17 October 1981, *Breedlove 53578* (CAS!, GH!); Mpio. Chamula, bog at Paraje Muk'in ha, 2590 m, [16°46′12″N, 92°33′W], 14 November 1981, *Breedlove & Bartholomew 55514* (CAS!, MEXU!, MO!); Mpio. Zinacantán, near the summit of Muk'tavits, 2745 m, [16°44′34″N, 92°41′42″W], 16 November 1981, *Breedlove & Bartholomew 55582* (CAS!, NY!); Mpio. Tenejapa, near Paraje Banabil, 2680 m, [16°46′48″N, 92°30′36″W], 12 January 1982, *Breedlove & Almeda 57060* (CAS!, F!, GH!, MEXU!); Mpio. Zinacantán, summit of Cerro Muk'tavits, 2740 m, [16°44′34″N, 92°41′42″W], 30 April 1988, *Breedlove 67051* (CAS!); Huistán, 5 km NW of Huistán along rd to San José de Las Floras, 2700 m, [16°44′51″N, 92°29′23″W], 7 May 1988, *Breedlove & Bourell 67195* (CAS!); Mpio. Tenejapa, in the paraje Ach'lum, 2740 m, [16°47′01″N, 92°27′05″W], 19 May 1988, *Breedlove & Bourell 68360* (CAS!); Huistán, 5 km WNW of Huistán Hwy on rd to San José Las Flores, 2700 m, [16°44′51″N, 20°29′23″W], 10 September 1988, *Breedlove 69865* (CAS!); Mpio. Tenejapa, in paraje Banabil, 2740 m, [16°46′48″N, 92°30′36″W], 14 November 1988, *Breedlove 71401* (CAS!); 25 km al NE de San Cristóbal de las Casas sobre el camino a Matzala, 2350 m, [16°47′08″N, 92°35′03″W], 25 November 1982, *Cabrera et al. 3809* (MEXU!, NY!); 3 km al O de la carretera San Cristóbal de las Casas–Tenejapa, sobre el camino a Matzala, [16°47′08″N, 92°35′03″W], 29 September 1983, *Cabrera & de Cabrera 5760* (MEXU!); El Cerro del Huitepec, al O de San Cristóbal de las Casas, [16°44′34″N, 92°41′42″W], 4 December 1983, *Cabrera & de Cabrera 5997* (MEXU!, MO!); Cerro Zontehuitz, 10 mi by rd from Las Casas, to Tenejapa, then up barranca to trail at top, to 10,000 ft, [16°50′N, 92°38′W], 28 January 1952, *Carlson 2410* (F!, MEXU!); Mpio. San Cristóbal de las Casas, Estación Biológica Huitepec–PRONATURA, 2600 m, [16°44′45″N, 92°41′46″W], 6 March 1991, *González E. et al. 1319* (MEXU!); Mpio. Chamula, Cerro Zontehuitz, 2 km below summit (by rd), S slope, 2824 m, 16°48.471′N, 92°35.094′W, (16°48′28″N, 92°35′05″W), 17 January 2003, *Kelly et al. 1334* (CAS!, MEXU!, NY!). Mpio. Zinacantán, near Zinacantán center, 6500 ft, [16°45′35″N, 92°43′18″W], 9 November 1966, *Laughlin 2730* (DS!, MEXU!, NY!, US!); Mpio. Tenejapa, campo de fútbol 2 km al SO de Tenejapa, 2160 m, 16°48′33″N, 92°30′42″W, 27 February 1995, *Martínez-Ico et al. 170* (CAS!, MEXU!); Mpio. Tenejapa, campo de fútbol 2 km SO de Tenejapa, 2160 m, 16°48′33″N, 92°30′42″W, 1 March 1995, *Martínez-Ico et al. 177* (CAS!, MEXU!); Mpio. Tenejapa, 2 km al NE de bodega Conasupo, 2180 m, 16°48′33″N, 92°30′42″W, 6 November 1995, *Mejía E. & Luna G. 933* (CAS!); camino San Cristóbal a Tenejapa, [16°46′48″N, 92°33′36″W], 1 January 1960, *Miranda 9204* (MEXU!, US!); Mpio. Huistán, Ranchería El Porvenir, 11 November 1994, *Ochoa G. 4560* (CAS!); Mpio. Tenejapa, 4 km al S de Tenejapa sobre la carretera a San Cristóbal de las Casas, 2400 m, [16°48′09″N, 92°30′46″W], 16 December 1992, *Panero et al. 3103* (MEXU!); Mpio. Chamula, San Juan Chamula, [16°47′02″N, 92°41′23″W], 12 October 1987, *Santíz R. 236* (CAS!, MEXU!); Mpio. Chamula, San Juan Chamula, 6900 ft, 30 December 1987, *Santíz R. 495* (CAS!, MEXU!); Mpio. Chamula, San Juan Chamula, 27 February 1988, *Santíz R. 673* (CAS!, NY!); rd from Chamula to Chenalho, near Paraje Tentic, 2250 m, 16°40′N, 93°00′W, [16°51′43″N, 92°41′04″W], 2 February 1990, *Stafford et al. 195* (F!, MEXU!, NY!); Mpio. Tenejapa, 20 km al SW de Tenejapa camino a San Cristóbal de las Casas, [16°45′16″N, 92°35′02″W], 25 September 1983, *Téllez V. & Pankhurst 7266* (CAS!, MEXU!, MO!); Mpio. San Cristóbal de las Casas, Cerro Zontehuitz, 12 km al NE de San Cristóbal de las Casas, 2750 m, [16°50′N, 92°38′W], 2 February 1989, *Tenorio & Clark 15551b* (CAS!, MEXU!); Mpio. San Cristóbal de las Casas, ridge near radar tower, Zontehuitz, 9400 ft, [16°50′N, 92°38′W], 21 June 1970, *Thorne & Lathrop 40131* (DS!); Mpio. Tenejapa, near Tenejapa center, 6700 ft, [17°06′N, 92°19′12″W], January–March 1964, *Ton 393* (DS!, F!); Mpio. Tenejapa, Colonia Ach'lum, 8700 ft, [16°47′01″N, 92°27′05″W], 27 December 1965, *Ton 449* (CAS!, MEXU!, NY!); Mpio. Tenejapa, Paraje Matsab, 8800 ft, [16°46′48″N, 92°28′12″W], 5 January 1966, *Ton 478* (CAS!, F!, LL!, US!); Mpio. Tenejapa, Paraje Shohleh, 8200 ft, [16°52′12″N, 92°28′12″W], 6 April 1966, *Ton 793* (CAS!, GH!, LL!, NY!); Mpio. Tenejapa, Colonia Ach'lum, 8600 ft, 26 April 1966, *Ton 875* (CAS!, MEXU!, NY!); Mpio. Tenejapa, Paraje of Matsab, 8900 ft, [16°46′48″N,

20°28′12″W], 5 October 1966, *Ton 1307* (DS!, MEXU!, NY!); Mpio. Tenejapa, colonia of 'Ach'lum, 9100 ft, 15 May 1967, *Ton 2362* (DS!); Mpio. Chamula, Cerro de Huitz, [17°06′30″N, 92°23′W], 1 March 1985, *Ton 8105* (CAS!, MEXU!, MO!); Mpio. San Cristóbal de las Casas, Santa Cruz en San Felipe, [16°44′38″N, 92°39′43″W], 15 November 1986, *Ton & Martínez 9527* (CAS!, MEXU!, MO!, NY!); Mpio. San Cristóbal de las Casas, Santa Cruz en San Felipe, 15 November 1986, *Ton & Martínez 9565* (CAS!, MEXU!, NY!); Mpio. San Cristóbal de las Casas, Santa Cruz en San Felipe, 15 November 1986, *Ton & Martínez 9564* (CAS!, GH!, MEXU!, MO!, NY!); Mpio. San Cristóbal de las Casas, Santa Cruz en San Felipe, 15 November 1986, *Ton & Concepción de López 9652* (CAS!, F!, MO!); Mpio. San Cristóbal de las Casas, Santa Cruz en San Felipe, 15 November 1986, *Ton & Martínez 9660* (CAS!, GH!, MEXU!, MO!); Mpio. San Cristóbal de las Casas, Cerro Zontehuitz, NE of San Cristóbal, 9000–9400 ft, [16°50′N, 92°38′W], 25 June 1962, *Webster et al. 11716* (MEXU!, MO!).

GUATEMALA. Huehuetenango: between Cananá and Quetzal, Cerro Cananá, Sierra de los Cuchumatanes, 2500–2800 m, [15°51′40″N, 91°24′47″W], 18 July 1942, *Steyermark 49103* (F!, NY!).

7. *Symplocos citrea* Lex. in La Llave & Lexarza (1824: 22). Neotype (designated by Díaz-Barriga & Cházaro B. 1993):—MEXICO. Michoacán: Mpio. Morelia, Ichaqueo, en bosque de encino humedo con elementos del bosque mesófilo de montaña, 2500 m, [19°34′22″N, 101°08′26″W], 23 September 1992, *H. Díaz-Barriga 7260* (neotype IEB-187899-n.v., online image!, isoneotypes CAS!, ENCB, IEB-115952-n.v., online image!, MEXU!, MICH-n.v., online image!, TEX-n.v., online image!, XAL)

= *Symplocos prionophylla* Hemsley (1881: 302). Type:—MEXICO. Oaxaca: without precise locality, 1842, *A. B. Ghiesbreght s.n.* (holotype K, lost). Neotype (designated here): MEXICO. Guerrero: Atoyac, carretera entre El Paraiso y Filo de Caballos, 16–18 km al N de El Paraiso, 1200 m, [17°24′30″N, 100°11′36″W], 4 November 1979, *S. Koch et al. 79325* (neotype CAS!, isoneotype NY!).

= *Symplocos pringlei* Robinson (1891: 168). Type:—MEXICO. Michoacán: hills of Patzcuaro, [19°30′36″N, 101°36′W], 1890, *C. G. Pringle 3345* (holotype GH!, isotypes A!, AC-n.v., online image!, BKL-n.v., online image!, BR-836920-n.v., online image!, BR-836906-n.v., online image!, CAS!, F!, GOET!, HBG-n.v., online image!, JE!, K!, LL-n.v., online image!, M-n.v., online image!, MEXU!, MO-2!, MIN-n.v., online image!, MSC-n.v., online image!, MU-n.v., online image!, NY!, PH-n.v., online image!, PUL-n.v., online image!, S!, US!, W-n.v., digital image!).

= *Symplocos novogaliciana* L.M.González in González-Villareal (2002: 21). Type:—MEXICO. Jalisco: San Sebastian del Oeste, camino de la Virgencita a Real Alto, 1940 m, 20 April 1999, *J. J. Reynoso D. et al. 4032* (holotype IBUG-0162958-n.v., online image!, isotypes CAS!, ENCB, F-2!, IBUG-0162957-n.v., online image!, IEB, MEXU!, MICH-n.v., online image!, NY!, TEX-n.v., online image!, US!, WIS-n.v., online image!).

Trees 4–15 m tall; juvenile branchlets and vegetative buds sericeous to pilose, trichomes 0.75–1.5 mm long, appressed to antrorsely spreading, reddish brown. Petioles 0.8–1.3 cm long; leaf blades bicolorous, elliptic or oblong to lanceolate or obovate, (3–)6–13(–16) × (2.0–)2.5–6.5 cm, coriaceous, abaxially appressed-pilose, densely spreading-pilose along midvein, adaxially glabrous, secondary veins not adaxially impressed, base acute to obtuse or rounded, margins serrulate-denticulate, with minute, narrowly conical, black deciduous glands (often persistent toward leaf apex), apex acute to short-acuminate. Inflorescences racemes 1–2.5(–5.5) cm long, 7–10-flowered; peduncle 0–5(–20) mm long; rachis 2–7 mm long, sericeous to pilose, trichomes 0.75–1 mm long; bracts deciduous, oblong to ovate, 2–4 × 2–3 mm, sericeous, ciliate to densely sericeous; bracteoles deciduous, 2–4, ovate, 2–4 × 2–3 mm, sericeous, ciliate to densely sericeous; pedicels 0–1.5 mm long. Hypanthium sericeous. Calyx lobes 5, broadly ovate to triangular, 2–3 × 2–3 mm, densely sericeous, margins ciliate. Corolla pink, 5–7-lobed, 8–12 mm long; tube 3–5 mm long; lobes adnate to filament tube for 5–7 mm, oblanceolate or rarely broadly elliptic, puberulent to sericeous distally. Stamens 4-seriate; filament tube 7–8 mm long; distinct portions of filaments 1–4 × ca. 0.5 mm. Disk densely pilose; style 8–10 mm long, sparsely pilose basally; stigma irregularly lobed. Fruits green maturing to dark bluish purple, narrowly cylindric to slightly obovoid (rarely fusiform), 1.3–1.6(–2) × (0.4–)0.6–0.7 cm, strigillose, apex acute with calyx lobes forming a conical beak; disk conical, apex partly visible, surpassed by calyx; endocarp 3-locular, perimeter rounded.

Vernacular names—Boncillo (*Soto & Roman 1429* [CAS, MO]), chocoyolillo (*Lozano 516* [MEXU]), cucharillo (*Cházaro B. & Zamudio 4724* [MEXU]), cucharo (*González 48* [MEXU]), garrapato (*Magallanes & Parada 4454* [MEXU]), jaboncillo blanco (*Rees s.n.* [CAS, MO]), mamuyo (*Hinton 7615* [GH, NY, US]), palo blanco (*Madrigal 3091* [MEXU]), tchcari-urapiti (*Madrigal 3091* [MEXU]), urápiti ucu (*Madrigal 3123* [MEXU]).

Illustrations—Díaz-Barriga (1993: 3); Díaz-Barriga & Cházaro (1993: 44).

Photographic image—Figure 2f.

Phenology—Flowering July through May; fruiting throughout the year.

Distribution and habitat—Mexico (Guanajuato, Nayarit, Jalisco, Colima, Michoacán, México, Distrito Federal, Morelos, Guerrero, and Oaxaca), common on the Pacific slope of the Eje Volcánico Transversal and in the Sierra Madre del Sur, oak-pine forest, oak forest, broad leaved evergreen forest, cloud forest at (1100–)1500–2650 m elev. Figure 10.

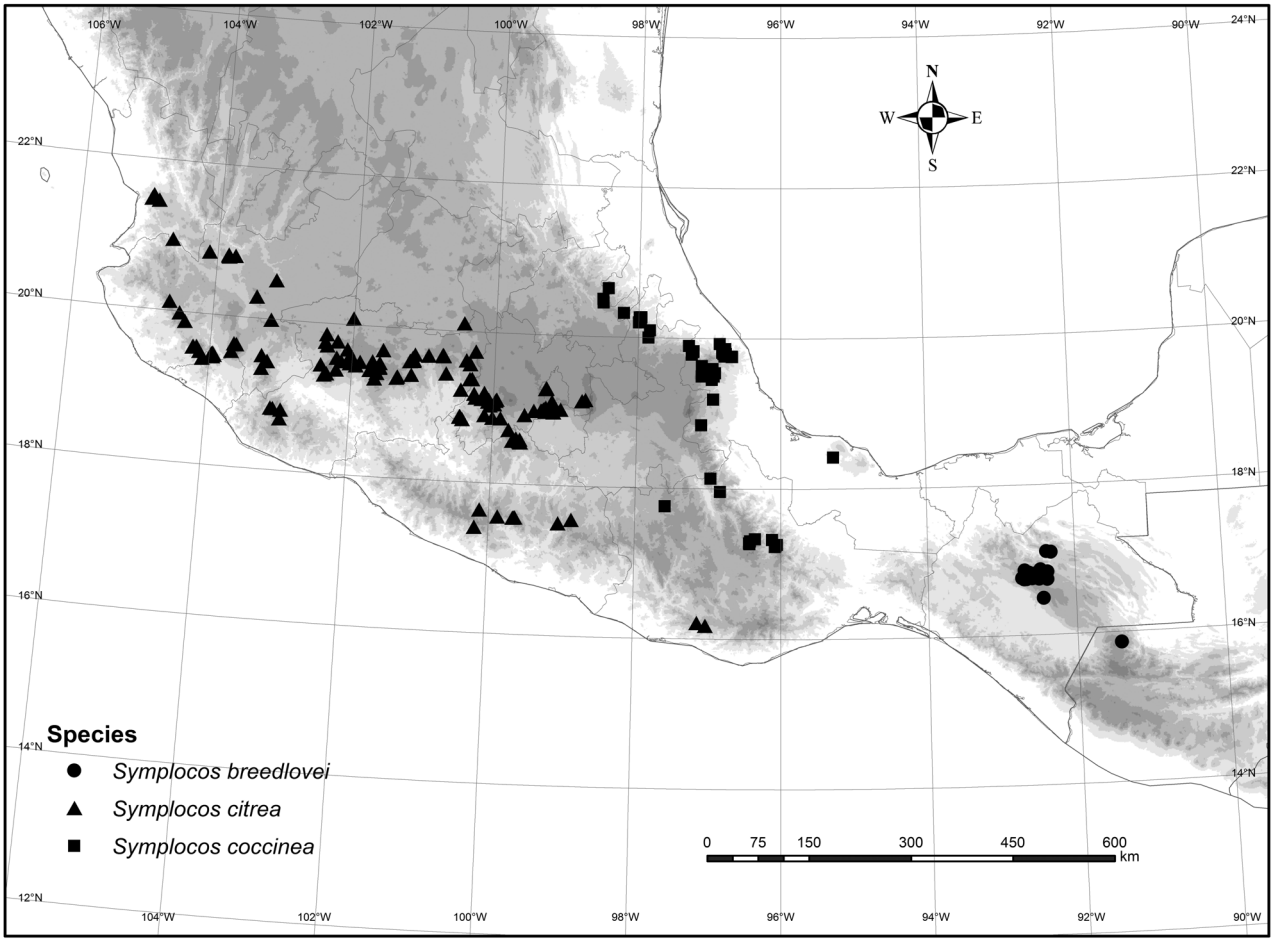

FIGURE 10. Geographic distribution of *Symplocos breedlovei*, *S. citrea*, and *S. coccinea*.

Conservation status—Although *Symplocos citrea* is endemic to Mexico, its distribution extends from the states of Nayarit southeastward to Oaxaca where it grows throughout a wide elevational gradient. It is one of the most commonly encountered species of *Symplocos* in Mexico and Central America, as evidenced by the over 230 collections that we have examined. Based on these data, we assign a classification of Least Concern (LC) to this species.

Discussion—*Symplocos citrea* is distinguished by the following combination of characters: leaves with the abaxial midvein densely pilose and the margins serrulate, flowers in dense, short racemes, corolla lobes puberulent to sericeous near the apex, ovaries consistently 3-locular, and fruits narrowly cylindric. This species is the most commonly collected *Symplocos* in western Mexico and is not likely to be confused with any other congeners that grow within its range (*S. hintonii*, *S. longipes*, and *S. sousae* Almeda [1982b: 255]), all of which are relatively rare and morphologically distinctive.

Symplocos novogaliciana, described from the Pacific slope of Nayarit and Jalisco, was distinguished from *S. citrea* by characters of its inflorescences, stamens, and sepals (González-Villarreal 2002). The differences cited included the pedunculate inflorescences of *S. novogaliciana* (with peduncles up to 20 mm), versus the subsessile fasciculate inflorescences of *S. citrea*; sepals 3–5 × 1–2 mm, with triangular-attenuate lobes, acute apices, and

margins with vesicular glands between trichomes in *S. novogaliciana*, versus sepals 4–6 × 2.5–4 mm, with ovate obtuse lobes, rounded to acute apices, and margins without glands; and a smaller number of stamens in *S. novogaliciana* (45–50 versus 50–75; González-Villarreal 2002). Most of the distinctions used to recognize *S. novogaliciana* are unreliable. The shape and the size of the sepals vary throughout the range of *S. citrea*. Individuals with narrow lobes and acute apices are common, and many individuals have occasional sparse vesicular glands along the sepal margins. In addition, stamen number is highly variable throughout the range of *S. citrea*. The long peduncles of *S. novogaliciana* are strikingly different from most individuals of *S. citrea*, but even this is a conspicuous extreme on a continuum of variation from subsessile to pedunculate inflorescences in *S. citrea* (inflorescences that are generally condensed racemes, and not at all fasciculate). We thus treat *S. novogaliciana* as a synonym of *S. citrea*.

The only known original material of *Symplocos prionophylla* was a Ghiesbreght specimen at K that was photographed prior to being sent on loan to MEXU in 2000. This specimen was lost in transit. Based on this K photograph of the specimen and on the protologue, we are confident that *S. prionophylla* is a synonym of the earlier name *S. citrea*. We have designated a specimen from Guerrero as the neotype of *S. prionophylla* because there are few specimens and duplicates of *S. citrea* from Oaxaca.

Additional specimens examined—**MEXICO. Colima:** Volcán del Nevado, [19°32′N, 103°42′W], *Bárcena 433* (MEXU!). **Distrito Federal:** Segundo Dinámo de Contreras, 2600 m, [19°17′02″N, 99°16′26″W], 7 December 1952, *Gold 244* (MEXU!); Autopista Mexico-Cuernavaca, Km 56 1/2, 2250 m, [10°06′45″N, 99°11′01″W], 7 December 1952, *Gold 250* (MEXU!, MO!); Contreras, [19°16′48″N, 99°16′34″W], 22 October 1950, *Gold s.n.* (MEXU!); Dinámo de Contreras, 2600 m, [19°16′48″N, 99°16′33″W], 29 October 1950, *Matuda et al. 18692* (CAS!, MEXU!, NY!); Cañada de Contreras, cerca del Primer Dinámo, 2550 m, [19°17′17″N, 99°15′52″W], 16 April 1970, *Rzedowski 27209* (CAS!, F!, NY!). **Guanajuato:** Jerécuaro, 2 km al SE de Chilarillo, 2200 m, [20°06′26″N, 100°27′02″W], 13 September 1988, *Rzedowski 47770* (MEXU!, MO!). **Guerrero:** crest of ridge near Huapango on rd to San Vicente S of Omiltemi, 2290 m, [17°32′53″N, 99°41′43″W], 18 October 1984, *Breedlove 61874* (CAS!, MO!); Taxco de Alarcón, Parque El Huizteco, 5 km al N de Taxco, en El Sombrero, 2480 m, 18°35′43″N, 99°36′54″W, 2 March 1998, *Calónico S. 8080* (MEXU!); Chilapa de Álvarez, Estación de microondas Pozo Largo, carretera Chilapa a Tlapa, 1935 m, 17°30′N, 99°03′W, 27 December 1993, *Calzada 19013* (MEXU!); Chilpancingo, 3 km adelante de Xocomanantlán, camino de Chilpancingo–Omiltemi, 2000 m, [17°33′21″N, 99°39′13″W], 14 October 1984, *Casstelo 367* (MEXU!); Taxco de Alarcón, Taxco, 8.2 km al NW, 2400 m, 18°35′16″N, 99°40′41″W, 28 May 1998, *Cruz D. 2330* (MEXU-2!); Taxco de Alarcón, Taxco, 9 km al NW, 2290 m, [18°36′31″N, 99°40′05″W], 4 July 1998, *Cruz D. 2511* (MEXU!); along dirt rd between Taxco to Tetipac, 5.3 mi NW jct. rd to Ixcateopan and hwy through Taxco and 1.8 mi from reservoir above Casahuates, 6700 ft, [18°34′16″N, 99°37′20″W], 5 December 1983, *Daniel & Lott 3323* (CAS!); La Primavera, 5 km al SE de Las Palancas, 1900 m, [17°38′34″N, 100°07′55″W], 14 February 1974, *González M. et al. 6766* (CAS!, MEXU!); Chilpancingo, Mojonera Plan de Potrerillos o 40° NE de Omiltemi, camino a Xocomotlán, 2400 m, [17°33′23″N, 99°38′33″W], 1 November 1984, *Lozano 516* (MEXU!); Taxco, [18°33′23″N, 99°36′18″W], 26 December 1943, *Miranda 3064* (MEXU!); Taxco de Alarcón, Arriba de Taxco, camino a Tenería, 2000 m, [18°33′37″N, 99°36′37″W], December 1943, *Miranda 3079* (MEXU!); Chilapa de Álvarez, Km 72–73 de la carretera Chilapa–Tilpa, 1900 m, [17°32′59″N, 98°52′14″W], 5 March 1994, *Panero & Calzada 3911* (LL!, MEXU!); Taxco de Alarcón, El Aguacate, 11.6 km al W de Taxco, 2440 m, 18°34′30″N, 99°43′15″W, 1 May 1998, *Ponce Vargas 40* (MEXU-2!); 2 km al E de Omiltemi, sobre el camino a Chilpancingo, 2250 m, [17°33′12″N, 99°40′21″W], 2 September 1962, *Rzedowski 16030* (CAS!); Taxco de Alarcón, 0.5 km al E de Cruz Alta, Puerto de Las Pitayas, rumbo a Puerto Oscuro, 2580 m, 25 May 1986, *Valencia A. 24* (MEXU!). **Jalisco:** Tequila, N side of Volcán Tequila, 14.2 km S of Tequila on the rd to the microwave station, 2150 m, [20°47′54″N, 103°44′37″W], 5 October 1985, *Bartholomew et al. 2685* (CAS!, GH!); Mpio. Tequila, N side of Volcán Tequila, 17.4 km S of Tequila on the rd to microwave station, 2440 m, [20°47′54″N, 103°44′37″W], 5 October 1985, *Bartholomew et al. 2704* (CAS!, NY!); Tequila, N side of Volcán Tequila, 17.4 km S of Tequila on the rd to the microwave station, 2440 m, 5 October 1985, *Bartholomew et al. 2710* (CAS!, GH!, NY!); Autlán de Navarro, along logging rd from El Chante to El Guisar in the Sierra de Manantlán, 2160 m, [20°17′N, 103°24′W], 17 August 1980, *Breedlove & Almeda 45627* (CAS!, F!); Mpio. Autlán de Navarro, along logging rd from El Chante to El Guisar in the Sierra de Manantlán, 2160 m, [20°17′N, 103°24′W], 17 August 1980, *Breedlove & Almeda 45628* (C!); Autlán de Navarro, along logging rd from El Chante to El Guisar in the Sierra de Manantlán, 2160 m, 17 August 1980, *Breedlove & Almeda*

45672 (CAS!, GH!); Mpio. Autlán de Navarro, near El Guisar along logging rd from El Chante in the Sierra de Manantlán, 2620 m, 17 August 1980, *Breedlove & Almeda 45703* (CAS!); 19 km SE of Mexican Hwy 110 S of Tecalitlán along rd to Jilotlán de los Dolores, 2130 m, [19°26′11″N, 103°11′23″W], 16 September 1986, *Breedlove & Anderson 64274* (CAS!); Autlán de Navarro, Sierra de Manantlán, arriba del aserradero, ladera N, 9100 ft, 23 November 1968, *Boutin & Brandt 2534* (CAS!, MEXU!); Tequila, Volcán de Tequila, 8 km S de Tequila por el camino que sube a las antenas, 2614 m, 20°48′30″N, 103°50′37″W, 5 September 2001, *Carillo R. et al. 2614* (MEXU-2!); Tequila, Cerro de Tequila, brecha a las microondas, 2300 m, [20°47′54″N, 103°44′37″W], 1 September 1991, *Cházaro B. et al. 6725* (MEXU!, MO!); Cerro El Almeal y las cercanías, 4.5 km por el camino al SE de la Estación Biológica Las Joyas, 2050 m, 22 December 1984, *Cochrane et al. 10624* (MEXU!); Autlán de Navarro, R. B. Sierra de Manantlán, upper W edge of Cerro Grande, [19°29′27″N, 103°57′22″W], 7 June 1991, *Cochrane et al. 12552* (F!, MO!); Cuautitlán, 52 km al NW de Colima, 3–4 km al NW de Telcruz, 1600 m, 19°25′38″N, 104°08′07″W, [19°29′53″N, 104°08′40″W], 10 February 1988, *Cuevas & Guzmán 2163* (MEXU!); Cuautitlán, 17–18 km al NE de Cuautitlán, La Cumbre, 2100 m, 19°33′10″N, 104°14′20″W, 29 April 1988, *Cuevas & Guzmán 2911* (MEXU!); 16–17 km al NE de Cuautitlán, 0.2 km al SW de La Cumbre, 1700 m, [19°32′45″N, 104°14′35″W], 22 July 1988, *Cuevas & Guzmán 3167* (MEXU!); Cerro de Tequila, al E de Tequila, 2500 m, [20°47′39″N, 103°51′15″W], 15 September 1967, *Díaz L. 413* (MEXU!); Tequila, Cerro de Tequila, 2300 m, [20°47′54″N, 103°44′37″W], 28 August 1972, *Díaz L. 3471* (MO!); Sierra de Nayarit (Huichol Territory), *Diquet s.n.* (NY!); Tolimán, 4 km al NW del Terrero, camino a las microondas, 2200 m, [19°27′56″N, 103°57′34″W], 7 June 1991, *Flores F. et al. 2634* (MEXU!, MO!); Tolimán, Rancho El Terrero, 1.5 km adelante del Aserradero, camino a las microondas, 2000 m, [19°27′42″N, 103°57′W], 14 June 1991, *Flores F. et al. 2668* (MEXU!, NY!); Tequila, 12 km al SE de la estación de tren Tequila, camino a la estación de microondas, Cerro Tequila, 2200 m, [20°47′32″N, 103°50′33″W], 7 November 1993, *Flores F. et al. 3101* (MEXU-8!); Barranca El Tejocote, 20 km al S de San Juan de la Montaña, 1735 m, [20°31′19″N, 103°08′20″W], 7 April 1988, *García M. et al. 3879* (MEXU!); Sierra de Manantlán Biosphere Reserve, Las Joyas Section, 36 km S of Ahuaca TRANSECT #9-10, 1950 m, [19°24′36″N, 104°06′W], 25 March 1991, *Gentry & Jardel 73554* (CAS!, MO!); Ayutla, Predio Santa Mónica, proximidad al campamento Las Iglesias, orilla del camino, 2040 m, [19°59′N, 104°28′W], 21 October 1979, *Guízar N. 701* (MEXU!); Tequila, Cerro Tequila, 2650 m, [20°47′54″N, 103°44′37″W], 23 December 1967, *González Villarreal et al. 1071* (MEXU-2!); Tonila, El Terrero, 2200 m, [19°27′42″N, 103°57′W], 2 April 1989, *González Villarreal et al. 3658* (MO!); without precise locality, *Hinton 3711* (F!); Tonila, brecha que va al Playón, Volcán de Fuego, 2350 m, 12 July 1992, *Huerta et al. 232* (MEXU!); 2–4 km E of Cerro La Cumbre, 17.5 km of El Chante, top Sierra of Manantlán plateau, along lumber from N end of S. de Manantlán Central to arroyo de Neverias at W end of S. Manantlán W, 2350 m, 19°33′30″N, 104°11′13″W, 6 January 1980, *Iltis et al. 2355* (CAS!, MEXU!); Autlán de Navarro, R. B. Sierra de Manantlán, 75 m to the N of rd fork to Las Joyas, 2100 m, 9 March 1987, *Iltis et al. 29379* (GH!); on SW facing slope below the plateau top of Cerro Grande, on rd from Terrero to Mexicalitos (Los Picachos), 2300 m, 17°27′45″N, 103°56′W, 13 March 1987, *Iltis et al. 29493* (F!, MEXU!, MO!, S!); Sierra de Manantlán, SW facing slope below the plateau top of Cerro Grande, 2300 m, [19°26′32″N, 103°57′21″W], 13 March 1987, *Iltis et al. 29493a* (CAS!, F!, MO!); Tecalitlán, 20 km al S de Llanitos por la brecha a Plan de Lego, y ca. 3 km al E por la cañada, 2150 m, [19°20′34″N, 103°15′45″W], 14 November 1989, *Koch & Fryxell 89135* (NY!); Cuautitlán, 16–17 km NE de Cuautitlán, 2 km SW de La Cumbre, 1900 m, 19°33′07″N, 104°14′30″W, 15 February 1989, *López & Guzmán 77* (MEXU!); Mazamitla, Fraccionamiento Natura, Mazamitla, 2000 m, 1 July 1996, *Machuca N. 7727* (NY!); Autlán de Navarro, Las Joyas, Manantlán, *Magallanes S. & Parada B. 4454* (MEXU!); Tecatitlán, Barranca del puerto de La Resbalosa, 2000 m, [19°30′40″N, 103°16′19″W], 6 July 1974, *Mancera O. 361* (MEXU!); Venustiano Carranza, Loma de la Ailera, predio Hacienda del Jazmín, 2500 m, 10 July 1974, *Mancera O. 419* (MEXU!); NW slopes of Nevada de Colima, in pine-fir zone above Jazmín, abandoned lumber rd 1 km above El Isote, 2500 m, [19°37′43″N, 103°38′05″W], 29 March 1949, *McVaugh 10100* (GH!, MEXU!, NY!); 3–5 mi NW of San Miguel de la Sierra (ca. 40 km, airline, W of Ayutla), [20°07′28″N, 104°37′15″W], 2000 m, 3 November 1962, *McVaugh 22055* (NY!); San Sebastián, segundo arroyo, 1500 m, [20°49′33″N, 104°07′07″W], 22 January 1927, *Mexia 1547* (A!, CAS!, DS!, F!, MO!, NY!, US!); San Sebastian, arroyo del Triangulo, 1425 m, [20°49′33″N, 104°07′07″W], 20 March 1927, *Mexia 1908* (A!, CAS!, DS!, F!, GH!, MO!, NY!); Ciudad Guzmán, Brecha a un lado de Los García, hacia la parte O del Nevado de Colima, 2155 m, [19°38′21″N, 103°40′09″W], 28 September 1993, *Negrete et al. 49* (NY!); Tequila, Volcán Tequila, Km 9 de la carretera a la estación de microondas en la cima de la montaña, 2600 m, [20°47′54″N,

103°44′37″W], 8 October 1993, *Panero et al. 3644* (CAS!, MEXU!, NY!); Tamazula, cerca de Agua Hedionda, 45 km al E de El Aserradero, sobre el camino a Manuel Diéguez, 1900 m, [19°52′43″N, 104°22′54″W], 26 May 1973, *Rzedowski & McVaugh 1088* (NY!); Tolimán, 3 km al NW de El Terrero, 12–13 km NE de Minatitlán, 2300 m, 19°27′42″N, 103°57′48″W, 22 November 1993, *Santana M. & Benz 6592* (MEXU!); La Manzanilla, 2 km al W de La Manzanilla, camino a Concepción Buenos Aires, 2100 m, [19°59′24″N, 103°10′22″W], 8 November 1987, *Soltero 701* (MEXU-2!); camino de La Cumbre al Rincón de Manantlán, Cuautitlán, 2020 m, 3 April 1986, *Vázquez 3909* (NY!); Tequila, Cerro de Tequila, 2500 m, [20°47′32″N, 103°50′33″W], 14 September 1969, *Villareal de Puga 2650* (MEXU!); Tequila, Volcán Tequila, along rd to microwave station, 8500 ft, 20°47′N, 103°50′W, 24 October 1970, *Webster & Breckon 15890* (GH!, MEXU-2!); Autlán de Navarro, R. B. Sierra de Manantlán, just E of Cerro La Cumbre on upper end of rd down to Rincón de Manantlán, 2.4 km by main rd E of Cerro El Almeal, 15.5 km (air) SE of Ahuacapán, 2100 m, 19°33′28″N, 104°14′14″W, 19 March 1989, *Wetter et al. 1096* (CAS!, F!, GH!); R. B. Sierra de Manantlán, 7.3 km N of El Terrero on the rd to La Laguna, 4.5 km (air) NNW of El Terrero, 2372 m, [19°28′51″N, 103°58′21″W], 23 March 1989, *Wetter et al. 2052* (F!); 26.5 km SE of jct. to Mex 110, on the way to Jilotlán de Dolores, 2040 m, [19°26′18″N, 103°11′03″W], 29 October 2000, *Yahara et al. 2200* (MEXU!). **Estado de México:** Mpio. Valle de Bravo, 9.8 km N of Temascaltepec on rd to Valle de Bravo, 2100 m, [19°04′56″N, 100°04′31″W], 12 October 1985, *Bartholomew et al. 2961B* (CAS!); Temascaltepec, 16 km NE of Temascaltepec, 2290 m, [19°06′44″N, 100°09′58″W], 25 November 1983, *Breedlove & Almeda 60478* (CAS!, MEXU!, NY!); Valle de Bravo, Temascaltepec, [19°11′34″N, 100°07′50″W], 21 October 1982, *García R. 377* (MEXU!); Ocuilan de Arteaga, carretera Jococingo–Malinalco, desviación a Santa Cruz Tezontepec–Chalma, meseta basáltica del Holotepec, Tenango del Valle, 2310 m, 18°59′N, 99°26′W, 18 December 1989, *González & Miranda 43* (MEXU!); Tejupilco, 3–4 km al E de Nanchititla, 2000 m, [18°52′24″N, 100°25′47″W], 19 November 1993, *González M. et al. 6464* (CAS!, MEXU!); Tejupilco, 8–9 km al S de Nanchititla, en el camino a Bejucos, [18°49′59″N, 100°25′36″W], 19 November 1993, *González M. et al. 6455* (MEXU!); Valle de Bravo–Avándaro, 1900 m, [19°10′44″N, 100°07′10″W], 12 November 1977, *Hernández M. 3075* (MEXU!); Temascaltepec, Las Mesas, 2000 m, [19°02′60″N, 99°59′07″W], 2 November 1932, *Hinton 2342* (F!, US!); Nanchititla, Dist. Temascalpetec, [18°52′N, 100°28′W], 17 March 1933, *Hinton 3616* (NY!, US!); Temascaltepec, *Hinton 3711* (F!); Temascaltepec, Rincón, 1980 m, [18°54′N, 100°07′12″W], 15 November 1933, *Hinton 5092* (F!, MEXU!, S!); Tejupilco, Rincón, 1960 m, 12 November 1933, *Hinton 5093* (A!, F!, MO!, S!); Dist. Temascaltepec, 20 March 1935, *Hinton 7540* (US!); Temascaltepec, Nanchititla, [18°52′N, 100°28′W], 13 April 1935, *Hinton 7615* (GH!, NY!, US!); 18 km W of Temascaltepec, 49 km E of Toluca at Km 49 along Toluca–Temascaltepec Hwy (#134), 2364 m, 19°06.719′N, 99°57.333′W, (19°06′43″N, 99°57′19″W), 22 January 2003, *Kelly et al. 1375* (CAS!); Ocuilan de Arteaga, SE de Las Lagunas de Zempoala, Km 18 de la carretera Ocuilan a Cuernavaca, Barranca de Ocuilan, 2280 m, [18°59′15″N, 99°19′20″W], 1 November 1985, *Lorence & Tejero 4892* (CAS!, MEXU!); Temascaltepec, Temascaltepec, [19°02′N, 100°03′W], 26 October 1952, *Matuda et al. 26574* (MEXU-3!); Real de Abajo, Sultepec, 1800 m, 21 September 1953, *Matuda et al. 29308* (MEXU-2!); Valle de Bravo, 1800 m, [19°11′34″N, 100°07′50″W], 23 November 1952, *Matuda et al. 27309* (CAS!, MEXU-3!); Valle de Bravo, 1800 m, 21 November 1952, *Matuda et al. 27817* (MEXU!); Santa Bárbara–Santo Tomás de los Plátanos, 1100 m, [19°10′37″N, 100°16′20″W], 11 October 1953, *Matuda et al. 30385* (CAS!, MEXU!); Cerro de Mamatla, Zacualpan, 2000 m, [18°43′N, 99°46′39″W], 3 May 1954, *Matuda et al. 30567* (MEXU!); Cerro de Ahuacatitlán, Almoloya de Alquisiras, 1700 m, [18°51′57″N, 99°53′38″W], 29 March 1954, *Matuda et al. 30609* (MEXU!); Nanchititla, 1900 m, [18°52′N, 100°28′W], 26 May 1954, *Matuda et al. 30867* (MEXU!); Cerro de Pinal, Otzoloapan, 2300 m, [19°07′34″N, 100°15′05″W], 18 October 1954, *Matuda et al. 31893* (MEXU-2!); along Hwy 153 between Temascaltepec and Toluca, 53 km SW of Toluca, at turnoff to El Polvorin, 2000 m, [19°03′N, 100°01′48″W], 26 April 1987, *Miller & Meyers 2621* (CAS!, MEXU!, MO!); Valle de Bravo, near Río Molino above reservoir, Valle de Bravo, 1 November 1949, *Moore Jr. & Cetto 5484* (GH!); Valle de Bravo, ca. 6 km al S de carretera Avandaro–Toluca sobre la carretera a Temascaltepec, 2300 m, 5 October 1997, *Panero et al. 7345* (NY!); Temascaltepec, Temascaltepec, 4 November 1956, *Paray 2258* (MEXU!); Salto de Agua, [19°08′N, 98°46′W], November 1905, *Purpus 1775* (F!, GH-2!, MO-2!, NY-2!, US!); Tejupilco, 1 km al W de Nanchititla [sic], 1800 m, [18°51′18″N, 100°27′29″W], 9 April 1966, *Rzedowski 22099* (F!, MEXU!, MO!); Amecameca, 4 km al E de Santa Isabel Chalma, 2650 m, [19°09′02″N, 98°43′15″W], 25 February 1979, *Rzedowski 36076* (CAS!, MEXU!, MO!); Desierto de Tenancingo, [18°55′23″N, 99°33′40″W], 1915, *Salazar s.n.* (MEXU!); 14.5 km al E de Ocuilan, sobre la carretera a Cuernavaca, 2250 m, [18°59′20″N, 99°20′05″W], 30 July 1983, *Toledo M. 21* (MEXU!). **Michoacán:**

Morelia, Cerro Azul, 2300 m, [19°25′40″N, 100°40′40″W], 6 September 1912, *Arsène s.n.* (JE!); Morelia, vicinity of Morelia, Cerro Azul, 2100 m, 4 November 1909, [19°25′40″N, 100°40′40″W], *Arsène 2842* (GH!, MEXU!, MO-2!, NY!); Morelia, vicinity of Morelia, Campanario, 2100 m, [19°23′10″N, 101°09′52″W], December 1910, *Arsène 5808* (A!, MO!, US!); along Mexico Hwy #15, 18 mi E of Morelia, 7200 ft, [19°39′14″N, 100°55′57″W], 2 November 1970, *Breedlove 18716* (CAS!); 32 km SE of Puerto Las Cruces, N of Coalcoman along rd to Dos Aguas, Sierra de Coalcoman, 2195 m, [18°49′13″N, 103°03′42″W], 17 September 1986, *Breedlove & Anderson 64336* (CAS!); 16 km N of Ejido Varaloso along rd to Dos Aguas, Sierra de Coalcoman, 2375 m, [18°48′27″N, 102°57′10.5″W], 17 September 1986, *Breedlove & Anderson 64412* (CAS!); Morelia, 1–1.5 km al S de Atécuaro, 2260 m, [19°34′22″N, 101°11′21.5″W], 19 February 1992, *Carranza 3907* (CAS!, MEXU!); Los Reyes, Cerro Patambán, 3 km al E de Ciríо, 2540 m, [19°45′13″N, 102°23′14″W], 27 April 1999, *Carranza & Torres 5733* (MEXU!); Villa Madero, Brecha Villa Madero–Nocupetaro, aprox. 15 km después de Villa Madero, 2480 m, [19°20′15″N, 101°22′01″W], 4 May 1987, *Cházaro B. & Zamudio 4724* (MEXU!); Santa Clara del Cobre, Rincón Agua Verde, [19°25′04″N, 101°45′03″W], 27 July 1994, *Cruz E. & Pérez Calix 3* (MEXU!); Quiroga, Cerro La Acumara, 6 km Santa Fé de la Laguna, 2100 m, [19°41′34″N, 101°34′22″W], 29 May 1985, *Díaz B. 1058* (MEXU!); 2 km SW de Los Tanques, 2300 m, [19°27′54″N, 101°36′37″W], 23 September 1986, *Díaz B. 3208* (MEXU!); Tingambato, Ladera W del Cerro Cumburinda, 2000 m, [19°30′57″N, 101°53′14″W], 14 October 1988, *Díaz B. & Bello 5179* (MEXU!); Pátzcuaro, entre los Cerros La Cantera y Los Lobos, 2200 m, [19°51′20″N, 102°22′33″W], 29 March 1989, *Díaz B. 5792* (MEXU!); Santa Clara del Cobre, camino al Cerro de La Cantera, 2300 m, [19°18′28″N, 101°40′40″W], 23 October 1989, *Escobedo 1877* (MEXU!); Pátzcuaro, 6 km al S de Pátzcuaro, carretera a Opopeo, 2340 m, [19°27′47″N, 101°36′42″W], 10 November 1985, *Espinosa Garduño 2014* (MEXU!); Morelia, Cerro Peña de San Pedro, SW de San Miguel del Monte, 2400 m, [19°36′45″N, 101°09′11″W], 8 December 1990, *García L. 3557* (MEXU!); Paracho, cerro al N de Ahuiran, 2300 m, [19°40′16″N, 102°04′22″W], 13 December 1990, *García & Pérez 3583* (MEXU!); Morelia, Agua Zarca, cerca de San Miguel del Monte, 2200 m, 22 October 1991, *García & Pérez 4029* (MEXU!); Uruapan, Malpais de Capacuaro, 2350 m, [19°32′55″N, 102°03′05″W], 13 November 1991, *García & Pérez 4118* (MEXU!); Uruapan, 10 km de la desv. Anagahuan–Paricutín, 2250 m, [19°33′02″N, 102°13′05″W], October 1988, *González M. et al. 17060* (F!, MEXU-2!); Uruapan, 10 km de la desviación Anagahuan–Paricutín, 2250 m, 13 July 1988, *González M. et al. 17068* (MEXU-2!); Sierra Toricillas, Dist. Coalcoman, [20°05′09″N, 102°00′46″W], 14 October 1938, *Hinton 12379* (NY!, US!); Zitacuaro–Los Orcados, Dist. Zitacuaro, 2400 m, [19°22′12″N, 100°20′30″W], 11 October 1938, *Hinton 13349* (NY!, US!); Coalcoman, S. Torricillas, 2200 m, [20°05′09″N, 102°00′46″W], 28 July 1939, *Hinton 15028* (F!, GH!, MO!, NY!); Mpio. Tancítaro, Tancítaro, 2100 m, [19°20′14″N, 102°21′50″W], 11 October 1940, *Hinton 15511* (F!, MO!, NY!); Barroloso, Coalcoman, 2400 m, 22 October 1939, *Hinton 15367* (GH!, US!); Rincón de Ahorcado, al S de Cerro Cacique, 2400 m, [19°22′17″N, 100°18′38″W], 21 October 1978, *Ibarra C. 225* (MEXU!); Ladera S del Cerro Cacique, 2410 m, [19°22′15″N, 100°18′45″W], 28 April 1979, *Ibarra C. 463* (MEXU!); entre Copétiro y Apo., 1860 m, [19°26′54″N, 102°26′14″W], 1 September 1980, *Ibarra C. 1162* (MEXU!); Ciudad Hidalgo, 20 km al O de Cd. Hidalgo, sobre carretera a Morelia, 2300 m, [19°40′18″N, 100°43′54″W], 7 November 1977, *Koch & Fryxell 77383* (NY!); Charopan, 5 km al S de Ocumicho, 2290 m, [19°46′05″N, 102°12′51″W], 25 May 1986, *Labat 822* (MEXU!); Uruapan, La Alberca, Tiamba, 1960 m, [19°29′25″N, 102°01′59″W], 9 November 1978, *Madrigal S. 3091* (MEXU!); San Juan Parangaricutiro, Agua Chiquita, 2300 m, [19°23′35″N, 102°13′05″W], 11 November 1978, *Madrigal S. 3100* (MEXU!); Tlalpujahua, Cerro de Pamatácuaro, Pamatácuaro, Los Reyes, 2520 m, [19°42′22″N, 102°21′32″W], 16 November 1978, *Madrigal S. 3123* (MEXU!); Cd. Hidalgo, en La Venta, a 17 km al W de Cd. Hidalgo, carretera Morelia, por Mil Cumbres, 2450 m, [19°39′23″N, 100°43′13″W], 11 October 1983, *Martínez S. et al. 4675* (CAS!, F!, MEXU!); Mpio. Patzcuaro, 2 km al N de la ex-Hacienda de Charahuen, 2115 m, 19°31′59″N, 101°42′45″W, 5 February 2004, *Molina & Zamudio 449* (CAS!); Uruapan, 3.3 mi from Uruapan Hwy on rd to Paricutín, 2250 m, [19°30′32″N, 102°09′18″W], 13 September 1961, *Moore Jr. & Bunting 8816* (MEXU!); Panahuacaro, borde del camino, 2450 m, 12 August 1981, *Motte 315a* (MEXU!); Santa Clara del Cobre, Cerro San Miguel, 2500 m, [19°19′N, 102°23′W], 28 October 1988, *Pérez Calix 354* (MEXU!); Nahuatzen, 7 km W de Arantepacua, 2450 m, [19°34′24″N, 102°00′45″W], 19 June 1988, *Ramos s.n.* (MEXU!); Cañada Tsintzungua, Capácuaro, 2300 m, [19°32′55″N, 102°03′05″W], 17 December 1971, *Rees s.n.* (CAS!, MEXU!, MO!); 20 km al W de Ciudad Hidalgo, sobre la carretera a Morelia, 2250 m, [19°40′18″N, 100°43′54″W], 21 July 1964, *Rzedowski & de la Sota 18395* (MEXU!); San Miguel del Monte, 15 km al SE de Morelia, 2200 m, [19°39′22″N, 101°07′15″W], 17 September 1967,

Rzedowski 25164 (DS!); 12 km al E de Uruapan, sobre la carretera a Pátzcuaro, 1750 m, [19°27′59″N, 101°56′45″W], 23 January 1977, *Rzedowski 34595* (MEXU!); Morelia, 2 km SW de Atécuaro, 2300 m, [19°33′55″N, 101°11′30″W], 18 May 1986, *Rzedowski 39704* (MEXU!); Morelia, 4 km al S de San Miguel del Monte, 2400 m, [19°35′06″N, 101°08′04″W], 16 September 1987, *Rzedowski 44909* (MEXU!); Tlalpujahua, cerca de Pichardo, 5 km al SW de San Francisco Los Reyes, 2650 m, [19°44′18″N, 100°16′20"], 20 December 1987, *Rzedowski 46218* (MEXU!); Morelia, El Salitrillo, cerca de San Miguel del Monte, 2200 m, 26 November 1985, *Santos M. 1067* (MEXU!); Morelia, 3 km al SE de Atécuaro, 2400 m, [19°34′10″N, 101°10′31″W], 16 November 1986, *Santos M. 1898* (MEXU!); 2 km al S de Villa Escalante, carretera a La Huacana, [19°23′01″N, 101°39′W], 27 May 1979, *Soto N. & Román de S. 1429* (CAS!, MEXU!, MO!); aprox. 12 km al NE de Coalcoman, camino a Aguililla, 1750 m, [18°49′33″N, 103°05′46″W], 20 October 1979, *Soto N. & Silva R. 1921* (CAS!, MEXU!, MO!); 2 km S de Villa Escalante, Santa Clara del Cobre; carretera Pátzcuaro–Ario de Rosales, [19°23′01″N, 101°39′W], 23 October 1981, *Soto N. 3411* (MEXU!); 10 km al SE de Villa Madero, carretera a Nocupétaro, 2500 m, [19°21′10″N, 101°21′21″W], 30 September 1982, *Soto N. 4740* (MEXU!); Ocampo, en La Laguna Verde, 2500 m, [19°37′N, 100°24′W], 11 August 1984, *Soto N. et al. 6539* (MEXU!, MO!, NY!); Mpio. Hidalgo, carretera Cd. Hidalgo–Mil Cumbres, 2 km al O de La Venta, 2200 m, [19°39′55″N, 100°43′14″W], 8 March 1985, *Soto N. & Aureoles C. 7360* (CAS!, MEXU!, NY!); desviación a Laguna Verde, carretera San Felipe de Los Alzati–Angangueo, 10 km al NE de San Felipe, 2200 m, [19°34′10″N, 100°20′34″W], 7 July 1985, *Soto N. et al. 9057* (CAS!, MEXU!, NY-2!); Pátzcuaro, 6.5 km S de Pátzcuaro, carretera a Santa Clara del Cobre, 2300 m, [19°27′16″N, 101°36′40″W], 13 November 1999, *Zamudio R. 11234* (MEXU!). **Morelos:** Tepoztlán, La Pera, Coajomulco, 1600 m, [19°01′12″N, 99°08′14″W], 6 September 1985, *Castillo P. s.n.* (MEXU!); Tepoztlán, Mirador, Coajomulco, 2360 m, [19°01′17″N, 99°08′34″W], 4 November 1985, *Cervantes T. s.n.* (MEXU!); Cuernavaca, Colonia del Bosque, al N de la Barranca El Tecolote, 1800 m, 29 October 1987, *Estrada L. 1866* (MEXU!); Cuernavaca, Sierra de Morelos, 1925 m, [18°58′37″N, 99°16′19″W], 30 October 1969, *Hinton et al. 17438bis* (MEXU!); Tepoztlán, 5.5 km al E de Coajomulco, 500 m al N de la carretera, Sierra de Chichinautzin, 2450 m, [19°01′18″N, 99°09′34″W], 8 January 1984, *Ishiki I. 793* (MEXU!); Tepoztlán, carretera (cuota) México–Cuernavaca, 20 km al NE de Cuernavaca, 2160 m, [19°00′48″N, 99°09′39″W], 15 April 1976, *Koch 7644* (MO!); Valle de Tepeite, [18°59′32″N, 99°17′01″W], August 1932, *Lyonnet 976* (C!, CAS!, MEXU!, MO-3!, US!); Huitzilac, [19°01′42″N, 99°16′04″W], December 1930, *Lyonnet 1074* (MEXU!); hacía Santo Domingo, [19°00′38″N, 99°03′43″W], December 1942, *Miranda 3857* (MEXU-2!); Barranca de Atzompan, cerca de Huitzilac, 2460 m, 17 October 1964, *Palacios s.n.* (DS!); lava fields above Cuernavaca, 8000 ft, [19°00′16″N, 99°18′04″W], 19 November 1902, *Pringle 11013* (CAS!, F!, GH!, MO!, NY!, US!); mtn. side above Cuernavaca, 8000 ft, [19°01′N, 99°16′53″W], 13 October 1900, *Pringle 9125* (F!, GH!, MEXU!, MO!); Mpio. Tepoztlan, 5 km al ESE de Cuajomulco, autopista Mexico–Cuernavaca, 2400 m, [19°01′18″N, 99°09′50″W], 17 April 1966, *Rzedowski 22162* (DS!); Tepoztlán, camino a Cuernavaca, 2400 m, [18°58′23″N, 99°09′35″W], 29 January 1977, *Schwabe 77520* (CAS!, MEXU!); Huitzilac, 2500 m, [19°01′42″N, 99°16′04″W], 13 October 1975, *Sousa S. & Delgado S. 5118* (MEXU!); Cuernavaca, Colonia Bosque, oriente, 8 November 1969, *Vázquez 2332* (MEXU!). **Nayarit:** Tepic, W side of Cerro San Juan, 9.2 km S of rd from Tepic to Santa Cruz, 1520 m, [21°28′56″N, 104°59′50″W], 4 October 1985, *Bartholomew et al. 2667* (CAS!, GH!, MEXU!); N slope of Cerro San Juan along Hwy 54 to Jalcocotán, 1110 m, [21°31′06″N, 104°58′46″W], 4 December 1968, *Boutin & Brandt 2650* (CAS!); Tepic, W slope of Volcán San Juan ascended by small rd at Km 6 from Tepic to Jalcocotlán, 1380 m, [21°28′10″N, 105°00′19″W], 23 September 1979, *Breedlove 44345* (CAS!, MEXU!, MO!); Tepic, W slope of Volcán San Juan along small rd at Km 6 on rd from Tepic to Jalcocotán, 900 m [sic], 8 August 1980, *Breedlove 45199* (CAS!, MEXU!, MO!); Tepic, 5 km de la desviación al rancho La Noria–El Cuartereño, Cerro San Juan, 1500 m, 21°29′N, 104°59′, 4 April 1994, *Calzada 19187* (MEXU-2!, MO!); Tepic, 10 km al E de la desviación para el poblado El Cuareteño, Cerro San Juan, 1400 m, 21°28′15″N, 105°00′18″W, 6 April 1994, *Calzada 19218* (MEXU!, MO!); 5 km SW de la carretera El Izote–V. Carranza, camino a El Cuartereño, Cerro San Juan, [21°30′15″N, 104°58′40″W], *Flores F. et al. 4451* (MEXU!, MO!); El Terrero, 4.7 km del Terrero, por la brecha hacia Los Picachos, 2420 m, [20°57′N, 104°39′18″W], 13 December 1996, *González G. 48* (MEXU!); Tepic, Cerro San Juan, camino a El Cuarenteño, 8 km W de Tepic, 1330 m, [21°28′55″N, 104°58′43″W], 4 April 1992, *González & Lorea 1337* (MEXU!); Tepic, 12–17 km NW de Tepic, sobre la terracería a El Cuarenteño, 300 m adelante del El Izote, camino Tepic–Miramar, 21°30′N, 104°55′W, [21°30′19″N, 104°58′29″W], 9 September 1985, *Téllez V. 9145* (MEXU!, NY!); Tepic, Km 5–10, terracería a El Cuarenteño, que inicia 300–400 km [sic] al W de El Izote, [21°29′40″N,

104°59′32″W], 6 October 1987, *Téllez V. 10868* (MEXU!, MO!); Tepic, 13.5 km al SW de El Izote, brecha a El Cuarenteño, 1430 m, 21°29′N, 104°58′W, [21°27′N, 104°54′W], 5 December 1989, *Tenorio L. et al. 15694* (MEXU!, MO!); Tepic, 2 km al E de La Hacienda de la Noria, brecha a Tepic, 2200 m, [21°28′55″N, 104°58′43″W], 23 March 1989, *Tenorio L. et al. 15694* (MEXU!, MO!); Tepic, 13.5 km al SW de El Izote, brecha al Cuarenteño, 1430 m, 21°29′N, 104°58′W, 5 December 1989, *Tenorio L. et al. 16939* (MO!). **Oaxaca:** near Rancho La Cienaga, 11 February 1945, *Alexander 730* (NY!); La Soledad (near Mitla), 9 February 1966, *Ernst 2580* (MEXU!); without precise locality, *Karwinski s.n.* (photo ex B at US!); 9.6 km al SE del Cerro de Vidrio carretera Oaxaca–Puerto Escondido, 1850 m, [16°12′53″N, 97°08′10″W], 1 August 1984, *Torres C. & C. Martínez 5821* (F! MEXU!). **State unknown:** without precise locality, *Sessé & Mociño 3607* (F!), *Sessé & Mociño 3610* (F!), *Sessé & Mociño 3611* (F!).

