A REVISION OF *AMPELOCERA* (ULMACEAE)[1]

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ABSTRACT

Ampelocera, a genus of Ulmaceae with nine species of low- to mid-elevation rainforest trees, occurs from Mexico to Brazil. This review deals with the systematics and nomenclature, including the description of three new species, *A. albertiae* Todzia from Colombia, *A. longissima* Todzia from Ecuador, and *A. macphersonii* Todzia from Panama, Colombia, and Venezuela. The taxonomic history of *Ampelocera* is outlined, followed by a key to the species. Brief descriptions and geographic ranges are provided for each species.

Ampelocera is a little-known genus of nine species of neotropical trees. Although a frequent component of some low- to mid-elevation neotropical forests (A. Gentry, pers. comm.), *Ampelocera* is poorly represented in herbaria because it is a large rainforest tree and because specimens are not readily identified and often are misfiled. *Ampelocera* is characterized by its large tree habit, buttressed trunk, oblique leaf bases, large number of stamens, bifid style, and asymmetrical drupaceous fruits. The genus ranges from central Mexico to Bolivia and southern coastal Brazil, and it occurs in the West Indies.

In preparing a treatment for the *Flora de Nicaragua*, the literature dealing with *Ampelocera* was reviewed along with all material available from the following herbaria: BM, CAS, F, K, LL, MO, NY, TEX, and US. Three new species as well as changes in the currently accepted nomenclature came to light. Since no summary of the systematics and geography exists, a revision of the genus is now presented. A short history of *Ampelocera* is outlined below, followed by a diagnostic key for the species and a review of their systematics and nomenclature.

Historically included in the Ulmaceae, the genus has been the subject of recent studies on embryology (H. Tobe, Kyoto University, Japan, in prep.) and pollen (M. Takahashi, in prep.) that indicate it is not well placed there. Although past authors have positioned the genus in the subfamily Celtidoideae based on its drupaceous fruit, *Ampelocera* is anomalous within the Ulmaceae by virtue of its 4–16 stamens. On the basis of a summation of evidence from various sources (morphology, anatomy, embryology, palynology, and flavonoid chemistry), Tobe considers *Ampelocera* best classified in a family of its own.

In 1847 Klotzsch described *Ampelocera* with one species, *Ampelocera ruizii*, from a Ruiz & Pavón collection. He placed his new genus near *Celtis*. Since then, *Ampelocera* has generally been aligned within the subfamily Celtidoideae of the Ulmaceae with *Celtis* L., *Trema* Lour., *Aphananthe* Planch., and *Gironniera* Gaudich., although Planchon (1873) considered its placement within the Ulmaceae doubtful due to the anomalous stamen number.

In 1937 Baehni created the genus *Plagioceltis* attributed to Mildbraed on the basis of unpublished notes on the Ruiz & Pavón type specimen at Madrid (Gentry, 1983). I strongly suspect that the unnumbered Ruiz & Pavón type specimen of *Plagioceltis dichotoma* is from the same collection as the type of *Ampelocera ruizii* Klotzsch (Ruiz & Pavón *s.n.*, B!) because both bear leaves and flowers of exactly the same maturity (very young, not fully expanded leaves; flowers at anthesis; no fruits).

Since *Ampelocera* was erected in 1847, ten species have been added to the original *A. ruizii*. The first addition, *Ampelocera cubensis*, was described by Grisebach based on a Wright collection. It was approximately 50 years before the next species of *Ampelocera*, *A. crenulata* Urban and

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A. hondurensis J. D. Smith, were described. Those species, however, were not members of *Ampelocera*, nor even the Ulmaceae, and are presently placed into synonymy in genera in the Flacourtiaceae and Achatocarpaceae, respectively. In 1925 Kuhlmann described *A. glabra* Kuhlm. and *A. verrucosa* Kuhlm. followed by *A. edentula* Kuhlm. (1940) and *A. latifolia* Ducke (1943) all from Brazil. In the protologue of the most recently described species, *A. macrocarpa*, Forero & Gentry (1984) indicated the need for taxonomic study of *Ampelocera*.

Morphology and Taxonomic Characters

Ampelocera species are small to large trees often with slender, channeled buttresses and smooth gray bark. The wood is light brown to cream-colored and hard.

LEAVES

The leaves of all species are pinnately veined except for those of *Ampelocera hottlei*, which are trinerved at the base. The texture of most leaves is coriaceous, but *A. cubensis* and *A. macphersonii* have chartaceous leaves. The leaves of *Ampelocera* are glabrous except for those of *A. cubensis*, which are sometimes softly puberulent beneath. Young leaves in most species are often many times larger than those on fertile branches. Young leaves of *A. hottlei* and *A. macrocarpa* are distinctive for their bright blue metallic color.

Nearly all leaves of *Ampelocera* are oblong to elliptic with characteristic oblique bases and attenuate apices. *Ampelocera cubensis*, *A. glabra*, and *A. ruizii* often have obscurely and coarsely dentate leaves. Petioles are usually thick and have a red flaky epidermis.

INFLORESCENCES

Ampelocera inflorescences are axillary, sometimes simple, usually compound dichasia or rarely are panicles of compound dichasia. In *A. glabra* the rachises are so short that the inflorescences appear fasciculate. The longest and most densely flowered inflorescences in the genus with up to 56 flowers are found in *A. longissima*. Inflorescences have perfect flowers and functionally staminate flowers, the latter being found lower on the inflorescence axis.

FLOWERS

Ampelocera flowers are small, cream-colored, yellow, or green and offer a limited number of characters. All dimensions provided in the descriptions are based on dried material. The perianth consists of a sepalar cup with four or five usually sparsely puberulent lobes. The lobes in *A. cubensis* are villous.

Stamen number varies from 4 to 16 with the staminate flowers often having fewer stamens (4–8) than the perfect flowers. Two kinds of filaments are found in the genus: relatively thick filaments expanded near the base and drying flat characterize *A. edentula* and *A. macrocarpa*, and relatively long, thin filaments that twist upon drying characterize the other seven species. The anther connective is extended beyond the thecae to form a strigose apicule. In the species with the short, broad filaments, the connective extension is very pronounced, while in those with long, thin filaments, the extension is smaller.

The ovary in *Ampelocera* is puberulent and oblong to globose. The two style branches are free to the base in most species, but in *A. cubensis* and *A. ruizii* they are united in the lower one-fourth. Staminate flowers often have cylindrical, ribbed pistillodes with the same vestiture as the ovaries in the perfect flowers.

Size and shape of the drupaceous fruits of each species of *Ampelocera* are quite distinctive. Generally the fruits of *Ampelocera* are yellow, asymmetrical, and transversely obovoid or ellipsoid; they vary from 0.6 to 2.2 cm long. The fruits may be glabrous (*A. glabra*, *A. longissima*), sparsely puberulent (*A. edentula*, *A. macrocarpa*), densely pubescent (*A. macphersonii*), or densely pilose (*A. ruizii*). *Ampelocera hottlei* fruits, the most unusual in the genus, are symmetrically oblong and velutinous with longitudinal striations. *Ampelocera macrocarpa* typically has pyriform fruits with an unusually thick endocarp.

USES

The wood of *Ampelocera* is hard and is used for firewood and lumber. In the Pichis Valley of Peru, the astringent bark of *A. edentula* is used by the Campa Indians to tattoo skin. The bark is wetted and then bound around the arm, where it ulcerates the skin and causes a painful eruption. A coloring agent is then applied to the ulceration and scar tissue forms (A. Gentry, pers. comm.).

Systematic Treatment

Ampelocera Klotzsch, Linnaea 20: 541. 1847.
TYPE SPECIES: *Ampelocera ruizii* Klotzsch.

Plagioceltis Milbr. ex Baehni, Contr. Field Mus. Nat. Hist., Bot. Ser. 13(2): 272. 1937.

Small to large trees with slender buttresses. Leaves petiolate, entire or coarsely dentate, usually glabrous, pinnately veined or palmately veined at base, with paired stipules. Inflorescences axillary, sparsely branched to much-branched dichasia, or the flowers fasciculate, with perfect flowers toward the apex and functionally staminate flowers toward the base; rachises 0.2–7.8 cm long with 2–57 flowers. Flowers white, yellow, or green; calyx with 4–5 lobes, these usually united in the lower half; petals absent; stamens 4–16; filaments 1–4 mm long, 0.5–1 mm broad, of two types, either thick and expanded near base and drying flat, or long, thin, and drying twisted; anther connective extended beyond the anther at the apex; ovary superior, unilocular with a single pendulous ovule, glabrous or pubescent; style branches 2. Fruits drupaceous, yellow or orange, globose, or oblong, or obovoid to transversely obovoid, with persistent stamens and style branches; seeds globose, with thick cotyledons.