8. *Symplocos coccinea* Bonpland (1808: 185). ≡ *Praealstonia coccinea* (Bonpl.) Miers (1879: 291). Lectotype (designated here):—MEXICO. Veracruz: crescit in sylvis Regni Mexicani, prope Xalapa, alt. 660 hex., floret Decembri, *F. W. H. A. Humboldt & A. J. A. Bonpland 4447* (lectotype P-Bonpl.-670957-n.v., online image!, isolectotypes F?, G-n.v., digital image!, P-Bonpl.-135122-n.v., online image!, P-Bonpl.-135123-n.v., online image!, P-Bonpl.-135124-n.v., digital image!)

= *Alstonia ciliata* Bentham (1840: 48). ≡ *Symplocos ciliata* Bentham (1841: 78). ≡ *Symplocos benthamii* Gürke in Engler & Prantl (1890: 172) ["*Benthami*"]. ≡ *Symplocos coccinea* Bonpl. var. *benthamii* (Gürke) Brand (1901: 80). Type:—MEXICO. In loco Banco dicto, January 1838 or 1839, *K. T. Hartweg 366* (holotype K-n.v., online image!, isotypes G-n.v., online image!, LD-n.v., online image!, NY!).

= *?Hypopogon brevipes* Turczaninow (1858: 246) ≡ *Symplocos brevipes* (Turcz.) Turczaninow (1863: 577). Type:—MEXICO. Without precise locality, *A. B. Ghiesbreght 44* (holotype not located).

= *Symplocos coccinea* Bonpl. var. *hirta* Brand (1901: 80). Lectotype (designated here):—MEXICO. Oaxaca: Llano Verde, 6000 ft, April 184?, *H. G. Galeotti 1688* (lectotype NY!, isolectotype US!).

Trees 5–12 m tall; juvenile branchlets and vegetative buds tomentose to hirsute or hirtellous, trichomes to 1–2 mm long, appressed or erect, ferruginous to white. Petioles 3–5 mm long; leaf blades bicolorous, elliptic to oblong or obovate, 5–8.5(–12) × 2.5–3.5(–4.5) cm, coriaceous, abaxially sparsely to moderately appressed-pilose, densely pilose to hirsute along midvein, adaxially glabrescent, persistently sericeous to hirsute along midvein, secondary veins not adaxially impressed, base rounded to obtuse or rarely acute, margins crenulate or crenulate-denticulate, with persistent black or brown teeth, apex acuminate. Inflorescences 1-flowered; peduncles absent or to 2–3 mm long; bracts and bracteoles not obviously different, gradually larger toward the apex of the peduncle, caducous, 3–5, lowermost ovate to suborbicular, 1–2 mm × 1–2 mm, uppermost broadly ovate to deltoid, 3–5 × 3–4 mm, sparsely to moderately sericeous, margins ciliate. Hypanthium densely hirsute. Calyx lobes 5, ovate to lanceolate-ovate, 6–9 × 3–5 mm, densely sericeous, margins ciliate. Corolla red, 10–15-lobed, 1.3–1.6 cm long; tube 3–5 mm long; lobes adnate to filament tube for 4–7 mm, oblong to obovate, sparsely to moderately sericeous, glabrous near margins. Stamens multiseriate; filament tube 5–7 mm long; distinct portions of filaments 2–6 × 0.3–0.75 mm. Disk densely villous; style 10–13 mm long, pilose basally; stigma deeply and irregularly lobed. Fruits green maturing to dark bluish purple, ellipsoid to ovoid or obovoid, 1.8–2.7 cm × 0.8–1.5 cm, moderately to densely hirsute, apex gradually narrowed to base of coroniform calyx, the lobes erect and slightly reflexed apically; disk conical or pulvinate, apex partly visible, surpassed by calyx; endocarp 3-locular, perimeter slightly repand.

Vernacular name—Flor de noche buena (*Gutiérrez B. 3331* [MEXU]).

Illustration—Figure 11.

Photographic image—Figures 1d, 2h.

Phenology—Flowering January through March, September, and November; fruiting March, April, July, and September.

Distribution and habitat—Mexico (Hidalgo, Veracruz, Puebla, and Oaxaca), occasional to locally common in cloud forests at 1900–2500 m elev. Figure 10.

Conservation status—The available collections data indicate that this species is known from over 20 populations in southeastern Mexico; however, none of these are in a protected area. The area where this species occurs has been subjected to extensive habitat fragmentation and deforestation over many years and thus is projected to decline. The EOO is 65,753 km² and the AOO is 196 km². We assign a classification of Endangered (EN): B2ab(iv) for this species.

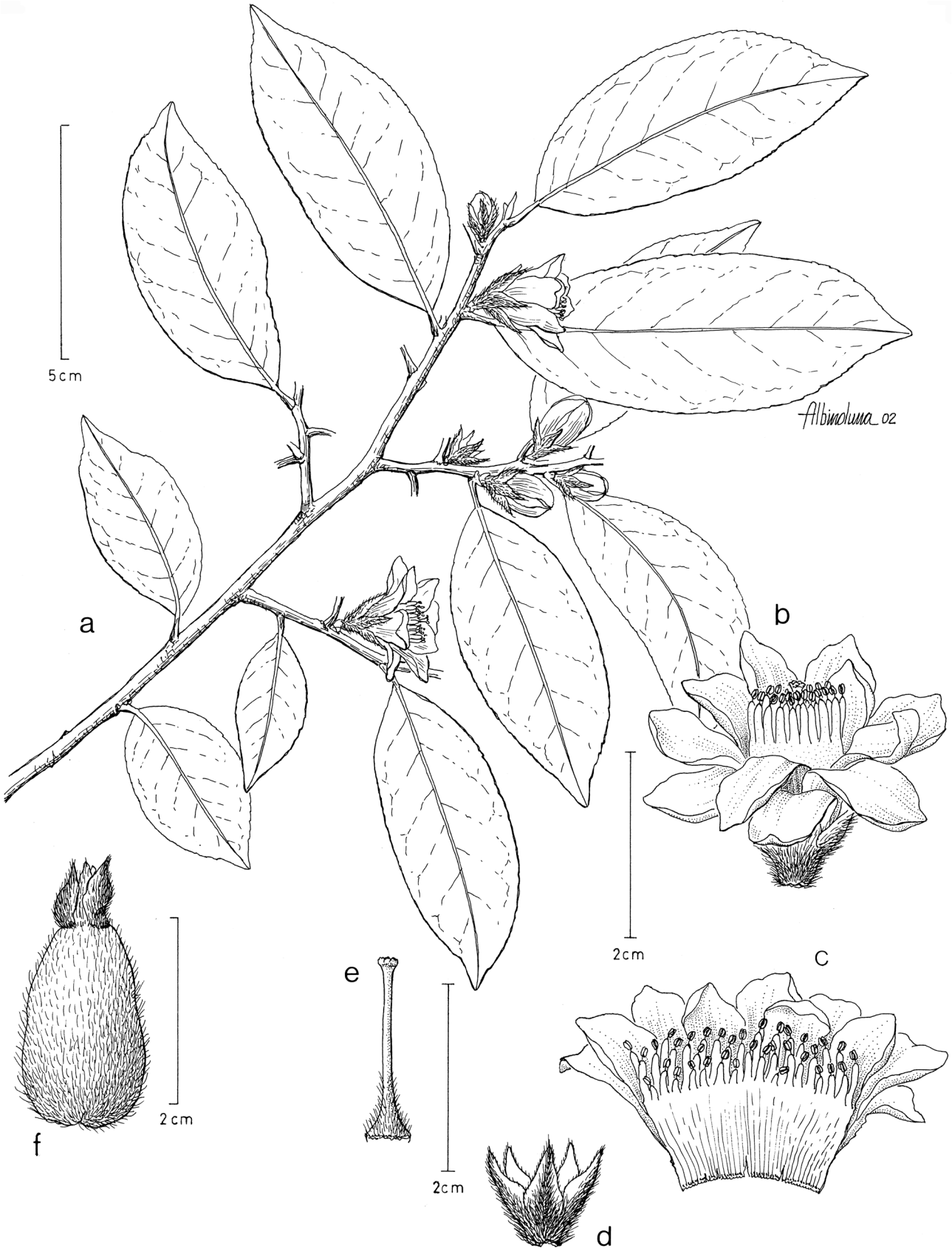

FIGURE 11. *Symplocos coccinea*. **a.** Branchlet with flowers. **b.** Flower. **c.** Corolla opened with attached stamens. **d.** Calyx. **e.** Style and stigma. **f.** Fruit. (a–e drawn from *L. Tenorio & R. Torres C. 5369*, MEXU; f drawn from *R. Cedillo T. et al. 896*, MEXU.)

Discussion—*Symplocos coccinea* is distinguished by the combination of large, solitary flowers with 10–15-lobed corollas and large, hirsute fruits. *Symplocos sousae* also has large, solitary flowers and prior to its description had been confused with *S. coccinea*. These species can be separated with the following couplet:

Corolla lobes 10–15, apically cuspidate to acuminate; fruits hirsute; sepals sericeous; bracts and bracteoles 3–5, caducous, sericeous; styles basally pilose..... *S. coccinea*
Corolla lobes 5, apically involute and rounded; fruits glabrous; sepals glabrous; bracts and bracteoles 5–9, persistent, glabrous; styles glabrous.....*S. sousae*

The lectotype of *Symplocos coccinea* has been selected to correspond with the specimen that is annotated as "holotype" on an undated annotation label on the P-Bonpl.-670957 specimen. There is no evidence that Bonpland designated one specimen among the duplicates as the holotype, and there is no published lectotypification, so lectotypification is necessary. We prefer to make this designation in accordance with the labeling of the specimen. The F specimen may be an isolectotype, but there is no collection number (4447) associated with the specimen.

The collections *C. J. W. Schiede 14*, *179*, and 266*, H. G. Galeotti 1684* and *1688*, *C. Jürgensen 834*, "etc." were cited in the protologue of *Symplocos coccinea* Bonpl. var. *hirta* Brand (1901: 80). We selected *H. G. Galeotti 1688* as the lectotype because it is the only collection that we have seen among the syntype collections. We specifically chose the NY specimen of *H. G. Galeotti 1688* because, of the specimens that we have seen of this collection, it has the most flowers.

Turczaninow (1858) described *Hypopogon* Turczaninow (1858: 246) and its sole species *H. brevipes* Turczaninow (1858: 246) but later subsumed it under *Symplocos* (Turczaninow 1863). Brand (1901) included the species in synonymy under *S. coccinea*, and the Ghiesbreght specimen is cited in Brand's index (as *S. coccinea* var. *hirta)*, but this specimen is not cited in the text of the treatment. We have not located *Ghiesbreght 44* and so we are not able to corroborate the application of these names. However, the description of *H. brevipes* matches *Symplocos* and in particular *S. coccinea* in all respects, e.g., solitary flowers with a densely pilose calyx, a red corolla, and 15 petals. We therefore tentatively place *H. brevipes* in synonymy with *S. coccinea*. Because Turczaninow worked at KW, it is possible that the Ghiesbreght specimen resides in that herbarium, or another Russian herbarium such as LE.

Additional specimens examined—**MEXICO. Hidalgo:** Mpio. Tenango de Doria, camino a Tenango de Doria a El Cirio (pañascos), a 6 km al E de Tenango, 1750–1800 m, [20°19′37″N, 98°12′37″W], 9 November 1985, *Lorence & Hernández M. 4896* (CAS!, F!, MEXU!, MO!). **Oaxaca:** Dist. Villa Alta, Mpio. San Juan Juquila, 3 km E de Natividad, Cruz de la Raya, punto trino Juquila–Capulalpan–Xiacui, 2200 m, [17°18′36″N, 96°24′51″W], 22 June 1994, *Aguilar S. 508* (MEXU!); Dist. Ixtlán, Sierra de Juárez, camino a Llano Verde, ca. 20 km al NE de Ixtlán, 2200 m, 9 April 1981, *Cedillo T. et al. 684* (CAS!, MEXU!, MO!, NY!); Dist. Ixtlán, Km 15 del camino a Llano Verde entrando por Calpulalpan de Méndez, 2340 m, 30 July 1981, *Cedillo T. et al. 896* (MEXU!, MO!); Dist. Cuicatlán, Cerro Nubine, Cuyamecalco, 2300 m, [17°57′51″N, 96°49′54″W], 8 September 1909, *Conzatti 2510* (GH!, MEXU!, US!); entre Calpul y Cacalotepec, [17°45′51″N, 97°35′10″W], 17 November 1939, *Conzatti 6001* (MEXU!); Dist. Mixe, 2 km sobre la terracería Totontepec–Villa Alta, 2023 m, [17°15′49″N, 96°02′44″W], 18 January 1986, *García M. & Torres 2023* (F!, MEXU!, MO!); 1 km W of Plan de Guadalupe, along trail to toma de agua in canyon, 11 km E of Puerto de la Soledad, hwy from Teotitlán de Flores Magón to Huautla, 2228 m, 18°08′21.2″N, 96°57′48.0″W, 20 January 2003, *Kelly et al. 1369* (CAS!, MEXU!, NY!); Dist. Ixtlán, 20 km E of Ixtlán church along rd to Talea de Castro, 2450 m, [17°16′20″N, 96°25′23″W], 9 April 1981, *Martin 513* (CAS!, MEXU!, MO!); Dist. Ixtlán, Mpio. Yotao, Camino Real de Juquila Vijanos hacia Los Hornos, 2145 m, 17°20′13″N, 96°20′50″W, 14 November 1996, *Munn et al. 203* (MEXU!); Dist. Totontepec, Santa María Tiltepec, 2360 m, [17°14′09″N, 96°04′32″W], 20 January 1984, *Tenorio L. & Torres C. 5369* (F!, MEXU!, MO!); Dist. Villa Alta, 12 km de la desviación de San Andrés Yaa–Oaxaca, SE de Villa Alta, 2300 m, [17°19′40″N, 96°06′52″W], 17 March 1982, *Torres C. & Cedillo T. 155* (CAS!, MEXU!, MO!); Dist. Mixe, Santa María Tiltepec, 10 km al SW de Totontepec, 2360 m, [17°14′09″N, 96°04′32″W], 20 January 1984, *Torres C. & Tenorio L. 4601* (CAS!, MEXU!, MO!); Dist. Mixe, 1 km al N de la desviación a Villa Alta, la cual se encuentra 7.5 km al S de Totontepec, 2460 m, 17°14′N, 96°05′W, [17°14′41″N, 96°04′05″W], 25 February 1988, *Torres C. & Cortes A. 11774* (MEXU!, MO!); San Pedro Nolasco, Talea, etc., [17°16′53″N, 96°25′37″W], 1843–1834, *Jürgensen 234* (MEXU!). **Puebla:** Mpio. La Unión, 6 km al E de Xicotepec, carretera a La Unión, 1350 m, 20°14′00″N, 97°58′00″W, 25 February 1987, *Campos V. et al. 100* (GH!, MEXU!); 8 km de San Agustin, Villa Juárez, 1300 m, [20°16′13″N, 97°59′02″W], 17

January 1963, *Martínez 106* (MEXU!); Unión entre Cerro Cuatezon y Cerro Alto, a 50 m de Cerro Alto, limites entre Tlapacoya y San Felipe Tepatlán, 1280 m, [20°06′03″N, 97°50′11″W], 15 February 1985, *Meza P. 25* (MEXU!); cerca y al SE Necaxa, [20°12′16″N, 97°59′38″W], 6 April 1944, *Miranda 3165* (MEXU!); Villa Juárez, [20°16′27″N, 97°57′44″W], 8 April 1944, *Miranda 3231* (MEXU!); near San Antonio Tepatlan, 2 November 1966, *Rudd 1076* (CAS!, F!, MEXU!); San Juan Ahuacatlán, [20°00′19″N, 97°51′25″W], 15 January 1912, *Salazar s.n.* (MEXU!); edge of canyon below Necaxa, 3900 ft, [20°12′16″N, 97°59′38″W], 26 March 1945, *Sharp 45344* (GH!, MEXU!, MO!); Mpio. La Unión, 6 km al E de Xicotepec, carretera a La Unión, 20°14′00″N, 97°58′00″W, 25 February 1987, *Tenorio L. et al. 12678* (MEXU!); Mpio. Hueytamalco, El Reparo, 1000 m, [19°54′11″N, 97°17′09″W], 13 February 1970, *Ventura A. 520* (DS!, F!). **Veracruz:** Coatepec, [19°27′13″N, 96°57′32″W], 7 November 1908, *Barnes & Land 609* (F!, US!); 12 km S of Misantla, 1350 m, [19°51′50″N, 96°48′35″W], 1 January 1982, *Bohs et al. 1728* (F!, NY!); Mpio. Banderilla, Rancho La Martinica, a 5 km al N de Pueblo de Banderila, 1500 m, 19°35′N, 96°57′W, 4 April 1978, *Calzada 4334* (F!); Mpio. Alto Lucero, Rancho Nuevo entre Plan de las Hayas y Tierra Blanca, 1250 m, 19°46′N, 96°41′W, 6 April 1981, *Castillo C. & Vázquez B. 1333* (F!, MEXU!); Mpio. Banderilla, Brecha de la Martinica, Rancho del Sr. González Parra, 1480 m, [19°35′17″N, 96°57′15″W], 11 January 1977, *Castillo C. et al. 121* (MEXU!, NY!); Mpio. Juchique Ferrer, Cerro de Villa Rica, cerca de Mundo Nuevo, 1600 m, 19°48′N, 96°46′W, 7 May 1981, *Castillo C. & Cortez 1794* (F!); Mpio. Xalapa, Parque Ecológico Francisco Xavier Clavijero, carretera Xalapa–Coatepec, 1350 m, [19°30′N, 96°56′W], 15 January 1986, *Cházaro B. & Acosta 3949* (MEXU!); Mpio. Huayacocotla, Cañada cerca de Palo Bendito, [20°27′27″N, 98°30′01″W], 8 January 1986, *Cházaro B. & Hernández de C. 3952* (MEXU!); Mpio. Coatepec, Cerro Huilotepec, abajo de la Mesa de los Laureles, rumbo a Tierra Grande, 2500 m, [19°30′42″N, 97°04′03″W], 27 December 1987, *Cházaro B. et al. 5264* (MEXU!); Mpio. Xalapa, Parque Ecológico Francisco Xavier Clavijero, 2 km S of Xalapa along old rd to Coatepec, 1350 m, 19°30′N, 96°56′W, 30 March 1988, *Cházaro B. et al. 5436* (NY!); Mpio. Las Vigas, Barranca del Alto Pixquiac, 2700 m, [19°38′17″N, 97°05′56″W], 26 December 1988, *Cházaro B. & Hernández de C. 5777* (CAS!, F!, MEXU!); Sierra de Chiconquiaco entre Chiconquiaco y Misantla, 1280 m, [19°50′42″N, 96°48′52″W], 19 November 1963, *Gómez-Pompa 1153* (A!); Mpio. Yecautla, Cuesta del Clarín, 1300 m, 19°48′N, 96°48′W, 23 December 1987, *Gutiérrez B. 2984* (MEXU!); Mpio. Yacautla, 500 m al N de Plan de la Escalera, 1340 m, 19°46′N, 96°47′W, 2 February 1988, *Gutiérrez B. 3035* (MEXU!); Mpio. Yecautla, Cuesta del Clarín al E de Santa Rita, 1300 m, 19°49′N, 96°49′W, 12 November 1988, *Gutiérrez B. 3329* (MEXU!); Mpio. Yecautla, Cuesta del Clarín al E de Santa Rita, 1200 m, 19°49′N, 96°49′W, 12 November 1988, *Gutiérrez B. 3331* (MEXU!); Mpio. Yecautla, arriba del Rincón abajo de Plan de la Escalera, 1350 m, 19°47′N, 96°47′W, 16 November 1988, *Gutiérrez B. 3353* (MEXU!); Mpio. Huayacocotla, Viborillas, 2200 m, [20°30′25″N, 98°30′12″W], 10 February 1972, *Hernández M. 1455* (CAS-2!, F!, GH!, NY!); Mpio. Juchique Ferrer, La Cima, Plan de las Hayas, 1700 m, [19°45′39″N, 96°40′34″W], 21 June 1972, *Hernández M. & Calzada 1574* (F!); Mpio. Atzalan, between Altotonga and Tlapacoyan, 1320 m, [19°49′17″N, 97°13′16″W], 25 May 1986, *LaFrankie 1331* (GH!); Dos Puentes, 1841, *Liebmann 596A* (A!, US!); Mpio. Banderilla, Rancho La Mesa, 1450 m, 19°36′N, 96°57′W, 4 March 1978, *Márquez R. 995* (F!); Orizaba, [18°51′N, 97°06′W], 1855, *Müller s.n.* (NY!); Mpio. Xico, Filo de la Rayuela, 1 km al SE de la ranchería Rusia, 2700 m, 19°30′N, 97°06′W, 21 April 1983, *Narave F. & Vázquez B. 459* (MEXU!, NY!); Mpio. Xalapa, Parque Ecológico Francisco Xavier Clavijero, 2 km S of Xalapa along old rd to Coatepec, 1300 m, 19°30′N, 96°56′W, 27 October 1981, *Nee 22444-a* (CAS!, F!, GH!, MEXU!, NY!); Mpio. Xalapa, Parque Ecológico Francisco Xavier Clavijero, 2 km S of Xalapa along old rd to Coatepec, 1300 m, 19°30′N, 96°56′W, 16 April 1983, *Nee 22444-b* (CAS!, F!, GH!, MEXU!, NY!); Mpio. Xalapa, Jardín Botánico Clavijero, 1300 m, [19°30′42″N, 96°59′49″W], 25 April 1978, *Ortega O. & Calzada 782* (F!); Mpio. Huayacocotla, Helechales hacia 3 cascadas sobre el arroyo Toluca, 1750 m, 20°39′N, 98°26′W, 14 February 1980, *Palma 31* (F!, MEXU!); near Xalapa, 4000 ft, [19°32′35″N, 96°54′50″W], April 1800, *Pringle 7847* (GH!, MEXU!, US!); Mpio. San Andrés Tuxtla, Madero, carretera a San Martín, 0–100 m, [18°25′24″N, 95°16′25″W], 24 April 1982, *Ramamoorthy 3558* (MEXU!); Jalapa, [19°32′35″N, 96°54′50″W], *Schlechtendal 179* (GOET!); Mpio. Yecautla, 6 km al NW de Santa Rita, [19°51′04″N, 96°48′45″W], 22 February 1975, *Vázquez T. 1854* (MEXU!); Mpio. Atzalan, Tatzayanala, junto al río y cerca de la capilla, 1350 m, [19°47′14″N, 97°14′34″W], 13 December 1969, *Ventura A. 237* (GH!, US!); Mpio. Jalacingo, El Cuizalin, 1500 m, 22 May 1970, *Ventura A. 1129* (DS!, NY!); Mpio. Yecuautla, La Chiveria, 1260 m, [19°50′28″N, 96°48′59″W], 26 June 1971, *Ventura A. 3756* (CR!, DS!); Misantla, Cruz Alta, 670 m, [19°55′57″N, 96°51′04″W], 18 March 1972, *Ventura A. 5094* (US!); Mpio. Totutla, Zochiapa, 1300 m, [19°11′35″N, 96°56′19″W], 26 April 1972, *Ventura A. 5301* (CAS!); Mpio.

Jalacingo, Aguacatitlan, orilla de camino, 1400 m, 30 October 1973, *Ventura A. 9208* (MEXU!, MO!); Mpio. Yecuatla, El Cajón, 1150 m, [19°51′53″N, 96°46′31″W], 16 November 1973, *Ventura A. 9266* (F!, MEXU!, MO!); Mpio. Atzalan, Alseseca, 1100 m, [19°50′02″N, 97°13′12″W], 16 May 1975, *Ventura A. 11358* (MEXU!); Mpio. San Andrés Tlalnehuayocan, San Antonio, 1350 m, [19°32′31″N, 96°58′23″W], 15 February 1979, *Ventura A. 15762* (MEXU!, MO!); Mpio. Atzalan, Alseseca, 1200 m, 2 March 1982, *Ventura A. 19451* (MEXU!). Without precise locality: *Bonpland s.n.* (F fragment from P!, possibly from type material); *Humboldt & Bonpland 26715* (MO!); Martamela?, 1841–1843, *Liebmann s.n.* (F!); 1841–1843, *Liebmann s.n.* (MO!, NY!, S-2!, US!); 1841–1843, *Liebmann s.n.* (MO!); *Sessé & Mociño 3612* (F!); *Sessé & Mociño 3613* (F!). **State unknown:** without precise locality, 1839, *Schlechtendal s.n.* (NY!).

9. *Symplocos costaricana* Hemsley (1881: 301). Lectotype (designated here):—COSTA RICA. Without precise locality, *A. R. Endres 148* (lectotype BM-895909-n.v., digital image!)

= *Symplocos molinae* Williams (1967: 266). Type:—HONDURAS. Morazán: on slopes of Mt. Uyuca, 1160 m, [14°01′29″N, 87°04′24″W], 7 August 1946, *L. O. Williams & A. Molina 10249* (holotype F!, isotypes EAP-n.v., online image!, GH!, LL-n.v., online image!, MEXU-4!, MO!, US!).

= *Symplocos blepharodes* Lundell (1970: 152). Type:—GUATEMALA: Izabal: Puerto Mendez, in zapotal on top of hill, [15°53′35″N, 89°13′46″W], 7 September 1969, *E. Contreras 9092* (holotype LL-n.v., online image!, isotypes CAS!, C, F!, LL!, MO!, S-2!, TEX!, US!).

Shrubs or trees 2–10 m tall; juvenile branchlets glabrous or sparsely sericeous, trichomes 0.2–0.3 mm long, white; vegetative buds glabrous or sparsely to densely sericeous. Petioles 5–10 mm long; leaf blades usually bicolorous, elliptic to obovate, 5–9 × 2–3(–3.5) cm, coriaceous, abaxially glabrous or sparsely sericeous, adaxially glabrous, secondary veins not adaxially impressed, base acute, margins entire or occasionally subcrenate distally, with deciduous marginal glands, plane or occasionally slightly revolute, apex shortly blunt-acuminate to obtuse. Inflorescences racemes 1.3–1.9(–2.9) cm long, 4–9-flowered; peduncle 1–3 mm long; rachis 0.8–1(–2) cm, sparsely to moderately sericeous, trichomes 0.2–0.3 mm long; bracts persistent, rounded or ovate to oblong, 1.5–2 × 1–2 mm, sparsely to moderately sericeous, margins ciliate; bracteoles persistent, 2–5, rounded or ovate to oblong, 1–1.5 × 0.75–1.5, sparsely to moderately sericeous, margins ciliate; pedicels usually absent or to 3 mm long. Hypanthium glabrous. Calyx lobes 5, broadly rounded, 1–1.5 × 1–2 mm, glabrous or sparsely sericeous, margins ciliate. Corolla white or pink to purplish, 5-lobed, 5–9 mm long; tube 3–4 mm long; lobes adnate to filament tube for 3–4 mm, ± oblong, glabrous. Stamens 3-seriate; filament tube 5–6 mm long; distinct portions of filaments 1–2 × 0.25–0.5 mm. Disk sericeous; style 7–8 mm long, glabrous; stigma conspicuously and irregularly lobed. Fruits green maturing to dark bluish purple, ellipsoid to obconic, 8–10 × 4–5 mm, glabrescent, apex with pronounced to obscure fleshy lobes, the calyx lobes not evident; calyx and disk enveloped by fleshy fruit apex, disk ± flat; 3-locular in cross section, perimeter rounded.

Vernacular name—Coral (*Skutch 4884* [F, NY, US]).

Illustrations—Figure 12; D'Arcy (1976: 550, figs. 1A, B; misidentified as *Symplocos chiriquensis* Pittier [1916: 168]).

Photographic image—Figure 1e.

Phenology—Flowering February through October, and December; fruiting August through April, and June.

Distribution and habitat—Guatemala, Honduras, El Salvador, Costa Rica, and Panama, in *Quercus* forest, *Pinus-Liquidambar* forest, tropical rain forest, and cloud forest at 650–1800 m elev. Figure 13.

Conservation status—S*ymplocos costaricana*, collected repeatedly over many decades, is known to us from five countries (Guatemala through Panama) and over 80 collections. Based on these data, we assign a classification of Least Concern (LC) to this species.

Discussion—*Symplocos costaricana* is recognized by the combination of entire-margined leaves; glabrous sepals, petals, and styles; and small glabrous fruits. This species is likely a close relative of *S. jurgensenii* and *S. naniflora*, both of which have small glabrous fruits, but is easily distinguished from these by its entire leaf margins. Populations of *S. costaricana* from Panama and Costa Rica are morphologically indistinguishable from specimens collected in Guatemala (*S. blepharodes*), Honduras, and El Salvador (*S. molinae*).

In the protologue of *Symplocos costaricana*, Hemsley cited a single collection, *Endress 148*, at K. The K holotype has been lost, and is preserved only as photographs at K and NY. We located a single duplicate of *Endress 148* at BM (seen by us as a digital image), and therefore we designate this specimen as the lectotype.

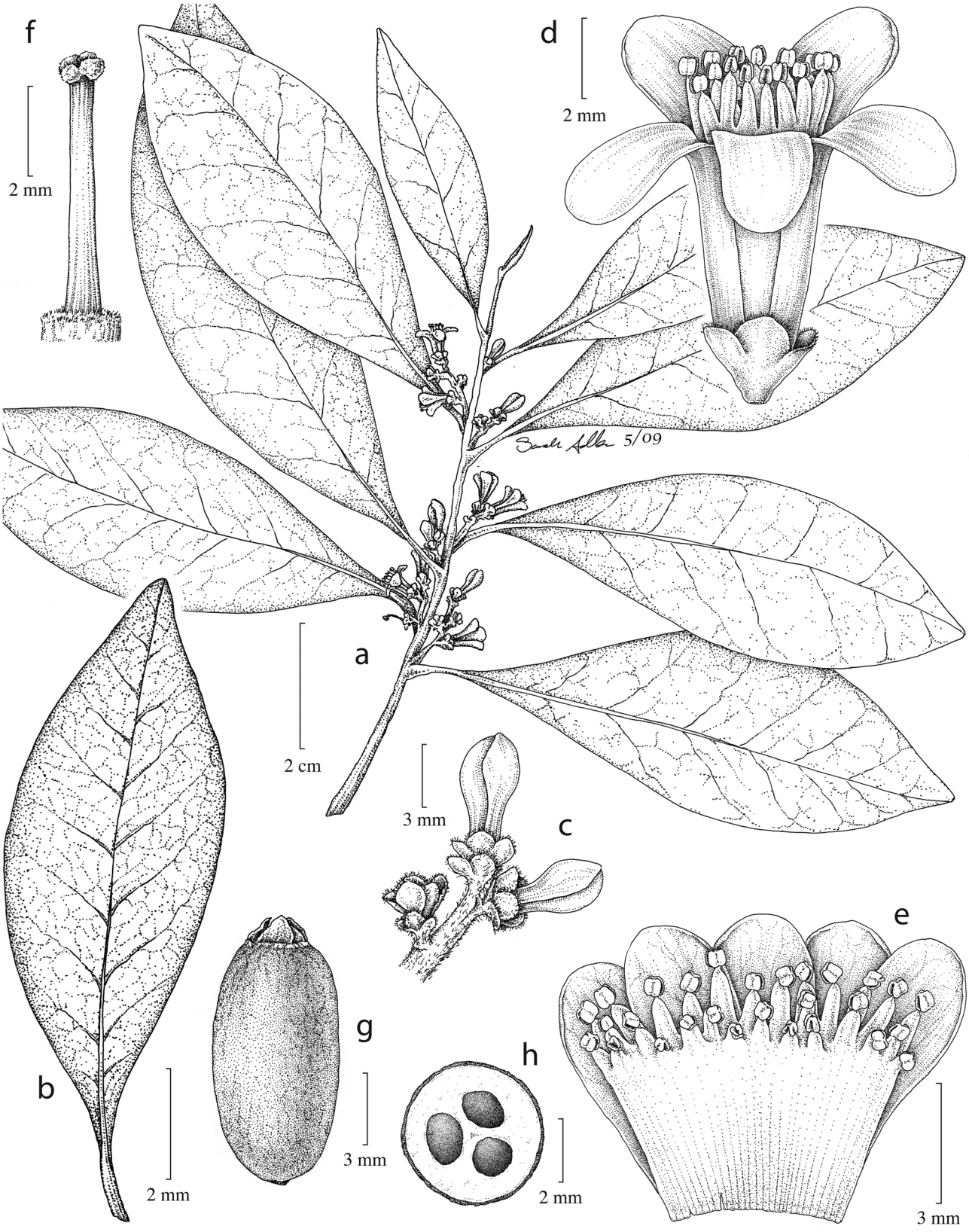

FIGURE 12. *Symplocos costaricana.* **a.** Branchlet with flowers. **b.** Leaf, adaxial surface. **c.** Inflorescence. **d.** Flower. **e.** Corolla opened with attached stamens. **f.** Disk, style, and stigma. **g.** Fruit. **h.** Fruit, cross section. (a–f drawn from *G. Davidse et al. 35255*, CAS; g, h drawn from *L. O. Williams 18252*, DS.)

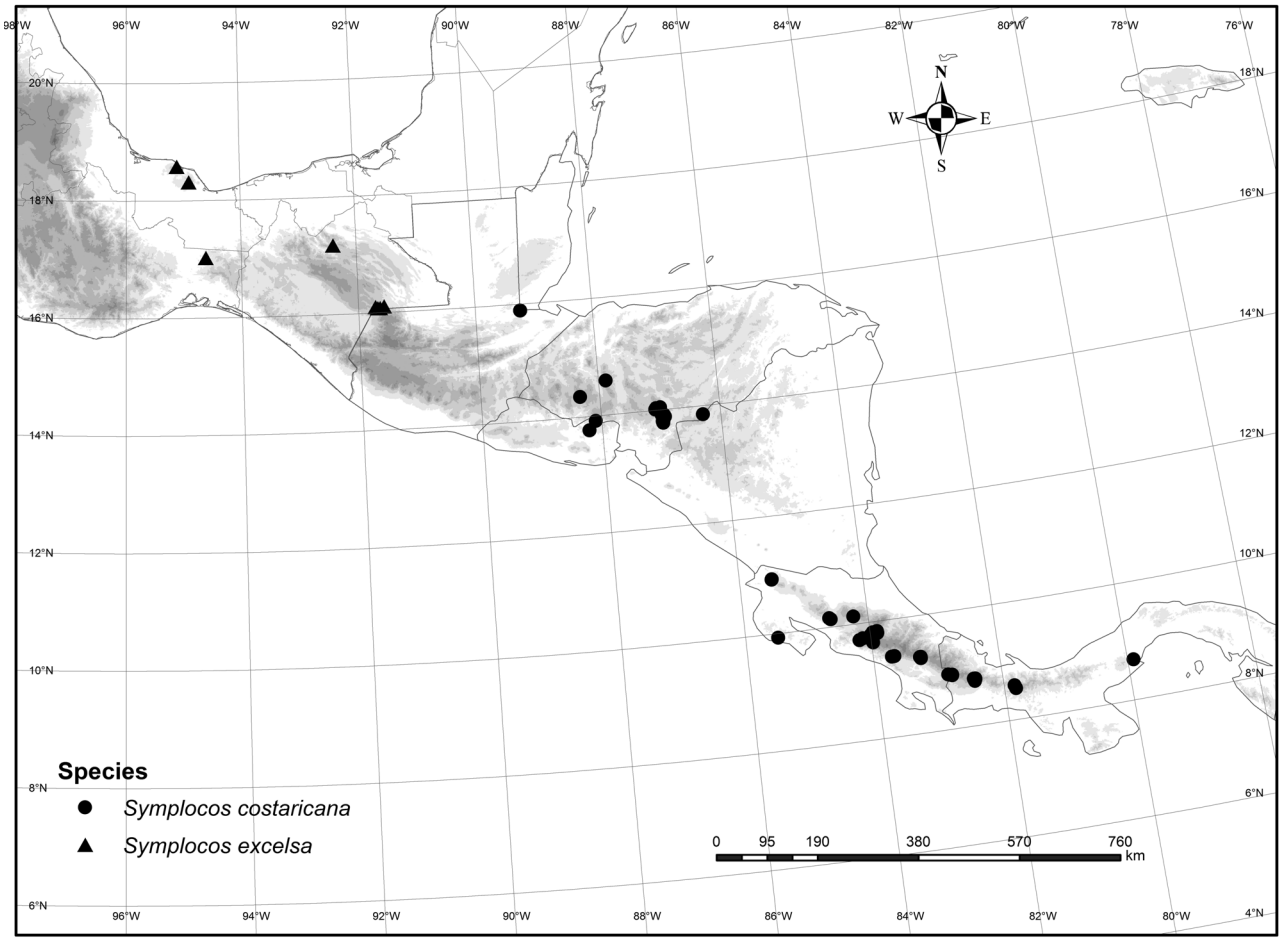

FIGURE 13. Geographic distribution of *Symplocos costaricana* and *S. excelsa.*

***Additional specimens examined*—GUATEMALA. Izabal:** Puerto Mendez, on top of hill, [15°53′35″N, 89°13′46″W], 7 September 1969, *Contreras 9089* (DS!, LL!, US!, S!, TEX!); Puerto Mendez, in Zapotal on top of hill in front of Military Camp, [15°53′35″N, 89°13′46″W], 5 October 1969, *Contreras 9259* (LL!, S!); Puerto Mendez, on top of rocky hill, 12 September 1970, *Contreras 10260* (F!, LL!, S!); Puerto Mendez, in Zapotal on top of hill, 12 September 1970, *Contreras 10261* (LL!); Puerto Mendez, in Zapotal on top of hill, 12 September 1970, *Contreras 10262* (LL!, S!).

HONDURAS. Comayagua: 15 km W of Siguatepeque, 1100 m, [14°35′13″N, 87°52′28″W], 15 May 1974, *Hazlett 2070* (MO!, US!). **Choluteca:** entre Tolubre y Los Achiotes, Montaña Tapahuasca, 1000 m, 18 June 1964, *Molina R. 14196* (F!, NY!). **El Paraíso:** 31 km S of El Zamorano on rd to Mandaste, 1360 m, [13°51′17″N, 86°17′51″W], 3 July 1970, *Davidse & Pohl 2256* (MEXU!, MO!, US!); entre Manzaragua y San Lucas, 1500 m, [13°46′44″N, 86°58′25″W], 4 July 1962, *Molina R. 10759* (F!, NY!, US!); entre Galeras y Las Casitas, 1600 m, [13°55′42″N, 86°58′53″W], 4 July 1962, *Molina R. 10766* (F!, NY!, US!); between Manzaragua and San Lucas, 1350 m, [13°46′44″N, 86°58′25″W], 22 September 1968, *Molina R. & Molina 22693* (DS!, F!, NY!, S!); Manzaragua rd SW of Güinope, 1400 m, [13°51′44″N, 86°56′55″W], 2 June 1951, *Standley 28501* (F!); Las Casitas, 1400–1500 m, [13°54′47″N, 86°59′07″W], 25 October 1951, *Standley 29023* (F!, GH!); Cerro El Zapotillo, rd between Zamorano and Guinope, 4450 ft, [13°55′N, 86°57′W], 4 July 1962, *Webster et al. 11979* (F!, GH!, MO!, S!, US!); 2 mi W of Guinope, 1400 m, [13°53′31″N, 86°57′46″W], 16 August 1946, *Williams & Molina R. 10308* (F!, GH!, MEXU!); vicinity of Manzaragua, 1400 m, [13°49′N, 86°58′W], 4 April 1948, *Williams & Molina R. 14002* (F!, MO!); near Guinope, 14°N, 87°W, 1400 m, [13°52′50″N, 86°56′04″W], 26 August 1951, *Williams 18252* (DS!, F!, GH!, US!); near Manzaragua, 1400 m, [13°48′46″N, 86°58′46″W], 7 February 1956, *Williams & Molina R. 19027* (F!). **Intibucá:** Mpio. Yamaranguila, 15 mi WNW of La Esperanza along the rd between La Esperanza and Gracias, along Río Toco, 1720 m, 14°20′42″N, 88°19′42″W, 22 June 1994, *Davidse et*

al. 35255 (CAS!, MEXU!, MO!). **Morazán:** Drainage of the Río Yeguare, colinas cantanosas de la Mt. Uyuca, entre Aldea Las Flores y empalme Tatumbla, 1500 m, 14°N, 87°W, [14°01′N, 87°04′W], 28 October 1948, *Molina R. 1346* (F!, GH!, MO!); drainage of the Río Yeguare, colinas semi-humedas, entre Las Flores y San del Rancho, ca. 14°N, 87°W, 1500 m, 9 November 1948, *Molina R. 1488* (F!); lower slopes of Cerro de Uyuca, 1530–1600 m, [14°01′N, 87°05′W], 22 February 1947, *Standley & Molina R. 4145* (F!, US!); Campamento de Las Flores, lower slopes of Cerro de Uyuca, 1500 m, 28 October 1948, *Standley 13737* (F!, GH!); San Juan del Rancho, N of Cerro de Uyuca, 1500 m, [14°05′N, 87°09′W], November–December 1948, *Standley 14356* (F!); Las Flores, slopes of Cerro de Uyuca, 1560 m, 25 July 1949, *Standley 21687* (F!); Las Flores, slopes of Cerro de Uyuca, 1560 m, [14°01′N, 87°05′W], 25 July 1949, *Standley 21698* (F!); region of El Quebracho, lower slopes of Cerro de Uyuca, 1450–1500 m, [14°01′N, 87°05′W], 28 July 1949, *Standley 21816* (F!); San Juan del Rancho, E base of Cerro de Uyuca, 1500 m, 20 September 1949, *Standley 23830* (F!, US!); faldas del Uyuca, 1000 m, [14°01′N, 87°05′W], 13 October 1944, *Valerio R. 2133* (F!); San Antonio de Oriente, 850 m, [14°02′44″N, 87°00′02″W], 22 July 1945, *Valerio R. 3129* (F!); Mt. Uyuca, 1530 m, [14°01′31″N, 87°04′31″W], 22 February 1947, *Williams & Molina 11927* (F!, GH!, MO!); Hoya Grande, 1400 m, [14°02′20″N, 87°04′10″W], 23 March 1947, *Williams & Molina 12241* (F!, GH); Hoya Grande, 1400 m, 23 March 1947, *Williams & Molina 12246* (F!, MEXU!); Hoya Grande, 1400 m, 19 August 1947, *Williams & Molina 13297* (F!, GH!).

EL SALVADOR. Morazán: Arambala, A. P. Río Sapo, sendero secreto de la naturaleza, 690 m, 13°55′N, 88°06′W, 30 April 2003, *Carballo 709* (MO!); 0.4 m W of western boundary, finca of General J. T. Calderón, Montes de Cacaguatique, 1380 m, [13°46′N, 88°13′W], 10 January 1942, *Tucker 760* (NY!, US!).

COSTA RICA. Alajuela: La Palma y El Socorro de San Ramón, [10°08′N, 84°36′W], 24 July 1928, *Brenes 6231* (F!, NY!); en el límite de la Reserve Forestal de Grecia, 1800 m, 10°08′00″N, 84°14′00″W, 28 March 1988, *Jiménez et al. 569* (F!); 14 km NW of San Ramón, 1020 m, [10°09′26″N, 84°37′16″W], 18 June 1972, *Lent 2608* (CR!, F!, NY!). **Cartago:** rd toward Las Cóncavas, S of Cartago, 8 August 1940, *Chrysler 5457* (F!); Cóncavas, 1300 m, [09°50′N, 83°53′W], 20 October 1969, *Lankester L-30* (F!); camino a Navarro, [09°48′N, 83°53′W], 1550 m, 22 July 1951, *León 3673* (CR!); Interamericana Sur ca. 10 km antes del Empalme, [09°46′41″N, 83°50′24″W], 27 August 1983, *Poveda A. et al. 3653* (F!); Cantón de El Guarco, Cuenca del Reventazón, Carretera Interamericana, Ruta al Cerro de la Muerte, Km 26–27, 1750 m, 09°49′15″N, 83°57′20″W, 23 April 1997, *Rodríguez 2116* (F!, MO!); Cantón de El Guarco, Cuenca del Reventazón, San Isidro, ruta hacia el Cerro de la Muerte, 1600 m, 09°48′40″N, 83°57′30″W, 3 November 1998, *Rodríguez 4091* (MO!); Navarrito, 4500 ft, [09°48′N, 83°54′W], 20 June 1932, *Stork 2963* (F!, MO!); 0.25 mi N Santa María Dota, 2800 ft, [09°39′36″N, 83°58′12″W], 8 July 1932, *Stork 3160* (F!); Cartago, ca. 13.4 km S of San Isidro de Tejar, ca. 14 km S of intersection of the Carretera Interamericana and the Cartago–San José Hwy at Km 29, [09°46′55″N, 83°59′31″W], 21 July 1980, *Wilbur 29402* (CAS!, DUKE!, NY!). **Guanacaste:** P. N. Guanacaste, Estación Cacao, Liberia, 1100 m, 10°55′45″N, 85°28′15″W, 27 October 1990, *Chávez 249* (MO!); P. N. Guanacaste, Estación Cacao, Liberia, 1100 m, 10°55′45″N, 85°28′15″W, 24 November 1990, *Chávez 419* (MO!); Cantón de Liberia, P. N. Guanacaste, Cordillera de Guanacaste, Cerro Cacao, Estación Cacao, 1100 m, 10°55′45″N, 85°28′15″W, 10 March 1991, *Chávez 520* (MO!); Cantón de Liberia, P. N. Guanacaste, Cordillera de Guanacaste, Estación Cacao, Cerro Cacao, 1100 m, 10°55′43″N, 85°28′10″W, 8 February 1995, *Espinoza 1253* (F!, MO); Parque Nacional Guanacaste Estación Mengo, sendero al potrero, lado sur, 1100 m, 10°55–56′N, 85°28–29′W, 15 July 1989, *II INBio 177* (MO!); Cantón de Liberia, P. N. Guanacaste, Cordillera de Guanacaste, Cerro Pedregal, en el sendero de la casa de Cacao al mirador, 1050–1160 m, 09°55′50″N, 85°28′30W″, 13 July 1996, *Morales 5497* (MO!). **Puntarenas:** Cantón de Buenos Aires, R. I. Ujarrás, Cordillera de Talamanca, Reserve Biológica Dúrika, 1500 m, 09°16′30″N, 83°14′40″W, 6 September 1995, *Aguilar & Jiménez 4296* (F!); Fila El Tigre, SE of Las Alturas, 1350–1450 m, 08°56′N, 82°51′W, 29 August 1983, *Davidse 24182* (CAS!, MEXU!, MO!); Cantón de Buenos Aires Ujarrás, cabeceras de Río Kuiyé, siguiendo la Fila que dá a Olán, 1400 m, 09°17′50″N, 83°14′45″W, 19 September 1989, *Herrera 3488* (CAS!, MO!); R. I. Ujarrás, Buenos Aires, Cordillera de Talamanca, Ujarrás, Quebrada Dorora, camino a Río Lori, 1520 m, 09°17′50″N, 83°15′30″W, 11 March 1993, *Herrera 5864* (MO!); Cantón de Coto Brus, Z. P. Las Tablas, Fila Cedro, Finca Cafrosa, 1480 m, 08°55′15″N, 82°47′20″W, 21 June 1996, *Navarro V. 389* (MO!); Parque Inter. La Amistad, Finca Cafrosa, San Vito de Cote Brus, 1200 m, 08°54′40″N, 82°47′19″W, 19 June 1990, *Saborío 33* (F!, MO!); Parque Inter. La Amistad, Finca Cafrosa, San Vito de Coto Brus, 1200 m, 08°54′40″N, 82°47′19″W, 19 June 1990, *Saborío 41* (MO!). **San José:** Cantón de Acosta, Fila Bustamante, Hcda. Tiquires, camino a Fila Aguabuena, cabeceras Río Tiquires, 1600–1800 m, 09°43′06″N, 84°10′52″W, 2 June 1995,

Morales 4265 (MO!, NY!); Cantón de Aserrí, Cuenca del Pirris-Damas, Cerros de Caraigres, falda NE del Alto de Buenavista, camino a Monterrey, 1470 m, 09°44′41″N, 84°07′20″W, 3 January 1997, *Morales 6019* (MO!); vicinity of El General, 700 m, [09°22′18″N, 83°39′38″W], April 1939, *Skutch 4278* (A!, MO!, NY!, S!, US!); vicinity of El General, 700 m, June 1939, *Skutch 4362* (A!, F!, MO!, NY!, S!, US!); basin of El General, 695–900 m, [09°22′12″N, 83°40′48″W], April 1940, *Skutch 4884* (F!, NY!, US!); vicinity of Santa María de Dota, 1500–1800 m, [09°39′N, 83°58′12″W], 26 December 1925, *Standley & J. Valerio 43455* (US!); San Isidro de El General, 750 m, [09°22′12″N, 83°42′07″W], 6 February 1963, *Williams et al. 24732* (CR!, F!).

PANAMA. **Chiriquí:** ca. 1 mi SW of Boquete, 4000 ft, [08°45′34″N, 82°26′34″W], 20 July 1947, *Allen 4717* (MO!, NY!, S!); Boquete, 3800 ft, [08°48′N, 82°26′W], 24 June 1938, *Davidson 739* (A!, DS!, F!, MO!, US!); Boquete, 4000 ft, 29 June 1936, *Davidson 843* (A!, F!, MO!, US!); above San Felix on rds near Cerro Colorado, below summit on Pacific side, 1250–1300 m, 08°35′N, 81°50′W, 6 July 1988, *McPherson 12699* (MEXU!, MO!); Cerro Colorado, 50 km N of San Felix on the continental divide, 1200–1500 m, [08°31′55″N, 81°48′50″W], 18 August 1975, *Mori & Dressler 7882* (CAS!, MO!); Finca Lérida to Boquete, 1300–1700 m, [08°48′02″N, 82°27′21″W], 8–10 July 1938, *Woodson Jr. et al. 1110* (GH!, MO!, NY!). **Province of Panama:** Cerro Campana, 2600 ft, [08°41′N, 79°54′W], 27 August 1965, *McDaniel 6829* (MO!).

10. *Symplocos elliptica* Kelly & Almeda (2002: 369). Type:—PANAMA. Chiriquí: Cerro Pata de Macho [Cerro Hornito], windswept ridge, 2100 m, [08°49′N, 82°24′W], 17 January 1986, *G. de Nevers & G. D. McPherson 6842* (holotype CAS!, isotypes BM!, CAS!, MEXU!, MO!, PMA!)

Trees 2–3(–20?) m tall; juvenile branchlets and vegetative buds sparsely sericeous, trichomes 0.25–0.5 mm long, translucent brownish. Petioles 1–1.2 cm long; leaf blades bicolorous, broadly elliptic to obovate, (3.3–)5.5–8.5 × 1.8–4.3 cm, coriaceous, abaxially sparsely strigose to glabrescent, adaxially glabrous, secondary veins not adaxially impressed, base obtuse, margins crenate-denticulate, with minute, black or brown, persistent teeth, apex acuminate. Inflorescences 1-flowered; peduncles 7–10 mm long, sparsely sericeous to subglabrous; bracts persistent, 3 or 4 toward base of peduncle, ovate, 0.75–1.25 × 0.5–0.75 mm, minutely sericeous or glabrous, margins ciliate; bracteoles persistent, 3 or 4, ovate, 1.5–2 × 1–1.5 mm, minutely sericeous or glabrous, margins ciliate. Hypanthium glabrous. Calyx lobes 5, subrotund, 1–1.5 × 1–2 mm, glabrous, margins ciliate, usually glandular. Corolla pink, 5-lobed, 7–9 mm long; tube 2–3 mm long; lobes adnate to filament tube for 3–4 mm, oblong to obovate, glabrous. Stamens 4-seriate; filament tube 5–6 mm long; distinct portions of filaments 2.5–3.5 × 0.75–0.9 mm. Disk villous; style 4–5 mm long, pilose basally; stigma conspicuously and irregularly lobed. Fruits green maturing to dark bluish purple, ellipsoid, 4–8 × 4–6 mm, glabrous, apex rounded to base of erect calyx lobes; apex acute with calyx lobes forming a conical beak; disk convex, covered by calyx lobes; endocarp 4–5-locular, perimeter rounded.

Vernacular name—None.

Illustration—Kelly & Almeda (2002: 370).

Phenology—Flowering January and May; fruiting May.

Distribution and habitat—Costa Rica (Cordillera Central) and Panama (Cerro Hornito and Cerro Sapo), in cloud forests at 1000–2200 m elev. Figure 14.

Conservation status—This species is known from just three scattered populations, one in Costa Rica and two in Panama. Two of the three populations are afforded some protection in national parks. The Costa Rican population occurs within Braulio Carrillo National Park, at its western border. Of the two Panamanian populations, only one occurs in a protected area, i.e., along the southern border of La Amistad International Park. The EOO is 25,381 km² and the AOO is 20 km². All of the known locations of this species consist of few individuals, certainly < 250. On this basis, we assign a classification of Endangered (EN): D to this species.

Discussion—This uncommon species is distinguished from all others in the area by the combination of broadly elliptic leaves with crenate-denticulate margins and acuminate apex, and solitary flowers with basally pilose styles. This species is similar to *Symplocos tribracteolata* in its solitary, 3–4-bracteolate flowers; however, *S. elliptica* differs by the shape and width of its leaf blades (broadly elliptic to obovate, 1.8–4.3 cm wide versus elliptic to elliptic-oblanceolate, 1.1–2.1 cm wide), 5-lobed corolla (versus 6-lobed), bracteolate peduncles (versus bracts lacking), and the basally pubescent style (versus glabrous or at most sparsely pubescent). The texture and venation of the leaves of *S. elliptica* suggests a close relationship to *S. limoncillo*, from which it is readily distinguished by

its 1-flowered inflorescences (versus racemose) and smaller fruits (0.4–0.8 × 0.4–0.6 cm versus 1.2–1.8 × [0.8–]1–1.2 cm).

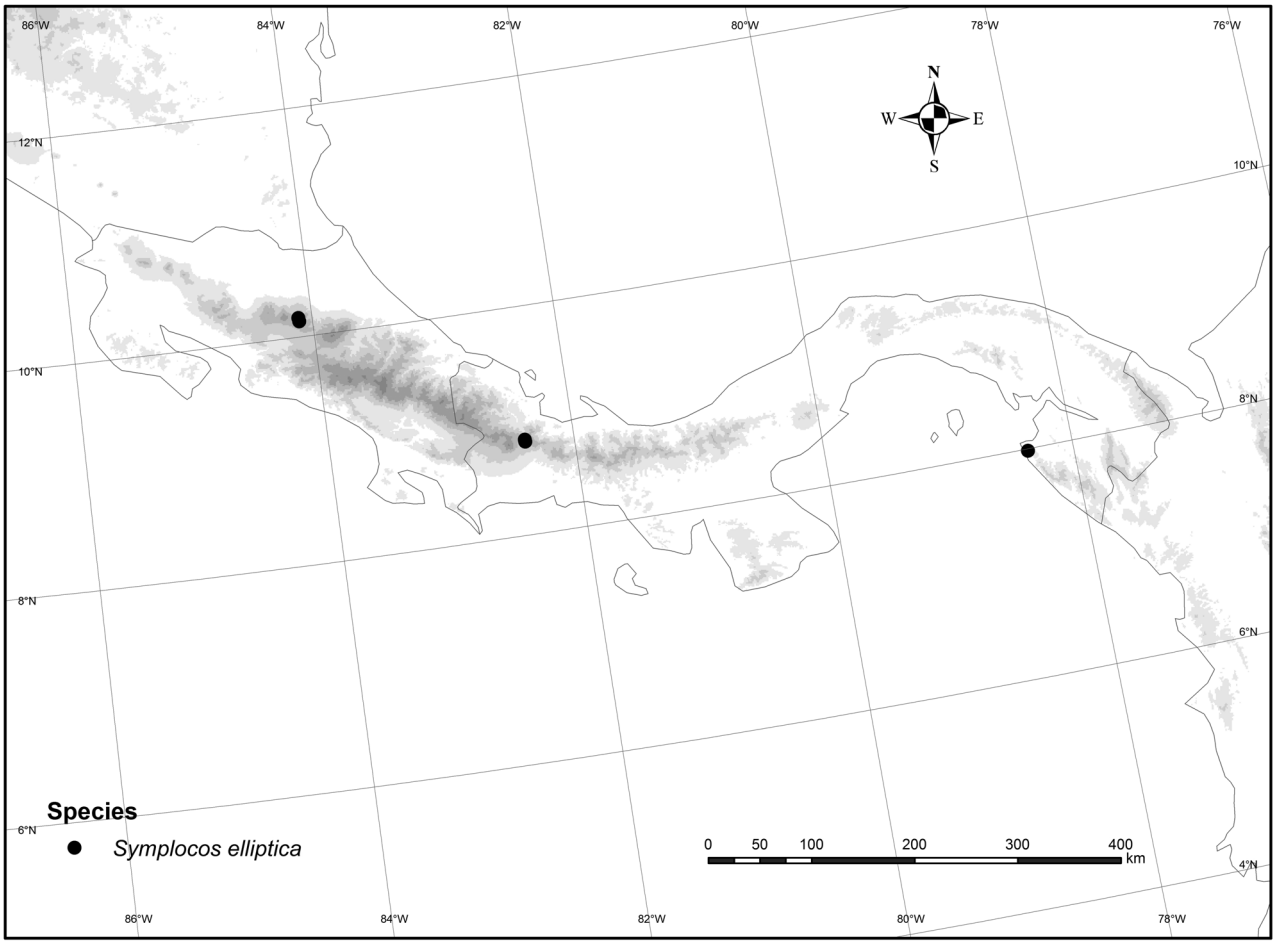

FIGURE 14. Geographic distribution of *Symplocos elliptica.*

***Additional specimens examined*—COSTA RICA**. **Heredia:** P. N. Braulio Carrillo, upper Volcán Barva, Atlantic slope, ca. 0.5 km below (N of) main trail to Lag. Barva, descending via old "Sendero del Transecto" then traversing 250 m directly E, 2750 m, 10°08′18″N, 84°06′33″W, 28 April 1992, *Boyle 801* (MEXU!, MO!); P. N. Braulio Carrillo "Sendero del Transecto," on flat portion of ridge during descent from Cerros Las Marías to rd leading to refugio at 2070 m, 2070 m, 10°10′07″N, 84°06′48″W, 24 May 1992, *Boyle 843* (MEXU!); P. N. Braulio Carrillo, Sendero del Transecto, on flat portion of ridge during descent from Cerro Las Marías to old rd that leads from San Rafael, Vara Blanca to Refugio, 2220 m, 10°10′07″N, 84°06′48″W, 30 May 1992, *Boyle 901* (CAS!, MEXU!, MO!).

PANAMA. Chiriquí: Cerro Pate Macho, windswept ridge on continental divide, 1800–2100 m, 08°49′N, 82°24′W, 13 March 1988, *Almeda et al. 6129* (CAS!, MO!, NY!, PMA!). **Bocas del Toro:** NW ridge of Cerro Pata de Macho [Cerro Hornito] from summit to Finca Serrano, 1200–2100 m, [08°50′N, 82°24′W], 27 May 1981, *Sytsma et al. 4958* (CAS!, MO!). **Darién:** NE slope of Summit Cerro Sapo, approach from Garachiné, 3300 ft, [07°59′N, 78°22′W], 8 May 1979, *Hammel 7269* (CAS!, MO!).

11. *Symplocos excelsa* Williams (1970: 204). Type:—MEXICO. Chiapas: Mpio. Trinitaria, slopes at Lago de Montebello, 25 mi E of La Trinitaria, 5200 ft, [16°06′N, 91°42′36″W], 17 August 1966, *D. E. Breedlove 15013* (holotype F!, isotypes DS!, LL-n.v., online image!, MO!, NY!, US!)

Trees 12–24 m tall; juvenile branchlets and vegetative buds densely sericeous, trichomes mostly 0.2–0.5 mm long, antrorsely spreading, golden brown. Petioles 5–7 mm long; leaf blades bicolorous, elliptic to oblanceolate-elliptic,

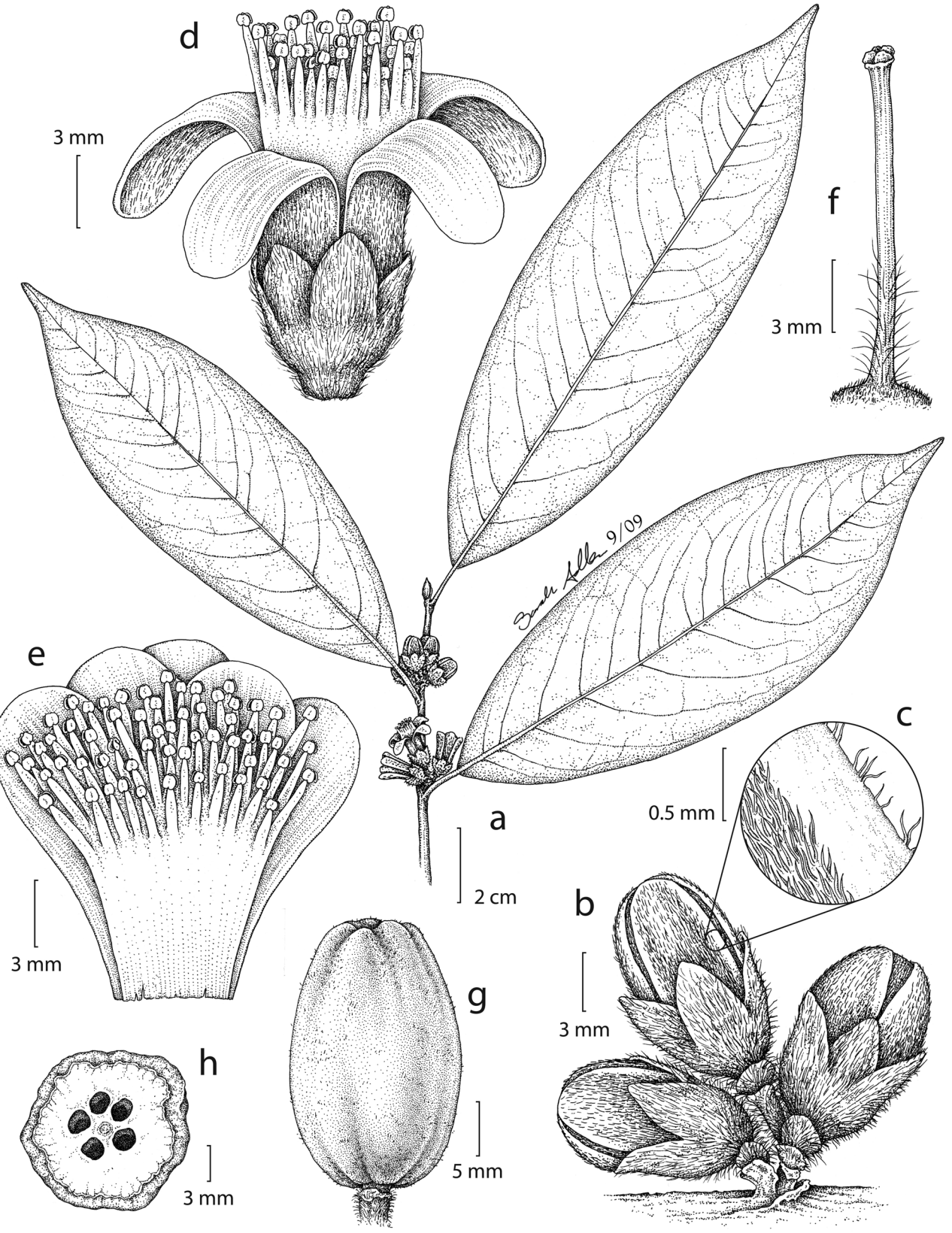

FIGURE 15. *Symplocos excelsa*. **a.** Branchlet with inflorescences. **b.** Inflorescence. **c.** Close-up of (b) showing pubescence of abaxial corolla lobe surface. **d.** Flower. **e.** Corolla opened with attached stamens. **f.** Disk, style, and stigma. **g.** Fruit. **h.** Fruit, cross section. (a–f drawn from *D. E. Breedlove 56131*, CAS; g, h drawn from *F. Ponce C. & R. Cedillo T. 12*, CAS.)

9–17 × 4–5.5 cm, coriaceous, abaxially sparsely strigose to densely hispid, adaxially glabrous, secondary veins deeply adaxially impressed, base acute or cuneate, margins serrulate or rarely subentire, apex acuminate. Inflorescences condensed racemes to 1.5–4.5 cm long, 5–10-flowered; peduncle absent; rachis 0–3 cm long, densely sericeous, trichomes 0.2–0.5 mm long; bracts deciduous, oblong, 8–10 × 2–4 mm, densely sericeous, margins densely sericeous; bracteoles deciduous, 3–5, oblong, 3–5 × 2–4 mm, densely sericeous, margins densely sericeous; pedicels absent. Hypanthium densely sericeous. Calyx lobes 5, oblong, 4–5 × 3–4 mm, densely sericeous, margins densely sericeous. Corolla pink, 5-lobed, 12–15 mm long; tube 7–8 mm long; lobes adnate to filament tube for 7–8 mm, linear-oblong, densely sericeous medially. Stamens ± 4-seriate; filament tube 10–11 mm long; distinct portions of filaments 3–5 × 0.5–0.75 mm. Disk persistently pilose; style 13–15 mm long, pilose basally; stigma conspicuously and irregularly lobed. Fruits green maturing to dark bluish purple, cylindrical to narrowly obconic, 1.5–2.7 × 0.8–1.5 cm, hispidulous, apex with pronounced to obscure fleshy lobes, the calyx lobes not evident; calyx and disk enveloped by fleshy fruit apex, disk ± flat; endocarp 4–5-locular, perimeter rounded to slightly undulate.

Vernacular name—None.

Illustration—Figure 15.

Phenology—Flowering August and December; fruiting January and December.

Distribution and habitat—Mexico (Chiapas, Oaxaca, and Veracruz), montane rain forests at 600–1700 m elev. Figure 13.

Conservation status—This species is known from five scattered populations in southeastern Mexico, none of which occur in a protected area. Most of the known collections were made in or near Lagunas de Montebello National Park in Chiapas, but we were unsuccessful in our attempt to relocate it there during field work in January 2003. The EOO is 36,745 km² and the AOO is 32 km². There is a continuing threat of deforestation and growth of ecotourism where the best sampled Chiapas population occurs, and thus the area, extent, and quality of habitat is projected to decline. We therefore assign a classification of Endangered (EN): B2ab(iii, iv) to this species.

Discussion—This rare species can be distinguished from all others in Mexico by the combination of large serrulate leaves, condensed, racemose inflorescences, densely pubescent petals, and large fruits (1.5–3 cm long). *Symplocos excelsa* can be distinguished from *S. serrulata* by its fruit apex with 4 or 5 lobes surrounding a crateriform distal cavity that conceals inflexed calyx lobes (versus truncate or convex and surrounded by the conspicuous calyx lobes that are erect or inflexed), leaf blade secondary veins conspicuously impressed adaxially (versus not conspicuously impressed), and a tendency for the inflorescences to be condensed racemes that lack peduncles (versus variably sessile to distinctly pedunculate and more open).

Additional specimens examined—**MEXICO. Chiapas:** Mpio. La Trinitaria, Montebello National Park, E of Laguna Tzikaw, 1300 m, [16°04′43″N, 91°37′54″W], 23 January 1973, *Breedlove & Smith 32189* (DS!, F!, MEXU!, MO!, NY!); Mpio. La Trinitaria, Montebello National Park, E of Laguna Tziscao, 1380 m, [16°04′48″N, 91°37′54″W], 18 December 1980, *Breedlove 48738* (CAS!, MEXU!, MO!); Mpio. Tila, Ahk'ulbal Nab above Paltalcingo, 1700 m, [17°10′41″N, 92°24′09″W], 13 December 1981, *Breedlove 56131* (CAS!, MO!); La Trinitaria, 10 km ENE of Dos Lagos above Santa Elena, 1170 m, [16°06′16″N, 91°33′40″W], 15 December 1981, *Breedlove 56149* (CAS!, GH!, MO!, NY!). **Oaxaca:** Mpio. Santa María Chimalapa, Cerro de la Fortuna, SO de la Sierra Tres Picos, al lado N de la cabecera del Río Verde, ca. 15 km en línea recta al NE de Santa María, 880–920 m, 17°01′30″N, 94°37′W, 29 April 1987, *Wendt et al. 5696* (CAS!, CHAPA). **Veracruz:** Catemaco, Cumbres de Bastonal, 640 m, [18°19′01″N, 94°54′W], 15 January 1974, *Ponce C. & Cedillo T. 12* (CAS!, MEXU!); San Andrés Tuxtla, Estación Biología Tropical Los Tuxtlas, Lote 73, 600 m, 18°34′ y 36′N, 95°04′ y 09′W, 4 September 1985, *Sinaca C. & Chigo S. 242* (CAS!).

12. *Symplocos hartwegii* Candolle (1844: 252) ["*Hartwegi*"]. Lectotype (designated here):—GUATEMALA. Quetzaltenango: Santa María de Jesús, [14°43′28″N, 91°31′17″W], 1839, 1840, or 1841, *K. T. Hartweg 545* (lectotype G-164225-n.v., online image!, isolectotypes B-n.v., digital image!, G-DC-142403-n.v., digital image!, K-n.v., digital image!, LD-n.v., online image!, NY!, P-n.v., digital image!, photo ex B at F! and NY! and US!)

= *S. hartwegii* var. *opaca* Brand (1906: 749). Lectotype (designated here):—GUATEMALA. El Quiché: Sacabajá, 1200 m, [15°10′37″N, 90°56′32″W], March 1892, *H. T. Heyde & E. Lux 3011* (lectotype F!, isolectotypes NY *p.p.*!, US-2 *p.p.*!).

Trees 6–50 m tall; distal branchlets and vegetative buds sericeous (rarely hirsute), trichomes 0.4–0.8 mm long,

appressed to antrorsely spreading, brownish. Petioles (3–)5–9 mm long; leaf blades bicolorous, elliptic or elliptic-oblong to obovate, 3.5–5.5(–8) × 2–3(–4.5) cm, membranaceous, abaxially moderately to sparsely appressed-pilose (more densely along midvein), adaxially glabrous, secondary veins not adaxially impressed, base obtuse, margins subentire to minutely serrulate, apex obtuse and short-acuminate. Inflorescences 1-(2-)flowered or rarely 3–4-flowered cymes, peduncle 1–7 mm long, sericeous, trichomes 0.2–0.7 mm long; bracts, if present, caducous, 1 or 2 toward base of peduncle, ovate, 3–4 × 3–4 mm, puberulent to sericeous, margins ciliate; bracteoles caducous, 2–4, ovate, 0.75–1.25 × 0.5–0.75, minutely sericeous or glabrous, margins ciliate. Pedicels absent. Hypanthium densely sericeous. Calyx lobes 5, broadly ovate, 2–4 × 2–3 mm, densely sericeous at least medially, margins ciliate and often glandular. Corolla pink, 5-lobed, 7–12 mm long; tube 3–5 mm long; lobes adnate to filament tube for 4–5 mm, oblanceolate, densely sericeous, margins glabrous. Stamens 4-seriate; filament tube 5–7 mm; distinct portions of filaments 3–4 × 0.75–1 mm. Disk densely pilose; style 7–9 mm long, sparsely pilose basally; stigma ± 3-lobed. Fruits green maturing to dark bluish purple, cylindrical, ovoid, or ellipsoid, 2–3 × 1–2 cm, subglabrous to strigillose (rarely persistently hirsute), glabrate, apex rounded to base of spreading calyx lobes; disk convex, fully exposed apical; endocarp 3-locular, perimeter rounded.

Vernacular name—Aceituno (*Martínez S. et al. 22497* [CAS, MEXU, NY], chilil (*Equipo CDC Flora 1383* [MEXU]), irayol de monte (*Reyna 663* [LAGU]).

Illustration—Kelly & Almeda (2005: 37).

Photographic images—Figures 1f, 2j.

Phenology—Flowering November through February, May, July; fruiting January, April, May, August, September, November, and December.

Distribution and habitat—Mexico (Chiapas), Guatemala, Honduras, and El Salvador, occasional to locally common in cloud forests at (1200–)2000–3100 m elev. Figure 16.

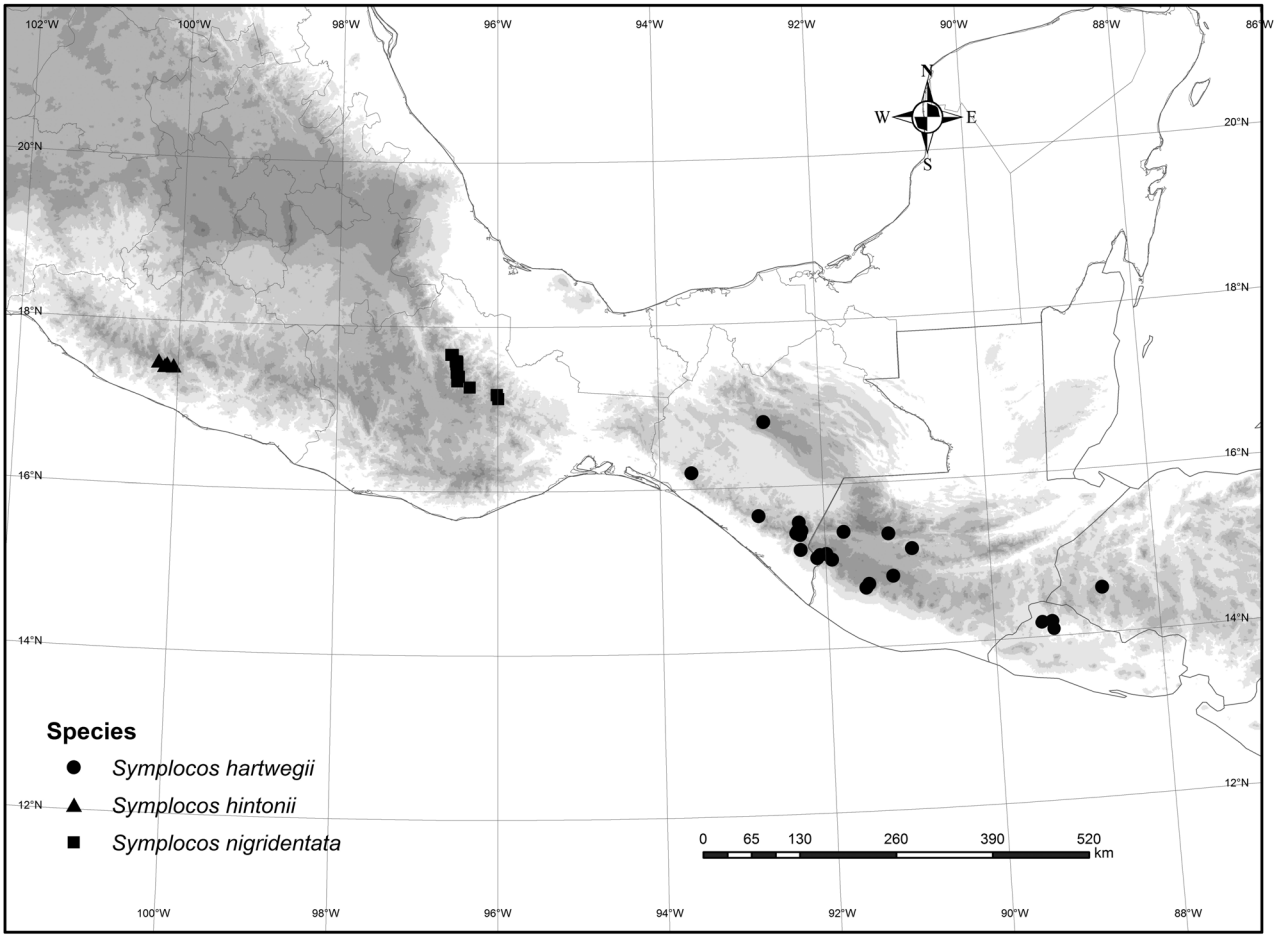

FIGURE 16. Geographic distribution of *Symplocos hartwegii*, *S. hintonii*, and *S. nigridentata*.

Conservation status—*Symplocos hartwegii* can be locally common at its known localities in Chiapas, Guatemala, and Honduras. It occurs in three protected areas: Parque Natural El Triunfo in Chiapas, Parque Nacional Montecristo in El Salvador, and Celaque National Park in Honduras. Based on these data, we assign a classification of Least Concern (LC) to this species.

Discussion—*Symplocos hartwegii* is distinguished by the combination of solitary (or rarely 2–4) flowers with sericeous sepals and petals, and large fruits. Its relatively small leaves have resulted in its misidentification as *S. pycnantha*. However, *S. pycnantha* is readily distinguished from *S. hartwegii* by racemose or spicate inflorescences (versus 1[–4]-flowered) and smaller fruits (0.6–0.9 × 0.4–0.6 cm versus 2–3 × 1–2 cm). The short-petiolate leaves (3–5 mm long) and much more densely and coarsely pubescent distal branchlets and fruits in the specimens from El Salvador are atypical.

Three elements were cited in the protologue of *Symplocos hartwegii*: Guatemala ("ex schedulá in h. Boiss."), Mexico ("Pav.! in h. Boiss."), and Santa María ("Hartw.!"). The Hartweg specimen, which we take to be *Hartweg 545*, was also cited in the same publication as the type of *S. cernua* Bonpland var. *mexicana* Candolle (1844: 248), which was validly published and placed in synonymy under *S. hartwegii*. The only syntype that we have been able to locate is *Hartweg 545*, which is here designated as the lectotype of *S. hartwegii*. This action renders *S. cernua* var. *mexicana* superfluous.

The type of *Symplocos hartwegii* var. *opaca* was cited in the protologue as occurring at B, with a locality of "Guatemala: Sacabaja, 1200 m," which we take to be the specimens of *H. T. Heyde & E. Lux 3011*. The B specimen of this collection is presumably destroyed. The only other specimen of which we know that is not a mixed collection with *S. pycnantha* is one at F (accession number 76765). Thus we have lectotypified *S. hartwegii* var. *opaca* on this F specimen, with the *S. hartwegii* elements of other duplicates of this collection established as isolectotypes (e.g., the duplicates at NY and US). The MO duplicate consists entirely of *S. pycnantha* and thus is not part of the type material of this name.

Additional specimens examined—**MEXICO. Chiapas:** Motozintla de Mendoza, N and W slope of Cerro Mozotal below the microwave tower along the rd from Huixtla to El Porvenir and Siltepec, 3000 m, [15°25′48″N, 92°20′07″W], 18 November 1971, *Breedlove 22743* (DS!, MO!); Unión Juárez, SE side of Volcán Tacaná above Talquian, 2700 m, [15°06′45″N, 92°06′03″W], 12 November 1972, *Breedlove 29419* (DS!, MO!, NY!); SE side of Cerro Tres Picos and the ridges near summit, 2100–2500 m, [16°11′40″N, 93°36′31″W], 11 December 1972, *Breedlove & Thorne 30120* (DS!, MEXU!, MO!, NY!); Motozintla de Mendoza, NW slope of Cerro Mozotal below the microwave tower along the rd from Huixtla to El Porvenir and Siltepec, 3000 m, [15°25′48″N, 92°20′07″W], 30 December 1972, *Breedlove & Thorne 31194* (DS!, F!, MEXU!, MO!, NY!); Siltepec, ridge above Siltepec on the rd to Huixtla, 2000–2400 m, [15°33′09″N, 92°18′35″W], 18 January 1973, *Breedlove & Smith 31851* (DS!, MEXU!, MO!, NY!); El Porvenir, NW slope of Cerro Male, 3–4 km W of El Porvenir along rd from Huixtla to Siltepec, 2800 m, [15°27′35″N, 92°19′05″W], 19 September 1976, *Breedlove 40367* (DS!, MO!); Motozintla de Mendoza, SW side of Cerro Mozotal, 11 km NW of the jct. of the rd to Motozintla along the rd from El Porvenir and Siltepec, 2100 m, [15°24′N, 92°18′W], 23 November 1981, *Breedlove & Bartholomew 55790* (CAS!, MEXU!); Motozintla de Mendoza, near summit of Cerro Mozotal, 2750 m, [15°25′11″N, 92°20′12″W], 24 November 1981, *Breedlove & Bartholomew 55873* (CAS!, GH!, MEXU!, MO!); Motozintla de Mendoza, N slope of Cerro Mozotal near the summit, 2900–3000 m, [15°25′28″N, 92°20′39″W], 31 January 1982, *Breedlove & Almeda 58168* (CAS!, GH!, MEXU!, MO!, NY!); ridge NE of Cerro Boqueron on rd from El Rosario to Niquivil, 2255 m, [15°13′12″N, 92°18′W], 29 November 1986, *Breedlove & Sigg 66151* (CAS!); Jaltenango, Reserva el Triunfo, poligono 1, near Campamento HQ, 1900 m, [15°39′N, 92°48′W], November–December 1989, *Heath & Long 494* (CAS!, MEXU!); Mpio. Motozintla de Mendoza, Cerro Mozotal, N slope, ca. 3 km below summit by dirt rd, ca. 2 km NW of Motozintla–Buenos Aires–Porvenir Hwy (now paved), 2912 m, 15°26.543′N, 92°19.884′W, (15°26′32″N, 92°19′53″W), 17 January 2003, *Kelly et al. 1339* (CAS!, MEXU!, NY!); Mpio. El Porvenir, 1 km al O de El Porvenir, camino a Motozintla, 2870 m, 15°27′10″N, 92°17′15″W, 27 February 1988, *Martínez S. et al. 22497* (CAS!, NY!, MEXU!); Porvenir, Mt. Male, 3200 m, [15°27′N, 92°16′48″W], 6–12 July 1941, *Matuda 4674* (MEXU!, MO!, NY!); Tres Cruces, Sierra Madre, 2600 m, [16°47′24″N, 92°42′W], 24 February 1945, *Matuda 5047* (DS!, F!, MO!).

GUATEMALA. Huehuetenango: summit of Cerro Pixpix, above San Ildefonso Ixtahuacán, 1600–2800 m, [15°25′N, 91°46′W], 15 August 1942, *Steyermark 50551* (F!). **San Marcos:** Sibinal, Volcán Tacaná, ascendiendo desde Sibinal, 3040 m, [15°08′48″N, 92°03′50″W], 18 June 1998, *Equipo CDC Flora 1383* (MEXU!); upper S-

facing forested slopes of Volcán Tajumulco, between Las Canojas and top of ridge, 7 mi from San Sebastián, 3300–3900 m, [15°05′07″N, 91°55′23″W], 16 February 1940, *Steyermark 35864* (F!); between Sibinal and Ixchiguán, 3500–4000 m, [15°09′28″N, 91°59′14″W], 18 February 1940, *Steyermark 35954* (F!, GH!). **Sololá and Totonicapán:** 5–10 km W of Los Encuentros, Cerro María Tecum, Sierra Madre Mtns., 2900–3100 m, [14°51′15″N, 91°11′15″W], 24 December 1972, *Williams et al. 41726* (F!, MO!, NY!, US!). **Quetzaltenango:** NW slope of Volcán Zunil, 6–8 km S of Zunil along rd to Fuentes Georginas, 2375 m, [14°46′06″N, 91°29′01″W], 2 October 1986, *Breedlove & Almeda 64823* (CAS!). **Sacatepéquez:** Volcán Acatenango, 9000 ft, 20 February 1905, *Kellerman 4824* (US!).

HONDURAS. Lempira: NE del Campamento Naranjo, 11 km al SE de Gracias, Parque Nacional de Celaque, 2560 m, 14°33′N, 88°40′W, 31 January 1992, *Darío 13* (CAS!, MO!).

EL SALVADOR. **Santa Ana:** Bosque Montecristo, 2100 m, [14°24′29″N, 89°22′02″W], 24 January 1977, *Martínez 968* (MHES, photo!); San José Ingenio, P. N. Montecristo, miramundo, 2400 m, 14°25′N, 89°21′W, 25 November 2001, *Martínez 392* (LAGU, photo!, MO!); San José Ingenio, P. N. Montecristo, miramundo, 2400 m, 14°25′N, 89°21′W, 21 April 2002, *Martínez 987* (LAGU, photo!); San José Ingenio, P. N. Montecristo, miramundo, 2418 m, 14°25′N, 89°21′W, 14 May 2002, *Martínez 1060* (LAGU, photo!, MO!); San José Ingenio, P. N. Montecristo, miramundo, 2418 m, 14°25′N, 89°21′W, 15 May 2002, *Martínez 1064* (LAGU, photo!, MO!); San José Ingenio, P. N. Montecristo, Miramundo, 2400 m, 14°25′N, 89°21′W, 21 April 2002, *Martínez s.n.* (MO!); Montaña de Montecristo, 2100 m, [14°24′29″N, 89°22′02″W], 13 September 2001, *Reyna 333* (EAP, photo!); P. N. de Montecristo, 2250 m, [14°24′29″N, 89°22′02″W], 29 July 1976, *Reyna 663* (MHES, photo!, EAP, photo!).

13. *Symplocos hintonii* Lundell (1969: 122). Type:—MEXICO. Guerrero: Dist. Galeana, Teotepec, edge of forest stream, 2600 m, [17°28′22″N, 100°08′21″W], 18 May 1939, *G. B. Hinton et al. 14276* (holotype LL!, isotypes CAS!, MO!, NY!, S!, US!)

Trees ca. 10–12.5 m tall; distal branchlets and vegetative buds densely hirsute, trichomes 0.5–1.5 mm long, widely to retrorsely spreading, brownish. Petioles 0–4 mm long; leaf blades bicolorous, ovate to ovate-lanceolate to elliptic or oblanceolate, 3.5–9 × 2–4.5 cm, subchartaceous, adaxially and abaxially setose-pilose, trichomes 0.5–1.5 mm long, secondary veins adaxially impressed, base rounded to emarginate or subcordate, margins entire, revolute toward base imparting a ± folded aspect to leaves, apex sharply acuminate. Inflorescences 1–2-flowered or rarely 3–5-flowered racemes; peduncles 5–6 mm long, setose-pilose, trichomes 0.5–1.5 mm long; bracts persistent, 1–4 toward base of peduncle, ovate-lanceolate, 2.5–6 × 1–2.5 mm, adaxially sericeous, margins ciliate; bracteoles persistent, 2–4, ovate-lanceolate, 2.5–6 × 1–2.5 mm, adaxially sericeous, margins ciliate. Hypanthium densely sericeous. Calyx lobes 5, subulate-lanceolate, 4.5–9.5 × 1–1.5 mm, appressed-pilose to ± spreading-pilose, margins appressed-pilose to ± spreading-pilose. Corolla pink, 5-lobed, 2–2.5 cm long; tube 8–13 mm long; lobes adnate to filament tube for 11–12 mm, lanceolate, appressed-pilose distally at the acute apex. Stamens 7-seriate; filament tube 12 mm long; distinct portions of filaments 4–5 × 0.5 mm. Disk pilose; style ca. 13–14 mm long, pilose on lower half; stigma irregularly lobed. Fruits green maturing to dark bluish purple, ellipsoid to oblong, 1.5–1.6 × 0.6–0.9 cm, pilose, apex truncate to base of spreading calyx lobes; disk convex, apex partly visible, surpassed by calyx; endocarp 2–3-locular, perimeter rounded.

Vernacular name—None.

Illustration—Figure 17.

Phenology—Flowering May and October; fruiting October.

Distribution and habitat—Mexico (central Guerrero), in *Quercus*-*Pinus* forests and cloud forests at 2500–2600 m elev. Figure 16.

Conservation status—This species, known from the type and three other collections, is restricted to a narrow elevational belt around Cerro Teotepec in the highlands of Guerrero, Mexico. The EOO is 34 km² and the AOO is 16 km². This species has a limited area of occupancy, grows in an area that is subject to deforestation with no official protected status, and the area, extent, and quality of habitat is projected to decline. We therefore assign a classification of Critically Endangered (CR): B1ab(iii, iv) to this species.

Discussion—*Symplocos hintonii* is distinguished by the combination of subsessile leaves and large flowers (ca. 2.5 cm long) with lanceolate petals and stamens in seven series. This species is unique among species of *Symplocos* in the region in having an inflorescence that is positioned under the leaves in the area between the revolute basal margins. This unusual floral presentation is probably an adaptation for hummingbird pollination.

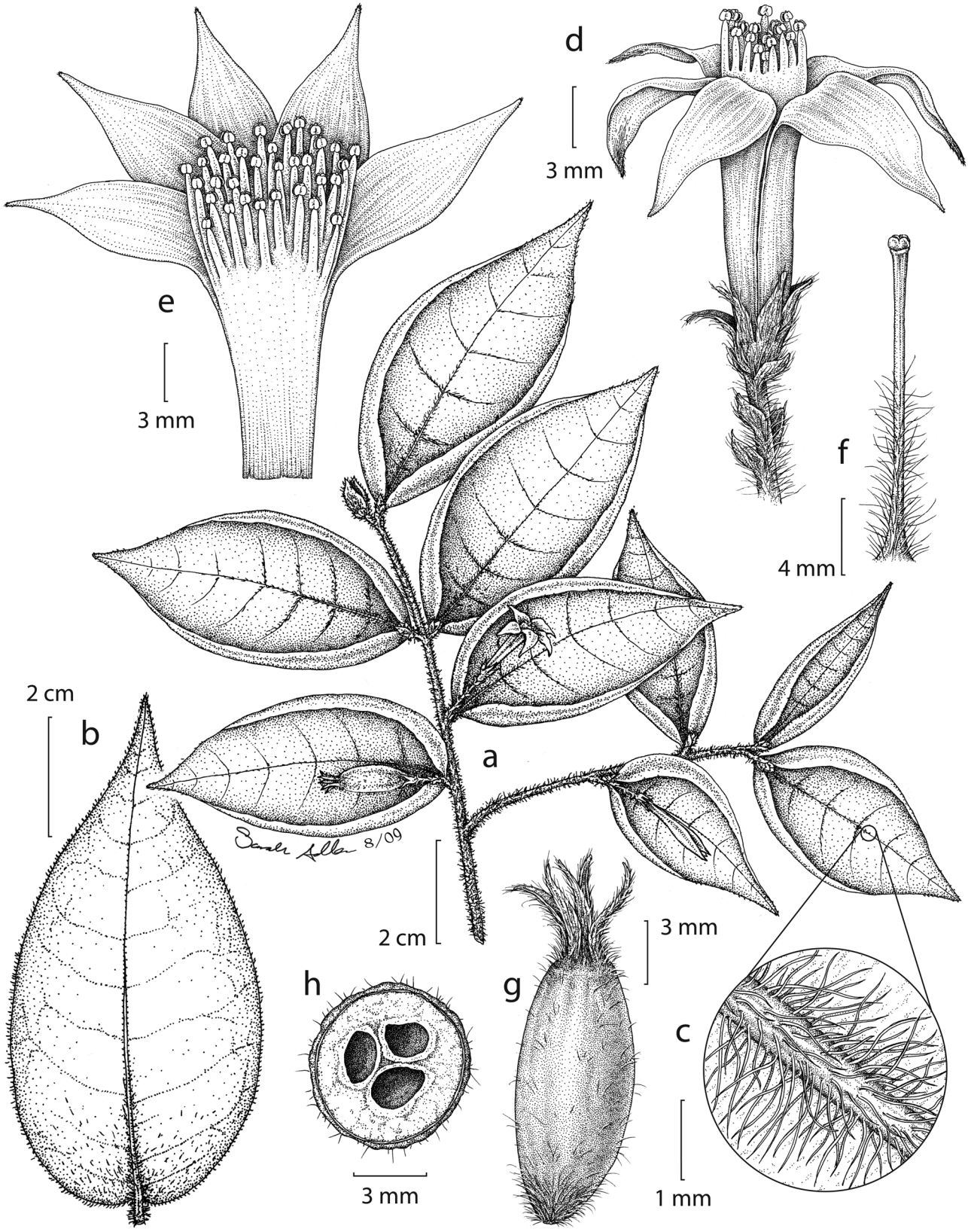

FIGURE 17. *Symplocos hintonii*. **a.** Branchlet with flowers. **b.** Leaf, adaxial surface. **c.** Close-up of (a) showing midvein pubescence on abaxial leaf blade surface. **d.** Flower. **e.** Corolla opened with attached stamens. **f.** Style and stigma. **g.** Fruit. **h.** Fruit, cross section. (a, c, d, g, h drawn from *D. E. Breedlove & F. Almeda 65018*, CAS; b drawn from *D. E. Breedlove & F. Almeda 65026*, CAS; e, f drawn from *G. B. Hinton et al. 14276*, CAS.)

Additional specimens examined—**MEXICO. Guerrero:** E slope of Cerro Teotepec along rd from Filo de Caballo to Atoyac, 2590 m, [17°27′02″N, 100°03′30″W], 9 October 1986, *Breedlove & Almeda 65018* (CAS!, NY!); above Puerto El Gallo on W slope of Cerro Teotepec along rd from Filo de Caballo to Atoyac, 2560 m, [17°27′N, 100°10′W], 9 October 1986, *Breedlove & Almeda 65026* (CAS!); W of Puerto El Gallo along rd to Toro Muerto, 2530 m, [17°30′10″N, 100°14′44″W], 11 October 1986, *Breedlove & Almeda 65160* (CAS!, NY!).

14. *Symplocos jurgensenii* Hemsley (1881: 301). Lectotype (designated by Fritsch & Almeda 2015):—MEXICO. [Oaxaca:] Sierra San Pedro Nolasco etc., 1843–1834, *C. Jürgensen 746* (lectotype G-164229-n.v., online image!, isolectotypes BM-952632-n.v., online image!, BM-952633-n.v., online image!, G-164230-n.v., online image!)

= *Symplocos strigillosa* Krug & Urb. in Urban (1893: 332). ≡ *Symplocos martinicensis* Jacquin (1760: 24) ssp. *strigillosa* (Krug & Urb.) D. Mai in Mai (1986: 15). Lectotype (designated by Mai 1986):—CUBA. Pinar del Río: Retiro, 13 July 1863, *C. Wright 2932* (lectotype GOET!, isolectotypes BM-952623-n.v., online image!, GH!, GOET!, MO!, NY-2!, S-4!, US!, W!).

= *Symplocos bicolor* Williams (1967: 265). Type:—BELIZE. Mullins River Rd, 100 ft, [17°05′58″N, 88°19′26″W], 15 December 1931, *W. A. Schipp 862* (holotype F!, isotypes C, CAS!, GH!, MICH-1192774-n.v., online image!, MO!, NY!, S!).

Trees 4–15 m tall; juvenile branchlets and vegetative buds moderately strigose to pilose, trichomes mostly 0.5–1 mm long, appressed to antrorsely spreading, pale orange or tawny. Petioles 4–10 mm long; leaf blades bicolorous, elliptic, 5–13.5 × 2–5 cm, membranaceous to subcoriaceous, abaxially glabrous (rarely sparsely strigillose on midvein), adaxially glabrous, secondary veins not adaxially impressed, base acute, margins crenulate-denticulate, with minute, black deciduous marginal glands ca. 0.25 mm long, apex acuminate. Inflorescences cymes or racemes 1–2.8 cm long, 3–6-flowered; peduncle 1–4 mm long; rachis 0.5–2 cm long, moderately strigose, trichomes 0.5–1 mm long; bracts persistent, elliptic to elliptic-ovate or rarely obovate, 1–3 × 0.5–2 mm, densely strigillose, margins ciliate; bracteoles persistent, 2–3, elliptic to elliptic-ovate, 0.75–1 × 0.5–0.75 mm, densely strigillose, margins ciliate; pedicels absent or to 1 mm long. Hypanthium glabrous. Calyx lobes 5, broadly ovate to suborbicular, 0.5–0.8(–1) × 1–1.5 mm, glabrous or sparsely to moderately sericeous, margins ciliate. Corolla white, 5-lobed, 5–7 mm long; tube 2–3 mm long; lobes adnate to filament tube for 3 mm, oblong-obovate, glabrous. Stamens 3-seriate; filament tube 3–4 mm long; distinct portions of filaments 1.5–3 × 0.5–0.75 mm. Disk sericeous to strigillose; style 4–7 mm long, glabrous or sparsely villous at base; stigma irregularly lobed. Fruits green maturing to dark bluish purple, ovoid to ellipsoid, 6–10 × 4–7 mm, glabrous, apex rounded or gradually narrowed to the truncate disk; calyx lobes erect; disk convex, surpassing calyx lobes and well exposed; endocarp 3–5-locular, perimeter rounded.

Vernacular name—None.

Illustrations—Figure 18; Williams (1967: 265).

Phenology—Flowering April and November through January; fruiting February, April through July, and September.

Distribution and habitat—Mexico (Veracruz, Oaxaca, and Chiapas), Belize, Guatemala, and Nicaragua, in tropical rain forests in at 0–1600 m elev. Also in Cuba. Figure 19.

Conservation status—Collections of *Symplocos jurgensenii* have been made from more than 30 localities in southern Mexico, Belize, Guatemala, and Nicaragua, as well as ten additional localities in Cuba. Based on this widespread distribution and coupled with a comparatively broad elevational range, we assign a classification of Least Concern (LC) to this species.

Discussion—*Symplocos jurgensenii* is recognized by its crenulate-margined, bicolorous leaves that are almost black adaxially, small flowers with glabrous petals and styles, and small glabrous fruits. This species is likely a close relative of *S. costaricana* and *S. naniflora*, other low elevation species with small fruits and glabrous petals. *Symplocos costaricana* is distinguished from *S. jurgensenii* by its entire leaf margins (versus crenulate-denticulate); *S. naniflora* is most readily separated by its densely pilose styles (versus glabrous or merely sparsely villous at base).

Symplocos jurgensenii does not differ substantially from *S. strigillosa* (Krug & Urb.) of Cuba. Other than the flowers and leaves, which average slightly larger in *S. jurgensenii*, the range of morphological variation appears to overlap completely between the two entities, e.g., in branchlet, leaf, and inflorescence trichome length, leaf shape and margin, and fruit size. On this basis, we thus consider *S. jurgensenii* and *S. strigillosa* to be conspecific (see also Fritsch & Almeda, 2015).

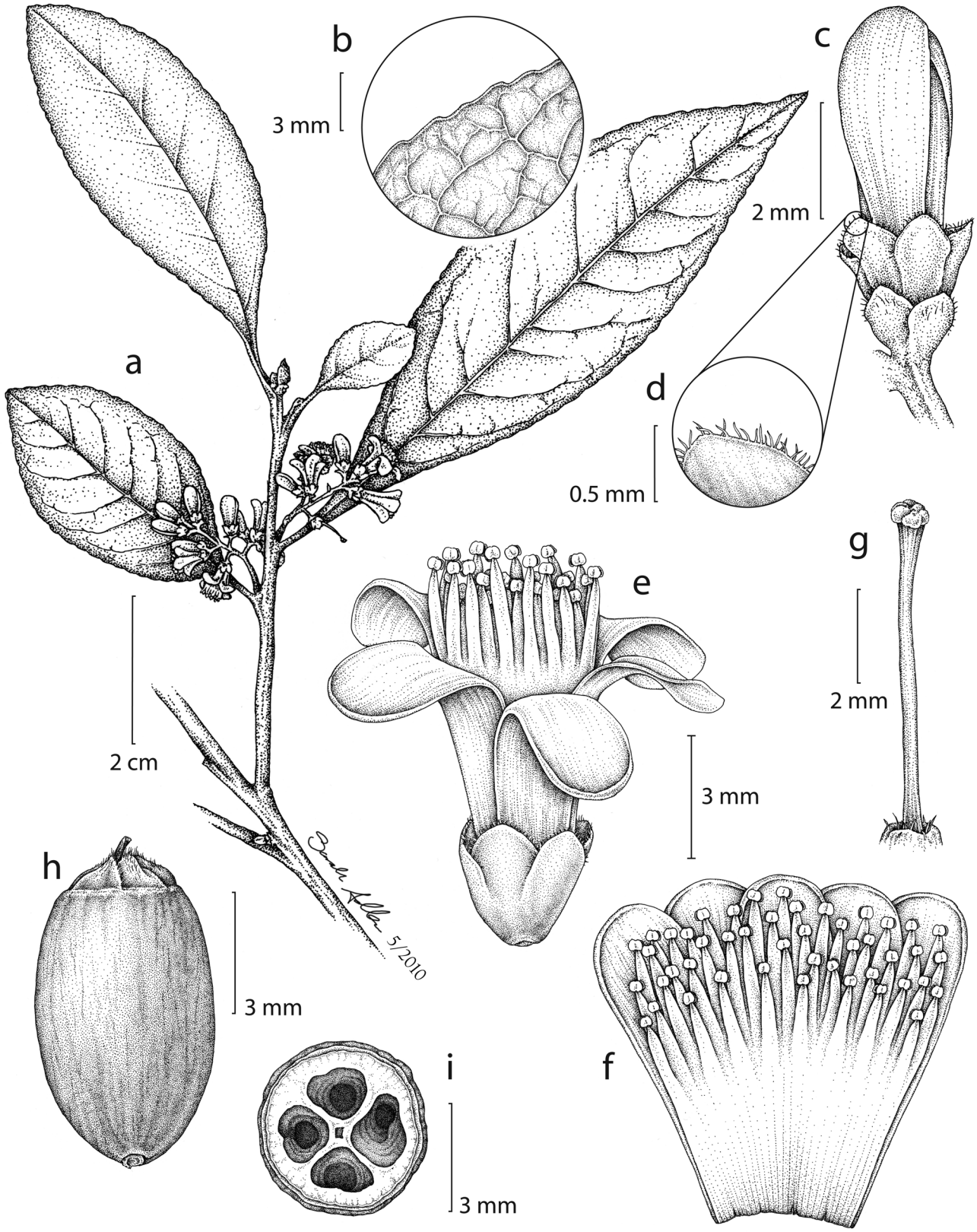

FIGURE 18. *Symplocos jurgensenii*. **a.** Branchlet with inflorescences. **b.** Close-up of (a) showing leaf blade margin. **c.** Flower bud. **d.** Close up of (c) showing ciliate calyx lobe margin. **e.** Flower. **f.** Corolla opened with attached stamens. **g.** Disk, style, and stigma. **h.** Fruit. **i.** Fruit, cross section. (a drawn from *H. Hernández G. 582*, CAS and *R. Torres C. & P. Tenorio L. 4548*, CAS; b–g drawn from *Hernández G. 582*, CAS; h, i drawn from *R. Torres C. & P. Tenorio L. 4548*, CAS.)

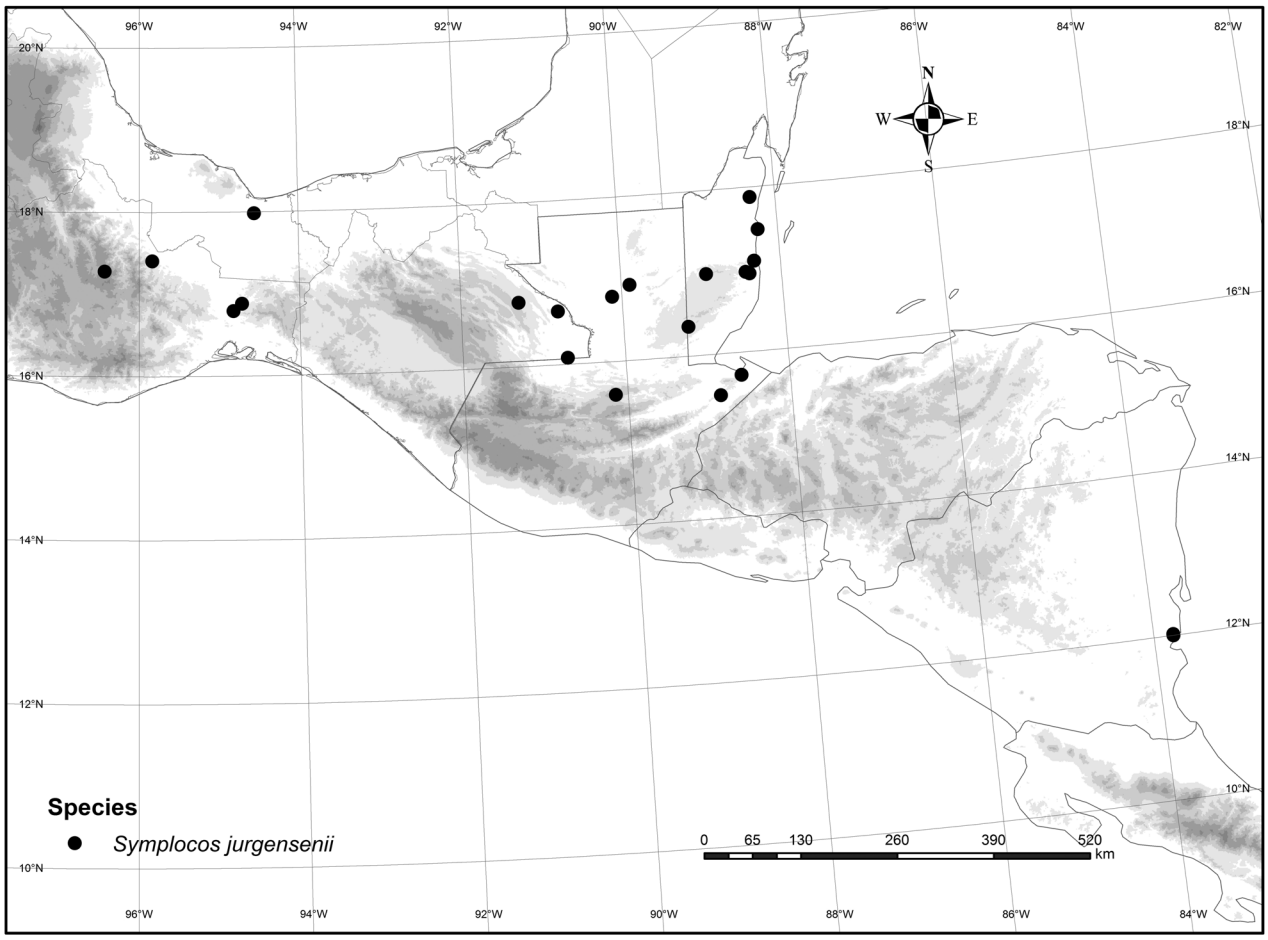

FIGURE 19. Geographic distribution of *Symplocos jurgensenii* in Mexico and Central America.

Additional specimens examined—**MEXICO. Chiapas:** Ocosingo, Alrededores del Nuevo Centro de Población Velasco Suárez (Selva Lacandona), 500 m, 16°47′N, 91°17′W, 7 December 1976, *Calzada 2917* (NY!); Ocosingo, Nuevo Veracruz, a 33 km al W del Vértice del Río Choxoy, camino a Chajul, en zona Marqués de Comillas, 130 m, [16°04′48″N, 90°42′36″W], 10 January 1986, *Martínez S. 15891* (MEXU!, MO!); Ocosingo, 16 km al NW de Boca Lacantum, camino a Palenque, 220 m, [16°39′N, 90°48′W], 20 January 1986, *Martínez S. 16434* (CAS!, MEXU!, NY!); Ocosingo, 15 km al NW de Boca Lacantum, camino a Palenque, 220 m, 20 April 1986, *Martínez S. 18457* (MEXU!, MO!). **Oaxaca:** 12 km NE de Lázaro Cardenas, camino a Santa María Chimalapa, 225 m, [16°47′42″N, 94°49′30″W], 21 February 1982, *Cedillo T. 1124* (MEXU!, MO!); Chinantla, 3000 ft, 184?, *Galeotti 1685* (GH!, NY!, US!); Mpio. Santa María Chimalapa, Paso Piedra de Tigre, ca. 8 km al O de Santa María, 220 m, 16°53′N, 94°43′W, 13 November 1984, *Hernández G. 582* (CAS!, MEXU!, MO!); La Carmelita, 14 km SW de Jalahui, brecha Playa Vicente–Choapan, [17°24′21″N, 95°49′59″W], 19 January 1984, *Torres C. & Tenorio L. 4548* (CAS!, MEXU!, MO!). **Veracruz:** Minantitlan, [17°59′01″N, 94°33′01″W], 15 November 1928, *Mill s.n.* (US!). **State unknown:** without precise locality, 1841–1843, *Liebmann s.n.* (NY!); Jocobepa, June 1942[1842], *Liebmann 593 p.p.* (C-2!).

BELIZE. Maskall, [17°52′42″N, 88°18′47″W], 14 April 1934, *Gentle 1253* (A!, DS!, F!, GH!, MO!, NY!, US!); Stann Creek Dist., Stann Creek Valley, Baboon Ridge, [16°56′59″N, 88°23′36″W], 10 February 1940, *Gentle 3207* (A!, MEXU!, MO!, NY!, US!); Stann Creek Dist., Stann Creek Valley, Big Eddy Ridge, [16°58′20″N, 88°26′29″W], 12 January 1941, *Gentle 3486* (A!, CAS!, DS!, F!, MEXU!, MO!, NY!, US!); Stann Creek Dist., Mullins River Rd, [17°05′58″N, 88°19′26″W], 12 January 1955, *Gentle 8538* (CAS!, MO!, NY!, S!, US!); Cayo Dist., Río On Creek, Navel Rd, 6 km E of Augustine, Mtn. Pine Ridge Forest Reserve, 480 m, [16′59″N, 88′56′W], August 1988, *Meave & Howe 1227* (MO!); near Manatee Lagoon, [17°28′42″N, 88°14′43″W], 8 January 1906, *Peck 264* (GH!); Stann Creek Dist., Mullins River Rd, [17°05′58″N, 88°19′26″W], 29 April 1929, *Schipp 116* (A!,

CAS!, F!, MO!, NY!, S!, US!); Camp 32.B. H.-Guatemala Survey, 2100 ft, [16°21′36″N, 89°12′02″W], 17 April 1934, *Schipp 1268* (A!, F!, GH!, MO!, NY!, S!).

GUATEMALA. Izabal: S shore of Lake Izabal, E of Izabal, [15°29′51″N, 88°51′59″W], 2 May 1966, *Jones & Facey 3218* (F!, LL!, NY!); near Puerto Barrios, sea level, [15°43′30″N, 88°35′37″W], 25 April–6 May 1939, *Standley 73114* (F!). **Petén:** La Libertad and vicinity, [16°47′26″N, 90°07′07″W], 10 January 1935, *Aguilar H. 217* (A!, F!, MO!, NY!, S!); Santa Elena, bordeando la carretera Sayaxché, a Km 40, [16°55′11″N, 89°53′36″W], 8 February 1972, *Ortíz 2225* (F!, NY!, US!). **La Libertad:** La Libertad, 2 June 1933, *Lundell 3571* (F!, GH!, S!, US!). **Alta Verapaz:** Sebol, in high forest, ca. 1 km NEE, [15°35′39″N, 90°08′58″W], 29 April 1964, *Contreras 4536* (CAS!, LL!).