KEY TO THE SPECIES OF *AMPELOCERA*

1a. Fruits strongly asymmetrical, broader than long (not known in *A. albertiae*); filaments slender throughout.
  2a. Leaves usually dentate, occasionally entire; inflorescences borne on leafless branches; style branches 3–5 mm long.
    3a. Leaf margins often revolute; filaments ca. 2 mm long; Cuba and Hispaniola ..... 2. *A. cubensis*
    3b. Leaf margins not revolute; filaments ca. 3 mm long; South America.
      4a. Inflorescence rachises 0.9–1.5 cm long with 8–23 flowers; calyx 2–2.5 mm long; fruits 1–1.2 cm tall, 1.2–1.6 cm broad, densely pilose; Peru, Bolivia, Amazonian Brazil ..... 9. *A. ruizii*
      4b. Inflorescence rachises 0.5–0.8 cm long with 4–9 flowers; calyx ca. 1.5 mm long; fruits 1.5–2 cm tall, 2–2.3 cm broad, glabrous; southeastern and central coastal Brazil ..... 4. *A. glabra*
  2b. Leaves always entire; flowers borne on leafy branches; style branches 1–2 mm long.
    5a. Inflorescences with 3–6 flowers; stamens ca. 16; leaves chartaceous, unevenly colored on drying; Panama, northern Colombia, northwestern Venezuela ..... 8. *A. macphersonii*
    5b. Inflorescences with (9–)20–56 flowers; stamens 4–12; leaves subcoriaceous, uniformly colored on drying; Colombia (Valle), Ecuador.
      6a. Inflorescence rachises (2.7–)3.5–7.8 cm long, elongate, loosely flowered; ovary sparsely puberulent; Ecuador ..... 6. *A. longissima*
      6b. Inflorescence rachises 0.6–1.9 cm long, congested, densely flowered; ovary densely strigose; Colombia ..... 1. *A. albertiae*
1b. Fruits obovoid to globose, not strongly asymmetrical, longer than broad; filaments broadened basally.
  7a. Leaves trinerved at the base; style branches ca. 4 mm long; stamens ca. 16; fruits densely brown tomentose, with longitudinal striations; Mexico to Nicaragua ..... 5. *A. hottlei*
  7b. Leaves pinnately veined at the base; style branches 1–2 mm long; stamens (6–)8; fruits glabrous to sparsely puberulent, yellow; Honduras to Panama, South America.
    8a. Ovary densely puberulent; fruit with a thin endocarp; greater Amazon Basin in Surinam, Guyana, Brazil, Venezuela, Colombia, Ecuador, Peru, and Bolivia ..... 3. *A. edentula*
    8b. Ovary sparsely puberulent; fruit with a thick endocarp; Honduras to northern Colombia and northern Venezuela ..... 7. *A. macrocarpa*

1. Ampelocera albertiae sp. nov. TYPE. Colombia. Valle: carretera Cali–Buenaventura, km 24, 1,750 m, 15 Oct. 1982, *L. Albert de Escobar, J. Folsom, J. Brand & D. Sánchez 2788* (holotype, TEX; isotypes, HUA, MO). Figure 1.

Ampelocerae longissimae similis sed inflorescentiis densifloris et ovariis dense strigosis differt. Inflorescentiae saepe ad basim ramosissimae, floribus (9–)20–52, sepala 4, 1.5–2 mm longae, stamina 8(–12) in floribus perfectis, filamenta 1.5–2 mm longae, tenues, fructus ignotus.

Trees 4 m tall; younger branches very sparsely puberulent, reddish brown; older branches gray, glabrous; stipules 3–4 mm long, lanceolate, sparsely to moderately strigose. Leaf blades elliptic, 9–12 × 3–6 cm, the apex acute, the base attenuate, drying coriaceous, dull green to brown, uniformly colored, glabrous and smooth above and beneath, the margins entire; lateral veins 5–6, gradually arcuate, raised beneath; petioles 0.5–0.6 cm long, smooth, drying dark brown. Inflorescences axillary, short panicles on leafy branches, often much-branched at base, with perfect and functionally staminate flowers; rachises 0.6–1.9 cm long, densely flowered, with (9–)20–52 flowers, sparsely strigose. Flowers white, subtended by ovate, chartaceous, acute bracts ca. 1 mm long; calyx 1.5–2 mm long, the lobes 4, united at the base, glabrous to sparsely strigose, ciliate; stamens 8(–12) in perfect flowers, 4–8 in functionally staminate flowers, these with a strigose pistillode; filaments 1.5–2 mm long, slender throughout; anthers ca. 1 mm long, with the connective extending into a short strigose

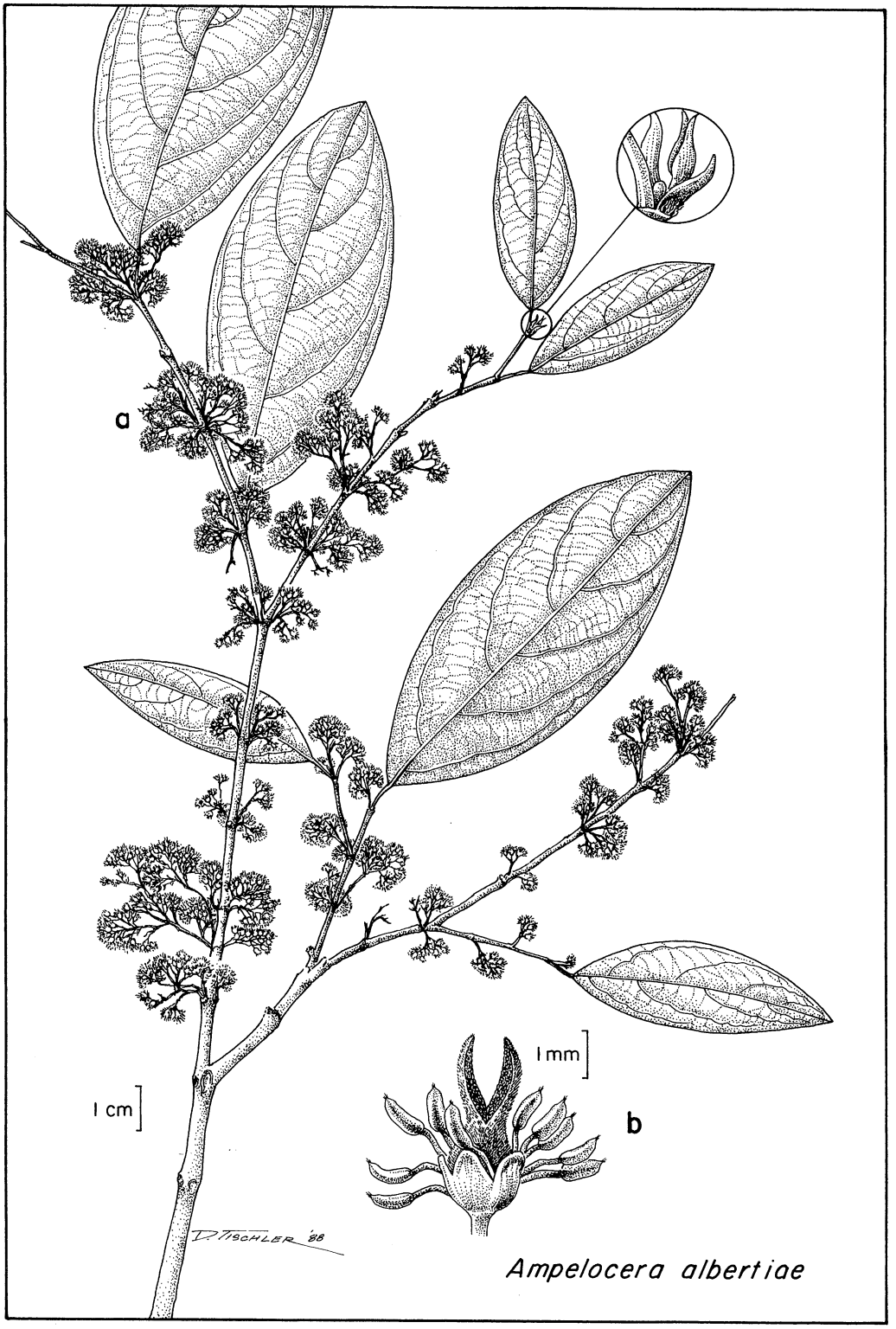


FIGURE 1. *Ampelocera albertiae.*—a. Fertile branch showing close-up of stipules.—b. Perfect flower. (From *Albert de Escobar et al. 2788* TEX.)

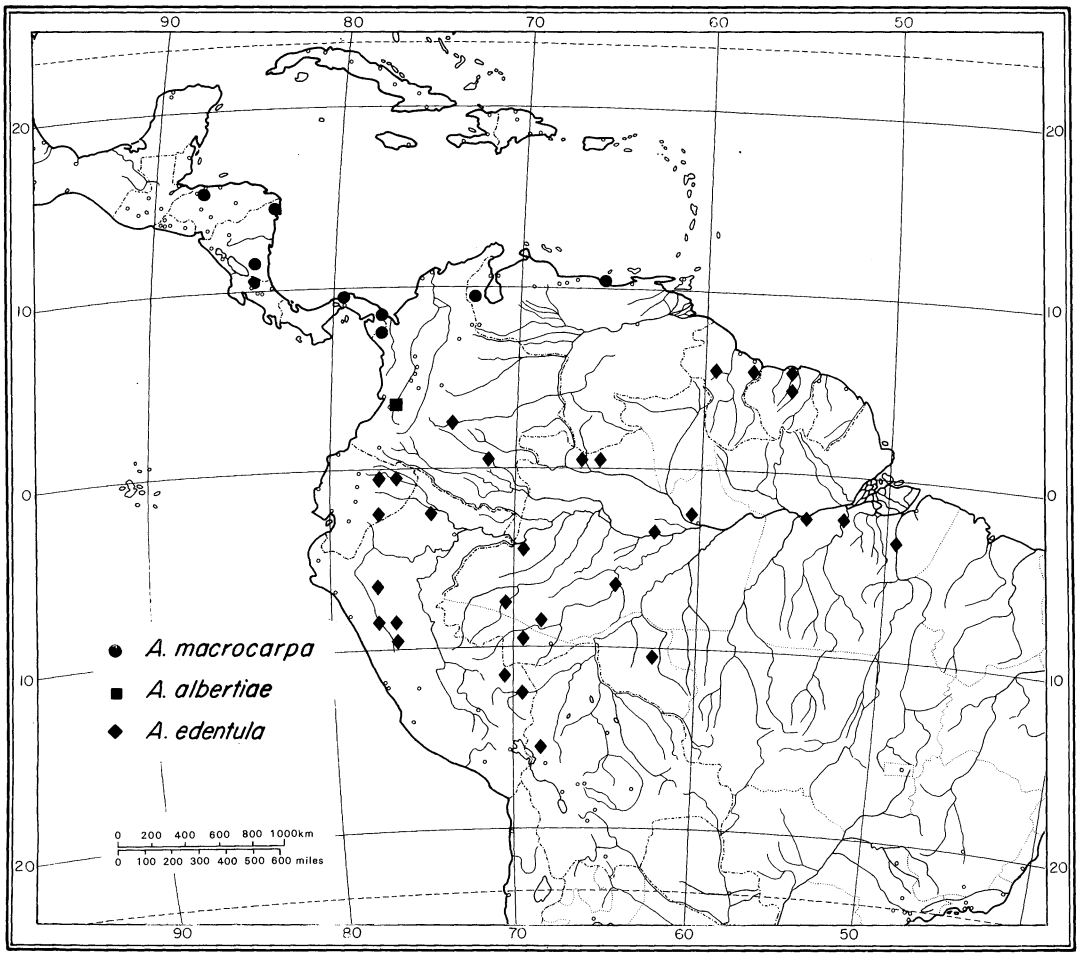


FIGURE 2. Distributions of *Ampelocera albertiae*, *A. edentula*, and *A. macrocarpa*.

apicule ca. 0.1 mm long; ovary densely strigose, the style branches 1.5–2 mm long, free to base. Fruit not seen.

Distribution, habitat, and phenology. This species is known only from the western slope of the western cordillera of Colombia (Fig. 2). Flowering is recorded in October.

Presently known from only one specimen, more collections are needed to understand the morphological variation and relationships of *Ampelocera albertiae*. *Ampelocera albertiae* is characterized by having entire leaves, densely flowered inflorescences on leafy branches, flowers with relatively thin filaments, and style branches 1–2 mm long. This species appears to be most similar to *Ampelocera longissima* but differs by having densely flowered inflorescences and densely strigose ovaries. The unusual, new species is named in honor of its discoverer, Dra. Linda Albert de Escobar, of the Universidad de Antioquia, Colombia (HUA), a student of Passifloraceae.

2. Ampelocera cubensis Griseb., Catalogus Plantarum Cubensium. 57. 1866. TYPE. Cuba. Pinar del Río: Loma de Rangel, 28 May 1863, *Wright 2222* (lectotype [designated by R. A. Howard (1988, Fiche 2, B 11)], GOET; isolectotypes, B, GH, GOET, K, MO).

Ampelocera pubescens C. Morton, Proc. Biol. Soc. Wash. 71: 153. 1958. TYPE. Cuba. Santa Clara: Limones, Soledad, Cienfuegos, 26 Apr. 1928, *J. G. Jack 6036* (holotype, US; isotypes, A—3 sheets, B, F (frag.), K, NY).

Trees 5–30 m tall; younger branches sparsely to densely puberulent, light brown; older branches glabrous, light gray to brown; flowering branches

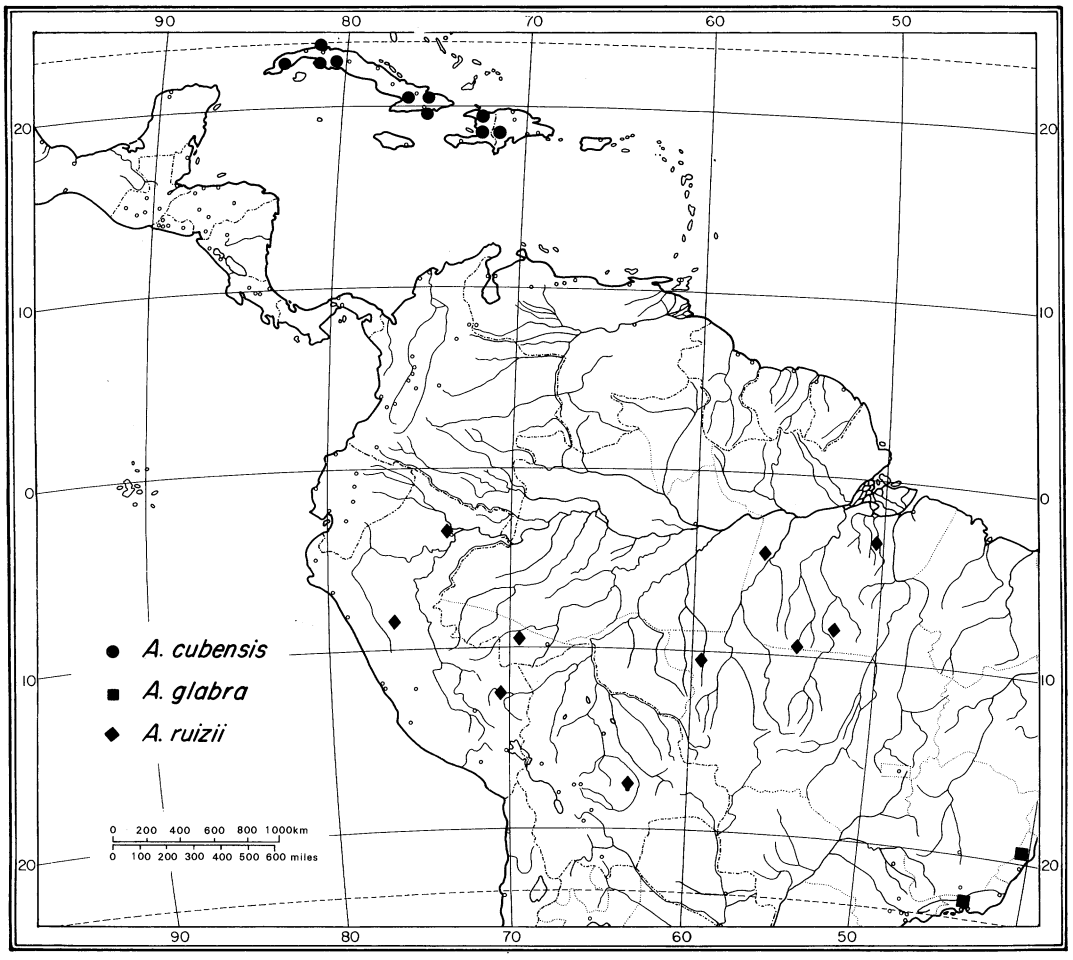


FIGURE 3. Distributions of *Ampelocera cubensis*, *A. glabra*, and *A. ruizii*.

with shortened internodes; stipules 2–5 mm long, lanceolate, sometimes falcate, acute, pilose. Leaf blades narrowly to broadly elliptic, 7.5–17 × 3.5–6(–9.5) cm, the apex gradually acuminate with the acumen 1–2 cm long, obliquely rounded at base, the margins entire, or obscurely dentate with 2–4 teeth per side, or obscurely crenulate, often revolute, drying chartaceous, light brown, the lateral veins 5–7, arcuate, smooth and glabrous above and beneath, the midvein puberulent to glabrous beneath; petioles 0.8–1.2 cm long, puberulent. Inflorescences axillary on leafless branches, fasciculate or in very short racemes with only perfect flowers; rachises 0.2–1 cm long with 2–5 flowers, glabrous to puberulent. Flowers (color not known) subtended by glabrous to sparsely puberulent bracts, the ovate bracteoles 2–3 mm long; calyx ca. 2 mm long, the lobes 4–5, united at base, pilose to villous; stamens 12–16; filaments ca. 2 mm long, linear, slender throughout; anthers 1–1.3 mm long, the connective slightly extended into an apicule; ovary sparsely puberulent, the style branches 3–4 mm long, connate in lower ca. 1 mm. Fruits yellow, asymmetrical, transversely obovoid, 0.8–1.3 cm long, 1–1.4 cm broad, puberulent; endocarp ca. 0.5 mm thick.

Common names. hueso de costa, jatia blanca (Cuba).

Distribution, habitat, and phenology. Uncommon in coastal thickets, limestone cliffs, and rocky woods in Cuba and on western Hispaniola (Fig. 3) from 0 to 300 m. Flowering apparently occurs February to June when the trees are leafless; fruiting specimens have been collected in April, May, July, and December.