NICARAGUA. Zelaya: área de la Bahía de Bluefields, Río Escondido, Abardeen Hilly y El Pool, 0–30 m, [12°01′N, 83°46′W], 30 March 1949, *Molina R. 2012* (F!, GH!); Bluefields, 1 km al W del pueblo, 80–100 m, 12°00′N, 83°46′W, 12 September 1984, *Moreno 24640* (CAS!, MO!).

***Extralimital specimens*—CUBA. Artemisa:** *J. S. S. León 12714* (NY!). **Camagüey:** *I. Arias et al. HFC 53725* (B-n.v., digital image 10 0415576!). **Cienfuegos:** *J. S. S. León & M. Roca 8017* (NY!). **Guantánamo:** *E. L. Ekman 6126* (NY!). **Holguín:** *E. L. Ekman 4712* (NY!). **Isla de la Juventud:** *N. L. Britton et al. 15805* (NY!). **La Habana:** *J. S. S. León 11530* (NY!). **Pinar del Río:** *N. L. Britton et al. 6747* (NY!). **Sancti Spíritus:** *A. Luna 132* (NY!). **Santiago de Cuba:** *J. S. S. León 11015* (NY!).

15. *Symplocos limoncillo* Bonpland (1808: 196). ≡ *Styrax limoncillo* (Bonpl.) Miers (1879: 292). Lectotype (designated here):—MEXICO. Veracruz: Xalapa, [19°32′35″N, 96°54′50″W], *A. J. A. Bonpland 4458* (lectotype P-Bonpl.-135121-n.v., online image!, isolectotype P-Bonpl.-648479-n.v., online image!)

= *Symplocos chiriquensis* Pittier (1916: 168). Type:—PANAMA. Chiriquí: forest along the Caldera River near El Boquete, ca. 1100 m, [09°46′30″N, 82°25′55″W], 4 March 1911, *H. Pittier 2994* (holotype US!, isotypes C!, F!, GH!, K-644453-n.v., online image!, NY!).

= *Symplocos flavifolia* Lundell (1938: 240). Type:—MEXICO. Chiapas: Montecristo, [15°41′33″N, 92°37′16″W], January 1938, *E. Matuda 1980* (holotype MICH-1192783-n.v., online image!, isotypes DS!, F!, GH!, K-644492-n.v., online image!, K-644493-n.v., online image!, LL-372468-n.v., online image!, MEXU-3!, MO!, NY!, US-2!).

Trees 7–20 m tall; juvenile branchlets and vegetative buds moderately to sparsely sericeous, trichomes 0.2–0.3 mm long, appressed to antrorsely spreading, whitish. Petioles 0.7–2 cm long; leaf blades typically concolorous, yellowish green or rarely slightly bicolorous, adaxially brownish green, abaxially yellowish green, elliptic to oblanceolate, 6.6–15 × 2–7 cm, subcoriaceous, abaxially glabrous or sparsely strigose on midvein, adaxially glabrous, secondary veins not adaxially impressed, base acute, margins crenate to serrulate, apex acute to acuminate. Inflorescences racemes, 2.3–5.2 cm long, 3–6-flowered or rarely 1–2-flowered; peduncle 0.7–2 cm long; rachis 1.5–4 cm long, sparsely to moderately sericeous, trichomes 0.2–0.3 mm long; bracts deciduous, elliptic to elliptic-ovate, 1.5–2 × 0.5–1.5 mm, sparsely to moderately sericeous, margins ciliate; bracteoles deciduous, 2 or 3, elliptic to elliptic-ovate, 0.75–1 × 0.5–1 mm, sparsely to moderately sericeous, margins ciliate; pedicels 0–1 mm long. Hypanthium glabrous. Calyx lobes 5, rotund, 1–2 × 1.5–2 mm, glabrous, margins ciliate. Corolla white or pink, 5–6-lobed, 8–11 mm long; tube 3–4 mm long; lobes adnate to filament tube for 4–5 mm, ovate, glabrous. Stamens 3-seriate; filament tube 5–6 mm long; distinct portions of filaments 0.5–2.5 × 0.25–0.5 mm. Disk moderately to densely sericeous; style 7–9 mm long, glabrous; stigma conspicuously and irregularly lobed. Fruits green maturing to dark bluish purple, ellipsoid to oblong, 1.2–1.8 × (0.8–)1–1.2 cm, glabrous, apex rounded or gradually narrowed to the truncate disk; calyx lobes erect; disk flat or pulvinate, surpassing calyx lobes and well exposed; endocarp 3–5-locular, perimeter rounded.

Vernacular name—Chillador, garapata, garapatilla, limoncillo (all from Standley, 1924).

Illustration—Figure 20.

Phenology—Flowering August and December through June; fruiting January through December.

Distribution and habitat—Mexico (Veracruz, Oaxaca, and Chiapas), Belize, Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica, and Panama, in cloud forests at 700–2200 m elev. Figure 21.

Conservation status—*Symplocos limoncillo* is known from over 125 collections. Although few of its known populations occur in formally protected sites, the species is widespread and locally common from southern Mexico throughout Central America. Based on these data, we assign a classification of Least Concern (LC) to this species.

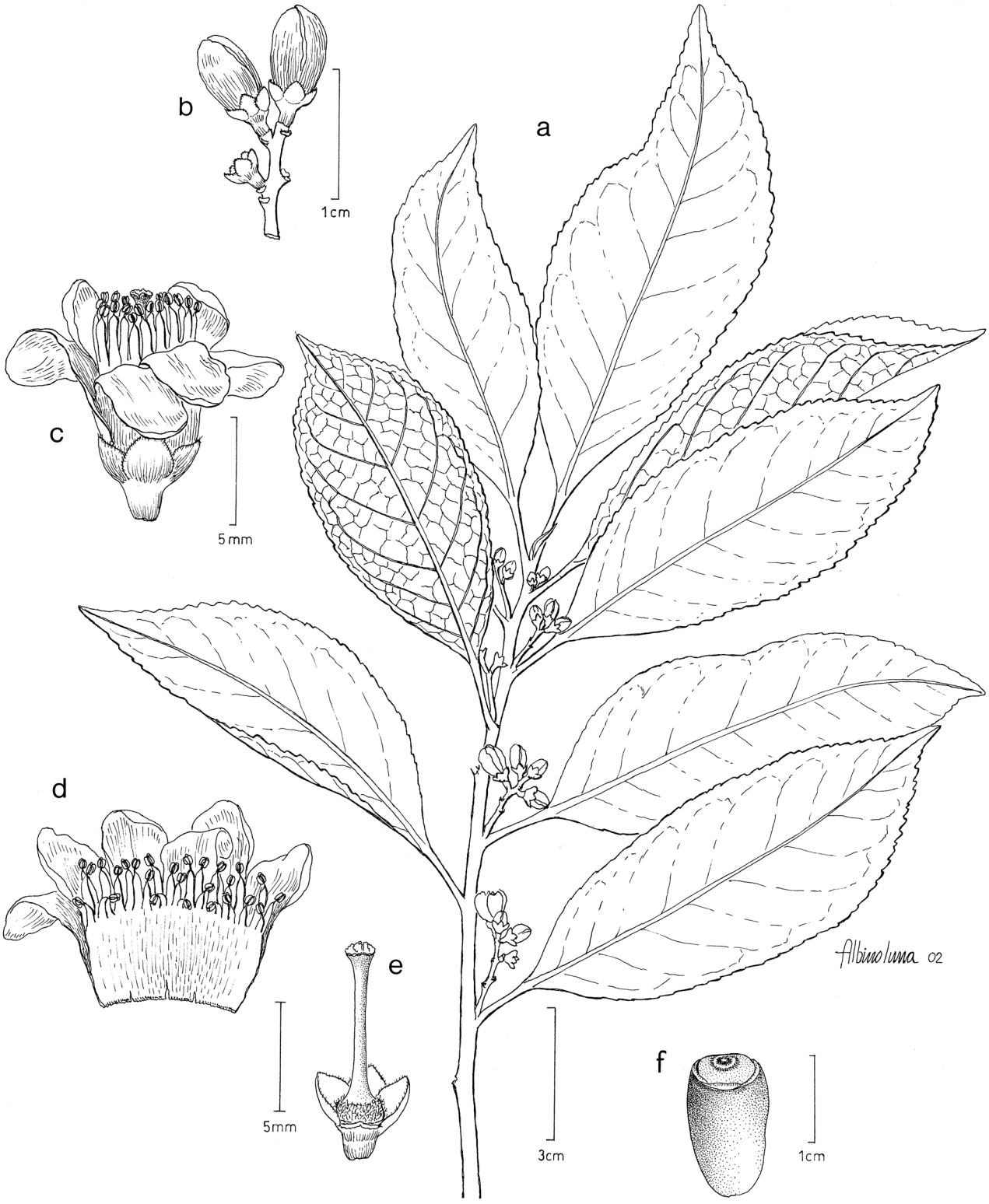

FIGURE 20. *Symplocos limoncillo*. **a.** Branchlet with inflorescences. **b.** Inflorescence with flower buds. **c.** Flower. **d.** Corolla opened with attached stamens. **e.** Calyx (partly cut away), disk, and gynoecium. **f.** Fruit. (a–e drawn from *D. E. Breedlove 48692*, MEXU; f drawn from *M. Heath & A. Long 1143*, MEXU.)

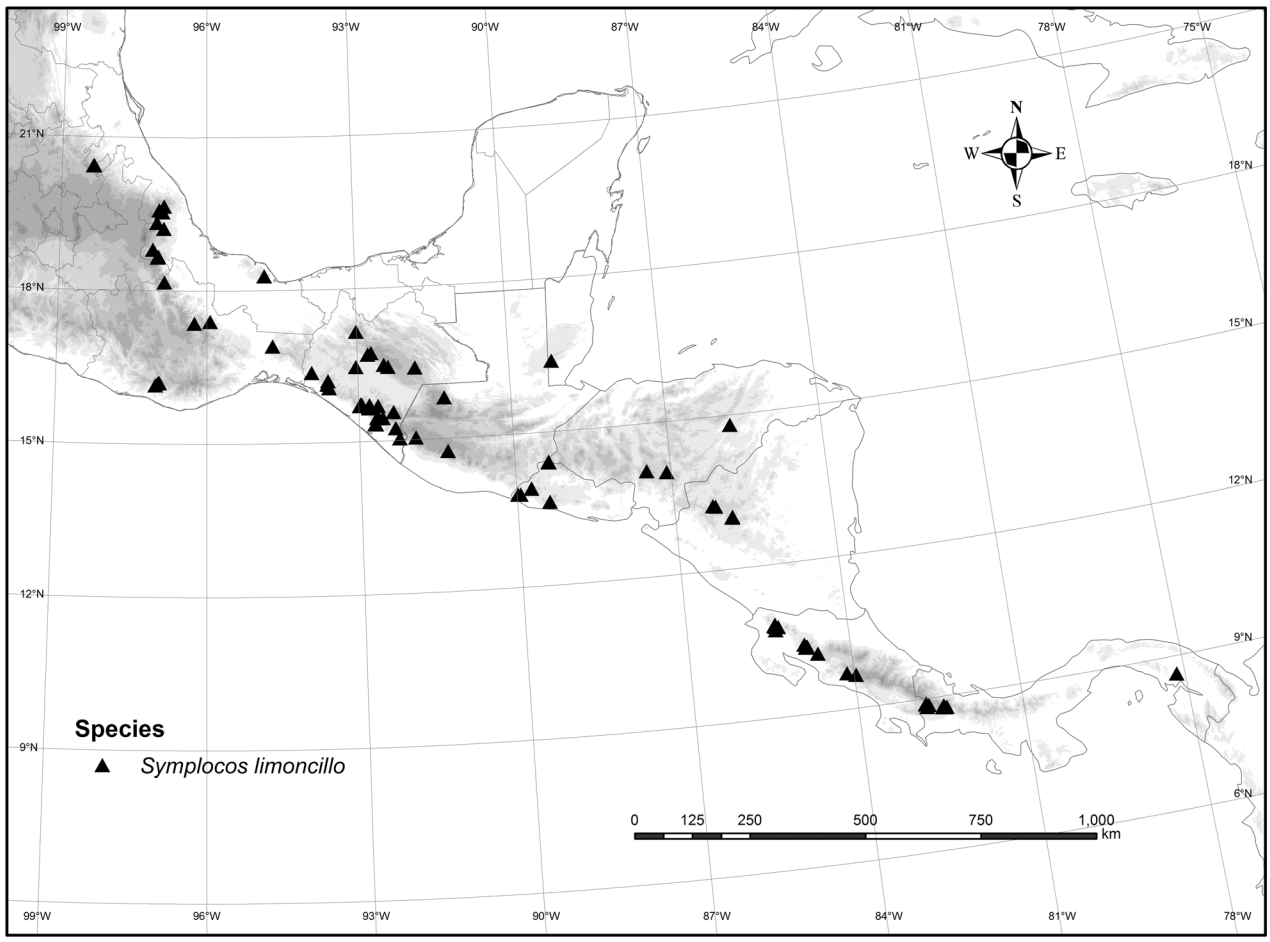

FIGURE 21. Geographic distribution of *Symplocos limoncillo*.

Discussion—*Symplocos limoncillo* is one of the most commonly collected species throughout the Mesoamerican region. This species is most readily recognized by the combination of shiny, yellowish green, crenate-margined leaves and distinctive fruits 1.5–1.8 cm long with a pulvinate apical disk.

Two duplicates of *A. J. A. Bonpland 4458*, the type material of *Symplocos limoncillo*, are housed at P-Bonpl., and they are both on the same sheet. We chose P-Bonpl.-135121, the duplicate on the lower portion of the sheet, as the lectotype, because it has fruits whereas P-Bonpl.-648479 has neither flowers nor fruits.

Additional specimens examined—**MEXICO. Chiapas:** Mpio. Villa Corzo, Ejido Sierra Morena, en las faldas de Cerro Bola, 1350 m, 16°08′17″N, 93°36′39″W, 4 August 2002, *Alvarado C. et al. 259* (MO!); Mpio. Rayón, near Puerto del Viento, 9 mi NW of Pueblo Nuevo Solistahuacán along rd to Tapilula, 6100 ft, [17°09′32″N, 93°00′44″W], 20 August 1965, *Breedlove 11979* (DS!, F!, US!); Mpio. Totolapa, Rancho Ch'a ha', 5–6 km W of Teopisca, 1500 m, [16°29′24″N, 92°28′48″W], 26 November 1971, *Breedlove 22865* (DS!, MEXU!, MO!); Mpio. Totolapa, at Rancho Ch'a'ha' 5–6 km W of Teopisca, 1500 m, 26 November 1971, *Breedlove 22905* (DS!, MO!, NY!); Mpio. Villa Corzo, E base of Cerro Tres Picos near Cerro Bola along a logging rd SW of Colonia Agronomos Mexicanos, 1500 m, [16°12′23″N, 93°35′49″W], 9 February 1972, *Breedlove 24065* (DS!); Mpio. Ángel Albino Corzo, above Finca Cuxtepec, 1380 m, [15°43′48″N, 92°57′36″W], 14 December 1980, *Breedlove 48692* (CAS!, GH!, MEXU!, MO!, NY!); Mpio. Zinacantan, near Bolomton below Paraje Apas, 1900 m, [16°42′01″N, 92°47′39″W], 17 February 1981, *Breedlove 49819* (CAS!, GH!, MO!); Mpio. Ángel Albino Corzo, above Finca Cuxtepec, 1380 m, 7 April 1981, *Breedlove 50762* (CAS!, GH!, MO!); Mpio. La Independencia, 6–10 km NNE of La Soledad along logging rd from Las Margaritas to Campo Alegre, 1600 m, [16°24′41″N, 91°51′48″W], 30 September 1981, *Breedlove 53149* (CAS!, MEXU!, MO!, NY!); Mpio. Las Rosas, 3 km S of Aguacatenango along rd to Las Rosas, 1768 m, [16°27′N, 92°24′W], 4 October 1981, *Breedlove 53238* (CAS!, MO!); Mpio. Ángel Albino Corzo, above Finca Cuxtepec, 1380 m, 10 January 1982, *Breedlove & Almeda 56952*

(CAS!, MEXU!); Mpio. Ángel Albino Corzo, just N of Finca Cuxtepec, 1370 m, 11 January 1982, *Breedlove & Almeda 56992* (CAS!); Mpio. Ángel Albino Corzo, NE slope of Cerro Venado above Finca Cuxtepeque, 4500 m, [15°42′N, 92°59′W], 10 May 1988, *Breedlove & Bourell 67515* (CAS!); Mpio. La Concordia, Finca Cuxtepec, trail NW from Finca, 1–3 km along trail, 1180 m, 15°44′N, 92°58′W, [15°43′30″N, 92°58′00″W], 12 July 1990, *Hampshire & Reyes G. 1208* (F!, MEXU!); Mpio. El Triunfo, Reserva El Triunfo, poligono 1, 1250 m, 15°39′N, 92°48′W, 19 June 1990, *Heath & Long 1143* (MEXU!); Mpio. Ixtapa, along Hwy 190 at the Zinacantán paraje of Muctajoc, 4400 ft, [16°43′47″N, 92°43′36″W], 18 August 1966, *Laughlin 1543* (DS!, F!, MEXU!); Mpio. Jiquipilas, loc. "La Palmita," 4.22 km al SO de Tiltepec, 1430 m, 16°22′19″N, 93°54′55″W, 22 April 2002, *León V. 415* (MO!); Mpio. La Concordia, Reserva de la Biósfera El Triunfo, poligono III, Campamento Quetzal, 50 km de la Colonia Independencia, 1800 m, 15°43′22″N, 92°56′37″W, 12 July 2002, *Martínez-M. 399* (CAS!); Escuintla, Las Cadenas, [15°27′36″N, 92°39′W], January 1938, *Matuda 1883* (DS!); Mpio. Escuintla, Santa Rosa, 1600 m, [15°27′N, 92°32′02″W], 20–25 June 1941, *Matuda 4252* (DS!, F!, GH!, MEXU!, MO!, NY!, US!); Mpio. Siltepec, Letrero, 2000 m, [15°33′26″N, 92°19′24″W], 6–9 July 1941, *Matuda 4334* (A!, DS!, F!, MEXU!, MO!, NY!, US!); Mpio. Siltepec, Cascada, Siltepec, 1600 m, [15°33′26″N, 92°19′24″W], 28 February 1945, *Matuda 5053* (F!, MEXU!, NY!); Mpio. Motozintla, Boqueron, 2540 m, [15°14′24″N, 92°17′24″W], 8 May 1945, *Matuda 15363* (F!, MEXU!); Mpio. Escuintla, Esperanza, Escuintla, [15°19′44″N, 92°40′10″W], 23 September 1946, *Matuda 16415* (F!, MEXU!); Mpio. Escuintla, Piñela, 4 June 1948, *Matuda 17839* (DS!, F!, MEXU!); Mpio. Escuintla, near Colonia Jalapa, 15 km W of El Triunfo, 700 m, [15°20′54″N, 92°40′47″W], 14 July 1948, *Matuda 18097* (CAS!, DS!, F!, MEXU!); Mpio. Acacogagua, Zacatonal, 1200 m, [15°27′N, 92°37′W], 11 September 1948, *Matuda 18328* (DS!, MEXU!); Finca Prusia, por Arroyo de la Cuchilla, 23 February 1951, *Miranda 6985* (MEXU!, US!); Mpio. Tonalá, Ejido Las Palmas, en el Paraje Santa Cruz, 180 m, 16°03′57″N, 93°34′42″W, 28 April 2002, *Reyes-García & Gómez C. 4589* (MO!); Mpio. Villa Corzo, Ejido Sierra Morena, 1550 m, 16°28′04″N, 93°02′12″W, 30 May 2002, *Reyes-García et al. 4589* (MO!); Mpio. Pueblo Nuevo Solistahuacán, 3 km NW of Pueblo Nuevo Solistahuacán, on the slopes below Hwy 195 in the vicinity of Clinica Yerba Buena, 5400 ft, 17°30′N, 92°40′W, [17°11′04″N, 92°54′18″W], September 1971, *Thorne & Lathrop 41709* (DS!); Mpio. Ángel Albino Corzo, near the Rancho Viejo of the Finca Prusia, 2400 ft, [15°42′36″N, 92°47′24″W], 23 January 1968, *Ton 3559* (DS!, F!, MEXU!); Mpio. Cacahoatlán, Unión Roja, 500 m, [15°02′21″N, 92°13′01″W], 6 June 1986, *Ventura & López 3766* (MEXU!, MO!); Mpio. Jaltenango, Colonia Santa Rita, ca. 33 km al SO de Jaltenango en la Sierra Madre, a 3 km de Finca Prusia; filo al E de la colonia, cerca de la vereda a El Triunfo, 1450 m, 15°41′N, 92°50′W, [15°40′11″N, 92°48′12″W], 1 August 1986, *Wendt et al. 5329* (CAS!). **Oaxaca:** Dist. Miahuatlán Mpio. San Jerónimo Coatlan, 24 km al SO de San Jerónimo Coatlan, brecha a Piedra Larga, 1600 m, [16°11′21″N, 96°58′13″W], 2 June 1992, *Campos V. 4630* (MEXU!); Dist. Cuicatlán, Cerro Campana, camino de Chiquilhuitlán, 1350 m, 18 April 1919, *Conzatti 3506* (US!); Talea, 3000 ft, [17°21′41″N, 96°14′57″W], February 1844, *Galeotti 1689* (NY!, US!); Mpio. Santa María Chimalapa, cerca de Santa María, 300 m, 16°54′30″N, 94°41′W, 8 April 1987, *Hernández G. 2429* (CAS!); 25 km SW of San Jerónimo Coatlán toward San Gabriel Mixtepec, 1622 m, 16°11.774′N, 96°56.743′W, (16°11′46″N, 96°56′44″W), 13 January 2003, *Kelly et al. 1315* (CAS!, MEXU!, NY!); Teotalcingo to Choapan, 1300 m, [17°23′45″N, 95°55′53″W], 25 March 1919, *Reko 4115* (US!); Dist. Teotitlán del Camino, 9 km al E de San Jerónimo Tecoatl, a 2 km al NW de Puente Fierro, 1400 m, [18°09′59″N, 96°51′36″W], 27 April 1978, *Sousa S. et al. 9341* (CAS!, MEXU!, MO!); Mpio. San Jerónimo, Dist. Miauhatlán, 1 km al NO de la entrada a Progreso, la cual se encuentra 41 km al O de San Jerónimo Coatlán o 12.3 km al NE de Piedra Larga, 1390 m, 16°09′N, 97°01′W, [16°10′19″N, 96°59′52″W], 20 March 1988, *Torres C. et al. 11920* (MEXU!). **Veracruz:** Zamapán, 9 November 1912, *Adole s.n.* (JE!); Mpio. Tlaltetetla, Barranca de Tlilapan, bajando de la parada el Pino hacia Guascaleca, Puebla, 1400 m, [18°48′19″N, 97°05′52″W], 15 April 1987, *Chazáro B. et al. 4637* (MEXU!); Jalapa, [19°32′35″N, 96°54′50″W], 1865–1866, *Hahn s.n.* (GH!); Ocotal Grande, 5 km N de Mecayapan, 700 m, [18°17′N, 94°50′W], 14 March 1985, *Ibarra M. et al. 2353* (CAS!); Mirador, August 1941, *Liebmann 594* (C-3!, F!, US!); Dos Puentes, September 1942, *Liebmann 595* (C-3!); Mpio. Texhuacán, 3 km SSW of Zongolica along gravel rd to Texhuacán, 1350 m, 18°39′N, 97°00′W, 8 February 1984, *Nee & Taylor 29438* (F!, MO!, NY!); Mpio. Texhuacán, 3 km SSW of Zongolica along gravel rd to Texhuacán, 1350 m, 18°39′N, 97°00′W, 8 February 1984, *Nee & Taylor 29459* (F!, MO!, NY!); Jalapa, hills about Jalapa, 4000 ft, [19°32′35″N, 96°54′50″W], 14 May 1900, *Pringle 8283* (CAS!, F!, GOET!, MEXU!, MO!, NY!, S!, US!); Zacuapan, [20°26′01″N, 98°20′58″W], June 1906, *Purpus 2036* (F!, MO!, NY!, US!); Mirador, May 1931, *Purpus 15315* (F!); El Mirador, May 1934, *Purpus 16093* (A!, US!); prope Jalapa, [19°32′35″N, 96°54′50″W], May 1829,

Schiede 180 (MO!, NY!, US!); Jalapa, [19°32′35″N, 96°54′50″W], *Schlechtendal 1.a.b.* (GOET-2!); Jalapa, [19°32′35″N, 96°54′50″W], *Schlechtendal 180* (NY!); El Mirador, Zacuapan, [20°26′01″N, 98°20′58″W], 9 May 1907, *Seler 5163* (CAS!); Jalapa, [19°32′35″N, 96°54′50″W], 1894–1896, *Smith 1838* (F!); Mpio. Zongolica, Cerro Tenango, 1350 m, 18°40′N, 96°59′W, 4 March 1976, *Vázquez T. 216* (NY!); Mpio. Totutla, El Mirador, 970 m, [19°12′52″N, 96°52′38″W], 8 April 1972, *Ventura A. 5196* (CAS!); Naolinco, La Cascada, 1400 m, [19°38′58″N, 96°52′40″W], 10 June 1976, *Ventura A. 12840* (MEXU!); Mpio. Naolinco, La Cascada, 1400 m, [19°38′58″N, 96°52′40″W], 5 May 1977, *Ventura A. 13953* (MEXU!); Mpio. Tlalnehuayocan, 2 km de Tlalnehuayocan con dirección a Mazatepec, por la parte N del camino de terraceria, 1750 m, 19°34′30″N, 96°58′40″W, 5 February 1991, *Zamora C. 2881* (MEXU!). Without precise locality: 1841–1843, *Liebmann s.n.* (F!, MO!, NY!, S!); 1787–1795–1804, *Sessé et al. 3608* (F!); 1787–1795–1804, *Sessé et al. 3609* (F!). **State unknown:** Laguna San José, December 1913, *Arsène s.n.* (NY!).

BELIZE. Toledo: southwestern Maya Mtns., Columbia River Forest Reserve, Union Camp, 700–750 m, 16°23′N, 89°09′W, 6 April 1992, *Holst 4058* (CAS!, MEXU!, MO!).

GUATEMALA. San Marcos: Finca El Porvenir, on Potrero Matasán along Río Cabús, Volcán Tajumulco, 1000–1300 m, [15°02′37″N, 91°54′12″W], 12 March 1940, *Steyermark 37569* (F!). **Sololá**: along Río Bravo, below Finca Mocá, 1000 m, [14°44′55″N, 91°17′21″W], 21 June 1942, *Steyermark 48054* (F!). **Huehuetenango:** Barillas, near Quiquil, 1500 m, [15°48′14″N, 91°18′54″W], 25 April 1948, *Holdridge 2339* (F!, US!).

HONDURAS. Morazán: bank of Lepaterique River 5 km to Lepaterique, 1300 m, [14°04′13″N, 87°28′14″W], 29 May 1976, *Molina R. & Molina 31491* (F!, MO!); lower slopes of Cerro de Uyuca, 1530–1600 m, [14°01′N, 87°05′W], 22 February 1947, *Standley & Molina R. 4258* (F!). **Olancho:** Finca Santa Rosita, Montaña de Chifiringo, 10 km S de Campamento, 1000 m, [14°48′22″N, 85°46′01″W], 22 October 1988, *Rodríguez 23* (F!).

EL SALVADOR. Ahuachapán: San Francisco Menéndez, en la finca del Sr. Agustín España, 13°49′N, 89°56′W, 1 August 1994, *Mangandi s.n.* (MO!); San Francisco Menéndez, El Corozo, Mariposario, zona alta "Los Sánchez," 350 m, 13°49′N, 89°59′W, 8 August 2000, *Rosales 1200* (MO!); San Benito, en Los Naranjos, La Cumbre, 1250 m, 13°49′N, 89°56′W, 30 March 1995, *Sandoval & Sandoval ISB00878* (MO!); P. N. El Imposible, San Benito, 850 m, 113°49′N, 89°56′W, 6 April 1997, *Sandoval ES-01537* (MO!); Sierra de Apaneca, in the region of Finca Colima, [13°55′N, 89°43′W], 17–19 January 1922, *Standley 20167* (GH!, NY!, US!). **La Libertad:** Comasagua, [13°38′13″N, 89°22′34″W], December 1922, *Calderón 1394* (US!, NY!). **Santa Ana:** Parque Nacional Montecristo, aserradero viejo, 1816 m, 14°24′N, 89°21′W, 17 April 2002, *Carballo et al. 284* (MO!); San José Ingenio, P. N. Montecristo, el camino de majada vieja, 1400 m, 14°25′N, 89°21′W, 6 February 2002, *Martínez 677* (MO!); San José Ingenio, P. N. Montecristo, la quebradona del cafetal de Chilo, 1400 m, 14°25′N, 89°21′W, 1 March 2002, *Martínez 772* (MO!); San José Ingenio, P. N. Montecristo, la quebradona del cafetal de Chilo, 1400 m, 14°25′N, 89°21′W, 1 March 2002, *Martínez 774* (MO!).

NICARAGUA. Estelí: Mpio. Estelí, ásentamiento Puertas Azules, 1300 m, 13°16′N, 86°16′W, 17 April 1999, *Rueda & Velásquez 10937* (MO!). **Jinotega:** Reserva Natural Miraflor, Comarca los Volcancitos, 1250 m, 13°15′N, 86°13′W, 26 August 1999, *Rueda 11734* (MO!). **Matagalpa:** Santa María de Ostuma, entre el Km 139–141, [13°N, 85°55′W], 28 March 1984, *Grijalva & Soza 3712* (CAS!, MEXU!, MO!); Fuente Pura, Santa María de Ostuma, entre Matagalpa y Jinotega, 1400 m, 26 August 1982, *Martínez S. et al. 1703* (MEXU!, MO!, NY!, US!); Santa María Ostuma, Cordillera Central de Nicaragua between Matagalpa and Jinotega, 1300–1500 m, 19–21 February 1963, *Williams et al. 24764* (F!, NY!, S!, US!); Finca Santa María de Ostuma, Cordillera Central de Nicaragua, 1400 m, 18 January 1965, *Williams et al. 27970* (F!, MEXU!); camino al Hotel Santa María de Ostuma, 1240–1260 m, 13°N, 85°55′W, 26 August 1982, *Moreno 17066* (CAS!, MO!); 10 km N of Matagalpa, Hacienda Santa María del Ostuma, 1300 m, 17 July 1978, *Vincelli 758* (CAS!, MEXU!, MO!); Hacienda Santa María de Ostuma, 4000 ft, 15 May 1972, *Wilbur & Almeda 16490* (CAS!, DUKE).

COSTA RICA. Guanacaste: Río Chiquito, Tilarán Zona de Monteverde, Río Negro, 1500 m, 10°22′N, 84°51′W, 5 December 1988, *Bello C. 570* (CAS!, MO!); Cantón de Liberia, P. N. Rincón de la Vieja, Cordillera de Guanacaste, Estación Las Pailas, Sendero Catarata Cangrejo, 10°46′40″N, 85°21′05″W, 12 March 1993, *R. Espinoza 784* (CAS!, MO); Santa Elena, near Monteverde cloud forest Reserve, near continental divide, [10°18′50″N, 84°49′30″W], 30 June 1980, *Hammel 9132* (CAS!, F!); Cantón de Liberia, Cordillera de Guanacaste, Rincón de la Vieja, Sitio Mundo Nuevo, 1300 m, 10°48′10″N, 85°21′50″W, 12 January 1993, *Morales 2272* (CAS!, F!, MO!); Cantón de Coto Brus, Cordillera de Talamanca, Sabalito, Las Mellizas, 1500 m, 8°53′30″N, 82°45′50″W, 21 July 1995, *Navarro 165* (MO!); P. N. Rincón de la Vieja, 6 km de la Administración, carretera a

Liberia, 500 m, 10°42′40″N, 85°20′52″W, 14 March 1991, *Rivera 1198* (F!, NY!); P. N. Rincón de la Vieja, Los Copelares, sendero al volcán, 1600 m, 10°49′18″N, 85°21′00″W, 21 August 1991, *Rivera 1566* (MO!); P. N. Rincón de la Vieja, sendero de la toma de agua, a 3 km de la estación, 10°46′05″N, 85°17′40″W, 17 September 1990, *Rivera 608* (CAS!, MO!); P. N. Rincón de la Vieja, sendero camino al Volcán Santa María, orillas del sendero a las pailas, entre Río Negro y el río antes de las pailas, 1800 m, [10°49′18″N, 85°21′W], 15 March 1989, *Zamora V. 1546* (F!, MO!). **Puntarenas:** Cantón de Coto Brus, Cordillera de Talamanca, Sabalito, Las Mellizas, Orilla de potrero, 1400 m, 8°53′50″N, 82°46′14″W, 3 March 1996, *Alfaro 517* (MO!); Santa Elena, 10°18′N, 84°49′W, 1400 m, 2 March 1989, *Bello C. 595* (CAS!, MO!); R. B. Monteverde, División Intercontinental, 1500 m, 10°19′N, 84°48′W, 20 June 1989, *Bello C. 956* (MO!); R. B. Monteverde, Altos de Santa Elena, 1400 m, 10°19′N, 84°49′W, 6 August 1991, *Bello C. 2942* (MO!); Monteverde, 1450–1550 m, 10°47′N, 84°50′W, [10°18′N, 84°50′W], 21 August 1984, *Gentry & Haber 48766* (CAS!, MO!); Monteverde, 1350 m, 10°18′N, 84°48′W, 10 March 1988, *Haber & Bello 8287* (CAS!, MO!); Monteverde, lower community, 1300 m, [10°18′37″N, 84°49′35″W], 29 March 1979, *Haber 298* (MO!); Monteverde, lower community, 1350–1400 m, 13 October 1984, *Haber 632* (CAS!, MO!); Monteverde, lower community, 1200 m, 27 November 1984, *Haber 1038* (CAS!, MO!); Puntarenas, Monteverde, 1400 m, 10°18′N, 84°48′W, 9 September 1988, *Haber 8722* (MO!); Cantón de Puntarenas, Monteverde, Bajo Tigre Reserve, 1200–1300 m, 10°18′N, 84°48′W, 3 April 1991, *Haber & Zuchowski 10602* (CAS!, MO!); Monteverde, 1275 m, 17 October 1963, *Jiménez M. 1202* (CR!, F!); Puntarenas, Hoge cliff edge, 1320 m, 16 February 1980, *Koptur 308* (MEXU!, MO!); Puntarenas, E of Monteverde on the Pacific watershed, 1300–1450 m, 10°18′N, 84°48′W, October–December 1976, *Lawton 1050* (F!, NY!); Puntarenas, Cantón de Coto Brus, Z. P. Las Tablas, Cordillera de Talamanca, Sabalito, Mellizas, Finca Cafrosa, Embalse 800 m NO de Tigre, 1300–1350 m, 08°53′15″N, 82°46′15″W, 20 August 1996, *Navarro V. 413* (F!, MO); Puntarenas, Cantón de Coto Brus, Cuenca Térraba–Sierpe, Sabalito, Las Mellizas, Finca la Zapatilla, 1660 m, 08°54′06″N, 82°45′49″W, 27 July 1997, *Navarro V. 786* (MO!). **San José:** Cantón de Aserrí, en la falda S. Quebrada Concha, Cerros de Caraigres, Fila Bustamante, 1000–1600 m, 09°42′12″N, 84°07′51″W, 4 February 1996, *Morales & Abarca 5223* (F!, MO!, NY!); near Santa María de Dota, 1500–1800 m, [09°39′N, 83°58′12″W], 14–26 December 1925, *Standley 41799* (US!); near Santa María de Dota, 1500–1800 m, 14–26 December 1925, *Standley 42527* (A!, US!).

PANAMA. Chiriquí: vicinity Boquete, lumber rd into the hills E of the Río Caldera, 4500–6500 ft, [08°46′54″N, 82°23′48″W], 23 July 1947, *Allen 4664* (MO!); Dist. Boquete, Boquete, 5500 ft, [08°47′N, 82°28′W], 27 June 1938, *Davidson 808* (A!, F!, MO!, US!); Dist. Boquete, laderas de Cerro Horqueta, finca de café de Manuel Lorenzo, 1360 m, 08°49′N, 82°27′W, 17 March 1998, *Galdames et al. 4223* (MO!); Cerro Pando area, 2200 m, 8°52′N, 82°43′W, 24 August 1982, *Hamilton et al. 973* (MEXU!, MO!, NY!); near border with Costa Rica, ca. 13 km from Río Sereno, Finca Hartmann, 1400–1500 m, 08°50′N, 82°45′W, 14 May 1991, *McPherson & Hensold 15337* (CAS!, MEXU!, MO!). **Darién:** Pariaque Hill near Río Sabana & Lara, [08°39′N, 78°09′W], 16 July 1966, *Tyson et al. 4724* (MEXU!, MO!).

16. *Symplocos morii* Almeda & L.M.Kelly in Kelly & Almeda (2002: 371). Type:—PANAMA. Chiriquí: Cerro Hornito [Cerro Pate de Macho], S rim of the Edwin Fabrega Dam and Reserve watershed, ridge trail leading to the summit, 1800–1950 m, [08°45′04″N, 82°05′04″W], 17 January 1989, *F. Almeda et al. 6267* (holotype CAS!, isotype PMA!)

Dwarf shrubs or trees 2–5 m tall; juvenile branchlets and vegetative buds glabrous. Petioles 2–7 mm long; leaf blades ± concolorous, broadly elliptic, 5.5–8(–9) × 3–5 cm, coriaceous, glabrous, secondary veins not adaxially impressed, base obtuse to rounded (rarely acute), margins entire, usually strongly revolute or rarely plane, marginal glands generally caducous, apex rounded. Inflorescences racemes 1.1–1.5 cm long, 3–5-flowered, glabrous; peduncle 2–3 mm long; rachis 5–7 mm long, glabrous; bracts persistent, oblong-ovate, 1–3 × 1.5–3 mm, glabrous, margins ciliate; bracteoles persistent, 3 or 4, oblong-ovate, 1.75–2.5 × 1.75–2.5 mm, glabrous, margins ciliate; pedicels 1–2 mm long. Hypanthium glabrous. Calyx lobes 5, subrotund, 1.3–1.7 × 1.8–2.2 mm, glabrous, margins ciliate. Corolla white, 5-lobed, 5–6 mm long; tube 1.5–1.8 mm long; lobes adnate to filament tube for 2–2.2 mm, oblong, glabrous. Stamens ± 3-seriate; filament tube 2–3 mm long; distinct portions of filaments 2–2.5 × 0.5–0.75 mm. Disk villous; style 1.8–2 mm long, glabrous; stigma conspicuously and irregularly lobed. Fruits white, ovoid to ellipsoid, 6–8 × 4–5 mm, glabrous, apex obtuse with irregularly erect to infolded calyx lobes; disk convex, almost equaling calyx lobes and well exposed; endocarp 3-locular, perimeter irregularly undulate.

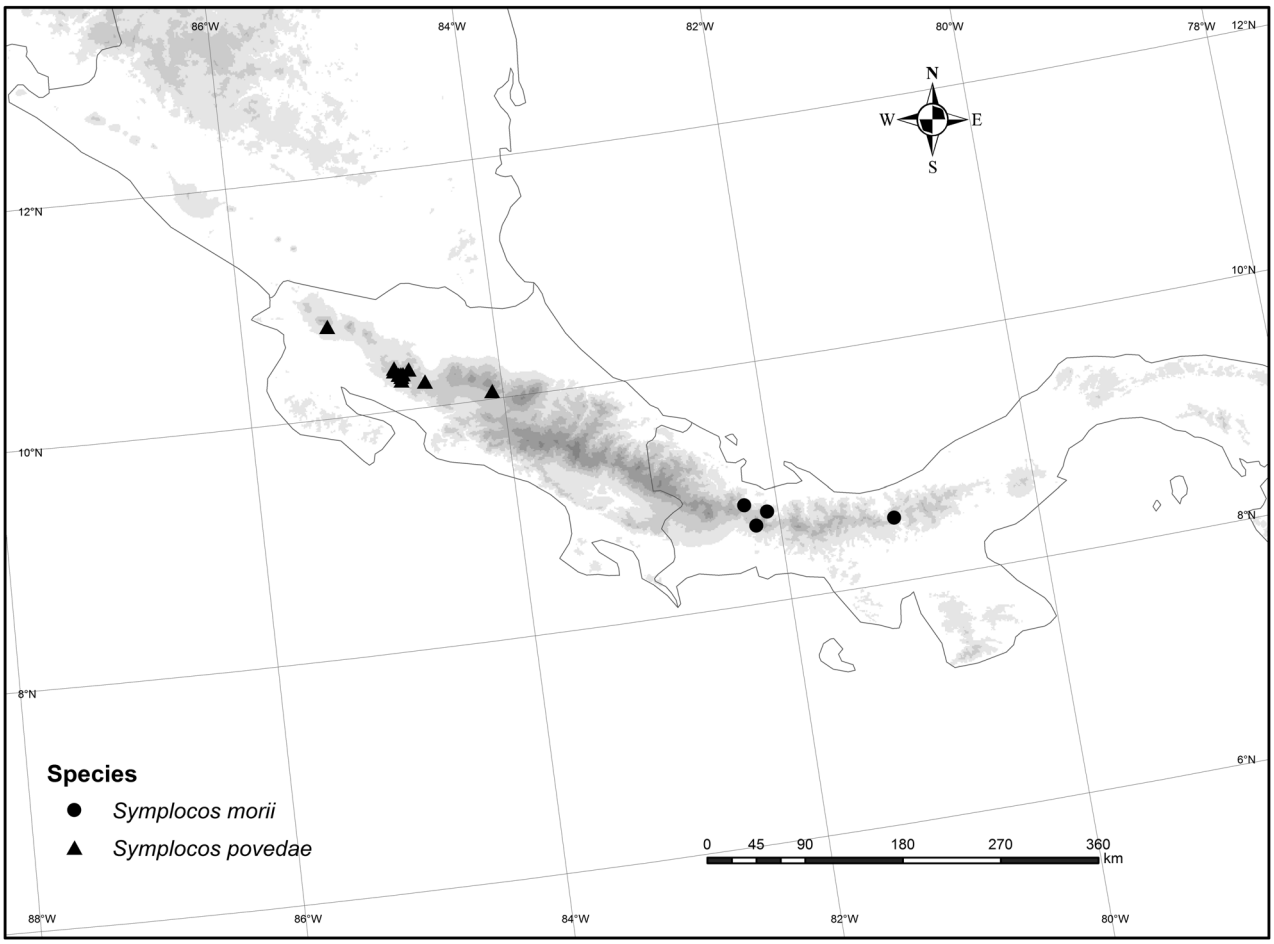

FIGURE 22. Geographic distribution of *Symplocos morii* and *S. povedae*.

Vernacular name—None.

Illustration—Kelly & Almeda (2002: 372).

Phenology—Flowering January, June, and July; fruiting January, April, and December.

Distribution and habitat—Panama (Bocas del Toro, Chiriquí, and Veraguas provinces), in exposed windswept sites with dwarf cloud forest vegetation that forms a 3–5 m canopy at 1300–2300 m elev. Figure 22.

Conservation status—This western Panamanian endemic is known from four populations, three of which are protected. The protected populations occur within the Reserva Forestal Fortuna, which forms the eastern border of a continuous mosaic of protected land that includes La Amistad International Park, Volcán Barú National Park, and Palo Seco Forest Reserve. The EOO is 1143 km² and the AOO is 16 km². Based on the limited area of occupancy and the few known populations, we assign a classification of Vulnerable (VU) D2 to this species.

Discussion—This species is easily distinguished from all others in the region by the combination of broadly elliptic, entire- and revolute-margined leaves 3–5 cm wide, glabrous styles ca. 2 mm long, and fruits that are white when mature.

Additional specimens examined—**PANAMA. Bocas del Toro:** on Chiriquí trail, elfin forest at divide, [08°49′54″N, 82°15′12″W], 20 April 1968, *Kirkbride Jr. & Duke 992* (MO!, NY!). **Chiriquí:** path from Linares Farm to top of Cerro Hornito ca. 1400–1750 m, [08°38′56″N, 82°10′57″W], 27 December 1977, *Folsom et al. 7240* (CAS-2!, MO!); Cerro Hornito, 40 km NW of Gualaca, 2238 m, [08°39′N, 82°11′W], 27 July 1975, *Mori & Bolten 7502* (CAS!, MEXU!, MO!). **Veraguas:** summit of Cerro Tute above Escuela Agricola Alto de Piedra, just W of Santa Fé, 1350–1410 m, 08°32′N, 81°07′W, 5 June 1982, *Knapp & Dressler 5396* (CAS!, MEXU!, MO!).

17. *Symplocos naniflora* Kelly & Almeda (2002: 374). Type:—COSTA RICA. Puntarenas: Cantón del Golfito Jiménez, between Quebrada Patemazo and the headwaters of Río Madrigal, 650 m, 08°30′15″N, 83°28′50″W, 30 November 1990, *G. Herrera 4677* (holotype CAS!, isotypes CR!, F!, MEXU!, MO!, NY!, TEX!)

Trees 13–20 m tall; juvenile branchlets and vegetative buds sparsely to moderately pilose, trichomes 0.5–1 mm long, spreading to erect, brownish. Petioles 4–8 mm long; leaf blades usually bicolorous (rarely concolorous), oblanceolate or rarely to narrowly elliptic, 6.5–11(–12.5) × 2.5–3.5(–4.4) cm, membranaceous, abaxially pilose (densely so along midvein), adaxially glabrous, secondary veins not adaxially impressed, base narrowly acute, margins serrulate-denticulate, with black, deciduous glands, apex acuminate. Inflorescences racemes 0.9–1.9 cm long, 3–6-flowered; peduncle 0–3 mm long; rachis 5–10 mm long, moderately to sparsely sericeous, trichomes 0.5–1 mm long; bracts persistent, ovate to subrotund, 0.75–1.5 × 0.75–1.5 mm, glabrous or less commonly villous, margins ciliate, also with large, brown, vesicular glands; bracteoles persistent, 3 or 4, ovate to subrotund, 0.75–1 × 0.75–1 mm, villous or less often glabrous, margins ciliate, also with large, brown, vesicular glands; pedicels 0–3 mm long. Hypanthium glabrous. Calyx lobes 5, triangular-ovate to subrotund, 0.8–1.5 × 1–1.5 mm, abaxially sparsely to moderately sericeous or glabrous, margins glabrous or sericeous. Corolla white, 5-lobed, 4–6 mm long; tube 1.5–2.5 mm long; lobes adnate to filament tube for 2–3 mm, oblong, glabrous. Stamens 3–4-seriate; filament tube 3–5 mm long; distinct portions of filaments 2–3 × 0.25–0.5 mm. Disk densely villous; style 4–6 mm long, densely villous to within 1 mm of apex; stigma inconspicuously lobed. Fruits green maturing to dark bluish purple, ellipsoid, 10–12 × 4–5 mm, glabrous, apex rounded with calyx lobes short and persistent laterally on disk; disk convex, surpassing calyx lobes and well exposed; endocarp 4-locular, perimeter rounded to slightly undulate.

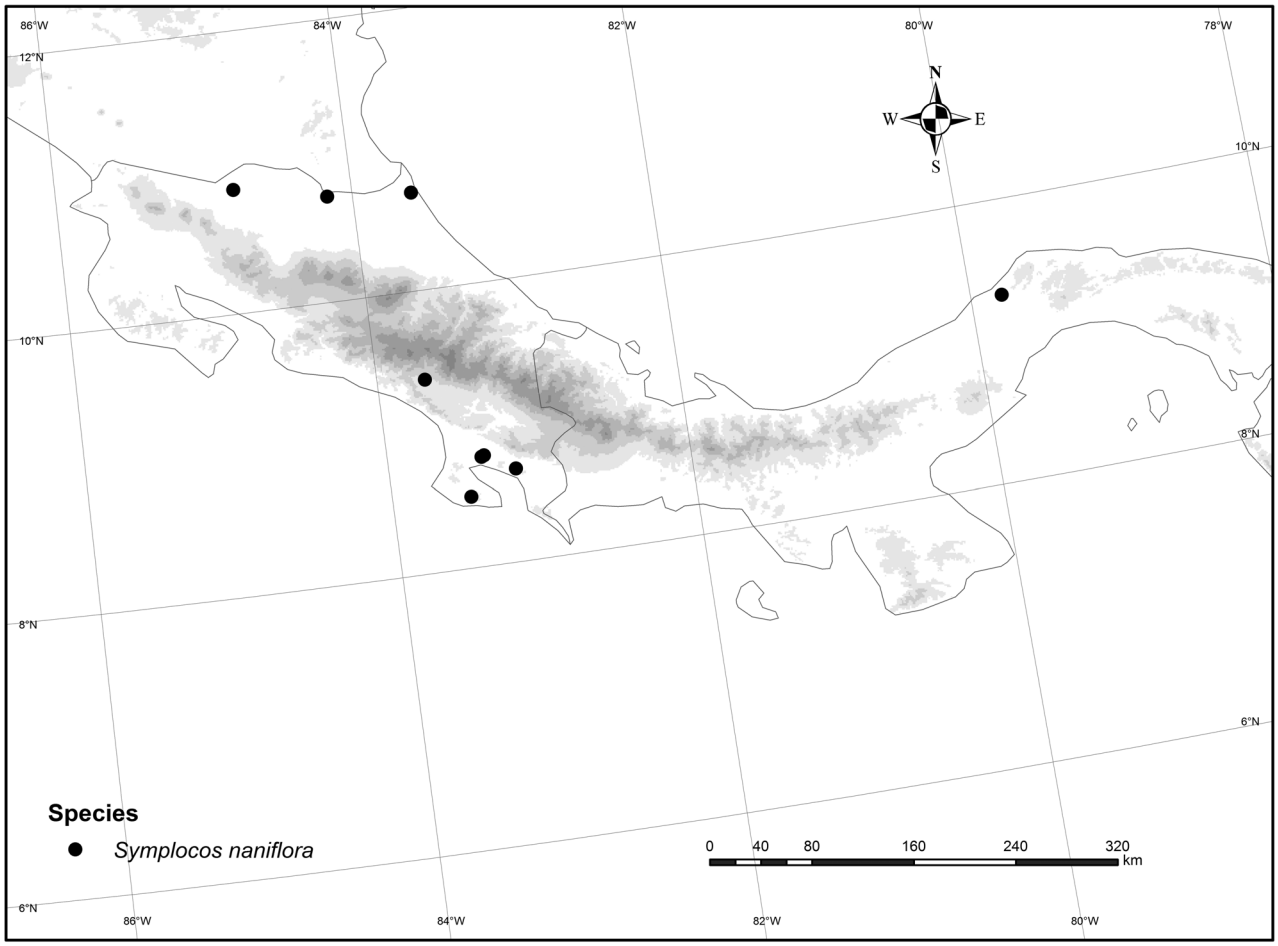

FIGURE 23. Geographic distribution of *Symplocos naniflora*.

Vernacular name—None.

Illustration—Kelly and Almeda (2002: 373).

Phenology—Flowering July and November through January; fruiting February.

Distribution and habitat—Costa Rica (Alajuela, Puntarenas, and San José provinces) and Panama (Colón Province), in rain forests at 0–900 m elev. Figure 23.

Conservation status—The nine collections of this species represent eight known populations from Costa Rica and one outlier in Panama. Three of the populations are protected within Costa Rica in Corcovado National Park, Tortuguero National Park, and Refugio Nacional de Vida Silvestre Caño Negro. The EOO is 65,885 km² and the AOO is 36 km². Because of deforestation threats, the area, extent, and quality of habitat is projected to be in decline, and we assign a classification of Endangered (EN): B2ab(iii) to this species.

Discussion—*Symplocos naniflora* is distinguished by the following combination of characters: membranaceous leaves, small flowers with densely villous styles, and small fruits. This species may be closely related to *S. jurgensenii*, another low elevation, small-fruited species. *Symplocos jurgensenii* is distinguished from *S. naniflora* by its glabrous leaves (versus abaxially pilose), glabrous styles (versus densely villous to within 1 mm of apex), and larger corollas (6–7 mm long versus 4–6 mm).

Additional specimens examined—**COSTA RICA. Alajuela:** Cantón de Los Chiles, Caño Negro, Las Cubas, Cuenca del Río Frío, 35 m, 10°52′48″N, 84°47′39″W, 11 October 1996, *Rodríguez et al. 1653* (F!); Cantón de San Carlos, llanura de San Carlos, finca aserradero San Jorge, 100 m, 10°44′54″N, 84°10′07″W, 21 January 1996, *Zamora V. & Zeledón 2368* (MEXU!, MO). **Puntarenas:** Reserva Forestal Golfo Dulce, entre Rancho Quemado y Drake, 300 m, 10°41′50″N, 83°36′10″W, 29 March 1991, *Aguilar et al. 105* (MEXU!, MO!); Cantón de Osa, R. F. Golfo Dulce, Península de Osa, Los Mogos, 200 m, 08°46′20″N, 83°22′40″W, 5 July 1994, *Aguilar 3462* (MO!); Cantón del Golfito, Valle de Coto Colorado, camino a las torres del ICE, cabecera del Río Sorpresa, 5 km al E, 08°39′35″N, 300–400 m, 83°09′44″W, 1 February 1992, *Zamora et al. 1748* (F!, MO!); Cantón del Golfito, Valle de Coto Colorado, camino a las torres del ICE, cabecera del Río Sorpresa, 5 km al E, 300–400 m, 08°39′35″N, 83°09′44″W, 22 January 1993, *Zamora et al. 1924* (F!, MO!, NY!). **San José:** basin of El General, 675–900 m, [09°22′12″N, 83°40′48″W], 12 December 1977, *Skutch 5523* (F-2!).

PANAMA. Colón: Santa Rita, [09°19′32″N, 79°47′26″W], 16 May 2002, *Aizprúa et al. 3306* (F!, MO!, NY!).

18. *Symplocos nigridentata* L.M.Kelly & Almeda, *sp. nov.* Type:—MEXICO. Oaxaca: Dist. Villa Alta, 28 km al SW de Talea, 2850 m, [17°16′05″N, 96°20′50″W], 19 April 1982, *R. Cedillo T. et al. 1269* (holotype MEXU!, isotypes CAS!, F!, MO!, NY!)

Diagnosis: Distinguished from all other species of *Symplocos* ser. *Symplocos* by the combination of crenate-denticulate leaf margins with black, persistent, sharp, narrowly conical glands ca. 0.5 mm long; lanceolate-ovate, sericeous calyx lobes; and small, pubescent fruits.

Shrubs 1.5–3 m tall or trees 4–10 m tall; juvenile branchlets and vegetative buds sericeous, trichomes 0.1–0.5 mm long, white. Petioles 4–11 mm long; leaf blades bicolorous, elliptic to broadly elliptic or oblong, 5.5–8.5 × 2.3–4 cm, subcoriaceous, abaxially subglabrous to sparsely pilose or appressed-pilose, sparsely to densely strigose along midvein, adaxially glabrous, secondary veins ± adaxially impressed, base obtuse to rounded or occasionally acute, margins crenate-serrulate with black (brown when young), persistent, sharp, narrowly conical glands ca. 0.5 mm long, apex acuminate. Inflorescences racemes or spikes 1.1–1.7 cm long, 5–9-flowered; peduncle absent; rachis 3–6 mm long, sericeous, 0.1–0.5 mm long; bracts caducous, ovate, 1–2 × 1–1.5 mm, sericeous, margins ciliate; bracteoles caducous, 2–3, ovate, 1.5–2 × 1–1.5 mm, sericeous, margins ciliate; pedicels 0–1 mm long. Hypanthium densely sericeous. Calyx lobes 5, lanceolate-ovate, 2–3 × 1.5–2.5 mm, moderately sericeous, margins ciliate. Corolla pink or reddish pink, 5-lobed, 8–10 mm long; tube 3–4 mm long; lobes adnate to filament tube for 4–5 mm, oblong, glabrous. Stamens 3- or 4-seriate; filament tube 4–6 mm long, distinct portions of filaments 1–2.5 × 0.25–0.5 mm. Disk pilose; style 6–7 mm long, sparsely pilose basally; stigma irregularly lobed. Fruits green maturing to dark bluish purple, ellipsoid, 8–10 × 4–6 mm, sparsely to moderately pilose or appressed-pilose, apex acute with calyx lobes forming a conical beak; disk convex, covered by calyx lobes; endocarp 3-locular, perimeter rounded.