Additional specimens examined. CUBA. HAVANA: near Playa de Mariano, Feb. 1922, *Bro. León 10677* (GH, NY, US); Sierra de Anafe, 8 Aug. 1923, *Bro. León 11486* (GH, NY). LAS VILLAS: on limestone outcrop of Potrero Seboruco at Gavilán, 1–20 July 1950, *Howard et al. 21* (A, NY). ORIENTE: Renté, Santiago Bay, July 1943, *Bro. Clemente 2984* (GH). Banes, Puerto Rico, 18 Nov. 1915, *Ekman 6629* (F, K, US); Palmarito de Cauto, 250 m, 2 May 1919, *Ekman 9626* (NY); Papayo, in hills, 21 Feb. 1919, *Ekman 9470* (LL, NY, US—2 sheets). PINAR DEL RÍO: Sierra de Anafe, 18 Dec. 1911, *P. Wilson 11398* (NY—3 sheets, US). SANTA CLARA: Limones, Soledad, Cienfuegos, 12 Mar. 1927, *Jack 4911* (A, NY, US); 3 Sep. 1927, *Jack 5396* (US); 7 Feb. 1928, *Jack 5934* (A—2 sheets, NY, US); 18 July 1929, *Jack 7490* (A, NY, US); Bartolina woods, S coast of eastern Tapata, 1 Aug. 1930, *Bro. León 14625* (GH, NY). DOMINICAN REPUBLIC. SANTO DOMINGO: Peninsula de Barahona, top of Cerro Jean-Josè, ca. 300 m, 23 Sep. 1926, *Ekman 7044* (GH). HAITI: L'ARTIBONITE: Massif des Cahos, Dessalines, limestone cliffs at Case-à-Roche, 13 Mar. 1925, *Ekman 3506* (LL); Gonâve Island, Anse à Galets, Aug. 1927, *Eyerdam 214* (A, GH, NY, US).

This species is characterized by relatively small, thin, sparsely dentate leaves; short, fasciculate inflorescences that are borne on leafless branches; style branches 3–4 mm long; linear filaments; and small, puberulent, strongly asymmetrical fruits. *Ampelocera cubensis* is closely related to *A. glabra* from central coastal and southeastern Brazil and *A. ruizii* from Amazonian Brazil, Peru, and Bolivia. It differs from *A. glabra* by having smaller fruits and less prominently dentate leaves and differs from *A. ruizii* by having shorter inflorescences with 2–5 (vs. 8–23) flowers and by having sepals 1.5 (vs. 2–2.5) mm long.

Morton (1958) described *Ampelocera pubescens*, distinguishing his new species from *A. cubensis* by the vestiture of the lower leaf surface and the length of the stipules (4.5–6 mm in *A. pubescens* vs. 3 mm in *A. cubensis*). I can find no other characters to corroborate the recognition of two taxa, and, in fact, vestiture of material annotated as *A. pubescens* by Morton, including the type (*Jack 6036*), ranges from densely to sparsely pilose.

3. Ampelocera edentula Kuhlm., Annais Prim. Reu. Sul. Amer. Bot. 3: 75. 1940. TYPE. Brazil. Pará: "In silva collina inter locos Piquiatuba et Cipoal," 18 Jan. 1933, *Ducke s.n.* (RB # 24.565) (holotype, RB, n.v.; isotypes, K, US).

Ampelocera latifolia Ducke, Trop. Woods 76: 15. 1943. TYPE. Brazil. Amazonas: Esperança, boca do Javary, 29 Oct. 1942, *Ducke 1039* (holotype, RB, n.v.; isotypes, MG, MO, NY, US).

Trees 12–30 m tall, up to 90 cm dbh, with triangular buttresses 1.5–3 m high; young branches dark reddish brown, glabrous to puberulent, lenticellate, smooth; older branches light grayish brown, with exfoliating bark; stipules 2–6 mm long, narrowly to broadly lanceolate, acute, strigose. Leaf blades elliptic to oblong-elliptic, 8–26(–35) × 3.5–12 cm, apex acuminate with tips 0.2–1.2 cm long, the base rounded, cuneate to oblique, with margins entire, lustrous above, glabrous, drying smooth above and beneath, dull green to brown, pinnately veined; lateral veins 5–7, arcuate, raised beneath; petioles 0.5–1.4 cm long, glabrous or with a red flaky epidermis. Inflorescences 1–2 per axil on leafy branches, short, much-branched, densely flowered panicles, with staminate and perfect flowers; rachises 0.8–2.8 cm long, branching almost to the base, densely flowered, with 6–27(–55) flowers, puberulent. Flowers white to greenish yellow, subtended by bracts 0.5–2 mm long, these reddish, ciliate, ovate, acute, chartaceous; pedicels 0.5–1 mm long, narrower than the rachis and flower base; calyx 1.5–2 mm long, the lobes 4, united in lower half, glabrous to sparsely puberulent; stamens (6–)8 in perfect and staminate flowers; filaments 3–4 mm long, broadened basally; anthers ca. 1 mm long, often curved inward, with the connective extended into an apicule 0.5–1 mm long; ovary in perfect flowers densely puberulent, oblong, 2–3.5 mm long, with style branches 1–1.5 mm long; pistillode in staminate flowers oblong, strigose at the apex and with 5–6 strigose ridges. Fruits yellow, globose to oblong, only slightly asymmetrical, glabrous to sparsely puberulent, scabrous, (0.8–) 1.6–2.2 cm long, 1–1.7 cm broad; endocarp thinner than 0.5 mm.

Common names and uses. Nina-caspi (Peru: San Martín). The fiber of the bark is strong, and when bound around the arm it causes painful eruption; it is toxic and vesicans. The fruit is hypnotic. (Data fide *Woytkowski 5449.*)

Distribution, habitat, and phenology. This species is found throughout the Amazon Basin from near sea level to 750 m in Surinam, Guyana, Venezuela, Brazil, Colombia, Ecuador, Peru, and Bolivia (Fig. 2) in primary tropical moist forest and nonflooded and flooded riverine forests. Flowering and fruiting apparently occur throughout the year.

Additional specimens examined. BRAZIL. ACRE: near mouth of Rio Macauhan (tributary of Rio Yaco), 9°20'S, 69°W, 3 Aug. 1933, *Krukoff 5266* (K, MO—2 sheets, NY, US). AMAZONAS: Manaus, Estrada do Aleixo, 27 Aug. 1945, *Ducke 1736* (A, F, NY, US); Rio Purús, Rio Ituxi, SE of Lábrea, 29 June 1971, *Prance et al. 13979* (MG);

near mouth of Rio Embira (tributary of Rio Tarauaca), 7°30′S, 70°15′W, *Krukoff 4877* (A, F, K—2 sheets, MO, US); Serra da Neblina, Rio Cauaburi, beyond mouth of Tucano Igarapé, 125 m, 16 Nov. 1965, *Maguire et al. 60185* (MO). PARÁ: near EMBRAPA station, at km 23 on road Altamira–Itaituba, 29 Oct. 1977, *Berg et al. 734* (MO); Tucurui, Cagancho, Rio Tocantins, Jan. 1981, *Lisboa et al. 2114* (MG). RONDÔNIA: Município de Ouro Preto do Oeste, BR 364, rodovia Cuiabá–Porto Velho, km 382, rodovia 470, linha 81, em direção a Mirante da Serra, km 17, 10°11′S, 62°63′W, *C. A. Cid 4940* (MO—2 sheets). SURINAM: Kaboerie, Arbor no. 596, Oct. 1950, *B. W. 4964* (K—2 sheets, NY). GUYANA: Mazarumi Station, 9 Jan. 1940, *Fanshawe 3075* (K, NY); Mapenna Creek, Courantyne River, 23 Oct. 1946, *Fanshawe 5369* (K, NY, US). VENEZUELA. AMAZONAS: Cerro Neblina, between base camp and "Puerto Chimo" along Río Mawarinuma, 150–180 m, 0°50′N, ca. 66°8′W, 26 Apr. 1984, *Gentry & Stein 46979* (MO, TEX). COLOMBIA. META: Sierra de la Macarena, Caño Entrada, 550 m, 13 Jan. 1950, *Philipson et al. 2107* (US). VAUPÉS: Río Apaporis, entre el Río Pacoa y el Río Kananarí, Soratama, 250 m, 28 Sep. 1951, *Schultes & Cabrera 14147* (ECON—2 sheets). ECUADOR. NAPO: Estación Experimental INIAP-Payamino, 5 km al N de Coca, 0°25′S, 77°00′W, 250 m, 10–15 Sep. 1986, *Neill et al. 7320* (TEX); Añangu, Parque Nacional Yasuní, 0°31–32′S, 76°23′W, 260–350 m, *Studies of Ecuadorian Forests 9154* (NY). PERU. HUÁNUCO: vicinity of Tingo María, along Río Huallaga above docks by coffee tanks, 25 June 1960, *Mathias & Taylor 5002* (F). MADRE DE DIOS: Tambopata Tourist Camp at junction of ríos Tambopata and La Torre, 280 m, 12°49′S, 69°43′W, 24 July 1985, *Gentry et al. 51256* (MO). SAN MARTÍN: Prov. Mariscal Cáceres, Dtto. Tocache Nuevo, 15 Sep. 1970, *Schunke 4395* (F, GH, K, MO, NY, US); Gramalote ad Saposoa, 600 m, 1 Oct. 1959, *Woytkowski 5449* (MO); 17 Apr. 1962, *Woytkowski 7307* (F, GH, MO, NY, TEX, US); Sanango ad Saposoa, 600 m, 14 Apr. 1962, *Woytkowski 7291* (F, MO—2 sheets); 20 Apr. 1962, *Woytkowski 7312* (MO). BOLIVIA. LA PAZ: Prov. Larecaja, Tuiri, near Mapiri (on left bank of Río Mapiri), 490–750 m, 12–30 Sep. 1939, *Krukoff 10732* (A, F, K, MO, US), *10727* (A, F, K, MO, US).

Ampelocera edentula is characterized by having flowers with eight stamens; broad filaments with a pronounced terminal extension of the connective; and large yellow, globose, symmetrical fruits. This species is most closely related to *A. macrocarpa* from which it differs in having generally oblong fruits and a thin endocarp (vs. globose fruits and a thick endocarp).

In his description of *Ampelocera latifolia*, Ducke (1943) stated that his new species might be just an upper-Amazonian variant of *A. edentula*. The fruit on the type of *A. latifolia* is distinctly oblong while that on the type of *A. edentula* is smaller and round. This variation, however, may reflect only a difference in fruit maturity, and since I could find no other consistently correlated characters, *A. latifolia* is placed into synonymy with *A. edentula*.

Although *Ampelocera edentula* occurs throughout a broad geographic area in the Amazon Basin, it is poorly represented in herbaria, and consequently, its morphological variation is difficult to assess. Leaves are generally shorter on fertile branches, 12–20 cm long, while sterile branches have leaves up to 30 cm long. Some collections from Peru and Bolivia (*Schunke 4395*, *Woytkowski 7307* (Perú: Dept. San Martín); *Krukoff 10727* (Bolivia: La Paz)) have leaves up to 35 cm on fertile branches. These populations differ further from typical Brazilian *A. edentula* in having shorter petioles, more oblique leaf bases, and more pubescent fruits. A sterile specimen from Peru (Dept. Loreto: Prov. Requena, Jenaro Herrera, Río Ucayali, 73°45′W, 4°55′S, 22 Feb. 1987, *Gentry et al. 56289* (MO)) is unusual in having sparsely pubescent stems, petioles, and the lower surface of the primary and secondary veins. As more specimens become available, the variation presently included in *A. edentula* may warrant recognition of other taxa.

4. Ampelocera glabra Kuhlm., Arch. Jard. Bot. Rio de Janeiro 4: 351, pl. 28. 1925. TYPE. Brazil: "Rio de Janeiro ad urbem in selva loco Fabrica Alliança," 8 Nov. 1922, *Kuhlmann 6794* (holotype, B; isotypes, K, MO, US).

Trees 3–20 m tall, with a spreading crown; trunk brown, up to 66 cm diam.; older stems gray, glabrous; younger stems brown, glabrous; stipules ca. 5 mm long, lanceolate, glabrous or sparsely pilose. Leaf blades elliptic, 7.5–14 cm long, 2.7–7.2 cm wide, the apex acuminate, the tip 0.3–1.5 cm long, obliquely rounded at base, the margins dentate with 4–6 teeth, seldom entire, smooth, glabrous, drying subcoriaceous, the lateral veins 5–8, straight in lower ¾, slightly arcuate near margin; petioles 0.5–1 cm long, glabrous, drying dark brown. Inflorescences fasciculate or very short racemes or cymes, axillary on leafless stems, with perfect and staminate flowers having rudimentary pistils; rachises 0.5–0.8 cm long, sparsely puberulent, with 4–9 flowers. Flowers green, subtended by bracts ca. 1.5 mm long, glabrous to sparsely pilose; calyx ca. 1.5 mm long, the lobes 4, united at the base, ovate, sparsely pilose; stamens 16 in bisexual flowers, 12–14 in functionally staminate flowers; filaments ca. 3 mm long, slender throughout, with the connective extended into an apicule ca. 0.3 mm long; anthers 1–1.5 mm long; ovary sparsely puberulent and verrucose, the style branches ca. 4 mm long. Fruits yellow, asymmetrical, transversely obovoid, 1.5–2 cm tall, 2–2.3

cm broad, glabrous, with persistent style branches; endocarp thin.

Common name. Mentira (Brazil).

Distribution, habitat, and phenology. This species occurs in primary forest in southern coastal Brazil (Fig. 3). Flowering August to November usually on leafless branches.

Additional specimens examined. BRAZIL. ESPIRITO SANTO: Reserva Florestal da CVRD, Linhares, Est. Gavea, ant. X-2, KM 20,790, 20 Aug. 1979, *Foli 98* (MO). MINAS GERAIS: Distr. Rio Branco, retiro de Antonio Avelino, 750 m, 27 Dec. 1930, *Mexia 5456* (MO). RIO DE JANEIRO: cultivadad no Horto Florestal da Gávea, 7 Jan. 1932, *Victorio s.n.* [RB no. 139428] (B); Huto Florestal, 19 Jan. 1928, *Kuhlmann s.n.* [RB no. 139426] (F); Mata das Obras Públicas, 23 Dec. 1926, *Kuhlmann s.n.* [RB no. 139430] (F, US).

Ampelocera glabra is distinguished by its small fascicles of flowers; large, strongly asymmetrical, glabrous fruits; and toothed leaves. It is clearly most closely related to and can be easily confused with *A. ruizii* but is geographically disjunct. The straight instead of arcuate lateral veins in *A. glabra* are distinctive in the genus.

5. **Ampelocera hottlei** (Standley) Standley, Trop. Woods 51: 11. 1937.

Celtis hottlei Standley, Trop. Woods 20: 20. 1929. TYPE: Honduras. Yoro, near Progreso, 4 Apr. 1929, *Hottle 32* (holotype, F).

Trees 10–30 m tall; trunk 10–50 cm dbh, with narrow buttresses, ca. 2 m tall; crown subglobose or spreading; bark smooth, white to gray with dark lenticels, hard, with a sweet odor; sapwood creamy yellow to light brown; branches light brown-gray, lenticellate; stipules ca. 4 mm long, linear-lanceolate, puberulent. Leaf blades oblong to elliptic, (7–)8.5–16(–26) × (2.6–)3.3–8(–10.5) cm, the apex acuminate with an acumen 0.2–3 cm long, obliquely attenuate to rounded at base, the margins entire, drying chartaceous to subcoriaceous, dull dark green above, dull light green beneath, the young leaves blue to purple, glabrous and smooth above and beneath, the lateral veins 3–4(–5), arcuate, only slightly raised beneath, the base palmately veined with basal pair arising at the petiole; petioles 0.6–1.2 cm long, glabrous, minutely verrucose, usually drying dark brown. Inflorescences axillary on leafy branches, 1–2.5 cm long, compound dichasia with perfect flowers toward the apex and functionally staminate flowers toward the base; rachises 0.7–1.5 cm long with 8–17 flowers, puberulent. Flowers purplish to yellowish green, subtended by puberulent bracteoles 1–2 mm long; calyx 1–2 mm long, the lobes 5, united at base, puberulent abaxially; stamens ca. 16 in perfect flowers, ca. 8 in staminate flowers; filaments ca. 2 mm long, linear-lanceolate, broadened basally; anthers ca. 1 mm long, anther connective extended ca. 1 mm into a puberulent apicule; ovary puberulent, the style branches ca. 4 mm long, united in lower 2–3 mm. Fruits yellow, symmetrical, obovoid, 1.2–1.5 cm tall, 1–1.2 cm wide, velutinous, with persistent style branches; endocarp ca. 1 mm thick.

Common names and uses. Mexico: coquito, cautivo, guaya, ojoche blanco, popo mojo. Belize: bullhoof, luin. Guatemala: luín, tisón. El Salvador: tisón. Nicaragua: cuscano, yayo. The wood is used for house construction and railroad ties.

Distribution, habitat, and phenology. This species occurs from central Mexico to Nicaragua (Fig. 4) in primary, undisturbed rainforest or tropical wet forest, sometimes on limestone. Flowering reported from February and fruiting from March to June.

Representative specimens examined. MEXICO. CAMPECHE: El Tormento, near Escárega, 17 May 1968, *Pennington & Sarukhán 9639* (A, K, NY). CHIAPAS: zona comprendida entre los ríos Chancaláh, Chocoljahíto, y Tulijá, Selva Lacandona, 250–450, 29 Nov. 1967, *Pennington & Sarukhán 9363* (NY); road to the ruins, La Arena, 13 Mar. 1958, *Schubert & Gómez Pompa 1731* (A). OAXACA: Mpio. Sta. María Chimalapa, ca. 7 km al oeste de Santa María en la vereda de Chicusaja, 250 m, 30 June 1984, *H. Hernández G. 163* (CAS); Ubero, 30–90 m, June 1937, *Ll. Williams 9497* (A, F, US). TABASCO: Villahermosa (Centro), Selva Dos Montes, atrás del aeropuerto 3.6 km (2.3 mi.) por camino rural de la entrada al aeropuerto, 8 May 1984, *Cowan & Zamudio 4672* (TEX). VERACRUZ: Estación de Biología Tropical "Los Tuxtlas," Mpio. San Andrés Tuxtla, 26 Mar. 1974, *Calzada 1166* (CAS, MO); Estación de Biología Los Tuxtlas, 170–200 m, 1 June 1981, *Gentry et al. 32522* (MO); Mpio. Minatitlán, 2 km al N de Uxpanapa (Pob. 12) en camino al Pob. 13, 17°13′N, 94°13′W, 150 m, 25 Apr. 1985, *Wendt et al. 4803* (TEX). BELIZE. EL CAYO: Valentin, June–July 1936, *Lundell 6225* (F, NY), *6346* (F, NY), *6423* (F). EL TOLEDO: Temash River, 21 Feb. 1945, *Gentle 5212* (F, LL, TEX); near Moffredye Lagoon, 27 Mar. 1945, *Gentle 5291* (GH LL, TEX, US); Temash River, 200 ft., 4 Mar. 1935, *Schipp 1347* (F, K, MO, NY). GUATEMALA. ALTA VERAPAZ: along Río Icvolay between Río Apia and Río Soctelá, 220–210 m, 14 Mar. 1942, *Steyermark 45038* (F); woods SE of Finca Yalpemech, near Alta Verapaz–Petén boundary line, 100–150 m, 23 Mar. 1942, *Steyermark 45205* (F, LL). HUEHUETENANGO: between Ixcan and Río Ixcan, Sierra de los Cuchumatanes, 150–200 m, 23 July 1942, *Steyermark 49219* (F). IZABAL: between Bananera and "La Presa" in Montaña del Mico, 40–300 m, 28 Mar. 1940, *Steyermark 38175* (F); Escoba, ca. 0 m, 3 May 1939, *Standley 72886* (A, F), *72953* (F, NY); Río Juyamá,