Vernacular name—None.

Illustration—Figure 24.

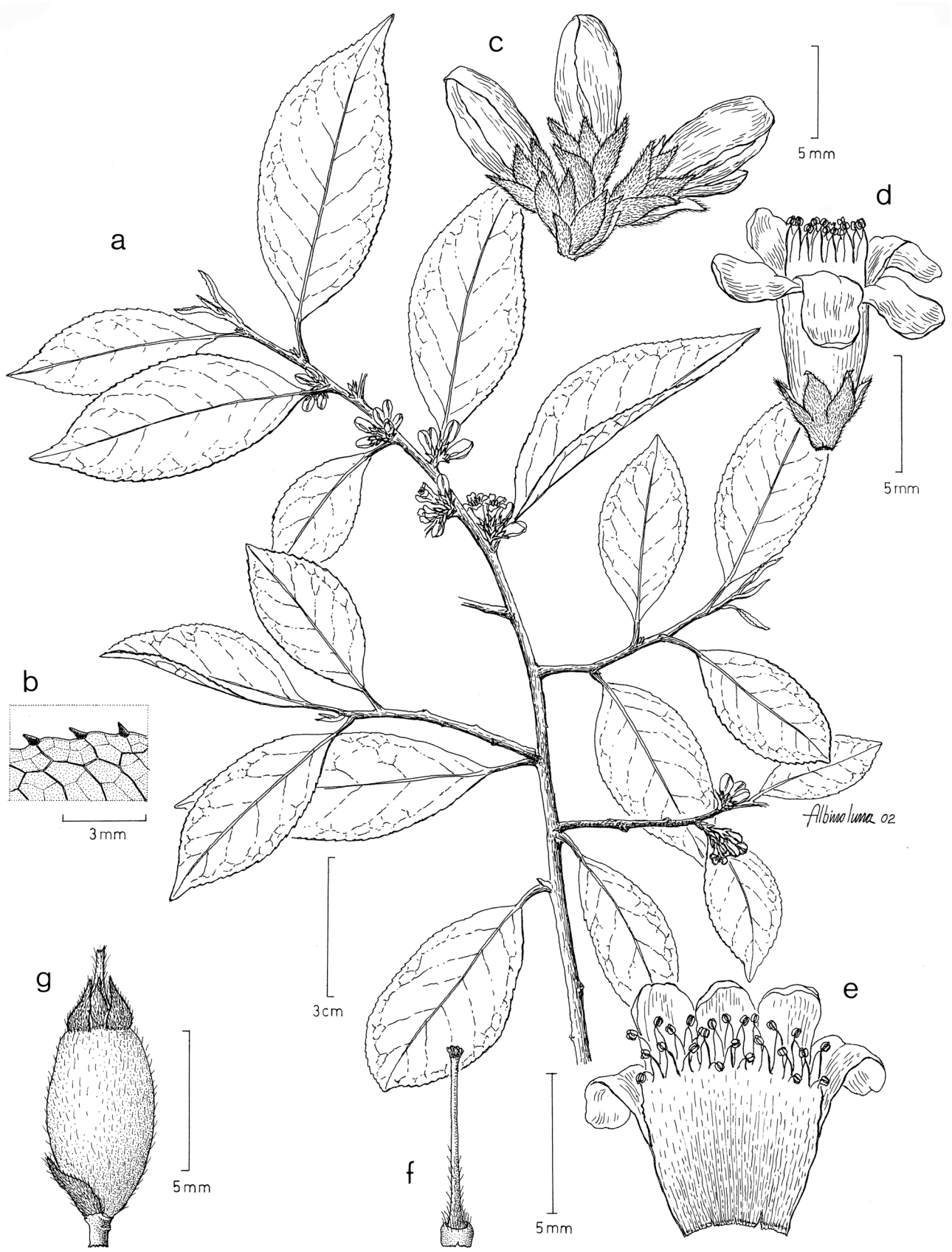

FIGURE 24. *Symplocos nigridentata*. **a.** Branchlet with inflorescences. **b.** Leaf blade margin. **c.** Inflorescence with flower buds. **d.** Flower. **e.** Corolla opened with attached stamens. **f.** Disk, style, and stigma. **g.** Fruit. (a–f drawn from *G. Martin 672*, MEXU; g drawn from *B. Hallberg 27*, MEXU.)

Photographic image—Figure 1g.

Phenology—Flowering January through April and August through October; fruiting August and November.

Distribution and habitat—Endemic to Mexico (Oaxaca), in *Quercus-Pinus* forests and cloud forests at 2500–3000 m elev. Figure 16.

Conservation status—*Symplocos nigridentata* is restricted to a narrow elevational belt in the mountains northeast of Oaxaca City. None of the known populations occur in a protected area. The EOO is 1096 km² and the AOO is 56 km². Threats of deforestation in the region indicate a projected decline in the area, extent, and quality of habitat. We assign a classification of Endangered (EN): B2ab(iii) to this species.

Discussion—This new species is recognized by the following combination of characters: crenate-denticulate leaf margins with black, persistent, sharp, narrowly conical glands ca. 0.5 mm long; lanceolate-ovate, sericeous calyx lobes; and small, pubescent fruits. Furthermore, the fruits, although not commonly collected, consistently have three locules with only one locule fertile at maturity. Plants that were annotated by us prior to 2008 as *Symplocos speciosa* are referable to *S. nigridentata*.

Paratypes—**MEXICO. Oaxaca:** Comaltepec, immediately to the right of Hwy 175, just beyond the first major switchback on descent from Mirador below Cerro Humo Chico, Quebrada of Río Cerro Pelón, 2750 m, 17°35′15″N, 96°31′30″W, 1 November 1993, *Boyle & Massart 2486* (CAS!, MEXU!, MO!); NW slope of Cerro Humo Chico, 43 km N of Ixtlán de Juárez jct. on rd to Valle Nacional, 2870 m, [17°33′33″N, 96°31′05″W], 9 November 1983, *Breedlove & Almeda 59966* (CAS!, MEXU!, NY!); 35 km N of Ayutla along rd from Mitla to Choapam, N slope of Cerro Zempoaltepetl, 2470 m, [17°10′42″N, 96°00′35″W], 17 April 1988, *Breedlove & Bartholomew 66870* (CAS!); W side of Cerro Humo Chico, 2740 m, [17°34′53″N, 96°31′04″W], 29 October 1991, *Breedlove & Mahoney 72302* (CAS!); N side of Cerro Zempoaltepetl, 2700 m, [17°10′51″N, 96°00′26″W], 1 November 1991, *Breedlove & Mahoney 72483* (CAS!); Ixtlán, a 500 m al N de la desviación a San Pedro Yolox, 2700 m, [17°34′41″N, 96°30′36″W], 1 July 1982, *Cedillo T. & Torres 1579* (CAS!, F!, MEXU!, MO!, TEX!); Yolox, Sierra de Juárez, Cerro Pelón, cerca de la desviación a Yolox, 2800–2900 m, [17°34′42″N, 96°30′40″W], 2 October 1993, *Cházaro B. et al. 7118a* (MEXU!, NY!); San Felipe Usila, 8.2 km en línea recta al S de Santa Cruz Tepetotutla, 2670 m, 17°40′03″N, 96°34′48″W, 27 February 1994, *Gallardo H. et al. 949* (MEXU!); San Felipe Usila, 8 km en línea recta al S de Santa Cruz Tepetotutla, 2500 m, 17°39′56″N, 96°33′36″W, 2 April 1994, *Gallardo H. et al. 1027* (MEXU!); Ixtlán, Mpio. Ixtlán de Juárez, 2.5 mi S of ruta nacional 175 from a point a few km N of turnoff to San Juan Evangelista Analco on timber rd to Ixtlán de Juárez, 2880 m, 17°24′N, 96°29′W, 24 April 1986, *Gereau & Martin 1962* (CAS!, MEXU, MO); vicinity of Cerro Zempoaltepetl, E slopes at Patio de Arena ca. 5 km E of summit, 2800 m, [17°07′48″N, 95°59′27″W], 8 August 1950, *Hallberg 827* (MEXU!); 2 km E of Valle Nacional–Ixtlán Hwy, along the rd to Zoogochi, 20 km N of Ixtlán de Juárez (by hwy), 2971 m, 17°24.703′N, 96°29.900′W, (17°24′42″N, 96°29′53W″), 11 January 2003, *Kelly et al. 1305* (CAS!, MEXU!, NY!); 3 km E of Valle Nacional–Ixtlán Hwy, along the rd to Zoogochi, 20 km N of Ixtlán de Juárez (by hwy), 2960 m, 17°24.177′N, 96°29.867′W, (17°24′10″N, 96°29′52″W), 12 January 2003, *Kelly et al. 1306* (CAS!, MEXU!, NY!); 3.5 km E of Valle Nacional–Ixtlán Hwy, along the rd to Zoogochi, 20 km N of Ixtlán de Juárez (by hwy), 2952 m, 17°24.150′N, 96°29.688′W, [17°24′04″N, 96°29′42″W], 12 January 2003, *Kelly et al. 1307* (CAS!, MEXU!, NY!); Ixtlán, Sierra de Juárez, ruta 175 Tuxtepec a Oaxaca, cerca la base de Cerro Pelón, 2750 m, [17°32′50″N, 96°30′56″W], 13 September 1982, *Lorence & Torres 4002* (CAS-2!, F!, MEXU!, MO!, NY!); Cerro Humo Chico, Comaltepec, Ixtlán, [17°34′24″N, 96°30′07″W], 6–7 April 1967, *MacDougall s.n.* (US!); Cerro Humo Chico, Comaltetepec, Ixtlán, 3000 m, 29 March 1969, *MacDougall s.n.* (NY!); Ixtlán, Mpio. Yolox, 8 km E of Yolox on rd between Yolox and Hwy 175, 2900 m, [17°35′N, 96°31′08″W], 13 April 1981, *Martin 529* (CAS!, MEXU!, MO!); Ixtlán, Mpio. Atepec, along Hwy 175 near Llano de las Flores, 3000 m, [17°26′58″N, 96°30′46″W], 24 March 1983, *Martin 672* (CAS!, MEXU!, MO!, US!); Sierra de Juárez, Llano de las Flores, [17°26′42″N, 96°30′06″W], 3 January 1960, *Miranda 9236* (MEXU!); Sierra de Juárez, parte alta de la brecha 290, Macuiltianguis, 2950 m, 20 March 1980, *Pérez P. B45* (MEXU!); Cerro Pelón, 48 km al N de Ixtlán, carretera a Tuxtepec, 2850 m, [17°35′08″N, 96°30′24″W], 11 September 1976, *Rzedowski 34102* (MEXU!, US!); Ixtlán, above Ixtlán de Juárez on the Tuxtepec Rd, [17°20′42″N, 96°30′17″W], 30 March 1966, *Smith & Tejeda 4484* (MEXU!, US!); Ixtlán, Comaltepec, El Mirador, 1.8 km al N de la entrada a San Pedro Yolox, carretera Oaxaca–Tuxtepec, [17°34′44″N, 96°30′26″W], 27 August 1986, *Torres C. & Cortes 8722* (F!, MEXU!, MO!).

19. *Symplocos oreophila* Almeda (1982a: 318). Type:—COSTA RICA. Cartago: Panamerican Hwy between Km 60 and 77, La Trinidad, Cordillera Talamanca, 3140 m, [09°40′01″N, 83°52′59″W], 26 February 1966, *A. Molina et al. 17859* (holotype F!, isotypes CAS!, US!)

Trees ca. 5 m tall; juvenile branchlets and vegetative buds sparsely to moderately strigillose, trichomes 0.2–0.3 mm long, antrorsely spreading, brownish. Petioles 2–5 mm long; leaf blades bicolorous, elliptic to ovate, 1.7–3.6 × 1–1.9 cm, coriaceous, abaxially sparsely strigillose, occasionally glabrate, adaxially glabrous, secondary veins ± adaxially impressed, base obtuse to rounded, margins crenulate-denticulate, with persistent black marginal glands ca. 0.5 mm long, apex obtuse, rounded, or slightly emarginate. Inflorescences racemes 8–12 mm long, 3–5(–7)-flowered; peduncle 1–5 mm long; rachis 2–8 mm long, moderately strigillose, trichomes 0.2–0.3 mm long; bracts persistent, ovate to oblong, 1–1.5 × 1–1.5 mm, sparsely to moderately strigillose, margins ciliate, with vesicular glands; bracteoles persistent, 5–8, ovate to oblong, 1–1.5 × 1–1.5 mm, moderately to densely strigillose, margins ciliate, with vesicular glands; pedicels 0–1 mm long. Hypanthium glabrous. Calyx lobes 5, subrotund, 1–1.5 mm × 1–1.5 mm, glabrous, margins sparsely ciliate. Corolla pinkish white, 5-lobed, 5–6 mm long; tube 1–1.5 mm long; lobes adnate to filament tube for 1.5–2 mm, oblong, glabrous. Stamens 3–4-seriate; filament tube 2–3 mm; distinct portions of filaments 1.5–2.5 × 0.5–0.75 mm. Disk setose; style 5–6 mm long, sparsely pilose basally; stigma deeply 3-lobed. Fruits green maturing to dark bluish purple, subcylindrical to obovoid, 8–10 cm × 4–5.5 mm, glabrous, apex gradually narrowed to base of erect calyx lobes; disk convex, apex approximately equaling calyx lobes and well exposed apically; endocarp 3-locular, perimeter rounded.

Vernacular name—None.

Illustration—Almeda (1982a: 319).

Phenology—Flowering June; fruiting (with flower buds) February.

Distribution and habitat—Costa Rica (Cordillera de Talamanca), in cloud forests at 2500–3140 m elev. Figure 25.

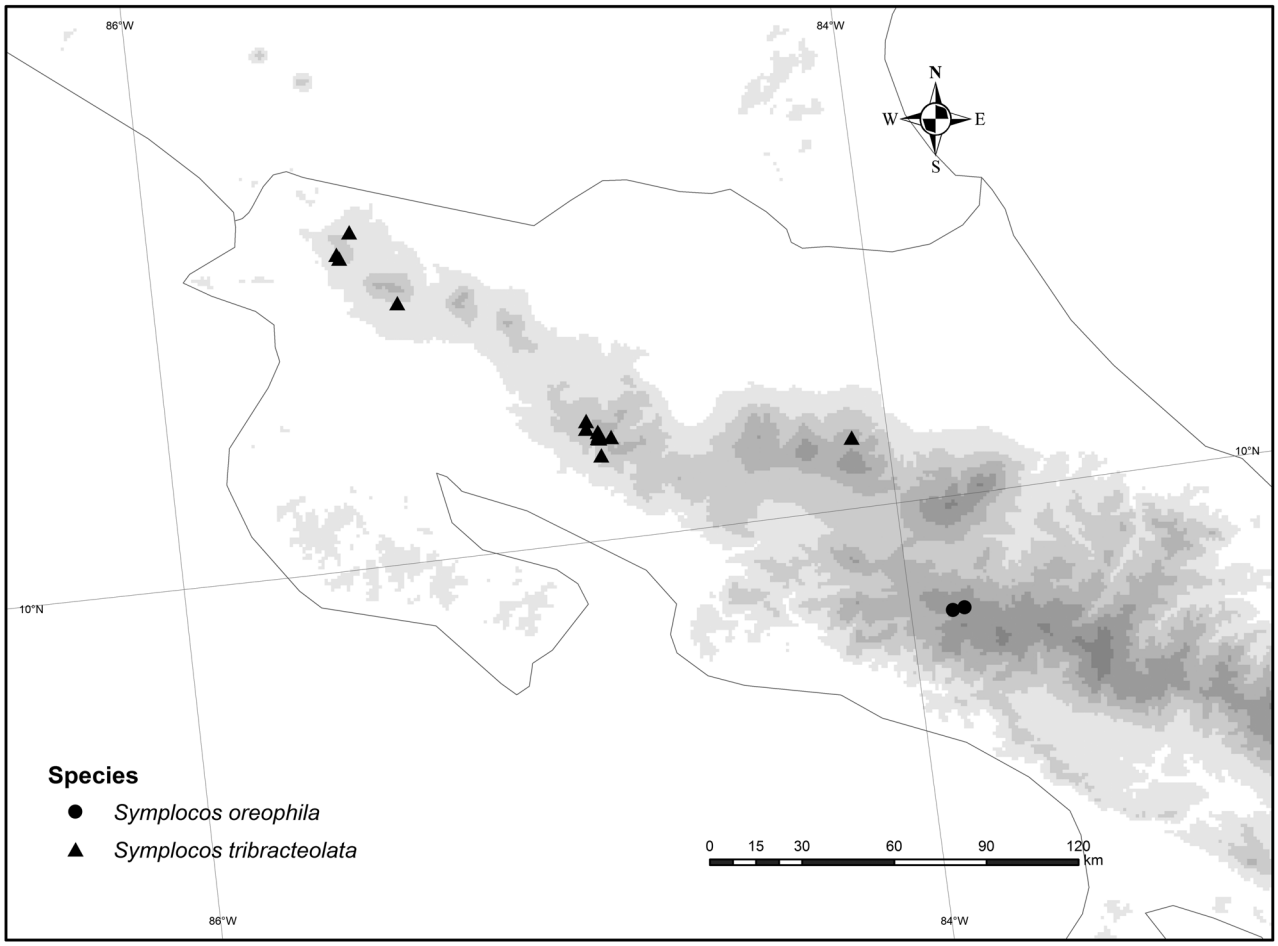

FIGURE 25. Geographic distribution of *Symplocos oreophila* and *S. tribracteolata.*

Conservation status—This species, known from the type and one other collection, was last collected in 1972. Efforts to relocate it since that time have been unsuccessful. It occurs in the higher elevations of Costa Rica's Cordillera de Talamanca, where it appears to be endemic. Both collections occur just outside the northern boundary of Parque Nacional Los Quetzales. The AOO is 8 km². Based on the limited AOO, evident rarity, and projected decline in area, extent, and quality of habitat, we assign a classification of Critically Endangered (CR): B2ab(iii) to this species.

Discussion—*Symplocos oreophila* is distinguished by the combination of small, elliptic to elliptic-ovate leaves with crenate-denticulate margins, racemose inflorescences, glabrous sepals, and small fruits.

Additional specimens examined—**COSTA RICA. Cartago:** ca. 16 km SE of El Empalme, 8200 ft, [09°40′12″N, 83°51′W], 8 June 1972, *Wilbur & Almeda 17537* (CAS!, DUKE!, F!, LL!, MO!).

20. *Symplocos pachycarpa* Kelly & Almeda (2006: 318). Type:—MEXICO. Oaxaca: Dist. Miahuatlán, 11 km SW of San Jerónimo Coatlán, toward San Gabriel Mixtepec, 1982 m, 16°12′29″N, 96°54′00″W, 13 January 2003, *L. Kelly et al. 1309* (holotype NY!, isotypes CAS!, F!, GH!, MEXU!)

Trees 7–20 m tall; juvenile branchlets and vegetative buds densely sericeous to tomentose, trichomes 0.5–0.8 mm long, reddish brown. Petioles 5–9 mm long; leaf blades bicolorous, narrowly elliptic or elliptic to oblanceolate, 8–12 × 2.7–3.5(–3.8) cm, subcoriaceous, abaxially densely sericeous, adaxially glabrous, secondary veins not adaxially impressed, base acute, margins entire, apex acuminate. Inflorescences fascicles, 1.3–2.1 mm long, 10–16-flowered; peduncle absent; rachis 5–10 mm, densely sericeous to tomentose, trichomes 0.5–0.8 mm long; bracts persistent, broadly ovate to subrotund, 1.5–2 × 1.5–2 mm, sericeous, margins ciliate, bracteoles persistent, 3–5, broadly ovate to subrotund, 1–2 × 1–2 mm, sericeous, margins ciliate; pedicels absent. Hypanthium sericeous. Calyx lobes 5, ovate, (1.5–)2–3 × 1–1.2 mm, densely sericeous, margins densely sericeous. Corolla pink, 5-lobed, 8–11 mm long; tube 3–4 mm long; lobes adnate to filament tube for 3–5 mm, narrowly to broadly oblanceolate, sparsely sericeous distally. Stamens 3–4-seriate; filament tube 4–5 mm long; distinct portions of filaments 1–1.5 × ca. 0.75 mm. Disk villous; style 7–12 mm long, pilose on basal half; stigma irregularly 3-lobed. Fruits green maturing to dark bluish purple, broadly ellipsoid to subglobose, 6–8 × 3–5 mm, sparsely to densely pilose, apex rounded to base of erect or slightly infolded calyx lobes; disk convex, covered by calyx lobes; endocarp 3-locular, perimeter rounded.

Vernacular name—None.

Illustration—Kelly and Almeda (2006: 319).

Phenology—Flowering September, October, and December; fruiting January, May, and July.

Distribution and habitat—Mexico (Guerrero [Sierra Madre del Sur], Oaxaca [Sierra Norte, Sierra Madre del Sur, and Chimalapa region], and Veracruz), in cloud forests and *Quercus-Pinus* forests at (1400–)1600–2020 m elev. Figure 26.

Conservation status—This species is restricted to southern Mexico where it is known from 11 widely scattered populations in Guerrero and Oaxaca and one collection from the Pico de Orizaba area in Veracruz. It appears that none of these populations occur in a protected area. The single collection by Botteri from the Orizaba region was collected over 130 years ago. Although that area has been protected as Parque Nacional de Orizaba since 1936, we have no information as to whether this species still persists there. The EOO is 100,936 km² and the AOO is 44 km². In view of its highly fragmented geographic distribution, restricted elevational distribution, small AOO in unprotected sites with deforestation threats, and projected decline in area, extent, and quallity of habitat, we assign a classification of Endangered (EN): B2ab(iii) to this species.

Discussion—*Symplocos pachycarpa* is morphologically most similar to *S. citrea*. Both species have fasciculate or racemose inflorescences, densely sericeous sepals, petal lobes with sparse apical pubescence, basally pubescent styles, and pubescent ovaries and fruits. *Symplocos citrea* is most common on the Pacific slope of the Trans-Mexican Volcanic Belt, from Nayarit and Jalisco as far east as the State of Mexico and Distrito Federal. It is also present, but less common, in the Sierra Madre del Sur of Guerrero and Oaxaca. The following couplet distinguishes *S. pachycarpa* from *S. citrea*:

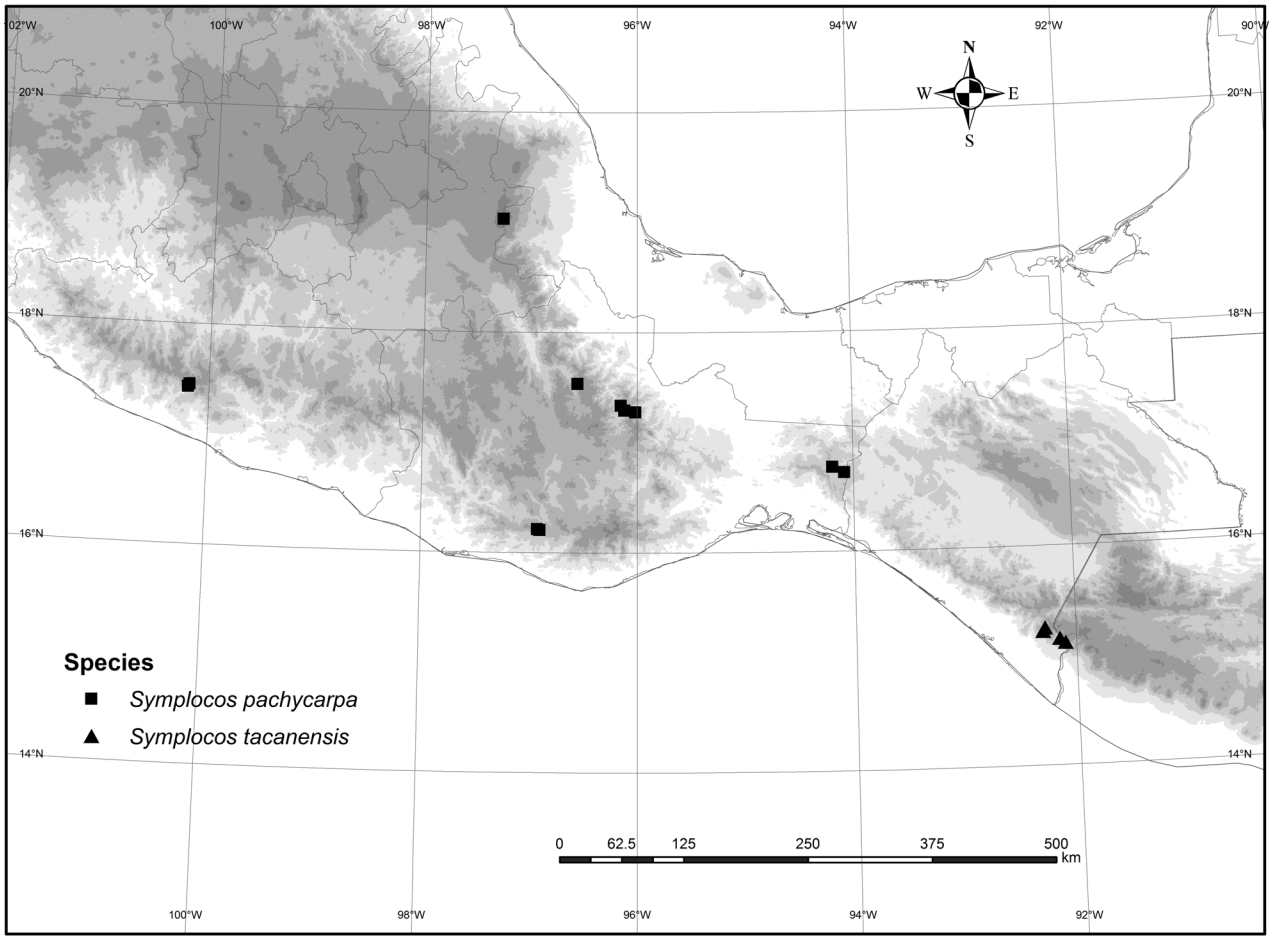

FIGURE 26. Geographic distribution of *Symplocos pachycarpa* and *S. tacanensis*.

Leaves narrowly elliptic or elliptic to oblanceolate, entire, the abaxial surface densely sericeous; fruits broadly ellipsoid to subglobose, 0.6–0.8 cm long; inflorescence bracts and bracteoles persistent ..... *S. pachycarpa*

Leaves elliptic or oblong to lanceolate or obovate, serrulate, the abaxial surface appressed pilose, densely spreading pilose along midvein; fruits narrowly cylindric to slightly obovoid (rarely fusiform), 1.3–1.6(–2) cm long; inflorescence bracts and bracteoles deciduous..... *S. citrea*

***Additional specimens examined*—MEXICO. Guerrero:** between Puerto el Gallo and Atoyac, 1830 m, [17°27′00″N, 100°10′53″W], 20 October 1984, *Breedlove & Almeda 61963* (BM!, CAS!, DUKE!, F!, GH!, IEB!, INB!, MEXU!, MICH!, MO!, NY!); below Puerto el Gallo along the rd to Atoyac, 1980 m, [17°25′39″N, 100°11′42″W], 10 October 1986, *Breedlove & Almeda 65146* (BM!, CAS!, DUKE!, F!, GH!, IEB!, INB!, MEXU!, MICH!, MO!, NY!, TEX!). **Oaxaca:** Dist. Villa Alta, Km 622 Camino Piedra Larga a Miahuatlán, 24 September 1982, *Cedillo T. 1831* (CAS!, MEXU!, MO!); Dist. Juchitán, Mpio. San Miguel Chimalapa, Cerro de la División, ca. 5 km al E de Benito Juárez, ca. 39 km en línea recta al NNE de San Pedro Tapantepec, 1400–1600 m, 16°43′N, 94°05′W, 1 May 1986, *Maya J. 3265* (CAS!, MEXU!); Dist. Ixtlán, Macuiltianguis, a 2 km abajo del Rancho "La Primavera" rumbo al Río "Faisan," 1600 m, [17°32′10″N, 96°33′32″W], *Pérez C. C93* (MEXU!); Dist. Mixe, Mpio. Totontepec, Rumbo Villa Alta, 16 km al O de Totontepec, [17°20′20″N, 96°09′09″W], 14 September 1986, *Ramírez G. & Ramírez C. 550* (CAS!, MEXU!, NY!); Dist. Miahuatlán, Mpio. San Jerónimo Coatlán, 10 km de San Jerónimo Coatlán, camino a San Pedro Juchatengo, [16°12′52″N, 96°55′18″W], 17 January 1992, *Salas M. 291* (MEXU!); El Mirador de Amatepec, 5 km al NE de Totontepec, hacia Choapán, 1860 m, [17°16′38″N, 96°01′03″W], 14 December 1985, *Torres C. et al. 7964* (CAS!, MEXU!, NY!); 6.7 km al SE de la desviación a Oaxaca por Mixes, la desviación esta 3.5 km al S de San Andrés Yaa, 2020 m, [17°17′35″N, 96°07′14″W], 7 December 1982, *Torres C. & Cedillo T. 2064* (F!, GH!, MEXU!, MO!); Mpio. Santa María Chimalapa, Cerro El

Quetzal (Cerro de la Mesa), ca. 3.5 km en línea recta al N del Cerro Guayabitos, ca. 44 km en línea recta al N de San Pedro Tapanatepec, cerca del límite con Mpio. San Miguel Chimalapa, 1950 m, 16°46′N, 94°11′30″N, 22 July 1985, *Wendt et al. 5071* (CAS!, MEXU!, MO!). **Oaxaca or Veracruz:** [Volcán Pico de] Orizaba, [19°01′50″N, 97°16′05″W], *Botteri 1187* (US!). **Veracruz:** montosis San Colicá, *Mohr 1501* (US!).

21. *Symplocos panamensis* McPherson (1988: 375). Type:—PANAMA. Colón: Santa Rita Ridge, ca. 500 m, [09°20′N, 79°45′W], 16 February 1986, *G. D. McPherson 8447* (holotype PMA-1192-n.v., online image!, isotypes BM-952630-n.v., online image [sheet 1 of 2]! and BM-952631-n.v., online image [sheet 2 of 2]!, CAS!, COL!, CR!, DUKE-n.v., online image!, K-644441-n.v., online image!, L-0537695-n.v., online image!, MEXU!, MICH-1192786-n.v., online image!, MO!, NY!, TEX-372472-n.v., online image!, US!, UTD)

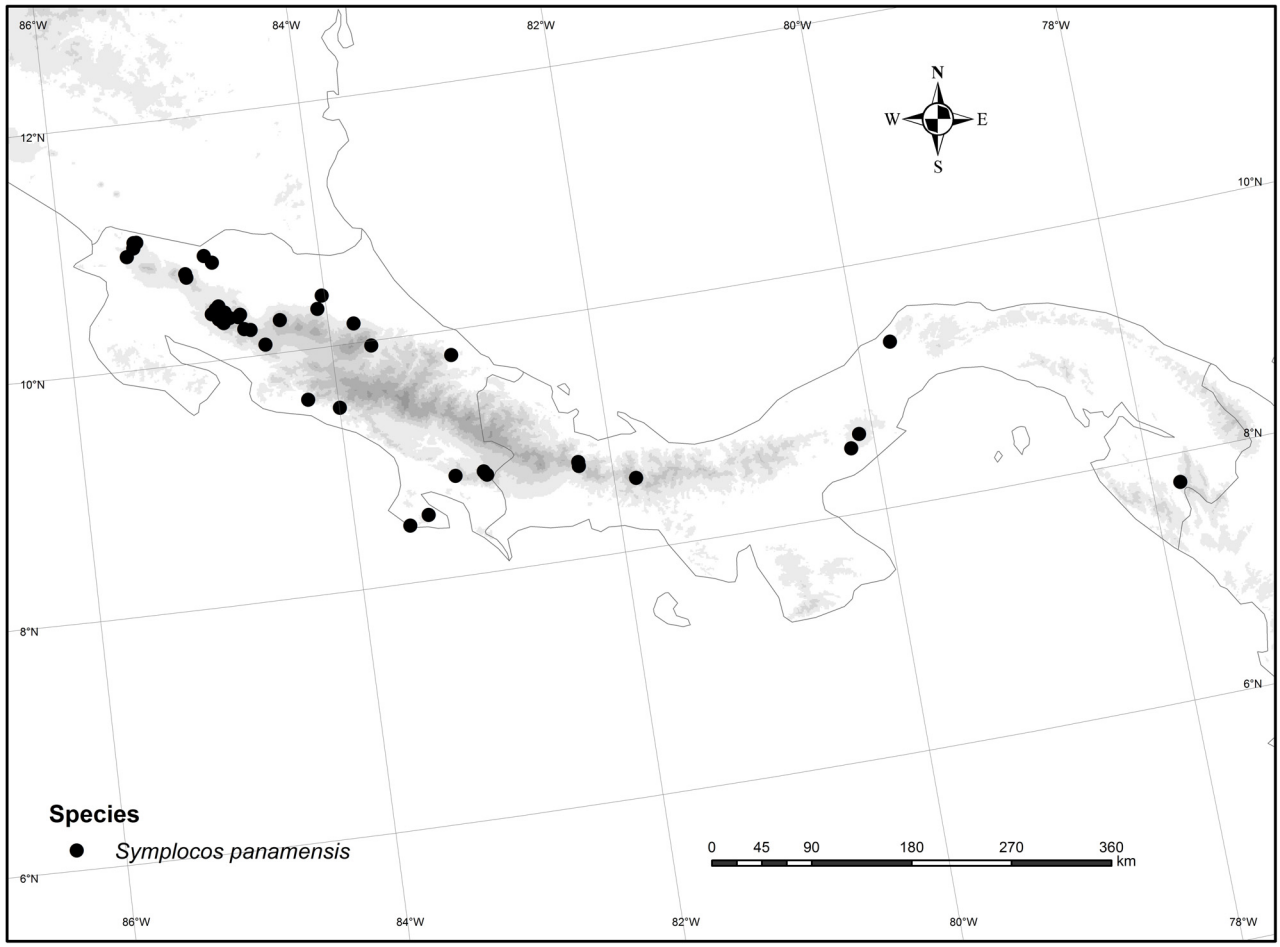

FIGURE 27. Geographic distribution of *Symplocos panamensis* in Central America.

Trees (2–)8–20 m tall; juvenile branchlets sparsely to moderately sericeous or occasionally glabrous, trichomes mostly 0.2–0.3 mm long, yellow; vegetative buds usually densely sericeous at least proximally or occasionally glabrous. Petioles 0.7–1.8 cm long; leaf blades ± concolorous, elliptic, 7.5–20 × 2.7–7 cm, membranaceous, abaxially sparsely sericeous or glabrous, adaxially glabrous, secondary veins not adaxially impressed, base obtuse to acute or attenuate, margins entire or serrate-denticulate distally, apex acuminate. Inflorescences condensed racemes 2–4.3 cm long, 3–7-flowered; peduncle absent; rachis 2–3 cm, sparsely sericeous, trichomes 0.2–0.3 mm long; bracts persistent, lanceolate ovate to ovate, 1.5–2 × 1–2 mm, sericeous, margins ciliate; bracteoles persistent, 3 or 4, lanceolate-ovate to ovate, 1–2 × 1–1.5 mm, sericeous, margins ciliate; pedicels absent. Hypanthium glabrous or sericeous. Calyx lobes 5, ovate, 1–2 × 1–2 mm, sericeous medially or occasionally glabrous, margins ciliate. Corolla white, 4–6-lobed, 10–13 mm long; tube 5–6 mm long; lobes adnate to filament tube for 6–7 mm, linear-oblong to oblanceolate, glabrous or rarely sparsely puberulent distally. Stamens 3–4-seriate; filament tube 9–10 mm distinct portions of filaments 1.5–2 × 0.5–0.75 mm. Disk pilose; style 7–10 mm long, sparsely pilose basally or occasionally

nearly to apex; stigma conspicuously and irregularly lobed. Fruits green maturing to dark bluish purple, ellipsoid to ovoid, 2.5–3.5 × 1.2–1.5 cm, glabrous, apex rounded to base of slightly incurved calyx lobes; disk narrowly conical, apex partly visible, surpassed by calyx lobes; endocarp 3–4-locular, perimeter 3–4-fluted.

Vernacular name—None.

Illustration—McPherson (1988: 376).

Phenology—Flowering January, February, April through July, and September; fruiting June through February.

Distribution and habitat—Costa Rica and Panama, in tropical rain forests and cloud forests at 0–1400 m elev. Also in Colombia and Ecuador. Figure 27.

Conservation status—Despite its limited range in Central America, this species is commonly collected and several of its known populations occur in protected areas in both Costa Rica and Panama. The species also occurs in Colombia and Ecuador but less is known about the extent of its distribution in those countries because few collections are available. We assign a classification of Least Concern (LC).

Discussion—*Symplocos panamensis* is one of the most commonly collected species of *Symplocos* in Panama and Costa Rica. It is most readily recognized by its large (2.5–3.5 cm long) fruits with an endocarp that is 3-fluted in cross section. It is also recognized by its chartaceous leaves, which are usually conspicuously undulate when dry, densely congested inflorescences, and glabrous to sparsely pubescent sepals and petals.

Additional specimens examined—**COSTA RICA. Alajuela:** R. B. Monteverde San Gerardo, Río Caño Negro, 1050 m, 10°23′N, 84°47′W, 20 October 1989, *Bello C. 1407* (CAS!, MEXU!, MO!); R. B. Monteverde, Quebrada Celeste, Río Peñas Blancas, Campo 4, 900 m, 10°20′N, 84°41′W, 6 November 1989, *Bello C. & Villegas 1461* (CAS!, MO!); Reserva Biólogica Monteverde, Río Peñas Blancas, Campo 3, 900 m, 10°20′N, 84°42′W, 26 June 1989, *Bello 1511* (MO!); R. B. Monteverde, Río Peñas Blancas, Finca de San Juan Cruz, 950–1000 m, 10°19′N, 84°04′W, 7 December 1989, *Bello C. 1566* (CAS!, MO!); Reserva Forestal de Arenal Monteverde, Río Aguas Gatas, Finca Ulate, 1000 m, 10°21′N, 84°40′W, 29 January 1990, *Bello C. 1874* (MO!); R. B. Monteverde, Peñas Blancas river valley on Atlantic slope, 950–1100 m, 10°20′N, 84°45′W, 27 July 1986, *Bello C. 5806* (MO!); Cataratas de San Ramón, [10°05′N, 84°30′W], 20 February 1931, *Brenes 13436* (CR!, F!, NY!); Reserva Forestal de San Ramón, San Ramón, ca. Palmareña, 900 m, [10°13′46″N, 12°38′51″W], 22 May 1986, *Gómez L. 11170* (CAS!, F!); Cantón de Upala, Cordillera de Guanacaste, Gijagua, slope NW of Volcán Tenorio, 700–1000 m, 10°44′00″N, 85°03′00″W, 27 August 1994, *Haber & Zuchowski 11848* (F!, MO!); Cantón de Upala, Bijagua, El Retiro, área que circunda la Laguna, 1000 m, 10°42′10″N, 85°02′40″W, 26 July 1993, *Herrera et al. 6400* (F!, MO!); Alajuela, Reserva Biológica Alberto M. Brenes, 1030 m, 10°13′N, 846°36′W, (10°13′N, 84°36′W), 1 December 1999, *Homeier 250* (CAS!); vicinity of Los Angeles, 19 km N of Interamerican Hwy jct. in San Ramón, 3440 ft, [10°51′43″N, 84°53′24″W], 24 June 1973, *Stone 3486* (CAS!, F!, MO!); entre Balso de San Ramón and the Río Cataratas, or ca. 12 km N of Balsa, 1150 m, 27 January 1976, *Utley & Utley 3784* (CAS!). **Alajuela-Puntarenas-Guanacaste border:** Cordillera de Tilarán, 1520–1580 m, [10°18′N, 84°48′W], 29 November 1976, *Dryer 1017* (F!, MO!). **Cartago:** Monumento Nacional Guayabo Turrialba, Santa Teresita, sobre los ríos Guayabo, Lajas y Torito, 700–1800 m, 09°57′50″N, 83°41′30″W, 8 May 1992, *Rivera 1710* (F!, MO!). **Guanacaste:** Cantón de Tilarán, Río Chiquito, Dist. Quebrada Grande, 750 m, 10°25′N, 84°51′W, 10 June 1989, *Bello C. 938* (CAS!, MEXU!, MO!); hills above village of Cabeceras, 9 km NW of Monteverde, 1200 m, 10°23′N, 84°53′W, 18 June 1986, *Bello C. & Clagget 5282* (MO!); Parque Nacional Guanacaste, Estación Biológica Volcán Cacao, sendero a Casa Frank (después del derrumbe), 1200 m, 10°55′38″N, 85°29′11″W, 3 December 1989, *Chávez & Blanco 13* (F!, MEXU!, MO!, NY!); Monteverde, 1550 m, 10°48′N, 84°50′W, 12 July 1990, *Gentry et al. 71544* (MO!); Cantón de la Cruz, P. N. Guanacaste, Estación Pitilla, sendero Los Memos, 700 m, 10°59′26″N, 85°25′40″W, 24 June 1996, *González & R. Espinoza 1091* (MO!); Parque Nacional Guanacaste, Estación Pitilla, camino al E de la estación, 600 m, 11°02′N, 85°25.3′W, 24 May 1989, *Hammel et al. 17387* (CAS!, MO!); Parque Nacional Guanacaste, Estación Pitilla, Fila Orosilito, 400–1000 m, 11°02′N, 85°24′W, 14 June 1989, *INBio 9* (CAS!, MO!); Cantón de La Cruz, Estación Pitilla, Cordillera de Guanacaste, 700–1000 m, 10°59′26″N, 85°25′40″W, 15 May 1991, *Moraga 393* (F!, MO!); Cantón de La Cruz, Cordillera de Guanacaste, Estación Pitilla Santa Cecilia 9 km S, 700 m, 10°59′26″N, 85°25′40″W, 8 January 1994, *Moraga 587* (F!, MO!). **Heredia:** Solano clearing and Río guacimo, La Selva Protection Zone, 450 m, [10°25′12″N, 84°01′12″W], 19 January 1983, *Hartshorn 2556* (CAS!, MO!, NY!). **Limón:** al puente sobre el Río Toro Amarillo, 5 km al SO de Guápiles, 300–400 m, [10°09′30″N, 83°48′16″W], 9 February 1965, *Jiménez M. 2791* (F!). **Puntarenas:** Cantón de Golfito, R. F. Golfo Dulce, Península de Osa, La Torre, cabeceras del Río Agujas, Finca de los Azofeifa, Puerto Jiménez, 300–400 m,

08°32′00″N, 83°26′00″W, 6 May 1993, *Aguilar 1853* (F!, MO!); Cantón de Osa, Fila Costeña. Cerro Anguciana, cabeceras del Río Piedras Blancas, Fila Cruces, 900 m, 08°49′02″N, 83°11′23″W, 7 December 1993, *Aguilar et al. 2690* (F!, MO!); Reserva Biológica Monteverde, Río Guacimal, Comunidad Reserva, 1500 m, 10°18′N, 84°48′W, 4 March 1990, *Bello 2108* (MO!); R. B. Monteverde, Río Veracruz, 1300 m, 10°16′N, 84°22′W, 4 May 1991, *Bello C. et al. 2775* (CAS!, MO!); Cantón de Puntarenas, Cordillera de Tilarán, San Luis Abajo a Finca El Buen Amigo, 700–1100 m, 10°26′20″N, 84°49′30″W, 22 June 1993, *Fuentes 378* (MO!); Monteverde, 1450 m, [10°18′31″N, 84°48′27″W], 15 June 1979, *Haber 343* (CAS!, MO!); Monteverde community on Pacific slope, 1400 m, 10°20′N, 84°50′W, 15 May 1986, *Haber et al. 4952* (F!, MO!); Monteverde community, moist-wet forest on Pacific slope, 1400 m, 10°20′N, 84°50′W, 15 May 1986, *Haber et al. 4971* (CAS!, MEXU!, MO!); Costa Rica, Puntarenas, Monteverde Reserve and upper San Luis Valley below Monteverde, Pacific slope, 1000 m, 10°20′N, 84°50′W, 11 September 1986, *Haber et al. 5604* (CAS!, MO!); Monteverde Cloud Forest reserve, Pacific slope, 1400 m, 10°20′N, 84°50′W, 13 October 1986, *Haber ex Bello 5944* (CAS!, MO!, NY!); Monteverde community, Pacific slope, Smith farm, 1400 m, 10°18′N, 84°48′W, 8 July 1989, *Haber 9278* (CAS!, F!, MO!); P. N. Corcovado, Sirena, Skyway Ollas, 1–20 m, 08°28′N, 83°35′W, 6 September 1989, *Kernan 1248* (CAS-3!, MO!); Cantón de Parrita, faja costeña del valle de Parrita, Las Vegas, camino a El Carmen, 350 m, 09°35′35″N, 84°13′42″W, 18 July 1995, *Morales & J. González 4545* (F!, MO!); above Wilson's finca, 6 km S of San Vito de Java, 5000 ft, [08°47′24″N, 82°57′W], 14 August 1967, *Raven 21782* (CR!, F!, MO!, NY!); 1 mi S of San Vito de Java, 3500 ft, [08°48′N, 82°57′36″W], 18 August 1967, *Raven 21915* (CR!, MO!, NY!); San Vito de Java, [08°49′18″N, 82°58′20″W], 13 August 1967, *Salas M. 678* (CR!). **San José:** Tarrazú, Zona Protectora Cerro Nara, 1000 m, 09°29′40″N, 83°59′40″W, 15 May 1997, *Estrada & J. Sánchez 817* (MO!).

PANAMA. Bocas del Toro: La Fortuna Dam area, N of dam, along continental divide trail W of Oleoducto Rd, 1200–1300 m, 08°47′N, 82°15′W, 11 February 1986, *Hammel & McPherson 14451* (CAS!, MEXU!, MO!); vicinity of Cerro Colorado above San Felix, Chiriquí, along paths N from continental divide rd, 1400–1450 m, 08°35′N, 81°50′W, 7 July 1988, *McPherson 12706* (MO!); Chiriquí–Bocas del Toro border, vicinity of Cerro Colorado, along mining rd on divide, 1300–1400 m, 08°35′N, 81°50′W, 27 January 1989, *McPherson 13647* (CAS!, MEXU!, MO!, NY!). **Chiriquí:** vicinity of Fortuna Dam, along Quebrada Arena, just S of continental divide, 1050 m, 08°45′N, 82°15′W, 8 September 1987, *McPherson 11696* (CAS!, MEXU!, MO!); Bocas del Toro border, near Fortuna Dam, along continental divide trail, 1200–1300 m, 8°45′N, 82°15′W, 5 August 1988, *McPherson 12826* (MEXU!, MO!, NY!). **Chiriquí/Bocas del Toro:** Cerro Colorado, 1450 m, [08°32′N, 81°49′W], 27 January 1989, *Almeda et al. 6427* (CAS!, COL!, CR!, INB!, MO!, NY!). **Darién:** Coasi Cana Trail on Cerro Campamiento E of Tres Bocas, headwater of Río Coasi, [07°46′N, 77°47′W], 29 April 1968, *Kirkbride, Jr. & Duke 1246* (MO!, NY!). **Coclé:** Cerro Pilon, El Valle, 3000 ft, [08°38′16″N, 80°06′18″W], 4 January 1968, *Duke & Lallathin 14971* (MO!).

***Extralimital specimens*—COLOMBIA. Chocó:** *A. Gentry & M. Fallen 17380* (MO!). **ECUADOR. Azuay:** *L. Ortíz 226* (MO!).

22. *Symplocos povedae* Almeda (1982a: 320). Type:—COSTA RICA. Heredia: among rocks at the margin of Río Patria, Monte de la Cruz, [10°04′N, 84°05′W], 30 October 1975, *L. Poveda 1179* (holotype CAS!, isotypes CR!, F!, NY!)

Trees 5–6 m tall; juvenile branchlets and vegetative buds hirtellous to hirsute, trichomes 1–1.5 mm long, spreading, brownish. Petioles (0.6–)1–2 cm long; leaf blades slightly bicolorous, elliptic to elliptic-ovate, (9–)13–25.5 × 3.5–9.6 cm, membranaceous to subcoriaceous, abaxially moderately hirsute or hirtellous, adaxially ± bullate, glabrous to sparsely hirtellous, secondary veins adaxially impressed, abaxially raised, base obtuse to rounded or truncate, margins serrate to serrulate, apex acuminate. Inflorescences sessile or subsessile fascicles 2–3.3 cm long, 1–5-flowered; peduncle absent; rachis 0–7 mm long, sericeous, trichomes 0.5–1 mm long; bracts persistent, lanceolate, 2–6 × 1.5–2.5 mm, sericeous, margins ciliate and with brown vesicular glands; bracteoles persistent, 6–15, lanceolate, 2–4 × 1.5–2 mm, sericeous, margins ciliate and with brown vesicular glands; pedicels 0–7 mm long. Hypanthium glabrous. Calyx lobes 5, lanceolate, 5–8 × 2–3 mm, densely sericeous, margins ciliate, usually glandular. Corolla pink, 10-lobed, 2–2.7 cm long; tube 6–8 mm long; lobes adnate to filament tube for 12–14 mm, linear-oblong, glabrous. Stamens multiseriate; filament tube 16–19 mm long; distinct portions of filaments 3–4 × 1–1.5 mm. Disk densely setose; style 19–20 mm long, sparsely pubescent basally; stigma conspicuously and

irregularly lobed. Fruits green maturing to grayish blue or purple, narrowly ellipsoid, 2.2–2.9 × 0.8–0.9 cm, glabrous, apex constricted and rostrate, with beak formed by fruit body and erect calyx lobes; disk convex, enclosed by calyx lobes; disk narrowly conical, apex partly visible, surpassed by calyx lobes; endocarp 3-locular, perimeter 3-fluted.

Vernacular name—None.

Illustration—Almeda (1982a: 321).

Photographic image—Figure 1h.

Phenology—Flowering October through December; fruiting July, August, and October.

Distribution and habitat—Costa Rica (Alajuela, Guanacaste, and Puntarenas provinces), in cloud forests at 1200–1700 m elev. Figure 22.

Conservation status—This Costa Rican endemic is known from ten collections representing about four or five populations. Largely centered on the Cordillera de Tilarán, it is afforded protection in the Monteverde Cloud Forest Reserve and the Children's Eternal Rain Forest. Two other outlying populations are known from Rincón de la Vieja National Park and Monte de la Cruz southwest of and outside of Braulio Carrillo National Park. The EOO is 1615 km² and the AOO is 40 km². The species is rare at all of its known localities and evidently represented by few individuals at any one site, as judged from several attempts to locate it. Based on these data, we assign a classification of Endangered (EN): B1ab(v).

Discussion—*Symplocos povedae* is easily distinguished from other species in Mexico and Central America by its large serrate leaves that are conspicuously bullate above and hirtellous on the prominently elevated network of secondary veins below, as well as the combination of large flowers, consistently 10-lobed corolla, and rostrate fruits with a fluted endocarp.

Additional specimens examined—**COSTA RICA. Alajuela:** Reserva Biológica Monteverde, Río Peñas Blancas, Rancho Escondido hasta San Gerardo, 1400–1700 m, 10°20′N, 84°43′W, 20 November 1988, *Bello C. 551* (CAS!, MEXU!, MO!); Cantón de San Ramón, Reserva Biológica Monteverde, Cordillera de Tilarán, Sendero Caño Negro, 1600–1700 m, 10°21′20″N, 84°49′50″W, 18 November 1994, *Fuentes 785* (MO!); Reserva Biológica Alberto M. Brenes, 1320 m, 10°13′N, 84°36′W, 25 August 2000, *Homeier & Mora 497* (BIEL!, CAS!, INB!, USJ!). **Alajuela-Puntarenas-Guanacaste border:** Cordillera de Tilarán, 1550–1580 m, [10°18′N, 84°48′W], 7 October 1976, *Dryer 831* (CR!, F!). **Alajuela-Puntarenas border:** on and near the continental divide ca. 2–5 km E and SE of Monteverde, 1550 m, 10°18′N, 84°46′W, 5 October 1978, *Lawton 1343* (F!). **Guanacaste:** Parque Rincón de La Vieja, Liberia, Cabeceras de Quebrada Rancho Grande, bosque circundante a Meseta Aguacatales, 1350–1400 m, 10°46′N, 85°49′W, [10°46′N, 85°19′W], 2 December 1987, *Herrera 1479* (CAS!, MEXU!, MO!). **Puntarenas:** Monteverde, upper San Luis Valley on Pacific slope, 1200 m, 84°50′N, 10°20′W, 20 October 1985, *Bello C. 3098* (CAS!, MO!); Monteverde, Veracruz River valley S of reserve, Pacific slope, 1300–1500 m, 10°15′N, 84°86′W, [10°15′N, 84°47′W], 22 August 1986, *Bello C. & Clagget 5324* (MO!); Monteverde, reserve cliff edge, 1550 m, [10°16′48″N, 84°46′48″W], 14 October 1978, *Haber 214* (MO!); Reserva Biológica Monteverde, rd to divide, swamp on continental divide (Sendero Pantanoso) and Sendero Chomogo, 1500–1600 m, 110°18′N, 84°47′W, 6 July 1990, *Haber & Zuchowski 10032* (CAS!, MEXU!, MO!).

23. *Symplocos pycnantha* Hemsley (1881: 302). Lectotype (designated here):—MEXICO. Oaxaca: Sierra San Pedro Nolasco etc., 1843–1844, *C. Jürgensen 892* (lectotype BM-939403-n.v., online image!, isolectotypes BM-939404-n.v., digital image!, K, lost, photo ex K at K and NY!, OXF-72361-n.v., digital image!, G-164226-n.v., online image!, G-164227-n.v., online image!)

= *Symplocos chiapensis* Lundell (1938: 240). Type:—MEXICO. Chiapas: [Mpio. Acacoyagua,] Mt. Ovando, near Escuintla, [15°24′36″N, 93°W], April 1936, *E. Matuda 2208* (holotype MICH-1192778-n.v., online image!, isotypes A!, CAS!, MEXU!).

= *Symplocos matudae* Lundell (1938: 241) ["*Matudai*"]. Type:—MEXICO. Chiapas: Mt. Pasitar [=Paxtal?], [15°26′24″N, 92°26′02″W], 29 December 1936, *E. Matuda 472* (holotype MICH-1192785-n.v., online image!, isotypes F!, GH!, LL!, US!).

= *Symplocos vernicosa* Williams (1967: 267). Type:—HONDURAS. Morazán: near summit San Juancito Mtns., 2000 m, [14°12′29″N, 87°04′33″W], 22 May 1957, *L. O. Williams 17431* (holotype F!, isotypes GH!, US!).

Trees 4–8 m tall; juvenile branchlets and vegetative buds moderately sericeous, trichomes < 0.5 mm long, white. Petioles 5–10 mm long; leaf blades bicolorous, elliptic to elliptic-ovate or obovate, 4.1–9 × 2–3.5 cm, coriaceous to

subcoriaceous, abaxially sparsely sericeous, occasionally glabrate, adaxially glabrous, secondary veins not adaxially impressed, base acute, margins serrulate or crenulate to subentire**,** apex abruptly short-acuminate. Inflorescences racemes or spikes 0.8–1.9 cm long, 2–7-flowered; peduncle 0–1 mm long; rachis 4–9 mm long, strigose, trichomes ca. 0.5 mm long; bracts deciduous, ovate to subrotund, 1–1.5 × 1–1.5 mm, sericeous, margins sericeous; bracteoles persistent, 3 or 4, ovate to subrotund, 1–1.25 × 1–1.25 mm, sericeous, margins sericeous; pedicels 0–1 mm long. Hypanthium densely sericeous. Calyx lobes 5, broadly ovate, 0.5–1 × 1–2 mm, sericeous, margins ciliate. Corolla pink, 5-lobed, 6–9 mm long; tube connate for 3 mm; lobes adnate to filament tube for 3–5 mm, oblong-obovate, sparsely to moderately sericeous or rarely glabrous. Stamens 3-seriate; filament tube 4–6 mm long; distinct portions of filaments 0.5–2.5 × 0.25–0.5 mm. Disk densely pilose; style 5–9 mm long, pilose basally; stigma 5-lobed. Fruits green maturing to dark bluish purple, ellipsoid to oblong, 6–9 × 4–6 mm, strigillose, apex with obscure fleshy lobes and calyx lobes not evident or with short persistent erect calyx lobes, truncate outside of calyx lobes; disk flat to convex, enclosed within calyx lobes and/or apex of fruit; endocarp 3–5-locular, perimeter rounded.