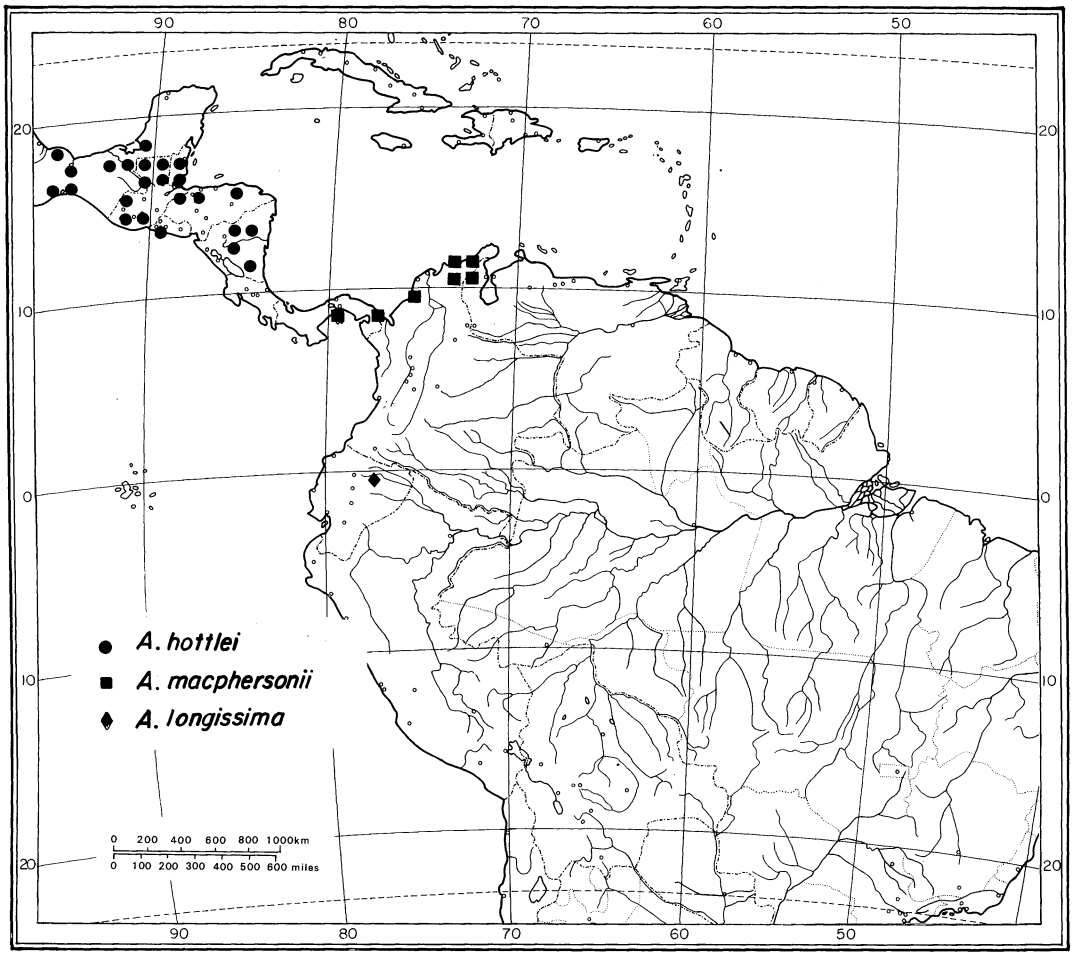


FIGURE 4. Distributions of *Ampelocera hottlei*, *A. macphersonii*, and *A. longissima*.

SE of Cheyenne, ca. 15 mi. SW of Bananera, 50–100 m, 8 Apr. 1940, *Steyermark 39153* (F). PETÉN: Paso Caballos, 5 Apr. 1965, *Contreras 5387* (LL, TEX); Tikal National Park on Remate Road, 4 Mar. 1961, *Lundell 16877* (F, LL); W and NW of Chinajá and 6 mi. W of Río San Román, 50–70 m, 29 Mar. 1942, *Steyermark 45500* (F). RETALHULEU: between Retalhuleu and Nueva Linda, 120–220 m, 18 Feb. 1941, *Standley 87284* (F), *88487* (F), *88520* (A, F). SANTA ROSA: Río de las Pitas, E of Taxisco, ca. 225 m, 2 Dec. 1940, *Standley 78928* (F). EL SALVADOR. AHUACHAPÁN: Sierra de Apaneca, in the region of Finca Colima, 17–19 Jan. 1922, *Standley 20149* (GH). HONDURAS. COLÓN: Guarunta, Wispernini Camp, 75–100 ft., Mar. 1938, *Hagen & Hagen 1372* (F, NY), *1376* (F, NY). YORO: near Progreso, 11 Apr. 1929, *Hottle 108* (F). NICARAGUA. MATAGALPA: Paiwita, 15 km W of Matiguás, 500 m, 5 May 1984, *Moreno 24122* (MO). ZELAYA: Kurinwacito, 80–100 m, 18–22 Mar. 1984, *Moreno 23654* (MO); near Caño San Antonio, 2 km N of Kuikainita, 100 m, 23 May 1978, *Neill 4157* (MO); Mpio. Siuna, La Pimienta, 1 June 1984, *Ortiz 1938* (MO); El Zapote, 40 km NE of Nueva Guinea, 25–31 Mar. 1984, *Sandino 4914* (MO); along Río Iyas between Quebrada El Toro, 260–280 m, 13 May 1978, *Vincelli 367* (MO).

Ampelocera hottlei is represented by the most collections and thus is the best-known species in the genus. Unlike other species, description of the trunk, bark, and sap is available from collection data. It is distinguished from all other species by its trinerved leaf base, and obovoid, densely pubescent, longitudinally lined fruits. As with *A. macrocarpa*, the young leaves are bright metallic blue.

6. Ampelocera longissima Todzia. TYPE. Ecuador, Napo: Estación Biológica Jatun Sacha, Río Napo, 8 km al E de Misahuallí 01°04′S, 77°36′W, 450 m, 28 Dec. 1987, *Neill, Gentry & Manning 8135* (holotype, TEX; isotype, MO). Figure 5.

Inflorescentiae pro genere longissimae, (2.7–)3.5–7.8 cm longae, flores 33–56. Sepala 4 glabra in dimidio inferno connata, stamina 8–10 filamentis ca. 3 mm longis tenuibus. Ovaria sparsim puberula. Rami styli 1–2 mm longi. Fructus leviter lutei transverse obovoidei glabri endocarpium tenuissimum.

Trees up to 20 m tall, with a large, round crown, and shallowly channeled buttresses to 1 m high; bark light gray; wood cream-colored to light brown; young branches very minutely puberulent, dark brown; older branches glabrous, gray; stipules 2–3 mm long, narrowly triangular. Leaf blades elliptic, 8.5–17.4 × 3.5–7.1 cm, the apex acute to gradually acuminate, the tips up to 1 cm long, attenuate at the base, rarely oblique, drying subcoriaceous, green to light brown, uniformly colored, smooth and glabrous above and beneath, the margins entire; lateral veins 4–6, arcuate; petioles 5–14 mm long, glabrous, smooth, and dark brown, becoming flaky and gray with age. Inflorescences axillary on leafy branches, flat-topped panicles or compound dichasia, often curving upward; rachises (2.7–)3.5–7.8 cm long, very minutely puberulent, loosely flowered, with 33–56 flowers. Flowers bisexual or staminate with pistillodes, light green; sepals 4, glabrous, connate in lower half; stamens 8–10; filaments ca. 3 mm long, linear, slender throughout; anthers ca. 1 mm long; ovary sparsely puberulent; style branches 1–2 mm long, papillate on inner surface, glabrous to sparsely strigulose on outer surface. Fruits light yellow, asymmetrical, transversely obovoid, 0.6–1 cm tall, 1–1.4 cm broad, glabrous, with persistent style branches; endocarp very thin, thinner than 0.5 mm.

Distribution, habitat, and phenology. This species is known only from Napo Province in Amazonian Ecuador (Fig. 4) in primary forest. Flowering reported in March on leafy branches; fruiting reported in January, May, and December.

Additional specimens examined. ECUADOR. NAPO: Reserva Biológica Jatun Sacha, Río Napo, 8 km al E de Misahuallí, 01°04'S, 77°36'W, 450 m, 19–28 Mar. 1987, *Cerón 973* (MO, TEX); 8 Nov. 1987, *Cerón 2633* (MO, TEX); 18–30 May 1985, *Palacios et al. 519* (MO); 25 Jan. 1986, *Palacios & Neill 965* (MO).