Vernacular name—None.

Illustration—Figure 28.

Photographic image—Figure 2g.

Phenology—Flowering September and November through April; fruiting January, February, and April through August.

Distribution and habitat—Mexico (Chiapas, Oaxaca), Guatemala, Honduras, El Salvador, and Nicaragua, in cloud forests at 700–2200 m elev. Figure 29.

Conservation status—This species is widespread from southern Mexico south to Nicaragua, where several populations are protected in parks and reserves. Because it is known from over 35 localities and over 120 collections, we assign a classification of Least Concern (LC) to this species.

Discussion—*Symplocos pycnantha* is similar to *S. speciosa* in its short racemose or spicate inflorescences, sericeous sepals, and small fruits with strigillose pubescence but differs by its broader fruits (4–6 mm wide versus 3–4 mm wide), consistently bicolorous leaves with a dark (often black) adaxial surface (versus usually concolorous yellowish green leaves), and often sericeous petal lobes (versus glabrous).

Lundell (1938) originally distinguished *Symplocos vernicosa* from *S. matudae* by the degree of petal pubescence, but later (1969: 124) stated that "*S. vernicosa* appears to be only a less pubescent form of *S. matudae*." The available material shows intergradation of petal pubescence, from glabrous (more common in Central America) to moderately sericeous (more common in Mexico), reinforcing the arbitrary nature of the distinction between the two entities.

In his treatment for the Flora of Nicaragua, Almeda (2001) suggested that *Symplocos vernicosa* forms part of a complex that includes *S. chiapensis*, *S. matudae*, and possibly *S. pycnantha* and that a better understanding of the each of the species would likely relegate one or more to synonymy. With the wider material available to us, we observe no consistent differences that permit the distinction of any of these species, so they must be recognized as *S. pycnantha*. It seems likely that neither Lundell nor Williams were aware of this name.

In the protologue of *Symplocos pycnantha*, Hemsley cited two collections, *Jürgensen 892* and *Linden 359*, both from "Hb. Kew." Two sheets each from both of these collections were housed at K; all of these have been lost and are only documented as photographs. We located five duplicates of *Jürgensen 892*; the specimen BM-939403 is designated as the lectotype because it has many branchlets and good-quality flowers. Additional syntypes that we have found are three specimens of *Linden 359* at G (G00359175, G00359174, and G00164228).

Additional specimens examined—**MEXICO. Chiapas:** Jitotol, 3 mi S of Jitotol, 5300 ft, [17°03′01″N, 92°51′23″W], 12 February 1965, *Breedlove 8889* (DS!, F!); La Trinitaria, Lago of Montebello, 25 mi E of La Trinitaria, 5100 ft, [16°06′30″N, 91°40′43″W], 13 April 1965, *Breedlove 9674* (DS!, F!, US!); Pueblo Nuevo Solistahuacán, on the E side of Pueblo Nuevo Solistahuacán, 1700 m, [17°09′N, 92°53′24″W], 11 December 1971, *Breedlove 23095* (DS!, MO!); Laguna Montebello, Montebello National Park, 1300 m, [16°06′30″N, 91°40′43″W], 24 May 1972, *Breedlove 25334* (DS!, MO!, NY!); Motozintla de Mendoza, SW side of Cerro Mozotal, 11 km NW of the jct. of the rd to Motozintla along the rd to El Porvenir and Siltepec, 2100 m, [15°24′N, 92°18′W], 27 June 1972, *Breedlove 25772* (DS!); La Trinitaria, E of Laguna Tzikaw, Montebello National Park, 1300 m, [16°05′15″N, 91°42′02″W], 16 November 1972, *Breedlove & Dressler 29642* (DS!, MO!); Motozintla de Mendoza, SW side of Cerro Mozotal, 11 km NW of the jct. of the rd to Motozintla along the rd to El Porvenir and

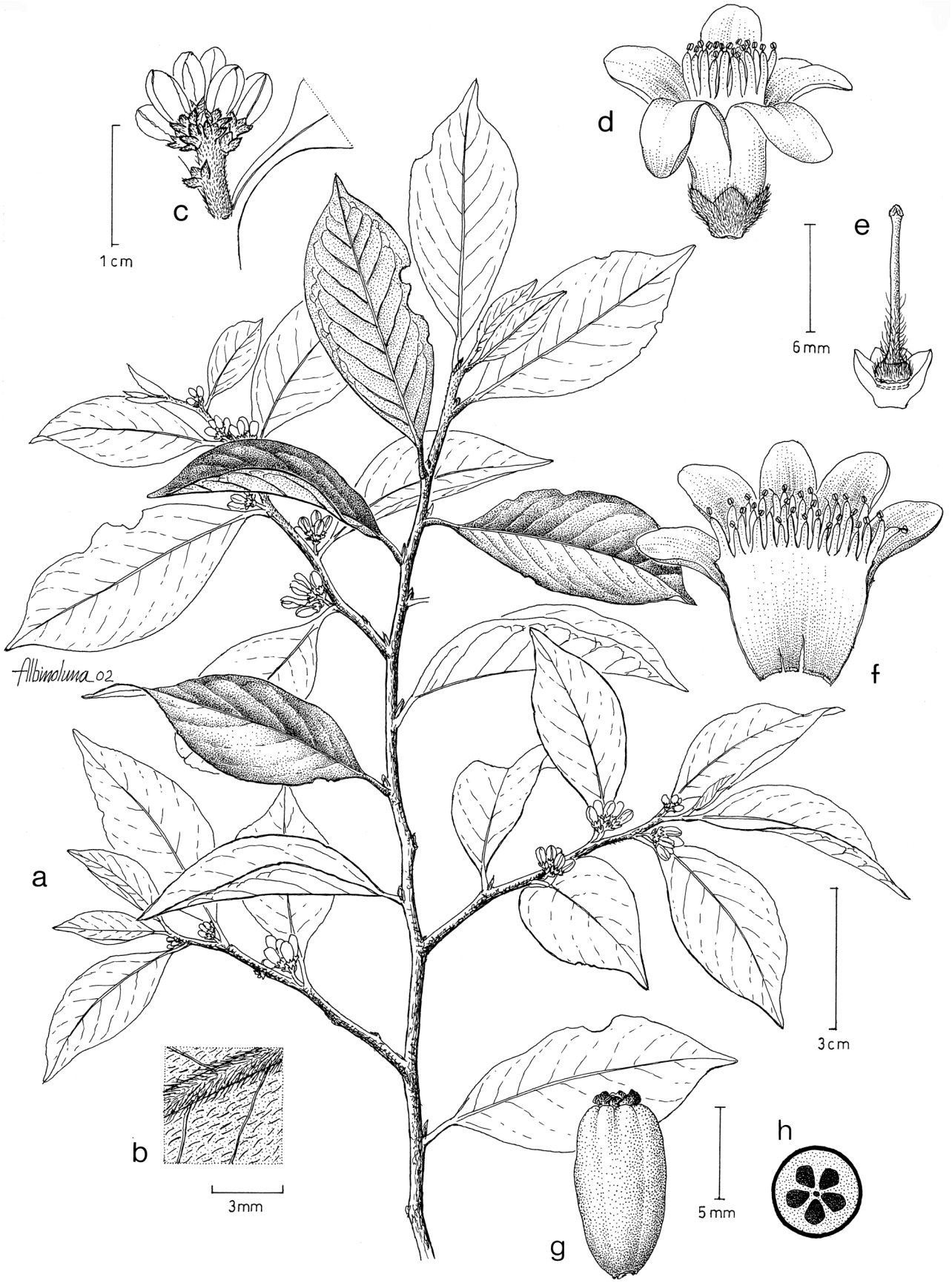

FIGURE 28. *Symplocos pycnantha*. **a.** Branchlet with inflorescences. **b.** Abaxial leaf surface showing pubescence. **c.** Inflorescence with flower buds. **d.** Flowers. **e.** Calyx (partly cut away), disk, and gynoecium. **f.** Corolla opened with attached stamens. **g.** Fruit. (a–f drawn from *D. Stone & C. Broome 2824*, MEXU; g drawn from *C. L. Lundell & E. Contreras 21169*, MEXU.)

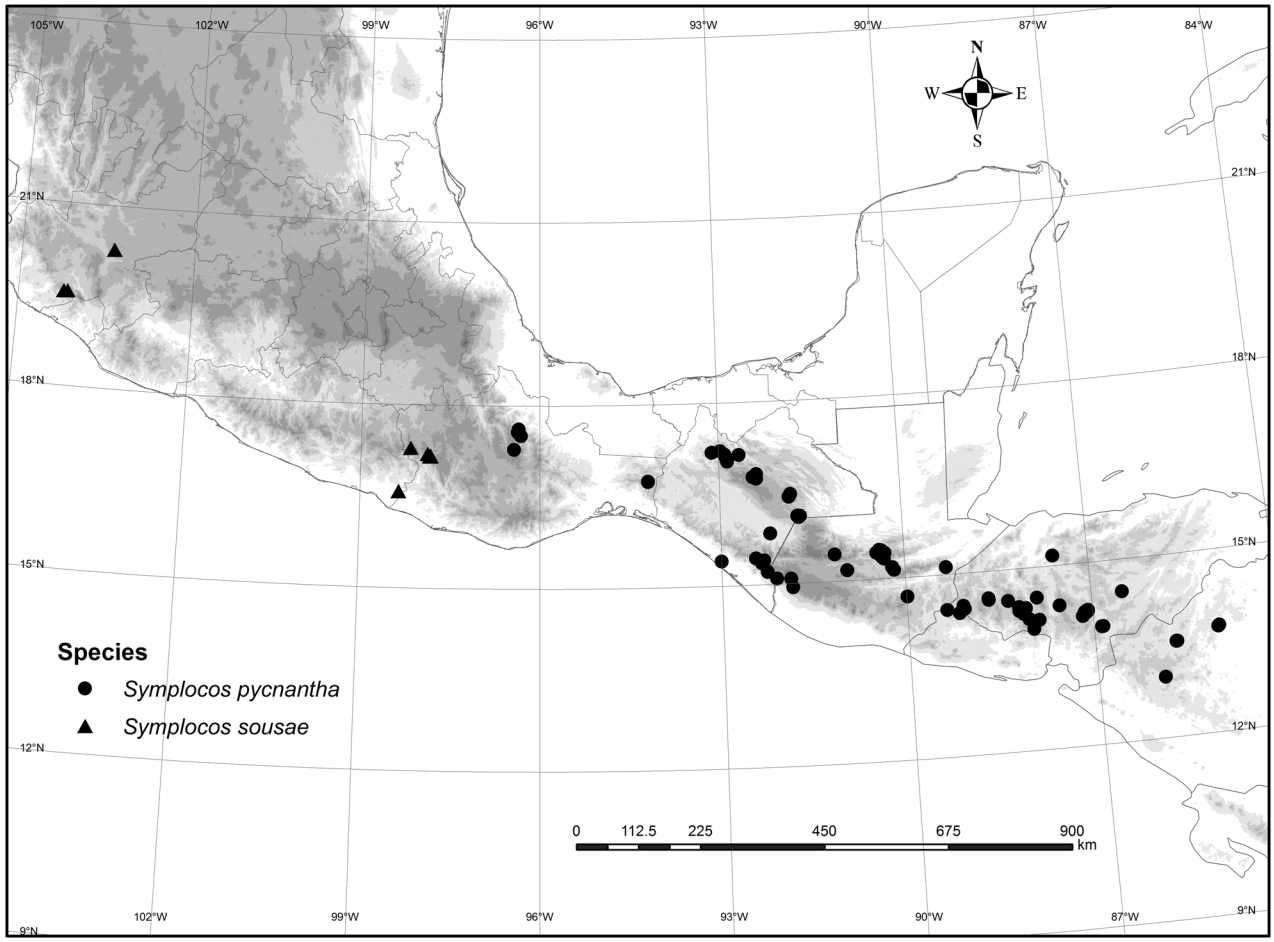

FIGURE 29. Geographic distribution of *Symplocos pycnantha* and *S. sousae*.

Siltepec, 2100 m, 29 December 1972, *Breedlove & Thorne 31100* (CAS!, MEXU!, MO!, NY!, US!); Pueblo Nuevo Solistahuacán, E side of Pueblo Nuevo Solistahuacán, 1700 m, 15 January 1973, *Breedlove 32715* (DS!, MO!); La Independencia, third ridge along logging rd from Las Margaritas to Campo Alegre, 2300 m, [16°28′32″N, 91°49′23″W], 18 February 1973, *Breedlove 33529* (DS!, MO!, NY!); Motozintla de Mendoza, SW of Cerro Mozotal, 11 km NW of the jct. of the rd to Motozintla along the rd to El Porvenir and Siltepec, 2100 m, 18 September 1976, *Breedlove 40225* (DS!, MO!); San Cristóbal de las Casas, along rd to Chanal 16–20 km E of Chilil, 2380 m, [16°44′24″N, 92°22′48″W], 10 November 1976, *Breedlove 41317* (DS!); San Cristóbal de las Casas, along rd to Chanal, 16–20 km E of Chilil, 2380 m, 10 November 1976, *Breedlove 41347* (DS!, MEXU!); Motozintla de Mendoza, SW side of Cerro Mozotal, 11 km NW of the jct. of the rd to Motozintla along the rd to El Porvenir and Siltepec, 2100 m, 21 November 1976, *Breedlove 41705* (DS!, MO!, NY!); La Independencia, along logging rd from Las Margaritas to Campo Alegre, 2300 m, [16°25′48″N, 91°51′W], 27 November 1980, *Breedlove & Almeda 47845* (CAS!, MEXU!, MO!); Jitotol, 5 km SE of Jitotol along rd to Bochil, 1600 m, [17°02′21″N, 92°51′11″W], 9 January 1981, *Breedlove & Keller 49341* (CAS!); Mexico, Chiapas, La Trinitaria, Lagunas de Montebello National Park along rd to Cinco Lagunas, 1380 m, [16°06′42″N, 91°42′21″W], 29 January 1981, *Breedlove 49687* (CAS!); La Independencia, third ridge along logging rd from Las Margaritas to Campo Alegre, 2300 m, [16°28′32″N, 91°49′23″W], 3 July 1981, *Breedlove 51306* (CAS!, GH!); La Trinitaria, Lagos de Montebello National Park, forest near Lago Montebello, 1370 m, [16°06′36″N, 91°43′12″W], 14 August 1981, *Breedlove 52249* (CAS!, GH!, MEXU!, MO!); Mpio. Pantepec, above Rayón along rd to Pantepec and Tapalapa, 1770 m, [17°12′43″N, 92°58′03″W], 22 September 1981, *Breedlove 53008* (CAS!, MEXU!, MO!, NY!); La Trinitaria, Lagos de Montebello National Park, near Lago Montebello, 1370 m, 19 January 1982, *Breedlove & Almeda 57471* (CAS!, MEXU!, MO!); Tenejapa, Colonia Chalam, 2700 m, [16°46′12″N, 92°26′24″W], 23 May 1988, *Breedlove 68583* (CAS!); 35 mi SE of Comitán, Los Lagos, E side of second lake on

right, 5200 ft, [16°06′11″N, 91°42′47″W], 18–24 January 1952, *Carlson 2257* (MEXU!); La Trinitaria, along rd from Lagos de Montebello to Dos Lagunas, [16°06′03″N, 91°40′43″W], 1480 m, 27 January 1979, *Croat 46592* (CAS!, MEXU!, MO!); Volcán Tacaná, Chiquihuites, 1920 m, [15°05′38″N, 92°06′01″W], 10 February 1969, *Hernández M. 510* (DS-2!, MEXU!, NY!); Mpio. Motozintla de Mendoza, Motozintla–Buenos Aires–Porvenir Hwy, ca. 6 km W of Buenos Aires, toward El Porvenir, 2200 m, 15°22.537′N, 92°20.303′W, (15°22′32″N, 92°20′18″W), 17 January 2003, *Kelly et al. 1349* (CAS!, MEXU!, NY!); pine forests of Pueblo Nuevo, *Linden 359* (K-2 lost, photo ex K at K and NY!, G-00359175-n.v., online image!, G-00359174-n.v., online image!, G-00164228-n.v., online image!); Motozintla, Pinabeto, 2586 m, [15°12′33″N, 92°14′49″W], 9 May 1945, *Matuda 15483* (F!, MEXU!); Pueblo Nuevo, Pueblo Nuevo Solistahuacán, [17°09′28″N, 92°53′59″W], 7 March 1950, *Miranda 6094* (CAS!, DS!, MEXU!, US!); Pantepec–Tapalapa, [17°11′36″N, 93°06′37″W], 17 August 1950, *Miranda 6532* (MEXU!); Motozintla, 8 mi W of jct. with Motozintla–Huixtla hwy along rd to Cerro Mozotal & Siltepec, 6600 ft, 15°21′N, 92°20′W, 2 April 1983, *Neill 5598* (CAS!, MO!); Mpio. Tenejapa, 10 km al NE de Chalam, camino a Ashlum, 2000 m, [16°48′57″N, 92°22′40″W], 23 May 1988, *Palacios & Breedlove 416* (CAS!); La Trinitaria, Lagos de Montebello, 1600 m, [16°06′42″N, 91°42′21″W], 22 January 1952, *Rzedowski 660* (MEXU!); Pueblo Nuevo Solistahuacán, SE edge of Pueblo Nuevo Solistahuacán, ca. 70 mi S of Mexico 195–190 intersection, [17°05′24″N, 92°52′12″W], 3 February 1971, *Stone & Broome 2824* (F!, MEXU!, MO!); La Trinitaria, E side of Lago Tsikaw in the region of the Lagos de Montebello, 4800 ft, [16°05′15″N, 91°42′02″W], 5 July 1967, *Ton 2644* (DS!, LL!); Motozintla, 11 km W de Buenos Aires, 2000 m, [15°21′33″N, 92°18′56″W], 2 April 1983, *Ton 5796* (CAS!, MEXU!, MO!, NY!); Trinitaria, Ejido Benito Juárez, anexo Tzicao, [15°50′22″N, 92°10′59″W], 10 July 1984, *Ton 7759* (CAS!, MEXU!, NY!). **Oaxaca:** Mpio. Ixtlán, Cerro El Chapulin, 1640 m, 17°30′30″N, 96°18′44″W, 2 August 1997, *Arellanes C. 0090* (MEXU!); Mpio. Ixtlán, Cerro El Chapulin, 1640 m, 17°30′03″N, 96°18′44″W, 3 August 1997, *Arellanes C. 0095* (MEXU!); Mpio. Ixtlán, Cerro El Chapulin, 1640 m, 17°30′30″N, 96°18′44″W, 6 August 1997, *Arellanes C. 0108* (MEXU!); Mpio. Ixtlán, Cerro El Chapulin, hectárea I, 1640 m, 17°30′30″N, 96°18′44″W, 28 January 1998, *Arellanes C. et al. 253* (MEXU!); Mpio. Comaltepec, Dist. Ixtlán, Cerro Redonda, above town of La Esperanza (on the Oaxaca-Tuxtepec Rd, Hwy 175, Caribbean slope, 1750 m, 17°37′15″N, 96°22′00″W, 26 October 1991, *Boyle & Boyle 611* (MO!); Mpio. Ixtlán, Dist. Ixtlán, 6 km to NNE of the settlement La Luz, on N slope of hill marked La Cueva de Sarmiento, Río Soyolapan watershed, 1790–1825 m, 17°34′16″N, 96°21′32″W, 1–5 November 1994, *Boyle et al. 3822* (MO!); Mpio. Ixtlán, Dist. Ixtlán, 6 km to NNE of the settlement La Luz, on N slope of hill marked La Cueva de Sarmiento, Río Soyolapan watershed, 1790–1825 m, 17°34′16″N, 96°21′32″W, 1–5 November 1994, *Boyle et al. 3850* (MO!); Mpio. San Miguel Chimalapa, Cerro Guayabitos, ca. 42 km en línea recta al N de San Pedro Tapanatepec al NO de la Congregación Benito Juárez filo alto al SE de la cima, 1800 m, 16°44′30″N, 94°11′15″W, 24 December 1985, *Wendt et al. 5181* (CAS!).

GUATEMALA. Alta Verapaz: 5 km al NO de Cobán, 1400 m, 10 May 1963, *Molina R. & Molina 11985* (F!, NY!); Mpio. Cobán Chicu'sha'b, 8 km al SW de Cobán, 15°26′N, 90°27′W, 22 July 1988, *Tenorio L. et al. 14653* (CAS!, MO!); Cobán, 4300 ft, [15°28′15″N, 90°22′20″W], March 1887, *von Turckheim 1152* (GH!, PH, photo!, US!); Chichen, 1600 m, [15°22′08″N, 90°22′01″W], 1908, *von Turckheim 2159* (C-2!, F!, GH!, MO!, NY!, S-2!, US-2!); 1–5 km E of San Juan Chamelco, 1500–1600 m, 15°25′N, 90°15′W, 1 February 1969, *Williams et al. 40451* (F!); San Juan Chamelco, [15°25′26″N, 90°19′41″W], February 1969, *Wilson 40969* (F!). **Baja Verapaz:** Unión Barrios, in high forest, [15°11′01″N, 90°12′16″W], 11 March 1972, *Contreras 11241* (LL!, S!); Unión Barrios, on Salama–Cobán Rd, 2.5 km W, [15°11′01″N, 90°12′16″W], 6 February 1975, *Lundell & Contreras 18931* (CAS!, LL!, MEXU!); Unión Barrios, on Salama–Cobán Rd, 2.5 km W, 6 February 1975, *Lundell & Contreras 18932* (LL!, MEXU!, MO!, NY!); Unión Barrios, SW of the village, [15°11′01″N, 90°12′16″W], 16 June 1975, *Lundell & Contreras 19459* (CAS!, LL!); Niño Perdido, between Km 151/152 W, 16 June 1977, *Lundell & Contreras 21125* (CAS!, LL!, MO!); Niño Perdido, between Km 151/152 W, bordering arroyo, 16 June 1977, *Lundell & Contreras 21128* (CAS!, F!, LL!, MEXU!, MO!); Niño Perdido, La Cumbre de San José, [15°08′15″N, 90°10′40″W], 21 June 1977, *Lundell & Contreras 21169* (CAS!, LL!, MEXU!, MO!, NY!); along Río Cobán between Santa Cruz and Tactic, 1500 m, 15°20′N, 90°20′W, 26 January 1969, *Williams et al. 40134* (F!). **El Quiché:** Valley of Río de las Violetas, N of Nebaj, 5800–6000 ft, [15°26′38″N, 91°08′08″W], 8 August 1964, *Proctor 25458* (F!, MO!); Sacabajá, 1200 m, 1892, *Heyde & Lux 733* (US!); Sacabajá, 1200 m, [15°10′37″N, 90°56′32″W], 1892, *Heyde & Lux 3011* (MO!, NY!, US!; the last two are mixed collections with *Symplocos hartwegii*). **Jalapa:** Volcán Jumay, N of Xalapa, 1300–2200 m, [14°41′N, 89°59′W], 1 December 1939,

Steyermark 32380 (F!). **San Marcos:** upper slopes of Quebrada Tierra María, between town of Tajumulco and Tecutla (9 mi S and W of Tajumulco), NW slopes of Volcán Tajumulco, 1800–2500 m, [15°06′02″N, 91°52′07″W], 27 February 1940, *Steyermark 36850* (F!); outer slopes of Tajumulco Volcano, Sierra Madre Mtns. ca. 8–10 km W of San Marcos, 2300 m, [14°56′28″N, 91°50′37″W], 31 December 1964, *Williams et al. 26957* (F!, NY!). **Zacapa:** upper reaches of Río Sitio Nuevo, 1500–1800 m, [15°07′25″N, 89°19′26″W], 25 January 1942, *Steyermark 43242* (F!, NY!).

HONDURAS. Comayagua: Quebrada Agua Amarilla, nuclear zone of Azul Meámbar National Park, 10.5 km E of Lago Yojoa, 1740 m, 14°48′N, 87°52′W, 11 March 1993, *Hawkins 562* (MO!); Comayagua Mtn., 2400 m, [14°20′25″N, 87°31′32″W], 6 March 1975, *Hazlett 2497* (GH!, MO!); al lado del camino el Danto a Jesus de Otoro, Montaña de San Juancillo, Reserva Biológica Cordillera de Montecillos, 1900 m, 14°30′N, 87°53′W, 1 March 1991, *House & Aguilar 844* (MO!). **El Paraíso:** Cerro Monserrat, 2000 m, [13°56′01″N, 86°52′14″W], 27 August 1978, *Castro T. 151* (MO!); Yuscarán, Cerro Monserrat, 2000 m, [13°56′01″N, 86°52′14″W], 27 August 1978, *Díaz Z. 168* (CAS!, MO!); El Volcán de Monserrat, 1700 m, 12 August 1971, *Molina R. 26138* (F!, NY!, US!); Cerro Monserrat, O de Yuscarán, 2000 m, 22–25 March 1975, *Nelson & Vargas 2433* (MO!); Cerro Monserrat, cerca de Yuscarán, 2000 m, 9 October 1977, *Nelson & Romero 4324* (MO!); Yuscarán, 1200 m, [13°56′N, 14°51′W], 27 August 1978, *Zelaya 147* (MO!). **Intibucá:** 8 km N of La Esperanza, 1800 m, [14°22′14″N, 88°11′01″W], 7 March 1974, *Hazlett 1266* (MO!); bosque de nubes de Calaveras, Cordillera de Opalaca, 1700 m, [14°29′14″N, 88°21′23″W], 10 April 1956, *Molina R. 6427* (F!, US!); Baños La Esperanza, 1800 m, [14°18′22″N, 16°11′W], 6 April 1957, *Molina R. 7946* (F!); edge of Quebrada Lejarsia between Km 9–11 on rd to La Esperanza–Marcala, 1600 m, [14°15′09″N, 88°06′47″W], 21 March 1969, *Molina R. & Molina 24309* (F!, NY!); El Duraznillo on Cordillera Opalaca, 1700 m, [14°N, 87°58′W], 26 March 1969, *Molina R. & Molina 24481* (F!, NY!); between Calaveras and El Duraznillo on Cordillera Opalaca, 1800 m, [14°20′55″N, 88°04′27″W], 12 March 1970, *Molina R. & Molina 25537* (F!, MO!, NY!, US!); Cerro Pelanariz, 1.5 km al NE de La Esperanza, 2000 m, [14°18′57″N, 88°10′39″W], 13 September 1981, *Sosa L. 33* (CAS!, MO!). **La Paz:** Las Trancas, 5 km NW of Güajiquiro, 2000–2100 m, 14°08′N, 87°52′W, 22 May 1993, *Liesner 26444* (CAS!, MO!); Paderones humedos del Huis, Km 110 sobre carretera Marcala, 1600 m, [14°09′34″N, 88°01′54″W], 11 April 1956, *Molina R. 6488* (F!, US!). **Lempira:** Montaña de Celaque, SE portion of the massif, valley of the Río Arcagual on the plateau, 2400 m, 14°33′26″N, 88°40′00″W, 26 May 1991, *Davidse & Zúniga 34835* (MEXU!, MO!); near cascada of the Río Arcagual, Celaque National Park, 2450 m, 24°40′N, 88°42′W, 18 November 1991, *Hawkins et al. 89* (MO-2!); E slopes of the Quebrada Naranja, 10 km SE of Gracias, Celaque National Park, 1900 m, 14°32′N, 88°40′W, 29 January 1992, *Hawkins et al. 150* (MO!); along trail from El Mojon to El Sucte, 13 km SW of Gracias, Celaque National Park, 2650 m, 14°32′N, 88°42′W, 31 January 1992, *Hawkins & House 164* (MO!); Montaña de Celaque, 2600 m, 18–22 November 1974, *Hazlett 2306* (CR!). **Morazán:** Rancho Quebrado, rd to El Rosario, San Juancito, [14°13′20″N, 87°04′16″W], 3 March 1952, *Carlson 2636* (F!); Rancho Quebrado, rd to El Rosario, San Juancito, 3 March 1952, *Carlson 2645* (F!); Cerro La Tigra near Tegucigalpa, 2400 m, [14°11′52″N, 87°07′31″W], 18 March 1973, *Clewell 3800* (MO!, US!); along rd to Parque Nacional La Tigra, 22–25 km NE of Tegucigalpa, 1850–2125 m, 14°12′N, 87°07′W, 1 February 1987, *Croat & Hannon 64037* (CAS!, MO!); a orillas de la carretera que conduce de la Aldea El Chaparro a la Mina de El Rosario, Cerro Nebuloso, 20 km NE de Tegucigalpa, [14°11′02″N, 87°06′17″W], 14 March 1977, *Erazo et al. 311* (MO!); La Vuelta del caite NE de San Juancito, Montaña La Tigra, 2300 m, [14°11′52″N, 87°07′31″W], 17 March 1957, *Molina R. 7734* (F!, US!); La Tigra Mtn., SW of San Juancito, 1800–2100 m, [14°12′50″N, 87°05′48″W], 2 February 1966, *Molina R. et al. 16971* (F!, NY!); Mt. La Tigra, SW of San Juancito, 1800–2100 m, 2 February 1966, *Molina R. et al. 17030* (F!, GH!, NY!, US!); dry slopes of Mt. San Juancito near El Rosario, 1400 m, [14°12′32″N, 87°04′28″W], 27 February 1969, *Molina R. 23401* (F!, NY!); mtns. above San Juancito, 7500 ft, [14°12′32″N, 87°04′28″W], August 1960, *Pfeifer 1950* (US!); Montaña La Tigra, 30 km E de Tegucigalpa, 1800 m, [14°12′N, 87°06′W], 29 February 1980, *Soto 204* (MO!); encima de El Hatillo, 1800 m, [14°07′47″N, 87°09′52″W], 1 August 1975, *Vargas & Barkley H45065* (CAS-2!, MEXU!, MO!, NY!); mtns. above San Juancito, 2000 m, 6 November 1947, *Williams & Molina R. 13369* (F!, GH!); mtns. above San Juancito, 1800 m, 20 February 1948, *Williams & Molina R. 13740* (F!, GH!, US!); mtns. above San Juancito, 2200 m, 20 February 1948, *Williams & Molina R. 13677* (F!, GH!); mtns. above San Juancito, 2000 m, 22 February 1949, *Williams et al. 15632* (F!, GH!, US!); La Montaña de La Tigra, SE de San Juancito, 2000 m, 5 February 1950, *Williams & Molina R. 17084* (F!, GH!, US!). **Ocotepeque:** al S del Cerro Chichicuilote, 12 km al SE de Nueva Ocotepeque, Reserva Biológica de Guisayote, 2300 m, 14°25′N, 89°04′W, 22 February

1992, *Darío 53* (CAS!, MEXU!, MO!); Ocotepeque, al N de la carretera del Occidente en el Cerro El Cocal, 10.5 km al NE de Nueva Ocotepeque en la Reserva Biológica de Guisayote, 2040 m, 14°28′N, 89°05′W, 24 March 1993, *Darío 400* (MO-3!). **Santa Bárbara:** upper rocky slopes and summit of Cerro Santa Bárbara, 2750 m, 5–6 April 1951, *Allen et al. 6081* (F!, GH!, US!). **Tegucigalpa:** La Laguna, Colonia Trail, San Juancito, 5800 ft, [14°12′32″N, 87°04′28″W], 4 April 1932, *Edwards 46* (F!, GH!). **Yoro**: Pico Pijol, 9 km al SE de Nueva Esperanza, 2282 m, [15°10′N, 87°34′W], 29 May 1993, *Darío 479* (CAS!, MEXU!, MO!). **Departamento unknown**: Distrito Central, Rancho Quemado, 4000 ft, [14°28′21″N, 86°29′37″W], 3 April 1970, *Gillis 9582* (F!).

EL SALVADOR. Chalatenango: E slope of Los Esemiles, 2250 ft, 14°21′N, 89°09′, 11 March 1942, *Tucker 999* (NY!, TEX!, US!). **Santa Ana:** San José Ingenio, P. N. Montecristo, Miramundo, 2400 m, 14°25′N, 89°21′W, 12 April 2002, *Martínez 925* (MO!). **Morazán:** near El Zancudo, 28 March 1979, *Seiter 1007* (F!).

NICARAGUA. Jinotega: Mpio. Jinotega, Reserva Natural Cerro Kilambé, 950–1700 m, 13°34′N, 85°41′W, 22 April 2000, *Rueda et al. 13377* (MO!). **Matagalpa:** Hacienda Santa María de Ostuma, Cordillera Dariense, 1300–1600 m, [13°N, 85°56′W], 8 December 1976, *Tomlin 107* (MO!); Hacienda Santa María de Ostuma, Cordillera Dariense, 1300–1600 m, 14 January 1977, *Tomlin 148* (MO!). **Nueva Segovia:** Mpio. Wiwili, Reserva Cerro Kilambé, 1400–1750 m, 13°34′N, 85°42′W, 7 September 2000, *Rueda et al. 14944* (MO!). **Zelaya:** Cerro El Hormiguero, W range, 1100–1183 m, 13°44′N, 85°00′W, 15 April 1979, *Pipoly 5170* (CAS!, MEXU!, MO!); Cerro El Hormiguero, W range, 1100–1183 m, 13°44′N, 85°00′W, 15 April 1979, *Pipoly 5201* (CAS!, MEXU!, MO!); Cerro La Pimienta number 1 and 2, E range, summit of 2 peaks, northernmost and central, 900–1160 m, 13°45′N, 84°59′W, 17 April 1979, *Pipoly 5237* (CAS!, MEXU!, MO!).

24. *Symplocos retusa* Kriebel, González & Alfaro (2004: 56). Type:—COSTA RICA. Pérez Zeledón: Parque Nacional Chirripó, Cordillera de Talamanca, sendero al Cerro Urán, 2640 m, 09°31′41″N, 83°35′17″W, 6 April 1995, *J. A. González 638* (holotype INB!, isotypes CR!, F!, MO!)

Trees 8–12 m tall; juvenile branchlets and vegetative buds glabrous. Petioles 5–14 mm long; leaf blades typically concolorous, yellowish green, rarely slightly bicolorous, brownish green adaxially and yellowish green abaxially, elliptic, 4.3–8.5 × 1.6–2.9 cm, subcoriaceous, glabrous, secondary veins not adaxially impressed, base acute, margins entire, apex retuse. Inflorescences 1-flowered or rarely 2- or 3-flowered; peduncles 8–15 mm long, glabrous; bracts caducous, 1 or 2 toward base of peduncle, ovate to deltoid, 1.5–2 × 1–2 mm, glabrous, margins ciliate; bracteoles caducous, 1 or 2, ovate to deltoid, 1.5–2 × 1–2 mm, glabrous, margins ciliate. Hypanthium glabrous. Calyx lobes 5, ovate, 2–3 × 1–2 mm, glabrous, margins ciliate. Corolla pale violet, 5-lobed, 6–8 mm long; tube connate for 3–4 mm; lobes adnate to filament tube for 3–5 mm, narrowly to broadly oblanceolate, glabrous. Stamens 3–4-seriate; filament tube 2–3 mm long; distinct portions of filaments 2–3 × 0.25–0.6 mm. Disk persistently pilose; style ca. 6.5 mm long, glabrous; stigma irregularly lobed. Fruits green maturing to dark bluish purple, ellipsoid, 6–10 × 3.5–5 mm, glabrous, apex gradually narrowed to the truncate disk; calyx lobes erect; disk pulvinate, surpassing calyx lobes and well exposed; endocarp 3–4-locular, perimeter rounded.

Vernacular name—None.

Illustration—Kriebel *et al.* (2004: 58).

Phenology—Flowering February, April, July, and December; fruiting May and July.

Distribution and habitat—Costa Rica (Pacific slope of the Talamancas) and western Panama, uncommon in moist forests at 1250–3000 m elev. Figure 30.

Conservation status—*Symplocos retusa* is restricted to the Cordillera de Talamanca of Costa Rica and westernmost Panama. The species is known from 13 collections representing about nine populations. Only four of these are afforded some protection, one in Costa Rica's Chirripó National Park and three in Panama's portion of La Amistad International Park and the contiguous Reserva Forestal de Fortuna. The EOO is 2395 km² and the AOO is 36 km². Based on these data, the restricted AOO, and a projected decline in area, extent, and quality of habitat due to deforestation threats, we assign a classification of Endangered (EN): B2ab(ii) to this species.

Discussion—*Symplocos retusa* is easily distinguished by the combination of its glabrous, entire-margined leaves with a retuse apex, solitary purple flowers, and fruit with a conspicuous pulviniform disk that protrudes beyond the persistent sepals.

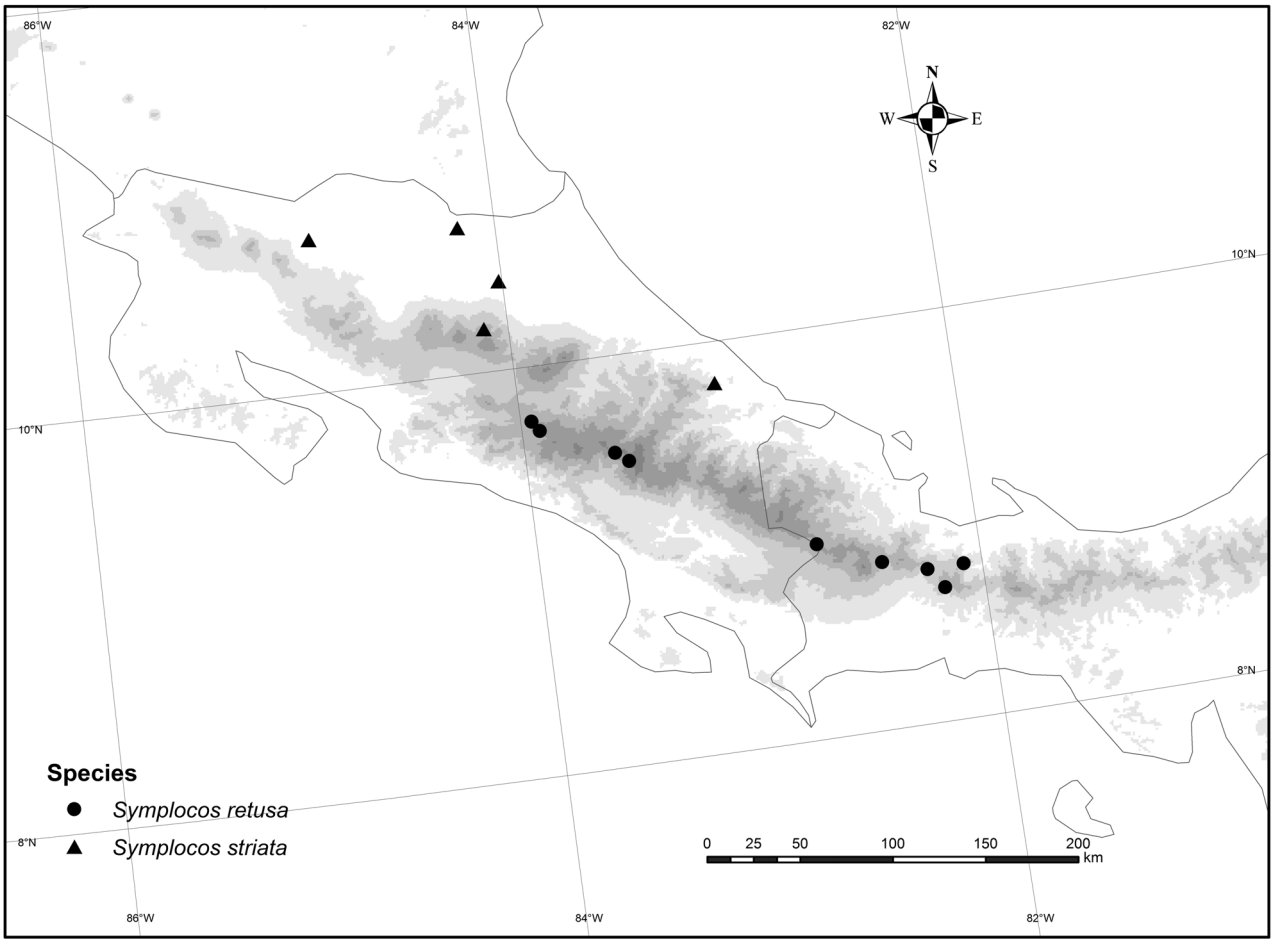

FIGURE 30. Geographic distribution of *Symplocos retusa* and *S. striata.*

***Additional specimens examined*—COSTA RICA. Cartago:** along Interamerican Hwy ca. 4.5 km E of Hwy 222, 2150–2200 m, 09°44′N, 83°57′W, 30 July 1979, *Stevens 13457* (C!, CAS!, F!, MO!); area near El Canon, 40 km S of Cartago, Cordillera de Talamanca, 2500 m, [9°40′59″N, 83°55′01″W], 26 January 1965, *Williams et al. 28218* (NY!, US!). **Puntarenas:** Coto Brus, Zona Protectora Las Tablas, Estación Las Alturas de Cotón, 1800 m, 08°58′20″N, 82°50′05″W, 20 May 2000, *Alfaro 3184* (CR!, INB!, MO!); Zona Protectora Las Tablas, trail from Biol. Station above Finca Las Alturas to Cerro Echandi, 2180 m, [8°57′N, 82°44′W], 19 February 1991, *Almeda et al. 6731* (CAS!, CR!, INB!, MO!, NY!). **San José:** Cordillera de Talamanca, Pacific slope of the Chirripó massif, 2700–3000 m, [9°28′47″N, 83°31′45″W], 6 April 1969, *Davidse & Pohl 1642* (MO!, US!); San Gerardo de Dota, 2250 m, 09°34′31″N, 83°48′20″W, 30 July 1996, *Wasselingh et al. 25* (CR!), *Wasselingh 27* (CR!).

PANAMA. Chiriquí: in and along wooded slopes on Cerro Horqueta, 1650 m, [08°49′N, 82°27′W], 13 August 1974, *Croat 26946* (MO); sendero Río Hornito, 08.68334°N, 82.22239°W (08°41′N, 82°13′20.6″W), 21 September 2011, *Kriebel & Burke 5753* (CAS!, NY!); vicinity of Fortuna Dam, forested slopes along ridge at southern boundary of watershed, 1250 m, 08°45′N, 82°15′W, 28 April 1986, *McPherson 9111* (MEXU!, MO!); near Fortuna Dam, on slopes of Cerro Hornito above Los Planes, 1300 m, 08°45′N, 82°15′N, 7 December 1987, *McPherson 11843* (MEXU!, MO!); Cerro Hornito, 40 km NW of Gualaca, 2238 m, [08°39′N, 82°11′W], 26 July 1975, *Mori & Bolten 7492* (CAS!, MO!).

25. *Symplocos schiedeana* Schlechtendal (1833: 527). Lectotype (designated here):—MEXICO. [Veracruz:] Barranca de Tioselo inter Tioselo et Jicochimalco, [19°22′30″N, 96°55′47″W], 29 August 1828, *C. J. W. Schiede 181* (lectotype HAL-98594-n.v., online image!, isolectotypes K-644494-n.v., online image!, P-761307-n.v., online image!, photo ex P at F! and US!)

= *Symplocos johnsonii* Standley (1927: 169). Type:—GUATEMALA. Alta Verapaz: Samac, near Cobán, 1350 m, [15°28′23″N, 90°26′44″W], 20 October 1920, *H. Johnson 874* (holotype US!, isotypes F!, US!).

Trees 9–21 m tall; juvenile branchlets and vegetative buds glabrous, juvenile branchlets occasionally striate from petiole bases. Petioles 1–2.5 cm long; leaf blades bicolorous, elliptic or oblong to obovate, 10–23 × 4–9 cm, subcoriaceous, glabrous, secondary veins not adaxially impressed, base acute, margins entire, apex obtuse or abruptly short-acuminate. Inflorescences condensed sessile or subsessile spikes 1.4–3 cm long, 5–8 flowered; peduncle 0–1 mm long; rachis 5–15 mm long, glabrous or sericeous, trichomes if present 0.5–.75 mm long; bracts persistent, ovate, 1–2 × 1–2 mm, sparsely sericeous, margins ciliate; bracteoles persistent, 3–7, ovate to broadly ovate, lowermost 1–1.5 × 1–1.5 mm, uppermost 1.5–2 × 1.5–2 mm distally on the pedicel, sparsely sericeous, margins ciliate; pedicels absent. Hypanthium glabrous to puberulent. Calyx lobes 5, suborbicular, 1–2 × 2–2.5 mm, sericeous to occasionally glabrous, margins sparsely ciliate toward apex. Corolla white or pink, 5-lobed, 9–15 mm long; tube 5–6 mm long; lobes adnate to filament tube for 6–7 mm, linear-oblong to oblanceolate, glabrous or sparsely to densely sericeous medially. Stamens 3–4-seriate; filament tube 9–12 mm long; distinct portions of filaments 3–5 × 0.5–0.75 mm. Disk densely pilose; style 9–15 mm long, densely pilose basally or up to ± halfway; stigma conspicuously and irregularly lobed. Fruits green maturing to dark bluish purple, ± cylindrical, 1.7–3.5 × 0.8–1.5 cm, glabrous, apex gradually narrowed to base of spreading calyx lobes; disk conical, apex partly visible, surpassed by calyx; endocarp 3-locular, perimeter shallowly and irregularly fluted.

Vernacular name—None.

Illustration—Figure 31.

Phenology—Flowering August through November; fruiting May and June.

Distribution and habitat—Mexico (Veracruz, Oaxaca, and Chiapas) and Guatemala, in cloud forests and montane rain forests at (850–)1350–2000 m elev. Figure 32.

Conservation status—Largely confined to southeastern Mexico, *Symplocos schiedeana* has a fragmented distribution extending from Veracruz and northeastern Oaxaca to Chiapas and north-central Guatemala. The 28 known collections represent some 16 populations, none of which occur in protected areas. The EOO is 117,535 km² and the AOO is 72 km². Deforestation threats throughout the region indicate a projected decline in area, extent, and quality of habitat. Based on these data, we assign a classification of Endangered (EN): B2ab(iii) to this species.

Discussion—*Symplocos schiedeana* Schlechtendal (1833: 527) is relatively well collected in Chiapas but represented by very few specimens from Veracruz, Oaxaca, and Guatemala. This species is distinguished by the combination of striate juvenile branchlets, large, glabrous leaves, flowers with glabrous or very sparsely pubescent sepals and densely pubescent styles, and large fruits. The sericeous corolla lobes in the specimens from Oaxaca and Veracruz are atypical for the species.

Brand (1901) excluded *Symplocos schiedeana* from his treatment because flowers and fruits are missing from the type material and because, from the general appearance of the plant, he thought that it was unlikely to be included in the American species of *Symplocos*. From our examination of a leaf fragment at F and three online images of the type material, however, we are confident that this species is one and the same as *S. johnsonii* published 94 years later. The branchlets of the specimens from the type material of *S. schiedeana* are glabrous and faintly striate from the petiole bases, the vegetative buds are glabrous, and the leaves are large (17–23 cm long) and obovate. Although open flowers and fruits are lacking on the specimens, young inflorescences are present, and these are sessile or nearly so and multiflowered, with ovate sericeous bracts and bracteoles. These characters all match the type material of *S. johnsonii* and clearly delimit *S. schiedeana* from other species.

No specimens were specifically cited in the protologue of *Symplocos schiedeana*. Schlechtendal was based at B from 1819–1833 (Stafleu & Cowan, 1985); thus it is likely that the holotype of *S. schiedeana* was at B and we assume that it has been destroyed. The former existence of a specimen at B is corroborated by Brand (1901), who cited only the specimen "Schiede n. 181 in herb. Berol. ex Mexico." The specimen at HAL has Schlechtendal's annotation of "*Symplocos Schiedeana*, n. sp.," and (like the K specimen), has the original collection label of C. J. W. Schiede with locality information that precisely matches that in the protologue of *S. schiedeana*. Because the HAL specimen is the only sheet among the type material we have seen with the author's annotation, and because the author was based at HAL from 1833–1866 (Stafleu & Cowan, 1985), we designate the HAL specimen as the lectotype even though it lacks the collection number (181) apparently indicated on the holotype.

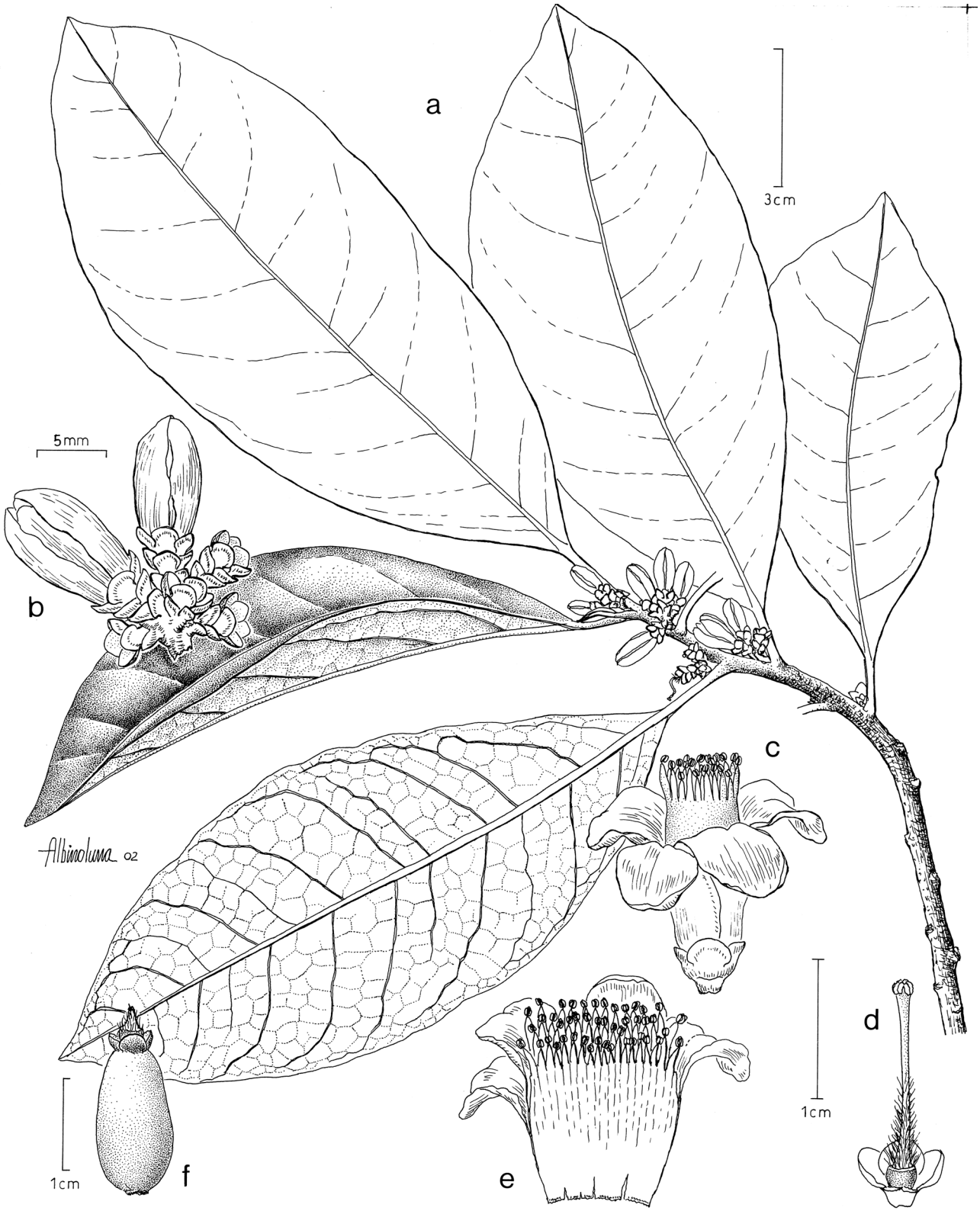

FIGURE 31. *Symplocos schiedeana*. **a.** Branchlet with inflorescences. **b.** Inflorescence with young flowers. **c.** Flower. **d.** Calyx (partly cut away), disk, and gynoecium. **e.** Corolla opened with attached stamens. **f.** Fruit. (a–e drawn from *E. Lathrop & R. F. Thorne 46772*, MEXU; f drawn from *F. Miranda 9172*, MEXU.)

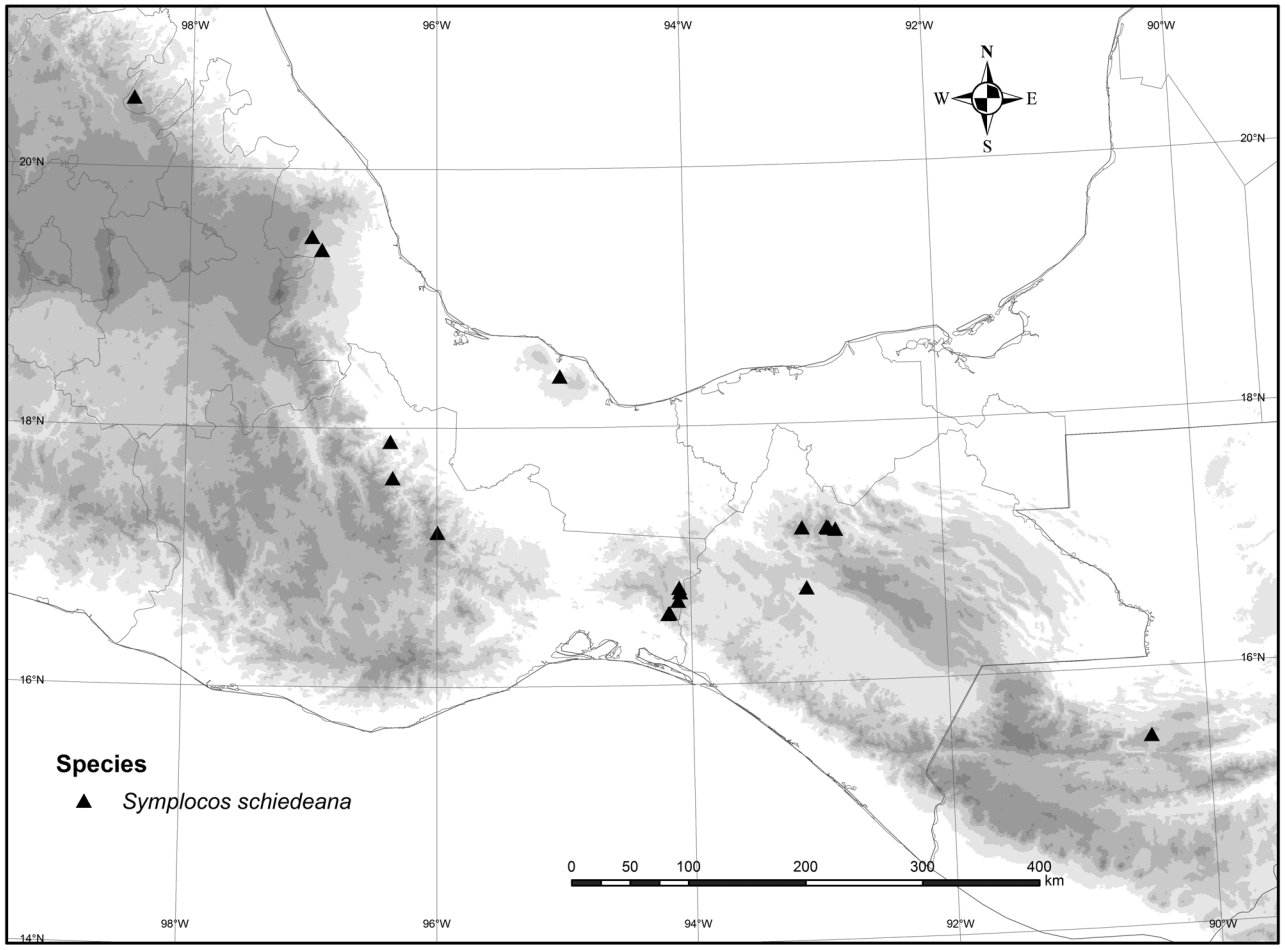

FIGURE 32. Geographic distribution of *Symplocos schiedeana*.