Ampelocera longissima is distinctive in having the longest inflorescences known in the genus, as well as glabrous, asymmetrical, transversely obovoid fruits. Vegetatively, *A. longissima* is somewhat similar to *A. edentula*, which grows in the same area, but can be separated easily by the latter's shorter inflorescences and pubescent, symmetrical fruits.

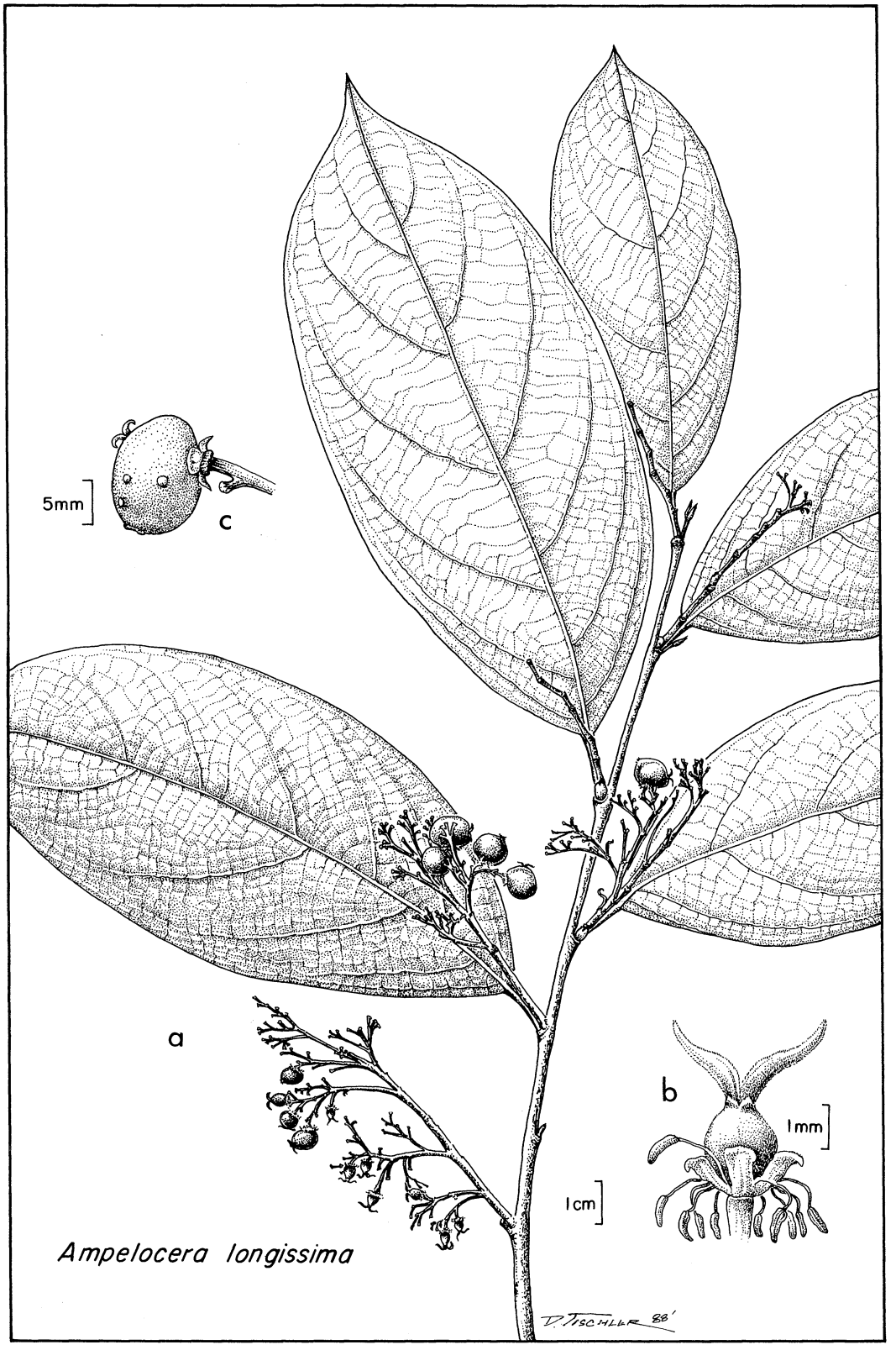
7. Ampelocera macrocarpa Forero & A. Gentry, Phytologia 55: 365. 1984. TYPE. Colombia. Chocó: upper Río Truandó between La Teresita and mouth of Río Ramón, 20 Jan. 1974, *Gentry 9436* (holotype, COL, n.v.; isotypes, MO, NY).

Trees 10–30 m tall; trunk to 50 cm dbh; younger branches sparsely puberulent; older branches glabrous; stipules ca. 6 mm long, linear-lanceolate, sparsely puberulent. Leaf blades oblong to elliptic, 8–22 × 3.7–10 cm (sapling leaves 22–38 cm long), the apex acute to acuminate with tips 1–3 cm long, very strongly oblique, base rounded to subcordate, the margins entire, drying coriaceous, dull green to brown, glabrous and smooth above and beneath, pinnately veined; lateral veins 4–11, arcuate, raised beneath; petioles 0.6–1 cm long, with a flaky red epidermis. Inflorescences axillary on leafy branches, compound dichasia with perfect flowers toward the apex and functionally staminate flowers at the base; rachises (1.8–)2.5–3.7 cm long, with 11–34(–57) flowers, glabrous, sometimes purple. Flowers green, subtended by minute floral bracts, ca. 1 mm long, ovate, acute, chartaceous; sepals 4–5, 1–2.5 mm long, united at base, glabrous; stamens 8 in perfect flowers, 4–6 in staminate flowers; filaments 1.5–2 cm long, broadened basally; anthers ca. 1 mm long, the connective extended into a short apicule less than 0.5 mm long; ovary in perfect flowers sparsely puberulent, with style branches 1–2 mm long; pistillode in staminate flowers cylindrical with longitudinal strigose ribs. Fruits yellow, globose or drying pyriform, 1.8–2.2 cm diam., essentially symmetrical, glabrous or very sparsely strigose, scabrous, with persistent style branches ca. 2 mm long; endocarp 1–2 mm thick.

Common names. Nicaragua: cuscano, yayo. Costa Rica: rescaldo.

Distribution, habitat, and phenology. This species occurs in the Atlantic lowland rainforest of Honduras, Nicaragua, Costa Rica, Panama, northern Venezuela, and northwestern Colombia (Fig. 2). It has been reported in second growth evergreen forest and on limestone. Flowering specimens have been collected in February; fruiting collections are known from January, March, May, and August.

Additional specimens examined. HONDURAS. ATLÁNTIDA: Lancetilla Valley, near Tela, 20–600 m, 6 Dec. 1927–20 Mar. 1928, *Standley 53125* (F), *54159* (F). NICARAGUA. RÍO SAN JUAN: edge of Río Santa Cruz, tributary of the Río San Juan, 42 m, 22 Mar. 1985, *Moreno 25531* (MO). ZELAYA: Comarca de San Isidro,



above Río Pajarito, 3 Oct. 1982, *Laguna 85* (MO); S of Río Wawa, 60 km NW of Puerto Cabezas, 40 m, 13 Mar. 1971, *Little 25135* (F, MO); 16 Mar. 1971, *Little 25165* (MO); along road from Siuna to El Dos, ca. 1 km E of Cerro Livico, 400–600 m, 12 Dec. 1980, *Stevens 18687* (MO). COSTA RICA. HEREDIA: Finca La Selva, 100 m, 25 Mar. 1981, *Folsom 9488* (F, LL, MO, TEX); Finca La Selva, 30 May 1974, *Hartshorn 1495* (MO, NY). PANAMA. COLON: Santa Rita East Ridge lumber road, 23 Feb. 1968, *Correa 738* (MO—2 sheets). DARIÉN: Parque Nacional del Darién, ridge between Río Topalisa & Río Pucuro, ca. 17 km E of Pucuro, 8°03.5′N, 77°17′W, 850 m, 17 Oct. 1987, *Hammel et al. 16276* (MO); S of El Real, region called Alturas de Nique, near Cana mine, 07°45′N, 77°40′W, 650–800 m, 21 Aug. 1987, *McPherson 11518* (MO, TEX). PANAMÁ: Pilota de Toro, 4 Dec. 1977, *Folsom et al. 6776* (TEX). SAN BLAS: forests around Puerto Obaldía, San Blas coast, 0–50 m, Aug. 1911, *Pittier 4319* (F). VENEZUELA. MIRANDA: Cerros del Bachiller, western sector: virgin evergreen forest, between base and summit, above Quebrada Bachiller, S of Caño Rico and Bachiller, 11 km (by air) SSE of El Guapo, 10°6–7′N, 65°53′W, 20–690 m, 27–28 Mar. 1978, *Steyermark & Davidse 117010* (MO). ZULIA: 6 km W of main road and 2 km S of Río Catatumbo, ca. 20–100 m, 9°6′N, 72°42′W, 29 Mar. 1982, *Liesner & González 13348* (LL, MO). COLOMBIA. CHOCÓ: trail from Río Tigre base camp up Serranía del Darién W of Unguía, 300–600 m, 17 July 1975, *Gentry & Aguirre 15286A* (NY, MO).