Additional specimens examined—**MEXICO. Chiapas:** Cintalapa, SE of Cerro Baúl on the border with the state of Oaxaca, 16 km NW of Rizo de Oro along a logging rd to Colonia Figaroa, 1600 m, [16°33′23″N, 94°10′11″W], 6 September 1972, *Breedlove 27608* (DS!, F!, MEXU!, MO!, NY!); Tuxtla Gutiérrez, Cerro Hueco near Federal Prison above Tuxtla Gutiérrez, 850 m, [16°43′34″N, 93°05′11″W], 3 October 1974, *Breedlove 38000* (DS!, F!, MEXU!, MO!); Cintalapa, SE of Cerro Baúl on the border with the state of Oaxaca, 16 km NW of Rizo de Oro along a logging rd to Colonia Figaroa, 1600 m, [16°33′23″N, 94°10′11″W], 14 November 1983, *Breedlove & Almeda 60227* (CAS!, GH!, MEXU!, MO!); Cintalapa, SE slope of Cerro Baúl, 1850 m, [16°33′N, 94°10′48″W], 3 May 1988, *Breedlove 67089* (CAS!); Pueblo Nuevo Solistahuacán, Clinica La Yerbabuena, 1900 m, 17°11′N, 92°54′W, 23–26 October 1989, *Heath & Long 2082* (MEXU!); Pueblo Nuevo Solistahuacán, 3 km NW of Pueblo Nuevo Solistahuacán, 6700 ft, [17°11′04″N, 92°54′18″W], 22 October 1971, *Lathrop & Thorne 46772* (MEXU!); Pantepec–Tapalapa, [17°11′36″N, 93°06′37″W], 17 August 1950, *Miranda 2841* (DS!, MEXU!); Pantepec–Tapalapa, 17 August 1950, *Miranda 6528* (MEXU!); Pueblo Nuevo Solistahuacán, camino Pueblo Nuevo a Simojovel, [17°10′24″N, 92°50′47″W], 29 December 1959, *Miranda 9172* (DS!, MEXU!); Cintalapa, arriba del camino a la Colonia Rodolfo Figueroa, cerca de Cerro Baúl, 1450 m, [16°33′N, 94°10′48″W], 3 May 1988, *Palacios E. 362* (CAS!); Pueblo Nuevo Solistahuacán, ca. 3 mi N of Pueblo Nuevo Solistahuacán, 6700 ft, [17°11′04″N, 92°54′18″W], 23 June 1970, *Thorne & Lathrop 40307* (B!, DS!, LL!); Pueblo Nuevo Solistahuacán, 3 km NW of Pueblo Nuevo Solistahuacán, 6700 ft, September 1971, *Thorne & Lathrop 41772* (DS!); Pueblo Nuevo Solistahuacán, Jitotol Ridge, 3 km N of Pueblo Nuevo Solistahuacán, 6600–6700 ft, 17°08′N, 92°53′W, 9 August 1972, *Webster et al. 17788* (CAS!, MEXU!); Pueblo Nuevo Solistahuacán, 3 km NW of Pueblo Nuevo Solistahuacán, 6700 ft, 21 August 1970, *Zuill 287* (DS!); Pueblo Nuevo Solistahuacán, 3 km NW of Pueblo Nuevo Solistahuacán, 6700 ft, 10 September 1970, *Zuill 334* (DS!); Pueblo Nuevo Solistahuacán, 3 km W of Pueblo Nuevo Solistahuacán, 6700 ft, 27 September 1970, *Zuill 718* (DS!). **Oaxaca:** 9.5 km E of the Mitla to Choapam Rd

on rd to Zacatepec, NE slope of Cerro Zempoaltepetl, 2130 m, [17°11′40″N, 95°59′37″W], 27 September 1986, *Breedlove & Almeda 64783* (CAS!); Mpio. Comaltepec, La Esperanza, 1600 m, 17°37′N, 96°21′W, 13 April 1991, *López L. 692* (CAS!); San Miguel Chimalapa, Cerro de la División, ca. 5 km al E de Benito Juárez, 1400–1600 m, 16°43′N, 94°05′W, 1 May 1986, *Maya J. 3269* (MEXU!); San Miguel Chimalapa, Arroyo entre Cerro Verde y Cerro Amargo, al S del camino Benito Juárez–La Ciénaga, ca. 8 km en línea recta al SE de Benito Juárez, ca. 32 km en línea recta al NNE de San Pedro Tapantepec, 1200 m, 16°39′N, 94°06′W, 4 August 1986, *Maya J. 3717* (MEXU!); Valle Nacional, Cerro Mirador, 15 km NNW de Valle Nacional, 1000–1200 m, 17°93′N, 96°22′W, [17°53′51″N, 96°22′10″W], 16 October 1992, *Meave del Castillo et al. 1511* (NY!); San Miguel Chimalapa, Cerro Salomón, ca. 2 km en línea recta al NNO del Cerro Guayabitos, ca. 43 km en línea recta al N de San Pedro Tapanatepec, cerca del límite con Mpio. Santa María Chimalapa, 1850 m, 16°45′N, 94°05′30″W, 23 August 1986, *Wendt et al. 5392* (MO!). **Veracruz:** Catemaco, camino a Bastonal, NW de Tebanca, [18°23′53″N, 95°00′48″W], 3 August 1985, *Cedillo T. 3305* (MO!); Coatepec, entre Coatepec y Coatepec Viejo, cerca de la Cascada de la Cravada, 1450 m, [19°28′32″N, 97°00′36″W], 24 August 1986, *Cházaro B. et al. 3988-A* (CAS!, GH!); Coatepec, cerca de la cascada de la Granada, [19°28′32″N, 97°00′36″W], 29 March 1991, *Cházaro B. & Hernández de C. 6594* (MO!); Huayacocotla, vicinity of shrine and "Bienvenidos a Huayacocotla" arch over the hwy, SW entrance to Huayacocotla on rd from Palo Bendito, 2150 m, 20°32′N, 98°29′W, 21 July 1982, *Diggs & Nee 2949* (NY!).

26. *Symplocos serrulata* Bonpland (1808: 190). ≡ *Praealstonia serrulata* (Bonpl.) Miers (1879: 292). Lectotype (designated here):—COLOMBIA. Crescit in sylvis prope Popayan Novo-Granatensium, alt. 1750 hex.; floret Decembri, *F. W. H. A. Humboldt & A. J. A. Bonpland s.n.* (lectotype P-Bonpl.-670958-n.v., online image!, isolectotype P-Bonpl.-135117-n.v., online image!)

= *Symplocos rufescens* Bonpland (1808: 192, t. 55). ≡ *Praealstonia rufescens* (Bonpl.) Miers (1879: 292). Type:—COLOMBIA. [Quindío:] Crescit in Andibus Quinduensibus, alt. 1300–1500 hex. (Regno Novo-Granatensi), *F. W. H. A. Humboldt & A. J. A. Bonpland s.n.* (holotype P-Bonpl.-135119-n.v., online image!).

= *Symplocos tomentosa* Bonpland (1808: 195). ≡ *Praealstonia tomentosa* (Bonpl.) Miers (1879: 292). Lectoype (designated here):—COLOMBIA. Habitat in Nova Granata, prope Ibague [Ybague], *F. W. H. A. Humboldt & A. J. A. Bonpland s.n.* (lectotype P-Bonpl.-670959-n.v., online image!, isolectotype P-Bonpl.-135118-n.v., online image!).

= *Symplocos irazuensis* Cufodontis (1933: 200). Type:—COSTA RICA. Cartago: Vulcanus Irazú, in declivio austro-occid. in jugo australi supra domum Guayabillos, 2500 m, [09°59′N, 83°51′W], 23 May 1930, *G. Cufodontis 361* (holotype W, photo ex W at F! and GH!, isotype F!).

= *Symplocos bradei* Brand ex Sleumer (1937: 263). Type:—COSTA RICA. Cartago: Volcán Irazú, [09°59′N, 83°51′W], 8 September 1908, *A. C. Brade 2018* (holotype B, photo ex B at F! and NY!).

= *Symplocos gibraltarica* Cuatrecasas (1950: 109). Lectotype (designated by Ståhl 1996):—COLOMBIA. Valle del Cauca: Cordillera Occidental, Gibraltar, N of Las Brisas between Cartago and Albán, 2100–2200 m, 25 May 1946, *Cuatrecasas 22524* (lectotype F-69551-n.v., online image!, isolectotypes COL-36208-n.v., online image!, COL-79275-n.v., online image!, F-1294685-n.v., online image!, P-648441-n.v., online image!).

Shrubs or more commonly trees 3–10 m tall; juvenile branchlets and vegetative buds densely hirsute (rarely glabrous), trichomes mostly 1–1.5 mm long, erect or spreading, ferruginous. Petioles 3–5(–8) mm long; leaf blades usually bicolorous (rarely concolorous), oblong-obovate or rarely to narrowly elliptic, (6–)9.5–20 × (2–)5–8 cm, membranaceous to coriaceous, abaxially moderately to densely hirsute to pilose, adaxially glabrous (rarely hispid when young), secondary veins slightly adaxially impressed, base obtuse to rounded, margins serrulate or entire, apex acuminate. Inflorescences racemes 2–4.5(–5) cm long, 3–7-flowered, or rarely 1–2-flowered; peduncle 0–10 mm long; rachis 5–30 mm long, densely hirsute (rarely glabrous), trichomes 1–1.5 mm long; bracts deciduous, oblong, 2–4 × 1.5–2 mm, densely sericeous to hirsute, margins densely sericeous to hirsute; bracteoles deciduous, 3–5, ovate to oblong, 2–2.5 × 2–2.5 mm, margins densely sericeous to hirsute; pedicels 0–3 mm long. Hypanthium densely hirsute. Calyx lobes 5, rotund, 2–5 × 3–5 mm, densely sericeous to hirsute, margins sparsely ciliate. Corolla pink, 5-lobed, 10–15(–18) mm long; tube 3–5 mm long; lobes adnate to filament tube for 6–9 mm, linear-oblong to oblanceolate, abaxially sericeous medially, glabrous toward the margins, margins ciliate. Stamens ± 4-seriate; filament tube 6–13 mm long; distinct portions of filaments 8–10 × 0.5–0.75 mm. Disk pilose; style 13–15 mm long, pilose basally; stigma conspicuously and irregularly lobed. Fruits green maturing to dark bluish purple, cylindrical to ellipsoid, 2–3 × 1.5–2 cm, hirsute, apex obtuse or truncate with erect or infolded calyx lobes; disk ± conical, often projecting beyond calyx lobes; endocarp 4–5-locular, perimeter rounded.

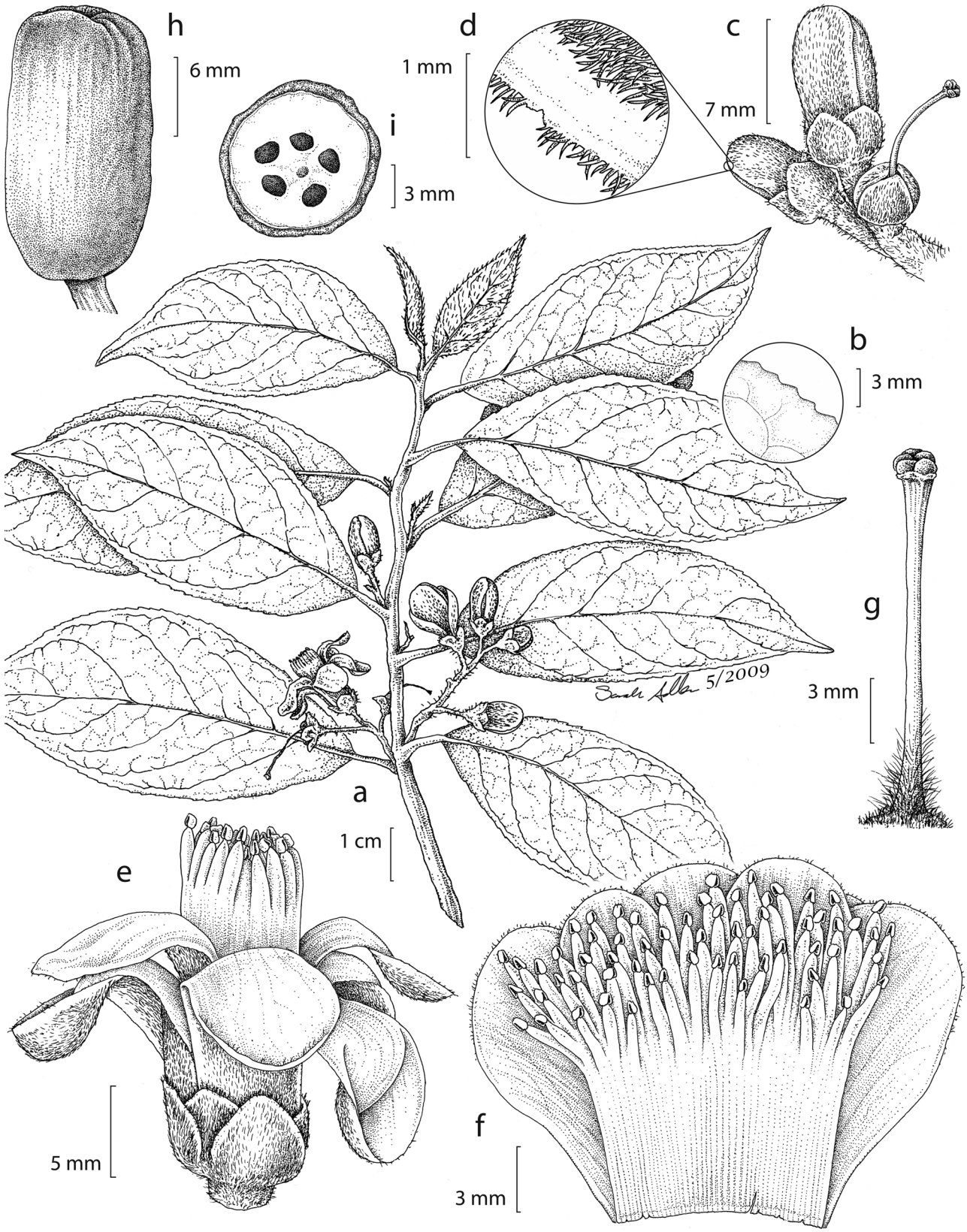

FIGURE 33. *Symplocos serrulata.* **a.** Branchlet with inflorescences. **b.** Close-up of (a) showing leaf blade margin. **c.** Inflorescence. **d.** Close-up of (c) showing corolla lobe surface pubescence and ciliate margin. **e.** Flower. **f.** Corolla opened with attached stamens. **g.** Top of disk, style, and stigma. **h.** Fruit. **i.** Fruit, cross section. (a–g drawn from *de G. C. Nevers et al. 8946*, CAS; h, i drawn from *F. Almeda et al. 3111*, CAS.)

Vernacular name—None.

Illustrations—Figure 33; Bonpland (1808: t. 54 & 55).

Photographic images—Figures 2a, 2i.

Phenology—Flowering December through October (peak January through July); fruiting January, September, October, and December.

Distribution and habitat—Costa Rica and Panama, common in *Quercus* forests and premontane forests at (1000–)1500–2500(–3000) m elev. Also in Colombia. Figure 34.

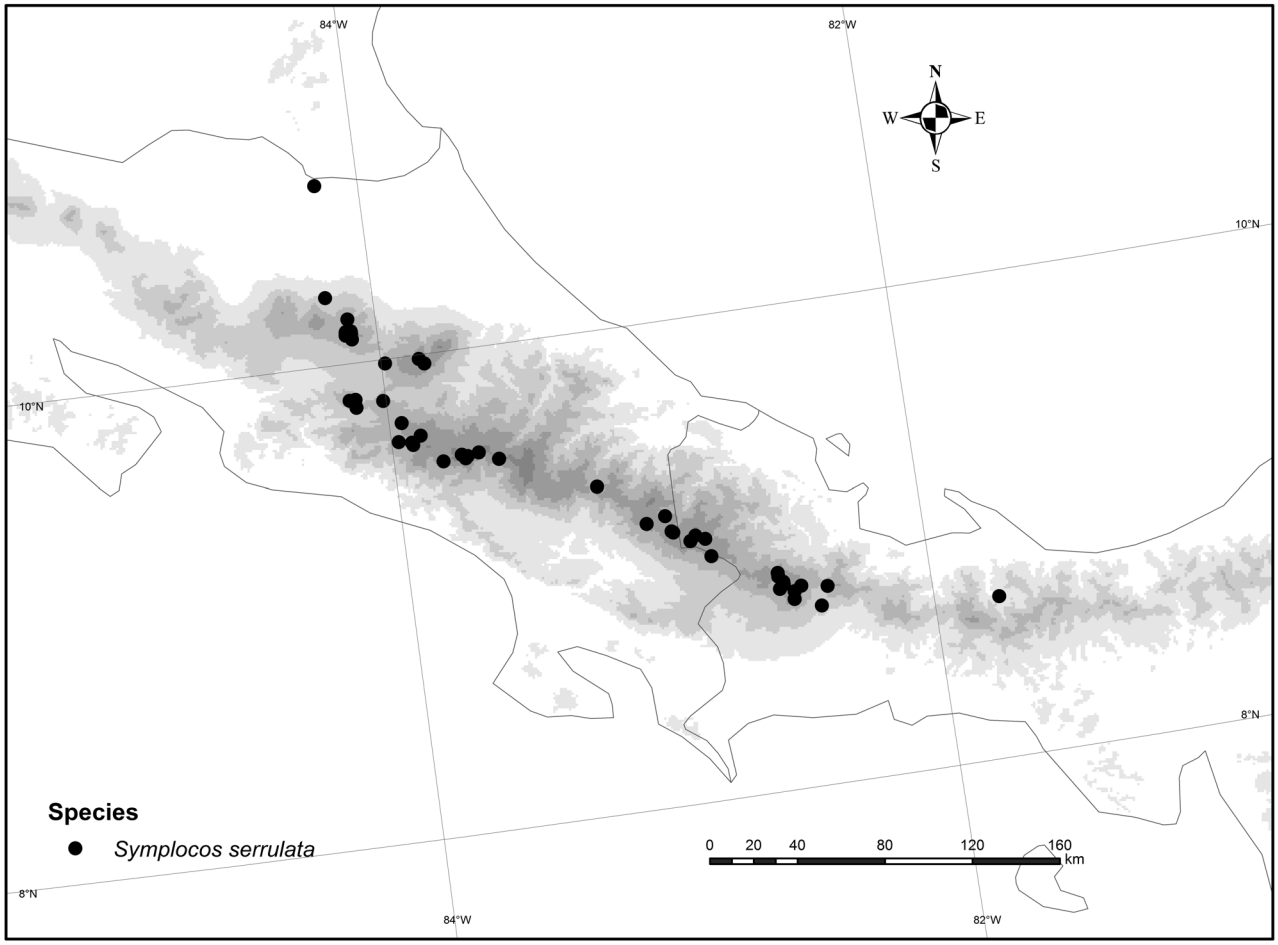

FIGURE 34. Geographic distribution of *Symplocos serrulata* in Central America.

Conservation status—Although *Symplocos serrulata* is restricted in Central America to Costa Rica and western Panama, it is known there from over 60 collections, and several populations are afforded protection in parks and reserves. It is also widespread in Colombia, occurring from Antioquia south to Huila. Based on these data, we assign a classification of Least Concern (LC) to this species.

Discussion—Typical specimens of *Symplocos serrulata* have branchlets with ferruginous trichomes, large leaf blades (12–16 cm long, 6–7 cm wide), open inflorescences (more than 2 cm long), and large flowers (ca. 1.5 cm) with sericeous petals. Typical *S. serrulata* can be distinguished from typical *S. austin-smithii* by its branchlet pubescence (ferruginous trichomes versus glabrous), larger leaves (12–16 x 6–7 cm versus 8–10 x 3–4 cm), open inflorescences (versus congested), and sericeous petals (versus glabrous or sparsely pubescent). These differences are maintained in most individuals of the two species, but *S. serrulata* can be difficult to distinguish from *S. austin-smithii* in Costa Rica and Panama because of intergradation in these characters. Where distinctions between the two species break down, the most reliable difference is in the structure of the fruit apex: obtuse or truncate with erect or infolded calyx lobes in *S. serrulata*, versus fleshy fruit lobes with the calyx not evident in *S. austin-smithii*.

Symplocos irazuensis was differentiated from *S. serrulata* by its long inflorescences (ca. 3 cm) and broadly

elliptic leaves that are glossy adaxially and glaucous with dense ferruginous pubescence abaxially (Cufodontis, 1933). However, these characters intergrade with *S. serrulata* and do not serve to clearly distinguish the species.

The lectotype of *Symplocos serrulata* is designated to correspond with the specimen that is annotated as "holotype" on an undated annotation label on the P-Bonpl.-670958 specimen. There is no evidence that Bonpland designated one specimen among the duplicates as the holotype, and there is no published lectotype, so lectotypification is necessary. We prefer to make this designation in accordance with the labeling of the specimen. The same rationale was used to select the lectotype of *S. tomentosa*.

Additional specimens examined—**COSTA RICA. Cartago:** ca. 14, SE of El Empalme on Cordillera de Talamanca, 2600 m, [09°40′03″N, 83°52′59″W], 18 July 1977, *Almeda et al. 3111* (CAS-2!, NY!); SE-facing slopes of Volcán Irazú, ca. 7–8 km beyond the entrance to Parque Nacional Irazú and ca. 5 km beyond the turnoff to Hacienda Coliblanco, 8500 ft, [09°57′43″N, 83°49′52″W], 21 February 1978, *Almeda & Nakai 3775* (CAS!, NY!); al Empalme Inter. Sur Cartago, [09°43′48″N, 83°57′W], 18 February 1972, *Poveda 400* (CR-2!, MO!); La Chonta, 27 May 1928, *Stork 2311* (F!, MO!); Río Sarapiquí, near Cariblanco, 800 m, [10°17′N, 84°11′W], 19 April 1949, *Williams 16456* (F!). **Cartago:** forest E of Inter-American Hwy near Km 97 (near La Georgina), Cerro de Talamanca, [09°34′N, 83°44′W], 23 July 1968, *Mathias 480* (F-2!, MEXU!, MO!, NY!, US-3!). **Heredia:** Barva, P. N. Braulio Carillo, cuenca del Tárcoles, Volcán Barva, alrededores de la estación, 2600 m, [10°08′N, 84°06′W], 2 January 2000, *Acosta & Ramírez 321* (MO!, NY!); slopes of Volcán Barva, 1000 m, [10°06′N, 84°06′W], 23 April 1970, *Bawa 390* (MO!); P. N. Braulio Carillo, upper Volcán Barva, Pacific slope, near divide, 2600–2700 m, 10°07′45″N, 84°07′15″W, 3 April 1992, *Boyle 797* (CAS!, MEXU!, MO!); P. N. Braulio Carillo, upper Volcán Barva, Atlantic slope, ca. 0.5 km below (N of) main trail to Lago Barva, descending via old Sendero del Transecto then traversing 250 m, 10°08′18″N, 2750 m, 84°06′33″W, 28 April 1992, *Boyle 805* (CAS!, MEXU!, MO!); P. N. Braulio Carrillo, Sendero del Transecto, 1990 m, 10°11′03″N, 84°06′27″W, 2 September 1992, *Boyle & Snow 1040* (MO!); P. N. Braulio Carrillo, Estación Barva, 2600 m, 10°08′00″N, 84°07′10″W, 23 June 1990, *Fernández 25* (CAS!, MEXU!, MO!); along rd to Volcán Barva, 1.5 km N of Sacramento, 2700 m, [10°07′06″N, 84°07′20″W], 27 June 1975, *Hartshorn 1761* (F!, MO!, NY!); P. N. Braulio Carillo, Volcán Barva, 2600 m, 10°07′20″N, 84°06′00″W, 7 August 1989, *Rivera 43* (CAS!, MEXU!, MO!); P. N. Braulio Carrillo, Estación Barva, 2300 m, 10°07′22″N, 84°07′15″W, 24 June 1990, *Varela 93* (MO!); P. N. Braulio Carrillo, Estación Barva, 2300 m, 10°07′22″N, 84°07′15″W, 26 June 1990, *Varela 155* (MEXU!, MO!); S edge of the Braulio Carillo park above Sacramento on S slope of Volcán Barva, 2600 m, [10°07′06″N, 84°07′20″W], 22 July 1980, *Wilbur 29464* (CAS!). **Limón:** Cordillera de Talamanca, headwaters of the unnamed western branch of the Río Teribe, between the Río Sini and the continental divide at Cerro Bekom, 2500–2600 m, 09°10′45″N, 83°03′30″W, 21 & 27 March 1984, *Davidse et al. 25745* (CAS!, MEXU!, MO!); Cordillera de Talamanca, headwaters of the unnamed W branch of the Río Teribe, between the Río Sini and the continental divide at Cerro Bekom, 2500–2600 m, 09°10′45″N, 83°03′30″W, 21 & 27 March 1984, *Davidse et al. 25750* (CAS!, MO!); Cordillera de Talamanca, Atlantic slope, Valle de Silencio, area just N of Cerro Hoffman, 4.5 air mi W of the Costa Rica-Panama border, 2350–2450 m, 09°08′N, 82°58′W, 8 September 1984, *Davidse et al. 28623* (CAS!, MEXU!, MO!, NY!); Cordillera de Talamanca, Atlantic slope, N slope of the unnamed cordillera between the Río Terbi (Teribe?) and The Río Sini, 2000–2500 m, [09°12′N, 82°59′W], 14 September 1984, *Davidse & Herrera Ch. 29092* (CAS!, MO!); P. N. Cordillera de Talamanca, 300 m antes de Unión Quebrada Kuisa con R. Lori, entre Ujarrás–San José Cabécar, 1800 m, 09°21′35″N, 83°13′45″W, 19 March 1993, *Herrera 5944* (MEXU!, MO!); Cantón de Talamanca, P. N. La Amistad, Tararia, Jardín, Valle del Silencio, 2400 m, 09°07′40″N, 82°57′40″W, 1 April 1997, *Quesada 1951* (MO!). **Puntarenas:** Cantón de Pérez Zeledón, P. I. La Amistad, Cordillera de Talamanca, Sendero Herradura, que sube a fila Urán, 2600–2800 m, 09°31′47″N, 83°35′30″W, 6 April 1995, *Aguilar & Garrote 3875* (MO-2!); Cantón de Coto Brus, Z. P. Las Tablas, Cuenca Térraba–Sierpe, sendero a Cerro Echandi, 2500–2700 m, 09°00′32″N, 82°49′41″W, 14 August 1997, *Alfaro 1363* (MO!). **San José:** ca. 5 km WSW of Aserrí, upper slopes and summit of Cerro Daser, 7000 ft, [09°51′N, 84°07′W], 18 February 1978, *Almeda & Nakai 3665* (CAS-2!); Cordillera de Talamanca, right-hand turn onto gravel rd off of Interamerican Hwy ca. 1 km beyond La Georgina en route to San Isidro de El General, 9700 ft, [09°34′N, 83°44′W], 9 March 1981, *Almeda & Nakai 4818* (CAS!, COL!, CR!, NY!); La Cima de Copey de Santa María de Dota, [09°38′36″N, 83°55′13″W], 30 June 1985, *Chavarría 17* (F!, MO!); Cantón de Pérez Zeledón, P. N. Chirripó, Cordillera de Talamanca, Finca San Carlos, entre las cabeceras de las quebradas Blanco y Barranca, 2640 m, 09°31′44″N, 83°35′32″W, 5 April 1995, *González 618* (MEXU!, MO!); Cantón de Pérez Zeledón Villa Mills, a orillas de casa junto a robles jóvenes, 3000 m, 9°33′30″N, 83°42′40″W, 7

September 1990, *Hernández 9036* (F!); alrededores de Santa María de Dota, Salsipuedes, 2700 m, [09°39′11″N, 83°58′14″W], 1 February 1972, *McCaffrey DMC 117* (CR-2!); Cantón Dota, Albergue Savegre, 09°33′00″N, 83°48′29″W, *Michelangeli & Doria 1118* (NY!); Z. P. Cerros de Escazú, Cedral, Cerro Rabo de Mico, 2100–2400 m, 09°50′57″N, 84°08′25″W, 25 July 1991, *Morales 84* (MO!); Z. P. Cerros de Escazú, Cedral, la falda N del Cerro Rabo de Mico, Cuenca del Río Poas, 1600–2300 m, 09°50′57″N, 84°08′25″W, 9 October 1991, *Morales 156* (MO!); Z. P. Cerros de Escazú, Aserrí, Cerros Escazú–La Carpintera, Cedral y Alto Hierbabuena, 2000 m, 09°50′30″N, 84°07′20″W, 1 October 1993, *Ramírez & Morales 136* (MEXU!, MO!); El Copey, 5200 ft, [09°38′N, 83°55′W], 19 April 1928, *Stork 1587* (F!, MEXU!, MO!); ca. 6–8 km SSW of San José in the Cerros de Escazú, 2200–2318 m, [09°50′45″N, 84°07′28″W], 25 May 1975, *Utley & Utley 2514A* (CAS!, F-2!, MO!); Cerros de Escazú (Cedral) approach to and summit of Cerro Daser ca. 3–5 km SW of Aserrí, 2300–2400 m, [09°51′N, 84°07′W], 13 March 4289, *Utley & Utley 4289* (CAS!); San Pedro de Coronado, 1400 m, [09°59′N, 83°59′W], 27 July 1937, *Valerio 1679* (F!); Tárbaca, 1700 m, 24 March 1938, *Valerio 1744* (F!); La Georgina, Cerro de la Muerte, Cordillera de Talamanca, [09°33′N, 83°43′12″W], 20 January 1987, *Zamora V. 1317* (F!, MO!). **San José-Cartago:** Cordillera de Talamanca, upper slopes, W ridge of Cerros Cuerici, 3160 m, 09°34′N, 83°40′W, 15 September 1983, *Davidse 24729* (CAS-2!, MEXU!, MO!).

PANAMA. Bocas del Toro: Cordillera de Talamanca, headwaters of the Río Culubre, 6 air km NW of the peak of Cerro Echandi of the Costa Rica-Panama border, 2450–2600 m, 09°05′N, 82°50′30″W, 2–3 March 1984, *Davidse et al. 25194* (CAS!, MEXU!, MO!, NY!); ca. 2 km SW of Itamut camp, Fabrega, 3100–3200 m, [09°06′10″N, 82°52′39″W], 8 March 1984, *Gómez P. et al. 22658* (CAS!, MEXU!, MO!); Parque Nacional La Amistad, Cerro Pittier, 2900 m, 09°04′588″N, 82°54′680″W, [09°04′58″N, 82°54′68″W], 9 March 2003, *Klitgaard et al. 727* (MO!). **Chiriquí:** Cerro Punta, 7000 ft, [08°53′06″N, 82°35′W], 3 July 1966, *Blum et al. 2416* (MO!); Volcán Barú, dirt rd going up E slope, 2500–3000 m, [08°47′N, 82°32′W], 11 April 1984, *Churchill & Kuijt 5089* (MO!); ridge N of Potrero Muleto, 3000 m, [08°48′53″N, 82°31′43″W], 15 March 1979, *D'Arcy & Hammel 12509* (MO!); ridgetop above Alto Boquete, 7400–8600 ft, [08°44′24″N, 82°25′59″W], 9 April 1979, *D'Arcy et al. 13120* (CAS!, MO!); Cerro Punta, 2000 m, [08°51′N, 82°34′W], 9 September 1971, *Lao 346* (MO!); along rd from Cerro Punta village towards Boquete, near Bajo Grande, 2100 m, 08°50′N, 82°35′W, 5 June 1986, *McPherson 9344* (CAS!, MEXU!, MO!); on path up N slope of Volcán Barú, starting along impassable rd formerly linking Boquete and Cerro Punta, 1750–1900 m, 08°50′N, 82°30′W, 28 July 1987, *McPherson 11345* (CAS!, MEXU!, MO!, NY!); NW of Cerro Punta, at INRENARE station in Parque Amistad, trail below station, 2100 m, [08°54′N, 82°35′W], 20 October 1992, *McPherson 15943* (CAS!, MEXU!, MO!); along trail to Cerro Pate Macho, 1850 m, 08°49′N, 82°24′W, 7 February 1986, *McPherson & Merello 8335* (CAS!, MEXU!, MO!, NY!); Bocas del Toro boundary, Cerro Colorado area, 1450 m, 08°40′N, 81°45′W, 26 January 1989, *de Nevers et al. 8946* (CAS-2!, MEXU!, MO!, NY!); Volcán Barú E slope on rd from Boquete, 9 km W of Boquete (air distance), 2400 m, 08°50′N, 82°30′W, 8 January 1983, *Stein 1295* (CAS!); edge of forested slope above Cerro Punta toward Bajo Grande in Quebrado Bajo Grande, 6500 ft, [08°51′36″N, 82°33′59″W], 14 January 1970, *Wilbur et al. 10918* (DUKE, F!, MO!).

***Extralimital specimens*—COLOMBIA. Antioquia:** *McPherson 13423* (COL!, MO!). **Bogotá:** *Triana 4259-5*, March 1856 (COL!). **Cauca:** *Idrobo 5635* (COL-2!). **Cundinamarca:** *Jaramillo M. et al. 2703* (COL-2!). **Huila:** *Cuatrecasas 8660* (COL!). **Norte de Santander:** *Schlim 20* (F!). **Tolima:** *Triana 4259-6* (COL!). **Quindío:** *Arbalaez S. et al. 2586* (COL!). **Valle:** *Duque-Jaramillo 4156* (COL!).

27. *Symplocos sousae* Almeda (1982b: 255). Type:—MEXICO. Jalisco: SE of El Chante and Aserradero along rd near El Guisar, an abandoned lumber mill, 2743 m, [20°17′N, 103°24′W], 24 November 1968, *F. Boutin & F. H. Brandt 2562* (holotype CAS!, isotypes HNT!, MEXU-2!)

Shrubs 1–3 m tall or trees 5–10 m tall; juvenile branchlets and vegetative buds sericeous or strigose to glabrous, trichomes 0.2–0.8 mm long, white to brown. Petioles 3–8 mm long; leaf blades concolorous, elliptic to elliptic-ovate or elliptic-obovate, 5–11 × 2.3–5.8 cm, coriaceous, abaxially sparsely to densely strigose or strigillose, adaxially glabrous, secondary veins not adaxially impressed, base rounded or rarely obtuse or acute, margins entire or often serrulate distally, apex acute to acuminate. Inflorescences 1-flowered; peduncles absent or to 1 mm long; bracts and bracteoles not readily distinguishable, persistent, 5–9, distributed from the base of the flower and further down along peduncle, lowermost suborbicular to reniform, 1.5–2.5 × 1.5–3 mm, uppermost broadly deltoid, 3–4.5 × 3.5–5 mm, glabrous, margins ciliate. Hypanthium glabrous. Calyx lobes 5, ovate, 3.5–5 × 3–4.5 mm, glabrous,

margins ciliate. Corolla pink or red (*Hinton 14226* and *14228*), 5-lobed, 1.2–1.6 cm long; tube 2–3 mm long; lobes adnate to filament tube for 4–6 mm, oblong to obovate, glabrous. Stamens multiseriate; filament tube 5–7 mm long; distinct portions of filaments 3–6 mm long. Disk strigillose to subglabrous; style 7–11 mm long, glabrous; stigma deeply 5-lobed. Fruits green maturing to dark bluish purple, ovoid to ellipsoid, 1.6–2.4 × 1.2–1.9 cm, glabrous, apex gradually narrowed to base of erect or irregularly spreading calyx lobes; disk conical, apex partly visible, surpassed by calyx lobes; endocarp 4-locular, perimeter repand.

Vernacular name—None.

Illustration—Almeda (1982b: 256).

Phenology—Flowering November through February; fruiting April, August, and November.

Distribution and habitat—Mexico (western Oaxaca, western Guerrero, Jalisco [Sierra de Manantlán]), in *Quercus-Pinus-Abies* forests at 2490–3025 m elev. Figure 29.

Conservation status—This Mexican endemic is known from 16 collections representing eight populations. Most of the collections were made in Oaxaca, with one from a nearby locality in Guerrero along its southern border with Oaxaca and three others from Jalisco, two of which are protected in the Reserva de la Biósfera Sierra de Manantlán. The EOO is 68,277 km² and the AOO is 32 km². Deforestation threats in many of its known localities indicate a projected decline in area, extent, and quality of habitat. Based on these data and coupled with its fragmented population structure, we assign a classification of Endangered (EN): B1ab(iii) to this species.

Discussion—*Symplocos sousae* can be distinguished by the combination of solitary, sessile or subsessile flowers; persistent, glabrous floral bracts; basally auriculate, glabrous calyx lobes; and large, glabrous fruits. Prior to its description, this species was confused with *S. coccinea*, which also has solitary flowers and large fruits. See the discussion under *S. coccinea* for a comparison of these two species.

Additional specimens examined—**MEXICO. Guerrero:** Dist. Galeana, Piedra Ancha, 3025 m, [16°35′N, 98°22′W], 5 March 1939, *Hinton et al. 14226* (NY!); Dist. Galeana, Piedra Ancha, 3025 m, [16°35′N, 98°22′W], 5 March 1939, *Hinton et al. 14228* (NY!). **Jalisco:** NW-facing, steep rocky wooded arroyo near top of Sierra de Manantlán Oriental, along lumber rd to Cerro Las Cumbres 0.5 km due WNW of Cerro las Capillas, 18.5 km SSE of El Chante, 2760 m, 19°33′20″N, 104°09′15″W, 6 January 1980, *Iltis et al. 2358* (CAS!, GH!, MEXU!, MO!, NY!, WIS). **Oaxaca:** ridge just N of Chicahauxtla, 2470 m, [17°09′29″N, 97°50′11″W], 5 November 1983, *Breedlove & Almeda 59741* (C!, CAS!, GH!, MEXU!, NY!); ridge just N of Chicahauxtla, 2470 m, 5 November 1983, *Breedlove & Almeda 59746* (CAS!, MEXU!, MO!); 2 km N of San Isidro Chicahuaxtla on side rd to San Martin Donjioso, 2440 m, 27 October 1986, *Breedlove 65485* (CAS!); Mpio. San Andrés Chicahuaxtla, above Santo Domingo Chicahuaxtla, 2440 m, [17°10′22″N, 97°50′28″W], 26 October 1991, *Breedlove & Mahoney 72239* (CAS!); Santiago Juxtlahuaca, San Martín Peras, 1 km de la desviación al poblado de Escopeta, Km 24 carretera de San Sebastián Tecomoxtlahuaca, 2655 m, 17°17′N, 98°09′W, [17°17′36″N, 98°10′05″W] 30 November 1994, *Calzada 19587* (MEXU!); Santiago Juxtlahuaca, San Martín Peras, 1 km de la desviación al poblado de Escopeta, carretera Coicoyan de las Flores–Santiago Juxtlahuaca, 2655 m, 17°17′N, 98°99′W, [17°17′36″N, 98°10′05″W] 31 August 1995, *Calzada & Clevinger 20144* (MEXU!); Mpio. San Andrés Chicahuaxtla, 1 km al E de San Andrés Chicahuaxtla, carretera A Tlaxiaco, 17°12′N, 97°53′W, 2 December 1992, *Campos V. et al. 4834* (CAS!); San Andrés Chicahuaxtla between Nochixtlán and Putla, Cerro Zarzamora, 5000 ft, [17°09′24″N, 97°50′20″W], 28 January 1968, *MacDougall & Carlson 3937* (F!); Cerro Zarzamora, San Andrés Chicahuaxtla, [17°09′24″N, 97°50′20″W], 15 April 1962, *MacDougall s.n.* (CAS!, MEXU!); Cerro Zarzamora, San Andrés Chicahuaxtla, December 1966, *MacDougall s.n.* (CAS-2!, MEXU!); Cerro Zarzamora, San Andrés Chicahuaxtla, 8000 ft, 28 January 1968, *MacDougall s.n.* (MEXU!, NY!); 1 km N de Chicahuaxtla, 2490 m, [17°09′55″N, 97°49′43″W], 8 February 1976, *Sousa S. et al. 5163* (CAS!, MEXU-3!).

28. *Symplocos speciosa* Hemsley (1881: 302). Lectotype (designated here):—MEXICO. Oaxaca: Pine-woods in the Cordillera of Oaxaca, 6000–7000 ft, November–April 1840, *H. G. Galeotti 1682* (lectotype G-359173-n.v., online image!, isolectotypes BR-836917-n.v., online image!, G-359172-n.v., online image!, F-871617!, P-761308-n.v., digital image!, P-761309-n.v., online image!, W-21980-n.v., digital image!)

Shrubs or trees 3–8(–12) m tall; juvenile branchlets and vegetative buds sparsely to moderately sericeous, trichomes 0.2–0.3 mm long, whitish. Petioles 6–10 mm long; leaf blades concolorous or occasionally bicolorous, usually yellowish green or occasionally green or dark green, elliptic, 5.5–10 × 2.5–3.5(–4) cm, subcoriaceous to

coriaceous, abaxially glabrous or sparsely appressed-pilose, occasionally moderately pilose, then densely so along midvein (in Oaxaca), adaxially glabrous, secondary veins not adaxially impressed, base acute, margins entire or occasionally undulate-subcrenulate or rarely serrulate, rarely with minute, narrow, black deciduous glands on youngest leaves, apex acuminate. Inflorescences racemes 1.4–1.9 cm long, 3–5-flowered; peduncle 1–2 mm long; rachis 1–5 mm long, moderately to sparsely sericeous, trichomes 0.1–0.3 mm long; bracts caducous or persistent, ovate to triangular, 1.5–2 × 1.5–2 mm, sericeous, margins ciliate, eglandular or more commonly with medium-sized red glands; bracteoles caducous or persistent (as bracts), 3–6, ovate to triangular, 1.5–2 × 1–2 mm, sericeous, margins ciliate, eglandular or more commonly with medium sized red glands; pedicels 3–4 mm long. Hypanthium sericeous. Calyx lobes 5, broadly ovate, 1.5–2 × 1.2–1.5 mm, moderately sericeous, margins ciliate. Corolla pink, 5-lobed, 7–9 mm long; tube 4–5 mm; lobes adnate to filament tube for 6–9.5 mm, oblanceolate, glabrous. Stamens 3-seriate; filament tube 6–7 mm long; distinct portions of filaments 0.5–1.2 × ca. 0.5 mm. Disk densely pilose; style 6–7 mm long, pilose basally; stigma irregularly 3-lobed. Fruits green maturing to dark bluish purple, ellipsoid, 9–10 × 3–4 mm, sparsely strigillose, apex acute with calyx lobes forming a conical beak, fruit body curved continuously into calyx lobes; disk ± flat, covered by calyx lobes; endocarp 3-locular, perimeter rounded.

Vernacular name—Blanco jook (*Rivera R. 2888* [MEXU]).

Illustration—Figure 35.

Photographic image—Figure 2b.

Phenology—Flowering (September) November through March; fruiting (February) March through July.

Distribution and habitat—Mexico (Puebla, Hidalgo, Veracruz, Guerrero, and Oaxaca), in cloud forest, *Quercus* forest, and *Pinus* forest at 830–2850 m elev. Figure 36.

Conservation status—Restricted to southern Mexico from Hidalgo and Guerrero to Veracruz and Oaxaca, *Symplocos speciosa* is known from many localities in a broad elevational belt with good forest cover. It is one of the most commonly collected species in Mexico. Based on these data, we assign a classification of Least Concern (LC) to this species.

Discussion—*Symplocos speciosa* is one of the most commonly collected species of *Symplocos* in the states of Oaxaca, Veracruz, and Hidalgo, Mexico. It is recognized by the combination of relatively small, elliptic, entire-margined leaves, 3–5-flowered inflorescences with pedicels 3–4 mm long, flowers with sericeous sepals and glabrous petals, and small, ellipsoid fruits.

Considerable morphological heterogeneity exists in *Symplocos speciosa*, reflected in the fact that the species falls out three times in the key. In all plants from Hidalgo, Puebla, and Veracruz, the bracteoles are persistent. These plants also have a strigillose leaf midvein abaxially and fasciculate inflorescences, their leaves are concolorous, tending to green or occasionally yellowish green, their bracteoles are usually eglandular (except at the tip), and elevations range from 830–2500 m. In all plants from Oaxaca and Guerrero, the bracteoles are caducous and exhibit two centers of morphological variation. At higher elevations (ca. 2300–2850 m), plants have leaves that are more or less concolorous (green to yellowish green) and typically densely pilose on the midvein abaxially, and also have fasciculate inflorescences, bracteoles that are densely glandular on the margin, and corollas that are 6–10 mm long. Examples of this group are the collections *D. E. Breedlove 61934*, *64649*, and *65992*, and *R. Cedillo T. 1268* and *1869*. At lower elevations (1250–1950 m), plants have leaves that are typically bicolorous (brown or brownish green) and strigillose on the midvein abaxially, and also have more elongated inflorescences, bracteoles that are sparsely glandular or eglandular on the margins (except for an apical gland), and corollas that are 6–7 mm long. The specimens in this group are known only from Oaxaca: *J. H. Beaman 5422* and *6229*, *B. Boyle 666* and *2531*, *B. Boyle & A. Boyle 3779*, *F. M. Liebmann 593 p.p.*, *R. López L. & G. Martin 654*, *M. Nee & G. Martin 32252*, *R. Ortega O. et al. 4057*, and *L. Woodruff et al.* 206.

Although morphological variation within *Symplocos speciosa* is thus extensive, the existence of overlapping characters precludes the recognition of formal taxonomic entities. The *D. E. Breedlove 61934* collection (the only collection of *S. speciosa* known to us from Guerrero) differs from the others in its strigillose leaf midvein abaxially and in this respect resembles the specimens of *S. speciosa* from Hidalgo, Puebla, and Veracruz. Two specimens in Oaxaca (*B. Boyle 2531* and *B. Boyle & A. Boyle 3779*) with elevations that are intermediate between those of the high- and low-elevation groups there (1950 and 2700 m, respectively) are also morphologically intermediate—they have the characters of the lower elevation group, except that they possess concolorous, greenish leaves that are pilose on the midvein abaxially.

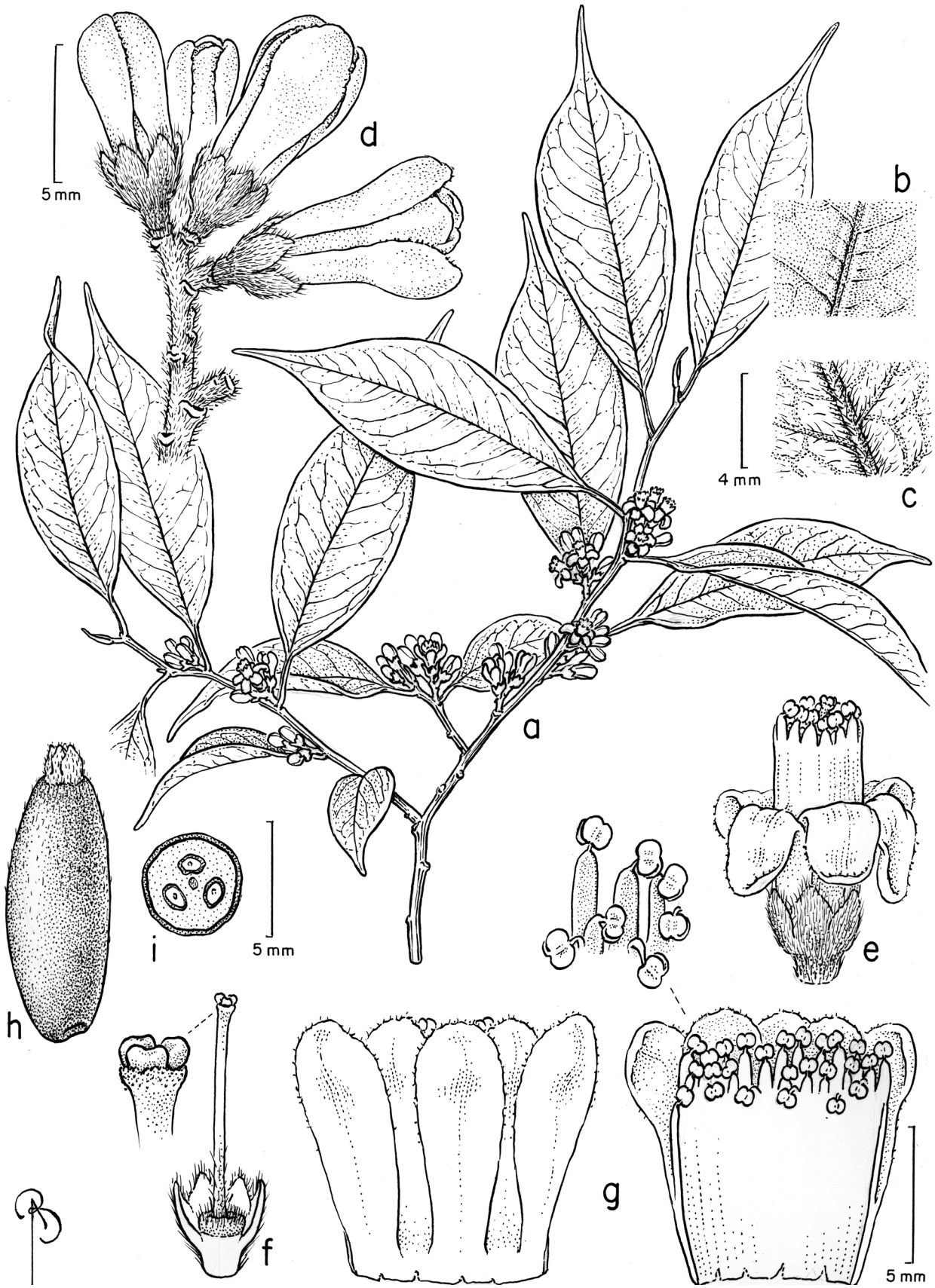

FIGURE 35. *Symplocos speciosa*. **a.** Branchlet with inflorescences. **b.** Adaxial leaf blade surface. **c.** Abaxial leaf blade surface. **d.** Inflorescence. **e.** Flower. **f.** Calyx (partly cut away), disk, and gynoecium. **g.** Corolla opened with attached stamens. **h.** Fruit. **i.** Fruit, cross section. (a–c drawn from *D. E. Breedlove & D. Mahoney 72347*, CAS; d–g drawn from *M. Sousa S. et al. 8975*, CAS; h, i drawn from *R. Torres C. & R. Cedillo T. 2679*, CAS.)

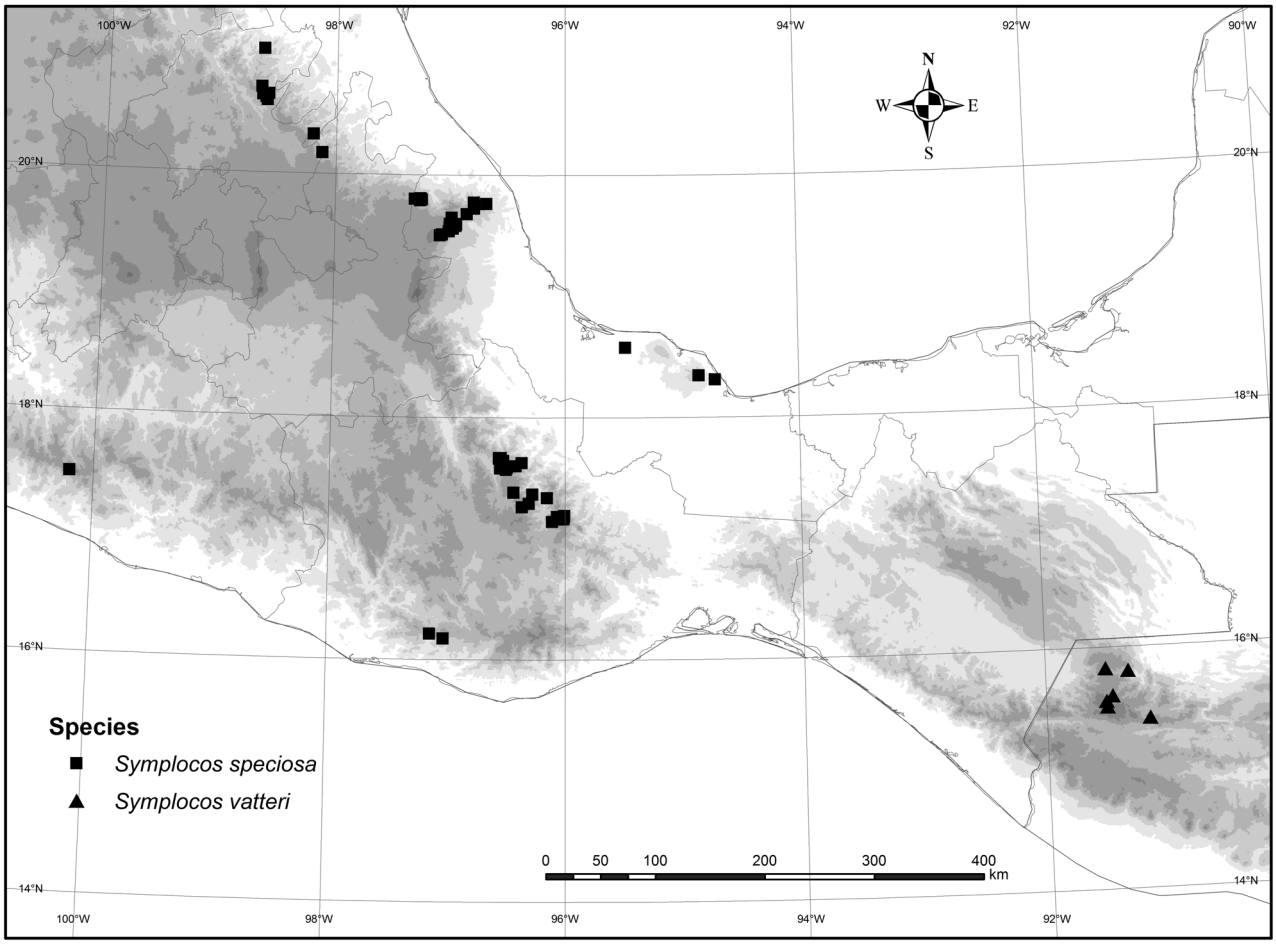

FIGURE 36. Geographic distribution of *Symplocos speciosa* and *S. vatteri*.

Variation in bracteole persistence is not common within *Symplocos* species, and is not known to occur to any large degree in any other species from Mexico or Central America. In contrast, the same pilose versus strigillose leaf midvein variation that occurs within *S. speciosa* is found in the presumably close relative *S. breedlovei*. A DNA sequence study to assess the taxonomic value of bracteole persistence and the other variable characters in *S. speciosa* more deeply would seem warranted.

In the protologue of *Symplocos speciosa*, Hemsley cited a single collection, *H. G. Galeotti 1682*. Two sheets of this collection were housed at K; both of these have been lost and are preserved only as photographs at K and NY. Of the many duplicates of this collection, we have designated the specimen G-359173 as the lectotype because it has many branchlets and good-quality flowers.

Plants that were annotated by us prior to 2008 as *Symplocos pycnantha* should be referred to *S. speciosa*.

Additional specimens examined—**MEXICO. Guerrero:** W slope of Cerro Teotepec near Puerto El Gallo, 2290 m, [17°29′09″N, 100°12′14″W], 20 October 1984, *Breedlove 61934* (CAS!). **Hidalgo:** Zacualtipán, manantial Cerro Blanco, ejido Tizapán, 1800 m, [20°39′04″N, 98°35′54″W], 20 October 1998, *Bonifacio V. K3* (MEXU!); Zacualtipán, Alrededores de Zacualtipán, [20°38′48″N, 98°39′03″W], 2 February 1964, *González Q. s.n.* (MEXU!); Tenango de Doria, 6 km al E de Tenango de Doria, hacia al Cirio, 1700–1800 m, [20°19′32″N, 98°11′57″W], 19 February 1981, *Hernández M. et al. 5453* (MEXU!, US!); Tianguistengo, 5 km al O de Tianguistengo, 2000 m, [20°42′31″N, 98°39′42″W], 21 December 1981, *Hernández M. et al. 6907* (CAS!, MEXU-2!, MO!); Mpio. Zacualtipán, La Mohonera, ca. 2 km S of Zacualtipán along Pachuca–Zacualtipán Hwy (#105), 2066 m, 20°37′45.8″N, 98°37′26.9″W, 24 January 2003, *Kelly et al. 1380* (CAS!, MEXU!, NY!); Zacualtipán, Paraje El Hayal, ejido La Mojonera al SE del Mpio. Zacualtipán, 1850 m, [20°37′33″N, 98°37′20″W], 5 July 1992, *López G. 108* (MEXU!); Zacualtipán, Paraje El Hayal, ejido La Mojonera, 5 km al SE de Zacualtipán, 1850 m, 19 July 1992, *López G. 246* (MEXU!); Zacualtipán, Paraje El Hayal, ejido La Mojonera al SE del Mpio. Zacualtipán,

1850 m, 28 December 1992, *López G. 424* (MEXU!); Zacualtipán, Paraje Cumbre de Muridores, ejido Atopixco, 2 km al NE de Zacualtipán, 1928 m, [20°36′03″N, 98°36′38″W], 20 May 1995, *Ramos N. 4* (MEXU!); Mpio. Tlanchinol, 4 km al NE de Tlanchinol, carretera a Huejutla, 1550 m, [21°01′22″N, 98°38′43″W], 18 January 1975, *Rzedowski 32685* (MEXU!); Zacualtipán, near Chapatla below Alumbres near Zacualtipán, 6000 ft, [20°38′48″N, 98°39′03″W], 21 March 1946, *Sharp 46216* (GH!, MO!, NY!). **Oaxaca:** Dist. Villa Alta, 0.6 km NE de entronque Juquila–Talea, Tarántulas, hacia Talea, Mpio. San Juan Juquila Vijanos, Sierra Norte, 1990 m, [17°22′08″N, 96°16′38″W], 12 December 1997, *Blanco Macías 407* (MEXU!); Mpio. Comaltepec, Dist. Ixtlán, flat area below trail to Rancho Tarabundi, trail leaves Hwy 175 ca.1 km above Vista Hermosa, on ridge above (N of) Río La Trucha, Caribbean slope, 1255 m, 17°35′N, 96°21′W, 19 November 1991, *Boyle & Boyle 666* (CAS-2!); Mpio. Comaltepec, trail from Hwy 175 to Federal Electricity Commission Camp above Río Soyolapan, E face of Cerro Relampago, 1950 m, 17°35′00″N, 19°24′30″W [17°35′00″N, 96°24′30″W], 12 November 1993, *Boyle 2531* (CAS!, MO!); Mpio. Ixtlán, 7.5 km NE of town of Ixtlán de Juárez, logging spur off rd that descends to La Luz and Yelareni, divide between Río Cajones and Río Soyolapan watersheds, 2700–2770 m, 17°23′06″N, 96°26′13″W, 20 October 1994, *Boyle & Boyle 3779* (CAS!, MO!); 35 km N of Ayutla along rd from Mitla to Choapam, N slope of Cerro Zempoaltepetl, 2470 m, [17°10′42″N, 96°00′35″W], 26 September 1986, *Breedlove & Almeda 64649* (CAS!); 35 km N of Ayutla along rd from Mitla to Choapam, N slopes of Cerro Zempoaltepetl, 2470 m, 22 November 1986, *Breedlove & Sigg 65992* (CAS!); NNE slope of Cerro Humo Chico, 2440–2740 m, [17°34′24″N, 96°30′07″W], 29 October 1991, *Breedlove & Mahoney 72347* (CAS!); Dist. Miahautlán, San Jerónimo Coatlán, 5 km al NE del campamento madero "Cerro Sol" sobre la brecha a Progresso, 1450 m, 16°09′N, 97°18′W, [16°10′35″N, 97°01′20″W], 16 March 1989, *Campos V.& Toriz A. 3010* (MEXU!); Villa Alta, 28 km SW de Talea, 2850 m, [17°15′49″N, 96°21′52″W], 19 April 1982, *Cedillo T. 1268* (CAS-2!, LL!, MO!); Dist. Ixtlán, 5 km al N de Cerro Humo Chico, carretera Ixtlán a Valle Nacional, [17°35′19″N, 96°29′35″W], 26 September 1982, *Cedillo T. 1869* (CAS!, MEXU!, MO!); San Felipe Usila, 8.5 km en línea recta al S de Santa Cruz Tepetotutla, 2415 m, 17°39′44″N, 96°33′14″W, 20 November 1993, *Gallardo H. et al. 803* (MEXU!); San Felipe Usila, 8.5 km en línea recta al S de Santa Cruz Tepetotutla, 2425 m, 17°39′44″N, 96°33′14″W, 21 December 1993, *Gallardo H. et al. 877* (MEXU!); San Felipe Usila, 8 km en línea recta al S de Santa Cruz Tepetotutla, 2510 m, 17°29′56″N, 96°33′36″W, [17°39′56″N, 96°33′36″W], 27 February 1994, *Gallardo H. et al. 938* (MEXU!); San Felipe Usila, 8 km en línea recta al S de Santa Cruz Tepetotutla, 2510 m, 17°29′56″N, 96°33′36″W, 27 February 1994, *Gallardo H. et al. 939* (MEXU!); San Felipe Usila, Dist. Tuxtepec, 8.0 km en línea recta al S de Santa Cruz Tepetotutla, 2010 m, 17°40′08″N, 96°32′43″W, 31 October 1994, *Gallardo H. & A. Gutiérrez 1224* (MEXU!); N of Cacalotepec, 2040 m, 11 December 1940, *Krueger & Gillespie 55* (GH!, MO!); Mpio. Comaltepec, Dist. Ixtlán: La Esperanza, 1600 m, 17°37′N, 96°21′W, 8 July 1990, *López L. & Martin 654* (CAS!); Km 15 de brecha 200, Macuiltianguis, 2350 m, 18 March 1980, *Lucero 06* (MEXU!); Dist. Mixe, Mpio. Tontepec, 3 km N of turnoff to Mixistlán on rd from Ayutla to Totontepec, 2500 m, 17°11′N, 96°04′W, 18 December 1985, *Nee & Martin 32252* (CAS!, NY!); La Esperanza, Macuiltianguis, 2800 m, [17°37′43″N, 96°22′06″W], 2 April 1980, *Pérez P. B73* (MEXU!); Dist. Mixe, Mpio. Totontepec, rumbo Villa Alta, 16 km al O de Totontepec, 1860 m, [17°20′20″N, 96°09′09″W], 14 September 1986, *Ramírez G. & P. Ramírez C. 522* (F!); Dist. Mixe, 10 km NE de la desviación a Totontepec, sobre la carretera Tamazulapán–Zacatepec, [17°11′35″N, 96°00′22″W], 18 May 1982, *Rico A. et al. 372* (CAS!, F!, MO!, NY!); San Felipe Usila, 10.8 km en línea recta al S de Santa Cruz Tepetotutla, 2660 m, 17°38′48″N, 96°31′26″W, 30 March 1994, *Rincón G. et al. 310* (MEXU!); San Felipe Usila, 7.6 km en línea recta al S de Santa Cruz Tepetotutla, 2240 m, 17°40′13″N, 96°33′28″W, 16 May 1994, *Rincón G. & C. Gallardo H. 467* (MEXU!); Dist. Mixe, Mpio. Totontepec Villa de Morelos, Tsiin jaa viam, tuk jovi, 8 October 1993, *Rivera R. JR 2888* (MEXU!); 39 km al S de Valle Nacional, sobre la carretera a Oaxaca, 1800 m, 26 December 1975, *Rzedowski 33772* (NY!); entre Llano Verde y Maravillas, cerca de San Andrés o Buenavista, a 27 km al NE de Calpulalpan de Méndez, 2400 m, [17°17′35″N, 96°18′22″W], 27 November 1977, *Sousa S. et al. 8975* (CAS!, MEXU!); Mixe, 5.2 km al NE de la desviación a Zacatepec, 2380 m, [17°09′52″N, 96°02′36″W], 23 April 1983, *Torres C. & Cedillo T. 2679* (CAS!, MO!); Mixistlán, 45 km al N de Ayutla, camino a Totontepec, [17°08′39″N, 96°06′28″W], 10 November 1983, *Torres C. et al. 3997* (MO!); ca. 40.8 mi N of Guelatao on Hwy 175 to Valle Nacional, 7.2 mi S of La Esperanza, along dirt rd on side of hwy (camino a San Isidro), 17°24′N, 96°30′W, [17°36′07″N, 96°25′04″W], 6 January 1989, *Woodruff et al. 206* (F!, MO!, NY!, TEX!). **Puebla:** mtns. W of Huauchinango, [20°10′26″N, 98°07′10″W], 1 November 1943, *Lundell 12634* (US!). **Veracruz:** Mpio. Soteapan, Sierra de Santa Marta al N de Ocotal Grande, 1365 m, [18°20′55″N, 94°51′17″W], 7 January 1972, *Beaman 5422* (F!, LL!, NY!); Mpio. Soteapan, Sierra de

Santa Marta arriba de Ocotal Chico, 1500 m, [18°20′55″N, 94°51′17″W], 22 June 1972, *Beaman 6229* (F!, NY!); Mpio. Banderilla, Rancho La Martinica, a 5 km al N de Banderilla, 1500 m, 19°35′N, 96°57′W, 4 April 1978, *Calzada & Castillo 4339* (F!, MEXU!, MO!); Mpio. Acajete, Plan de Cedeño, desviación por la carretera Jalapa–Perote, 1800 m, 19°35′N, 97°01′W, [19°34′38″N, 96°59′57″W], 13 March 1979, *Calzada & Castillo 5234* (F!, MEXU!); Mpio. Rafael Lucío, 4–5 km después de Piletas por la carretera Jalapa–Perote, 19°36′N, 97°00′W, 14 February 1979, *Castillo C. & Castillo 455* (F!, MEXU!, MO!, XAL!); Mpio. Alto Lucero, Cerro de la Cima, entre La Sombra y Tierra Blanca, 1700 m, 19°46′N, 96°41′W, 10 April 1981 *Castillo C. & Vázquez 1549* (F!); Mpio. San Andrés Tlalnehuayocan, Barranca del medio Pixquiac, entre Rancho Viejo y La Vega, 1650 m, [19°32′20″N, 97°00′28″W], 30 March 1988, *Cházaro B. et al. 1988* (MEXU!); Mpio. Chiconquiaco, cerros cerca de Buenavista, 2150 m, [19°43′38″N, 96°47′21″W], 30 December 1984, *Cházaro B. & Robles 3273* (MEXU!); Xico, Adelante del Ingenio del Rosario rumbo a Buenavista, [19°30′18″N, 97°05′04″W], 28 December 1986, *Cházaro B. & Oliva 4304* (CAS!, MEXU!); Mpio. Coatepec, Abajo de Mesa de Los Laureles rumbo a Tierra Grande, 2400 m, [19°30′42″N, 97°04′03″W], 27 December 1987, *Cházaro B. et al. 5277* (MEXU!); Mpio. Tlanehuayocan, Barranca del medio Pixqquiac, entre Rancho Viejo y la Vega, 1650 m, [19°32′20″N, 97°00′28″W], 30 March 1988, *Cházaro B. et al. 5403* (NY!); Mpio. Rafael Lucío, just N of main Xalapa–Perote Hwy (Hwy 140); on rd to San Miguel, 1 km W of Piletas, 1700 m, 19°36′N, 96°58′W, 18 July 1982, *Diggs & Nee 2855-e* (F!, NY!); Mpio. Banderilla, Piletas, cerca de Banderilla, 1600 m, [19°35′16″N, 96°58′41″W], 11 January 1973, *Hernández M. & Dorantes L. 1773* (F!, MEXU!, NY!); Mpio. Banderilla, Rancho La Mesa, 1450 m, 19°36′N, 96°57′W, 4 March 1978, *Márquez R. 996* (F!); Mpio. Soteapan, N side of Volcán San Martín Pajapan, 7 km NW of Pajapan, 830–980 m, 18°18′45″N, 94°43′W, 15 July 1982, *Nee et al. 25041* (NY!); Mpio. Banderilla, Cerro La Martinica NW de Banderilla, 1600 m, [19°35′35″N, 96°56′44″W], 10 February 1976, *Ortega O. & Castillo 154* (F!, MEXU!, MO!, NY!, XAL!); Mpio. Soteapan, Volcán de Santa Marta, 1720 m, 18°25′N, [18°20′55″N, 94°51′17″W], 20 December 1978, *Ortega O. et al. 4057* (F!); Mpio. Banderilla, Rancho La Mesa a 1 km aprox. de Banderilla, 1600 m, 19°35′N, 96°58′W, 24 March 1990, *Pérez G. & Mendizabal 300* (MEXU!); Mpio. Banderilla, Rancho La Mesa a 1 km aprox. de Banderilla, 1600 m, 19°35′N, 96°58′W, 29 April 1990, *Pérez G. & Mendizabal 301* (MEXU!); 4 km al E de Acajete, sobre la carretera a Perote, 1800 m, [19°35′03″N, 96°59′21″W], 4 February 1974, *Rzedowski 31704* (MEXU!); Mpio. Jalacingo, Aqua Santa, cerca de Ocotepec, 1750 m, 29 December 1969, *Ventura A. 297* (DS!); Mpio. Jalacingo, Agua Cruz, 1450 m, [19°48′13″N, 97°18′28″W], 28 May 1970, *Ventura A. 1175* (MEXU!, MO!); Acajete, Plan de Cedeño, 1780 m, [19°34′18″N, 97°00′02″W], 9 July 1971, *Ventura A. 4664* (MO!); Mpio. Jalacingo, Ocotepec, 1880 m, [19°48′30″N, 97°15′25″W], 5 January 1972, *Ventura A. 4722* (CAS!); Mpio. Jalacingo, Allende, 1775 m, [19°47′33″N, 97°15′35″W], 11 May 1972, *Ventura A. 5344* (CAS!); Mpio. Chiconquiaco, Guacamaya, 1900 m, [19°46′37″N, 96°47′35″W], 9 December 1972, *Ventura A. 7580* (CAS!); Mpio. Jalacingo, Allende, 1700 m, 12 December 1972, *Ventura A. 7602* (CAS!); Mpio. San Miguel del Soldado, Piletas, 1600 m, [19°35′16″N, 96°58′41″W], 30 April 1974, *Ventura A. 9980* (MEXU!); Mpio. Banderilla, Banderilla, 1500 m, [19°35′35″N, 96°56′44″W], 25 June 1974, *Ventura A. 10204* (MEXU!, MO!); Mpio. Banderilla, Banderilla, 1450 m, 3 January 1975, *Ventura A. 10736* (MEXU!, MO!); Mpio. Jalacingo, Ocotepec, 1700 m, 10 June 1975, *Ventura A. 11407* (MEXU!); Mpio. Chiconquiaco, Planta del Pie, 1900 m, [19°45′08″N, 96°47′23″W], 1 January 1976, *Ventura A. 12275* (MEXU!); Mpio. Acajete, Barranca de Plan de Cedeño, 1500 m, [19°34′18″N, 97°00′02″W], 30 January 1976, *Ventura A. 12373* (MEXU!); Mpio. Atzalan, La Florida, 1700 m, [19°47′55″N, 97°14′43″W], 2 March 1976, *Ventura A. 12606* (MEXU!); Mpio. Atzalan, La Florida, 1650 m, 16 June 1976, *Ventura A. 12878* (MEXU!); Jalacingo, Allende, 1700 m, [19°47′33″N, 97°15′35″W], 13 January 1977, *Ventura A. 13764* (F!); Mpio. Jalancingo, Allende, 1700 m, 13 January 1977, *Ventura A. 13766* (MEXU!); Mpio. Atzalan, Estoteno, 1500 m, 13 April 1977, *Ventura A. 13926* (MEXU!, MO!); Mpio. Atzalan, La Florida, 1650 m, 15 June 1977, *Ventura A. 14114* (MEXU!); Mpio. Banderilla, Banderilla, 1450 m, 5 July 1979, *Ventura A. 16317* (MEXU!); Salta Barranca, Zamora, 1450 m, [18°34′47″N, 95°28′59″W], 18 January 1980, *Ventura A. 16759* (MEXU!); Mpio. Acatlán, El Cerro, 1800 m, [19°40′51″N, 96°51′14″W], 21 January 1980, *Ventura A. 16767* (MEXU!, MO!); Mpio. Banderilla, Banderilla, 1500 m, 24 January 1980, *Ventura A. 16775* (MEXU!, MO!); Mpio. San Andrés Tlalnehuayocan, El Cerro, 1550 m, [19°33′40″N, 96°58′27″W], 7 July 1980, *Ventura A. 17437* (MEXU!); Mpio. Atzalan, La Florida, 1650 m, 39 May 1981, *Ventura A. 18524* (MEXU!); Mpio. Jalancingo, Ocotepec, 1750 m, 17 January 1982, *Ventura A. 19296* (MEXU!); Mpio. San Andrés Tlalnehuayocan, al E del Rancho Tejocotal, 1640 m, 19°39′N, 96°59′W, 24 November 1990, *Zamora C. & Zamora 2737* (MEXU!); Mpio. San Andrés Tlalnehuayocan, al NE de Tlalnehuayocan, 1700 m, 19°34′N, 96°59′W, 5 February 1991, *Zamora C. &*

Zamora 2858 (MEXU!). **State unknown:** without precise locality, Jocobepa, June 1942[1842], *Liebmann 593 p.p.* (C!, F!).

29. *Symplocos striata* Kriebel & Zamora (2004: 171). Type:—COSTA RICA. Heredia: Finca La Selva, Puerto Viejo de Sarapiquí, loop trail, [10°26′N, 84°01′W], 6 July 1979, *J. Sperry 817* (holotype DUKE-n.v., online image!, isotypes CAS!, CR!, INB!, MO!)

Trees 10–15 m tall; juvenile branchlets and vegetative buds densely hirsute, trichomes 1–2.25 mm long, spreading, brownish. Petioles 3–9 mm long; leaf blades bicolorous, elliptic to elliptic-obovate, 9.5–21 × 3.5–7.2 cm, chartaceous, abaxially smooth to slightly bullate, hirsute (more densely so along midvein), adaxially sparsely strigose becoming glabrous, secondary veins not adaxially impressed, base narrowly truncate, margins serrate, apex acuminate. Inflorescences fascicles or racemes 1–2.5 cm long, 3–5-flowered; peduncle absent; rachis 0–5 mm, densely hirsute, trichomes 1–2.25 mm long; bracts persistent, narrowly lanceolate, 2–3 × 1–1.5 mm , densely sericeous, margins densely sericeous; bracteoles persistent, 3–5, lanceolate, 3–5 × 1–1.5 mm, densely sericeous, margins densely sericeous; pedicels 0–5 mm long. Hypanthium usually glabrous or rarely sericeous. Calyx lobes 5, narrowly lanceolate, 4–5 × 1–1.5 mm, densely sericeous, margins ciliate, usually glandular. Corolla white, 8–9-lobed, 1–1.6 cm long; tube 6–9 mm long; lobes adnate to filament tube for 8–11 mm, linear-oblong, glabrous, rounded apically. Stamens multiseriate; filament tube 8.5–12 mm long; free portions of filaments 3–4 × 1–1.5 mm. Disk sericeous; style ca. 14 mm long, pilose on lower ¾; stigma conspicuously and irregularly lobed. Fruits green maturing to dark bluish purple, ellipsoid, 3–3.5 × 1.2–1.6 cm, glabrous, apex rounded to base of slightly incurved calyx lobes; disk narrowly conical, apex partly visible, surpassed by calyx lobes; endocarp 4-locular, perimeter irregularly fluted.

Vernacular name—None.

Illustration—Kriebel & Zamora (2004: 172).

Photographic image—Figure 2c.

Phenology—Flowering July; fruiting August and December.

Distribution and habitat—northern Costa Rica, uncommon in lowland rain forests of the Caribbean slope at 50–100(–500) m elev. Figure 30.

Conservation status—This species of the Caribbean lowlands of Costa Rica is known from 12 collections representing six populations. The population at the La Selva Biological Station is the only one occurring in a protected area. The EOO is 5109 km² and the AOO is 20 km². Deforestation threats in the lowlands indicate a decline in the area, extent, and quality of habitat. On this basis, we assign a classification of Endangered (EN): B2ab(iii) to this species.

Discussion—*Symplocos striata* is readily distinguished by the combination of densely hirsute buds and branchlets, large serrate leaves that are reticulate on both surfaces, flowers with subulate calyx lobes that are densely sericeous abaxially, and large fruits with a striate endocarp. This species is similar to *S. povedae*, but can be distinguished by its lack of conspicuously bullate leaf surfaces and white (versus pink) corollas.

Additional specimens examined—**COSTA RICA. Alajuela:** Asentamiento campesino La Garroba, 80–100 m, 10°45′N, 84°52′W, 10 November 1987, *Herrera 1193* (CAS!, MEXU!, MO!); San Carlos, Llanuras de San Carlos, Pital, Finca Hiloba, 18 km N de Boca Tapada, 50 m, 10°46′N, 84°11′W, 1 April 1995, *Jiménez & Quesada 1739* (INB!); Pital, Boca Tapada, Finca San Jorge, 50 m, 10°42′N, 84°10′W, 20 June 1996, *Rodríguez et al. 1158* (CR!, INB!, MO!, NY!); Pital Boca Tapada, Finca Aserradero San Jorge, 100 m, 10°44′N, 84°10′W, 21 January 1996, *Zamora V. & Zeledón 2363* (CR!, INB!, MEXU!, MO!). **Heredia:** Cantón de Barva La Legua, Finca Montreal, ridge between headwaters of Río Volcán and Río San Fernando, just above trail to refugio, 1740 m, 10°12′39″N, 84°06′45″W, 9 October 1992, *Boyle et al. 1159* (CAS!, MEXU!, MO!); Cantón Saraqipuí, OET, La Selva Arboretum, 2 July 2007, *González 9079* (LSCR!); Finca La Selva, the OTS Field Station on the Río Puerto Viejo just E of its jct. with the Río Sarapiquí, 100 m, [10°26′N, 84°01′W], 19 July 1980, *Hammel 9255* (CAS!, LSCR!, MO!); Finca La Selva, Puerto Viejo de Sarapiquí, Vargas clearing along the W boundary, 10°26′N, 84°01′W, 5 August 1974, *Hartshorn 1599* (DUKE!, F!, LSCR!, MO!, NY!); La Virgen, Parcela Aceituno (CATIE), La Tirimbina, La Virgen de Sarapiquí, 12 June 2013, *Salicetti 481* (LSCR!); Finca La Selva, Puerto Viejo de Sarapiquí, El Surá near Taconazo Creek, [10°26′N, 84°01′W], 9 July 1979, *Sperry 876* (CAS!, DUKE!); Cantón Sarapiquí, OET, La Selva, Sendero SSA, 500 m, 11 December 2010, *Vargas 571* (LSCR!); Cantón Sarapiquí, OET

La Selva Arboleda, 9 July 2001, *Vargas 713* (LSCR!); Finca La Selva, the OTS Field Station on the Río Puerto Viejo just E of its jct. with the Río Sarapiquí, Sendero Sura on slope down to stream on trail to the Lindero Occidentale, 100 m, [10°26′N, 84°01′W], 18 January 1995, *Wilbur 63552* (CAS-2!); Cantón Sarapiquí, OET La Selva Arboleda, 6 July 2006, *Zamora 3923* (LSCR!). **Limón:** Cerro Muchilla, Fila Matama, Valle de la Estrella, 850 m, 9°47′50″N, 83°05′30″W, 5 April 1989, *Herrera et al. 2523* (CAS!, MO!); Cantón de Pococí, Llanura de Santa Clara, Chiporrisito, 400 m, 10°36′10″N, 83°47′20″W, 30 January 1995, *Rodríguez 513* (CR!, INB!, USJ!).

30. *Symplocos tacanensis* Lundell (1939: 601). Type:—GUATEMALA. N slope of Volcán de Tacaná, [15°09′N, 92°09′W], 2100 m, 2 April 1939, *E. Matuda 2976* (holotype MICH-1192787-n.v., online image!, isotypes A!, CAS!, F!, GH!, K-644495-n.v., online image!, MEXU-2!, MO!, NY!, US!)

Trees 9–19 m tall; juvenile branchlets and vegetative buds densely hirsute, trichomes mostly 1.5–2.5 mm long, erect, ferruginous. Petioles 3–7 mm long; leaf blades bicolorous, oblong to lanceolate or lanceolate-oblong, 8–14 × 4–5.8 cm, subcoriaceous, abaxially hirsute, adaxially strigose when young and along major veins, secondary veins not adaxially impressed, base rounded to cordate, margins entire, apex acuminate. Inflorescences condensed racemes 1–1.5 cm long, 5–12-flowered; peduncle absent; rachis 3–4 mm long, densely hirsute, 1.5–2.5 mm long; bracts deciduous, ovate, 2–2.5 × 1–1.5 mm, densely hirsute, margins densely hirsute; bracteoles deciduous (but difficult to determine because of dense pubescence), 3–5, ovate, 1–2 × 1–1.5 mm, densely hirsute, margins densely hirsute; pedicels absent. Hypanthium densely hirsute. Calyx lobes 5, lanceolate, 3–4 × 2–3 mm, densely hirsute, margins densely hirsute. Corolla pink, 5-lobed, 7–10 mm long; tube 2–3 mm long; lobes adnate to filament tube for 4–5 mm, linear-oblong to oblanceolate, glabrous or sparsely sericeous distally. Stamens ± 4-seriate; filament tube 6–8 mm; distinct portions of filaments 1.5–2 × 0.5–0.75 mm wide. Disk pilose; style 8–10 mm long, pilose basally; stigma conspicuously and irregularly lobed. Fruits green maturing to dark bluish purple, cylindrical, 1.8–2.3 × 0.9–1.2 cm, hirsute, apex gradually narrowed to base of erect or slightly incurved calyx lobes; disk convex, apex partly visible, surpassed by calyx lobes; endocarp 3-locular, perimeter smooth to shallowly undulate.

Vernacular name—None.

Illustration—Figure 37.

Phenology—Flowering February and April; fruiting November.

Distribution and habitat—Mexico (Chiapas) and Guatemala, in cloud forest, Cerro Boqueron and Volcán Tacaná at 2100–3100 m elev. Figure 26.

Conservation status—This species is known from six collections representing four populations, all of which occur in the Cerro Boqueron and Volcán Tacaná area of southeastern Chiapas, Mexico, and adjacent Guatemala. None of the known populations are in a protected area. The EOO is 47 km² and the AOO is 16 km². In view of its rarity, local distribution, and deforestation threats in unprotected areas, we assign a classification of Critically Endangered (CR): B1ab(iv).

Discussion—*Symplocos tacanensis* can be recognized by the dense ferruginous pubescence covering its young branchlets, abaxial leaf surfaces, inflorescences, and sepals. The lanceolate sepals, large fruits, and densely congested inflorescences also distinguish this species from others in the area.

Additional specimens examined—**MEXICO. Chiapas:** on ridge NE of Cerro Boqueron on rd from El Rosario to Niquivil, 2255 m, [15°13′12″N, 92°18′W], 7 November 1986, *Breedlove 65734* (CAS!); on ridge NE of Cerro Boqueron on rd from El Rosario to Niquivil, 2255 m, [15°13′12″N, 92°18′W], 7 November 1986, *Breedlove 65754* (CAS!); on ridge NE of Cerro Boqueron on rd from El Rosario to Niquivil, 2255 m, [15°13′12″N, 92°18′W], 29 November 1986, *Breedlove & Sigg 66007* (CAS!); Unión Juárez, Volcán Tacaná, entre Talquian y la cima del Volcán, [15°06′45″N, 92°06′03″W], 19 June 1985, *Martínez S. et al. 13177* (MEXU!, NY!); Motozintla, track from ejido Boqueron to Cerro Boqueron, 2400 m, 15°15′N, 92°17′W, 9 February 1990, *Stafford et al. 359* (MEXU!, MO!).

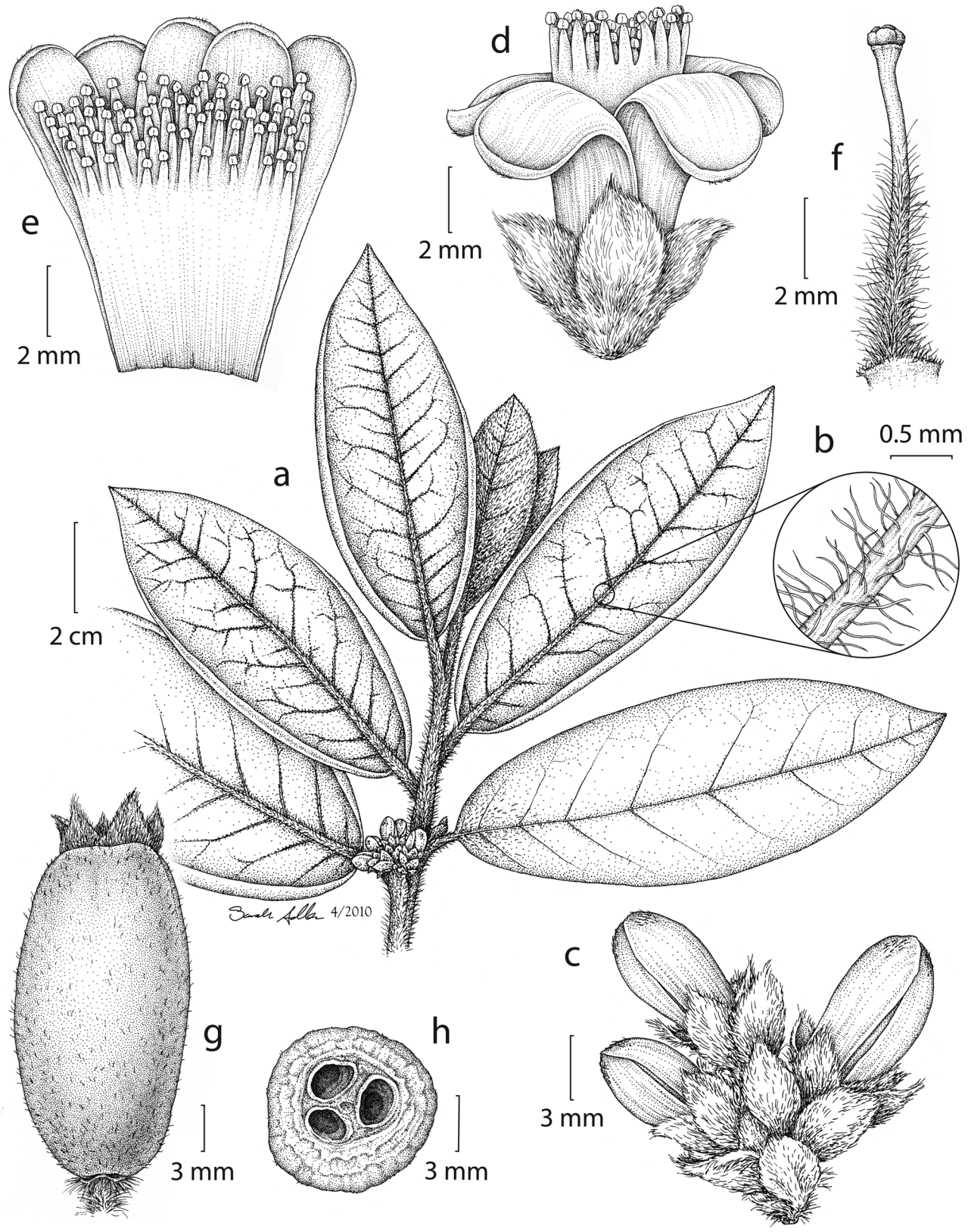

FIGURE 37. *Symplocos tacanensis*. **a.** Branchlet with inflorescence. **b.** Close-up of (a) showing midvein pubescence of abaxial leaf blade surface. **c.** Inflorescence with flower buds. **d.** Flower. **e.** Corolla opened with attached stamens. **f.** Disk, style, and stigma. **g.** Fruit. **h.** Fruit, cross section. (a drawn from *D. E. Breedlove 65734*, CAS, *D. E. Breedlove 65754*, CAS, and *E. Matuda 2976*, CAS; b drawn from *D. E. Breedlove 65734*, CAS; c–f drawn from *E. Matuda 2976*, CAS; g, h drawn from *D. E. Breedlove 65754*, CAS.)

31. ***Symplocos tribracteolata*** Almeda (1982a: 322). Type:—COSTA RICA. Puntarenas: Monteverde Cloud Forest Reserve, Chomogo Hill, 1600 m, [10°18′45″N, 84°47′55″W], 17 May 1979, *W. A. Haber 331* (holotype CAS!, isotype MO!)

Shrubs or trees 2–15 m tall; juvenile branchlets glabrous; vegetative buds glabrous or sericeous. Petioles 0.5–2(–2.7) cm long; leaf blades bicolorous, elliptic to elliptic-oblanceolate, 3.9–6.4 × 1.1–2.1 cm, subcoriaceous, glabrous, secondary veins not adaxially impressed, base acute, margins entire in proximal half, crenate distally, apex acuminate. Inflorescences 1-flowered; peduncles 4–7(–11) mm long, glabrous; bracts absent; bracteoles persistent or occasionally deciduous, 3, elliptic to ovate or deltoid, 1–2 × 1–1.5 mm, glabrous, margins finely ciliate. Hypanthium glabrous. Calyx lobes 5, elliptic to ovate or suborbicular, 1–1.5 × 1–2 mm, glabrous, margins finely ciliate. Corolla pink, 6-lobed, 7–9 mm long; tube ca. 2 mm long; lobes adnate to filament tube for ca. 2 mm, oblong, glabrous. Stamens multiseriate; filament tube 3–3.5 mm long; distinct portions of filaments 4.5–5 × 0.5–0.75 mm. Disk sericeous; style ca. 6 mm long, glabrous; stigma irregularly lobed. Fruits green maturing to reddish purple, ellipsoid, 5–6 × 3–4 mm, glabrous, apex rounded to base of erect or slightly infolded calyx lobes; disk pulvinate, approximately equaling calyx lobes and exposed apically; endocarp 3- or 4-locular, perimeter rounded.

Vernacular name—None.

Illustration—Almeda (1982a: 323).

Photographic image—Figure 2d.

Phenology—Flowering April, May, July, August, and November through January; fruiting July, August, and November through April.

Distribution and habitat—Costa Rica, locally common in cloud forests at 1300–1800 m elev. Figure 25.

Conservation status—This Costa Rican endemic is largely centered on the Cordillera de Tilarán, with one outlying population in the Volcán Barva sector of Braulio Carrillo National Park and three others in Guanacaste National Park. Six of the 11 known populations occur in a protected area. The EOO is 3469 km^2 and the AOO is 48 km^2. This species meets the area requirements under criterion B of the IUCN guidelines (2016: 69) for threatened (EOO less than 20,000 km^2 and/or AOO less than 2000 km^2). Its population structure is fragmented, but we have no evidence that it is declining or fluctuating, and it occurs at just over ten locations. Given these criteria, we assign this species a classification of Near Threatened (NT).

Discussion—*Symplocos tribracteolata* is distinguished by the combination of narrowly elliptic to elliptic-oblanceolate, glabrous leaves; solitary, tribracteolate flowers; and glabrous fruits that are only 5–6 mm long at maturity. *Symplocos elliptica* is similar by its solitary flowers and small fruits, but differs in its 3 or 4 bracts and the same number of bracteoles (versus bracts lacking in *S. tribracteolata*), narrower leaves (1.1–2.1 cm wide versus 1.8–4.3 cm), and wider fruits (4–6 mm versus 3–4 mm).

A fruiting collection from San José Province, collected in June 1997 on the Pacific side of the Panamerican Highway near San Gerardo de Dota at 2500 m elevation (*R. A. Wesselingh s.n.* [CAS]) appears closest to *Symplocos tribracteolata* in morphology, but has atypically large leaves (9–10 x 3.5–4.5 cm), long pedicels ([1.5–]2–3 cm), and large fruits (ca. 12 × 4.5 mm). The flowers are described as pink and the fruits reddish purple at maturity, as in *S. tribracteolata*.

Additional specimens examined—**COSTA RICA. Alajuela:** Monteverde, rd from Cerro Plano to Cerro Amigos, 1750 m, 10°19′11″N, 84°48′07″W, 28 April 2002, *Penneys 1493* (CAS!). **Guanacaste:** Cantón de La Cruz, Parque Nacional Guanacaste, Estación Pitilla, Sector Orosilito, 800–1100 m, 10°59′26″N, 85°25′40″W, 16 April 1995, *Alfaro 198* (MO!); Tilarán, Cordillera de Tilarán, Reserva Biológica de Colegio de Monteverde, 1600–1700 m, 10°21′20″N, 84°49′50″W, 10 January 1992, *Bello C. 4324* (MO!, US!); Parque Nacional Guanacaste, Estación Cacao, Liberia, 1100 m, 10°55′45″N, 85°28′15″W, 24 November 1990, *Chávez 432* (CAS!, MO!); Parque Rincón de La Vieja, Liberia, Cabeceras de Quebrada Provision y Quebrada Rancho grande, Meseta Aguacatales, 1350–1400 m, 10°46′N, 85°49′W, [10°46′N, 86°19′W], 1 December 1987, *Herrera 1466* (CAS!, MO!); Cantón de Liberia, Parque Nacional Guanacaste, Volcán Cacao, sendero hasta la cima del volcán, 1200–1600 m, 10°55′02″N, 85°27′50″W, 12 July 1996, *Morales et al. 5477* (F!, MO!). **Heredia:** between E fork of Río Volcán and W fork of Río San Rafael, Atlantic slope of Volcán Barva, 1600–1800 m, 10°12–13′N, 84°06′W, 12 April 1986, *Grayum et al. 7082* (MO!). **Puntarenas:** Cordillera de Tilarán, Monteverde Cloud Forest Reserve, forest margins along El Camino, 1550 m, [10°18′34″N, 84°48′02″W], 26 February 1992, *Almeda & Daniel 7097*

(CAS!, CR!, GH!, MEXU!, MO!, NY!, US!); Monteverde, rd from Hotel Belmar to Cerro Amigos, 1370–1800 m, [10°18′N, 84°48′W], 27 February 1992, *Almeda & Daniel 7123* (CAS!, CR!, NY!, US!); Reserva Biológica Monteverde, Quebrada Veracruz, Finca Pablo Morales, 1600 m, 10°15′N, 84°48′W, 11 January 1990, *Bello C. 1746* (CAS!, MO!); Monteverde Cloud Forest Reserve, rd to TV towers, Pacific slope, 1600 m, 10°20′N, 84°50′W, 23 April 1986, *Bello C. & Clagget 4477* (MO!); Monteverde, upper valley and ridges of Veracruz River S of Monteverde Reserve, Pacific drainage, 1600 m, 10°20′N, 84°50′W, 1 May 1986, *Bello C. & Clagget 4514* (MO!); Monteverde Reserve, Chomogo trail to Chomogo peak, 1550–1700 m, 10°20′N, 84°50′W, 9 November 1985, *Haber ex Bello 3339* (CAS!, MO!, US!); Monteverde Cloud Forest Reserve, continental divide in area of TV towers, 1700 m, 10°20′N, 84°50′W, 29 December 1985, *Haber et al. 4113* (CAS!, MEXU!, MO!); Reserva Biológica Monteverde, rd to TV towers, narrow ridge, 1650–1750 m, 10°18′N, 84°48′W, 18 April 1992, *Haber 11117* (CAS!, F!, MEXU!, MO!); Monteverde Cloud Forest Reserve, Pacific slope of continental divide, Brillante Trail, 1500–1620 m, [10°18′N, 84°48′W], 16 March 1982, *Feinsinger et al. 83-59-2* (MO!). **Puntarenas-Alajuela border:** on and near continental divide ca. 2–5 km E and SE of Monteverde, 1580–1700 m, 10°18′N, 84°46′W, 17–20 March 1973, *Burger & Gentry 8735* (CR!, F!); on and near the continental divide ca. 2–5 km E and SE of Monteverde, 1580–1700 m, 10°18′N, 84°46′W, 15 August 1977, *Lawton 1207* (F!). **Puntarenas-Guanacaste-Alajuela border:** división continental (Brillante), 1550–1580 m, [10°18′07″N, 84°48′13″W], 14 December 1976, *Dryer 1063* (F!, MO!); Cerro Amigos, 1800–1840 m, [10°18′N, 84°48′W], 23 May 1977, *Dryer 1382* (F!, MO!).

32. *Symplocos vatteri* Standley & Steyermark (1947: 222). Type:—GUATEMALA. Huehuetenango: moist cool mixed cloud forest with *Pinus ayacahuite* and *Abies guatemalensis*, around Rancho de Teja, 3 mi W of San Mateo Ixtatán, Sierra de los Cuchumatanes, 3330 m, [15°49′30″N, 91°30′04″W], 9 July 1942, *J. A. Steyermark 48463* (holotype F-2!, isotype US!)

Trees 5–20 m tall; juvenile branchlets and vegetative buds densely sericeous to pilose, trichomes 1.5–2 mm long, appressed to spreading, creamy white to brownish. Petioles 0.7–1.5 cm long; leaf blades bicolorous, elliptic-oblong, 7–17 × 3.5–7.2 cm, membranaceous, abaxially densely sericeous to appressed-pilose, adaxially glabrous to sparsely appressed-pilose, secondary veins not adaxially impressed, base obtuse to rounded, margins entire, apex acuminate to rarely obtuse. Inflorescences 1-flowered, peduncles 2–3.8 cm long, densely sericeous to pilose, trichomes 1.5–2 mm long, appressed to spreading; bracts absent; bracteoles caducous (not seen), 3–5 (evident from scars). Hypanthium densely sericeous laterally. Calyx lobes 5, broadly rotund, 4–5 × 5–6 mm, densely cottony-sericeous, margins densely sericeous. Corolla pink, 5-lobed, 1.5–2 cm long; tube 7–8 mm long; lobes adnate to filament tube for 9–10 mm, oblong, densely cottony-sericeous. Stamens ± 4-seriate; filament tube ca. 11 mm long; distinct portions of filaments 4–5 × 0.75–1 mm. Disk densely pilose; style 13–15 mm long, glabrous; stigma conspicuously and irregularly lobed. Fruits green maturing to dark bluish purple, broadly ellipsoid, 2–2.5 × 1.2–1.5 cm, strigillose, apex truncate to base of incurved-appressed calyx lobes; disk convex, enclosed within calyx lobes; endocarp 5-locular, perimeter rounded to slightly undulate.

Vernacular name—None.

Illustration—Figure 38.

Phenology—Flowering June, August, and November; fruiting January and February.

Distribution and habitat—Guatemala, in cloud forests at 2400–3500 m elev. Figure 36.

Conservation status—*Symplocos vatteri* is restricted to the mountains of western Guatemala where it is known from six populations, none of which occur in a protected area. The EOO is 1080 km² and the AOO is 24 km². Deforestation threats indicate a projected decline in area, extent, and quality of habitat. Based on these data, we assign a classification of Endangered (EN): B1ab(iii) to this species.

Discussion—*Symplocos vatteri* is distinguished by its combination of large, solitary flowers with densely cottony-sericeous sepals and petals.

The holotype consists of two sheets, which are labeled in Steyermark's handwriting as "1st sht" and "2nd sht."

Additional specimens examined—**GUATEMALA. Huehuetenango:** San Mateo Ixtatán, 3 mi SW of San Mateo Ixtatán along rd to San Pedro Soloma, 9600 ft, [15°49′30″N, 91°30′04″W], 6 February 1965, *Breedlove 8628* (DS!, F!, US!); San Juan Ixcoy, 5 mi S of San Juan Ixcoy along rd to Huehuetenango, 9200 ft, [15°33′21″N, 91°30′09″W], 4 February 1965, *Breedlove 8517* (DS!, F!); San Juan Ixcoy, 5 m S of San Juan Ixcoy along rd to Huehuetenango, 9200 ft, 5 August 1965, *Breedlove 11503* (DS!, F!, US!); Sierra Cuchumatanes to San Juan Ixcoy,

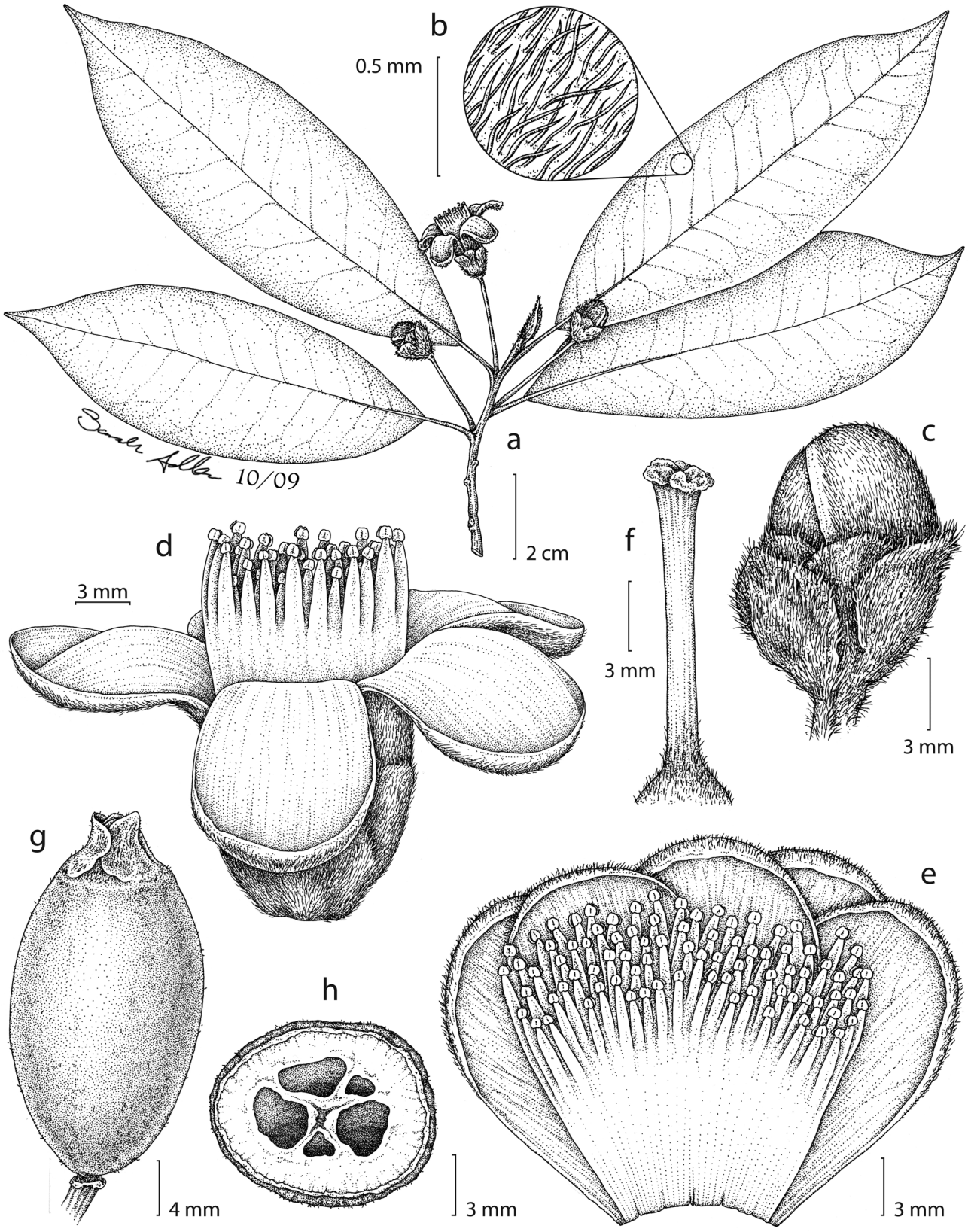

FIGURE 38. *Symplocos vatteri*. **a.** Branchlet with flowers. **b.** Close-up of (a) showing pubescence of abaxial leaf blade surface. **c.** Flower bud. **d.** Flower. **e.** Corolla opened with attached stamens. **f.** Tope of disk, style, and stigma. **g.** Fruit. **h.** Fruit, cross section. (a, b, d–f drawn from *E. Contreras 5074*, DS; c drawn from *D. E. Breedlove 11503*, DS; g, h drawn from *D. E. Breedlove 8517*, DS.)

3500 m, [15°36′N, 91°27′W], 12–23 January 1966, *Molina R. et al. 16580* (F!, NY!, US!); Sierra Cuchumantes Rd to San Juan Ixcoy, 3000 m, 18 November 1969, *Molina R. 21301* (F!, GH!, NY!); Sierra de los Cuchumatanes, between Paquix and San Juan Ixcoy, 3000–3350 m, [15°30′36″N, 91°29′41″W], 8 January 1974, *Molina R. et al. 30019* (F!, MO!); Mpio. Barillas, Aldea Nucá, 2500 m, [15°48′14″N, 91°18′54″W], 16 February 2005, *Véliz 15748* (MO!). **Quiché:** ca. 8 km W of Nebaj, 7800 ft, [15°24′30″N, 91°08′50″W], 19 June 1964, *Contreras 5054* (DS!, MO!, NY!, S!); ca. 9 km SW of Nebaj, 7800 ft, [15°24′30″N, 91°08′50″W], 20 June 1964, *Contreras 5074* (DS!, S!).

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Appendix I. Species recognized in this revision, enumerated and grouped into their higher-level categories

Symplocos section *Hopea*

1. *Symplocos culminicola* Standl. & Steyerm.
2. *Symplocos longipes* Lundell

Symplocos (section *Symplocos*) series *Symplocos*

3. *Symplocos abietorum* Standl. & Steyerm.
4. *Symplocos austin-smithii* Standl.
5. *Symplocos austromexicana* Almeda
6. *Symplocos breedlovei* Lundell
7. *Symplocos citrea* Lex.
8. *Symplocos coccinea* Bonpl.
9. *Symplocos costaricana* Hemsl.
10. *Symplocos elliptica* L.M.Kelly & Almeda
11. *Symplocos excelsa* L.O.Williams
12. *Symplocos hartwegii* A.DC.
13. *Symplocos hintonii* Lundell
14. *Symplocos jurgensenii* Hemsl.
15. *Symplocos limoncillo* Bonpl.
16. *Symplocos morii* Almeda & L.M.Kelly
17. *Symplocos naniflora* L.M.Kelly & Almeda
18. *Symplocos nigridentata* L.M.Kelly & Almeda
19. *Symplocos oreophila* Almeda
20. *Symplocos pachycarpa* L.M.Kelly & Almeda
21. *Symplocos panamensis* McPherson
22. *Symplocos povedae* Almeda
23. *Symplocos pycnantha* Hemsl.
24. *Symplocos retusa* Kriebel, J.A.González & E.Alfaro
25. *Symplocos schiedeana* Schltdl.
26. *Symplocos serrulata* Bonpl.
27. *Symplocos sousae* Almeda

28. *Symplocos speciosa* Hemsl.
29. *Symplocos striata* Kriebel & N.Zamora
30. *Symplocos tacanensis* Lundell
31. *Symplocos tribracteolata* Almeda
32. *Symplocos vatteri* Standl. & Steyerm.

Appendix II. Index to exsiccate. Specimens are listed alphabetically by first collector. Numbers in parentheses correspond to those in the species list of Appendix I. Numbers separated by a slash are mixed collections. Collections with three or more collectors are cited with the first collector's name followed by "*et al.*"

Adole (Frere) s.n. (15).
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Aguilar, R. & O. Garrote 3875 (26).
Aguilar, R. & Q. Jiménez 4296 (9).
Aguilar, R. *et al.* 105 (17); 2690 (21).
Aguilar H., M. 217 (14).
Aizprúa, R. *et al.* 3306 (17).
Alexander, E. J. 730 (7).
Alfaro, E. 198 (31); 517 (15); 1363 (26); 3184 (24).
Alfaro, E. *et al.* 1449 (4).
Allen, P. H. 4664 (15); 4717 (9).
Allen, P. H. *et al.* 6081 (23).
Almeda, F. & T. Daniel 7097 (31); 7123 (31).
Almeda, F. & J. L. Luteyn 1659 (5).
Almeda, F. & K. Nakai 3665 (26); 3775 (26); 4818 (26).
Almeda, F. *et al.* 3111 (26); 5086 (4); 6129 (10); 6267 (16); 6427 (21); 6731 (24).
Alvarado C., L. *et al.* 259 (15).
Arellanes C., Y. 0090 (23); 0095 (23); 0108 (23).
Arellanes C., Y. *et al.* 253 (23).
Arias, I. *et al.* HFC 53725.
Arsène, G. 2842 (7); 5808 (7); s.n. (7); s.n. (15).
Bárcena 433 (7).
Barnes, C. R. & W. J. G. Land 609 (8).
Bartholomew, B. *et al.* 2667 (7); 2685 (7); 2704 (7); 2710 (7); 2961B (7); 3308 (5).
Bawa, K. S. 390 (26).
Beaman, J. H. 5422 (28); 6229 (28).
Bello C., E. 551 (22); 570 (15); 595 (15); 938 (21); 956 (15); 1407 (21); 1511 (21); 1566 (21); 1746 (31); 1874 (21); 2108 (21); 2942 (15); 3023 (4); 3098 (22); 4324 (31); 5806 (21).
Bello C., E. & A. Clagget 4477 (31); 4514 (31); 5282 (21); 5324 (22).
Bello C., E. & O. Villegas 1461 (21).
Bello C., E. *et al.* 2775 (21).
Blanco Macías, A. 407 (28).
Blum, K. *et al.* 2416 (26).
Bohs, L. *et al.* 1728 (8).
Bonifacio V., R. K3 (28).
Bonpland, A. J. A. 4458 (15); s.n. (8).
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Boutin, F. & F. Brandt 2534 (7); 2562 (27); 2650 (7).
Boyle, B. 797 (26); 801 (10); 805 (26); 843 (10); 884 (4); 901 (10); 2531 (28).

Boyle, B. & A. Boyle 611 (23); 666 (28); 3779 (28).
Boyle, B. & D. Massart 2482 (5); 2486 (18).
Boyle, B. & N. Snow 1040 (26).
Boyle, B. *et al.* 1159 (29); 3822 (23); 3850 (23).
Brade, A. C. 2018 (26).
Breedlove, D. E. 7815 (6); 8010 (6); 8517 (32); 8584 (3); 8628 (32); 8645 (3); 8889 (23); 9674 (23); 10437 (6); 11503 (32); 11551 (3); 11747 (6); 11979 (15); 12464 (6); 12563 (6); 12716 (2); 15013 (11); 18716 (7); 22743 (12); 22865 (15); 22905 (15); 23095 (23); 24065 (15); 25334 (23) 25772 (23); 27608 (25); 28202 (6); 29419 (12); 32715 (23); 33529 (23); 38000 (25); 40225 (23); 40367 (12); 41317 (23); 41347 (23); 41406 (6); 41705 (23); 44345 (7); 45199 (7); 48692 (15); 48738 (11); 49687 (23); 49819 (15); 50049 (6); 50675 (2); 50762 (15); 51306 (23); 52249 (23); 53008 (23); 53149 (15); 53238 (15); 53382 (6); 53390 (2); 53393 (2); 53578 (6); 56131 (11); 56149 (11); 61874 (7); 61934 (28); 65485 (27); 65734 (30); 65754 (30); 67051 (6); 67089 (25); 68583 (23); 68604 (2); 69865 (6); 71401 (6).
Breedlove, D. E. & F. Almeda 45627 (7); 45628 (7); 45672 (7); 45703 (7); 47845 (23); 56952 (15); 56992 (15); 57060 (6); 57471 (23); 58075 (2); 58168 (12); 59741 (27); 59746 (27); 59966 (18); 59968 (5); 60011 (5); 60227 (25); 60478 (7); 61963 (20); 64649 (28); 64783 (25); 64823 (12); 65018 (13); 65026 (13); 65146 (20); 65152 (2); 65160 (13).
Breedlove, D. E. & B. Anderson 64274 (7); 64336 (7); 64412 (7).
Breedlove, D. E. & B. Bartholomew 55514 (6); 55582 (6); 55700 (2); 55790 (12); 55873 (12); 66870 (18).
Breedlove, D. E. & M. Bourell 67195 (6); 67515 (15); 68360 (6).
Breedlove, D. E. & R. Dressler 29642 (23).
Breedlove, D. E. & B. Keller 49341 (23).
Breedlove, D. E. & D. Mahoney 72239 (27); 72302 (18); 72347 (28); 72483 (18).
Breedlove, D. E. & P. H. Raven 12938 (6).
Breedlove, D. E. & J. Sigg 65992 (28); 66007 (30); 66151 (12).
Breedlove, D. E. & A. Smith 22030 (6); 31851 (12); 32189 (11).
Breedlove, D. E. & R. F. Thorne 30120 (12); 30432 (6); 31100 (23); 31194 (12).
Brenes, A. M. 4456 (4); 5821 (4); 6204 (4); 6231 (9); 7605 (4); 13436 (21); 21455 (4); 21456 (4).
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Burger, W. C. & J. L. Gentry Jr. 8735 (31).
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Cabrera, E. *et al.* 3809 (6).
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Calzada, J. I. 2917 (14); 4334 (8); 19013 (7); 19187 (7); 19218 (7); 19587 (27).
Calzada, J. I. & O. Castillo 4339 (28); 5234 (28).
Calzada, J. I. & C. Clevinger 20144 (27).
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Campos V., A. & G. Toriz A. 3010 (28).
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Carranza, E. 3907 (7).
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Chavarría, M. M. 17 (26); 507 (4).
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Cházaro B., M. & P. Hernández de C. 3952 (8); 3992-B (2); 4132 (2); 4677 (2); 5069 (2); 5777 (8); 6594 (25).
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Cházaro B., M. & L. Robles 3273 (28); 3805 (2).
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