Ampelocera macrocarpa is characterized by its large fruits with a very thick endocarp, relatively short petioles with flaky red epidermis, and short style branches. The leaves of this species are bright metallic blue when young and have strongly oblique bases. On saplings and young branches the leaves are extremely long and narrow (22–38 cm long). *Ampelocera macrocarpa* appears to be most closely related to *A. edentula* by virtue of the characters given in the key.

8. Ampelocera macphersonii Todzia, sp. nov. TYPE. Panama. Panamá: Canal Area, on hilltop W of canal and Panama City, 8°50′N, 79°34′W, 300 m, 3 May 1987, *McPherson & Stockwell 10901* (holotype, MO; isotypes, NY, PMA, TEX). Figure 6.

Arbores foliis ellipticis chartaceis. Inflorescentiae breves, racemi ramosi vel simplices, 0.8–1.2 cm longi, flores 3–6. Sepala 4, in dimidio distali villosa vel sericea, stamina ca. 16, filamenta 1.5–2 mm longa. Fructus aurantiaci, dense pubescentes, ramis styli persistentibus, transverse obovoidei valde asymmetrici, endocarpium tenue.

Trees up to 20 m tall; younger branches dark brown, puberulent; older branches gray to brown, glabrous, sparsely lenticulate; stipules narrowly triangular to lanceolate, 2–4 mm long, villous. Leaf blades elliptic, 7.5–21 × 4–7 cm, the apex acute or with acuminate tips up to 1.2 cm long, the base rounded to subcordate, sometimes oblique, the margins entire, dark green and shiny above, paler beneath, drying chartaceous, smooth and glabrous above and beneath, light brown to tan, unevenly colored on drying, lateral veins 5–10, arcuate; petioles 0.5–1 cm long, sparsely puberulent, with a smooth epidermis, drying dark brown. Inflorescences axillary, short, simple or compound dichasia, often paired at the node, borne on leafy branches; rachises 0.8–1.2 cm long, strigose to sparsely villous, with 3–6 flowers; subtending floral bracts 1–2 mm long, glabrous. Flowers not seen (the following description based on persistent floral parts on fruits); calyx ca. 2 mm long, the lobes 4, villous to sericeous in distal half; stamens ca. 16; filaments 1.5–2 mm long, linear-lanceolate, slender throughout; anthers ca. 1–1.5 mm long, connective not extended. Fruits yellow to orange, strongly asymmetrical, transversely obovoid, 1.2–1.6 cm long, 1.6–1.8 cm broad, densely pubescent, sweet, with persistent style branches 2 mm long; endocarp thin, less than 0.5 mm thick.

Common name and uses. Panama: Carasuma. Used as firewood.

Distribution, habitat, and phenology. This species occurs in Panama, northern Colombia, and northwestern Venezuela (Fig. 4). It is found in undisturbed deciduous forest and in moist forest, sometimes on limestone. Fruiting is in May, June, and October on leafy stems.

Representative specimens examined. PANAMA. DARIÉN: 110 mi. from Bayano Dam Bridge, vicinity of Canglón, trail to S from road to good forest, 50 ft., 14 May 1980, *Antonio 4568* (MO); Loma Piriauqe, 14 Apr. 1966, *Duke 8108* (MO); Río Pucro, below village of Pucro, 23 June 1967, *Duke 13126* (MO). COLOMBIA. BOLÍVAR: Loma de los Colorados, Mun. San Juan Nepomuceno, ca. 2 km S of San Juan, Cartagena–Magangue rd., 9°58′N, 75°10′W, 200–250 m, 7 May 1987, *Gentry & Cuadros 57496* (MO). SUCRE: Estación de Primatas de Colosó, 340 m, 75°30′W, 9°30′N, 17 Nov. 1981, *Gentry et al. 34819A* (MO). VENEZUELA. ZULIA: Dtto. Mara, vía entre Embalse Manuelote y el Campamento Carichuano, ca. 1–4 km al sureste de Carichuanao, al borde de la vía, en zona de bosque seco, 100 m, 29 Oct. 1982, *Bunting & Smith 11924* (NY); Dtto. Mara, en el área de reserva carbonífera de Guasare, unos 1.5 km al suroeste del Campamento

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FIGURE 5. *Ampelocera longissima.*—a. Fertile branch showing inflorescences.—b. Perfect flower. (a & b from *Cerón 2633* TEX.)—c. Fruit (from *Palacios et al. 519* MO.)

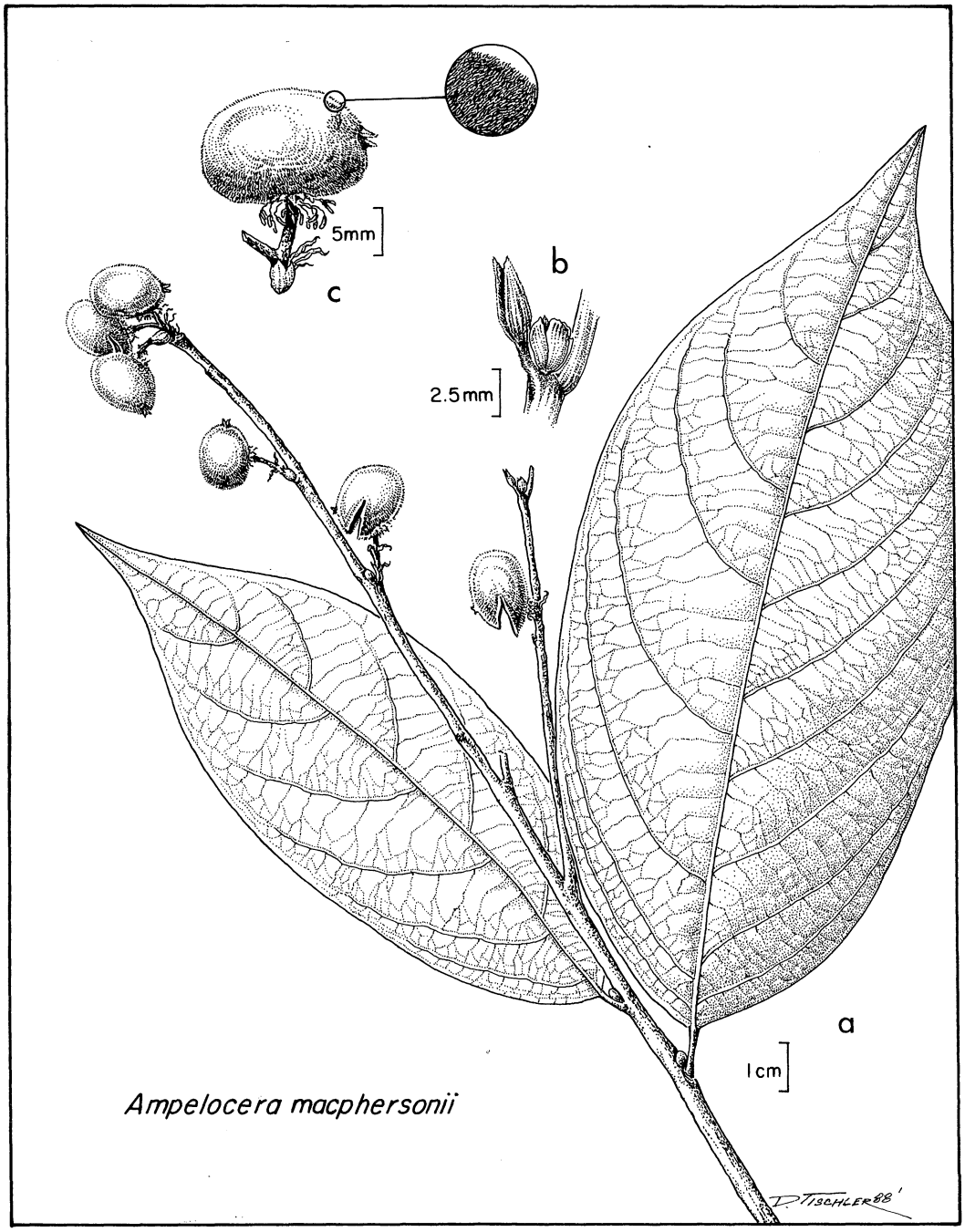

FIGURE 6. *Ampelocera macphersonii.*—a. Branch with infructescences.—b. Close-up of stipules.—c. Mature fruit with pubescence enlarged in inset. (a–c from *McPherson & Stockwell 10901* TEX.)

Carichuano, en bosque seco pero poco decíduo, 150 m, 28 Oct. 1982, *Bunting & Smith 11964* (NY); Dtto. Mara, semievergreen forest bordering Caño del Norte, tributary to Río Socuy, 6 km S of Corpozulia, Campamento Carichuano, 10°58′N, 72°16′W, *Steyermark et al. 122921* (MO); Dtto. Mara, undisturbed deciduous forest remnant on low hills, 4 km (by air) N of Corpozulia, Campamento Carichuano, 11°2′30″N, 72°16′30″W, 150–200 m, 1 June 1980, *Steyermark et al. 123074* (MO, NY); Cerro Cinco de Julio, W slopes to Río Guasare,

8.5–10 km (by air) NW Corpozulia, Campamento Carichuano, 11°2′30″N, 72°21–22′W, 120–400 m, 4 June 1980, *Steyermark et al. 123297* (MO).

Ampelocera macphersonii is distinctive in having entire leaves and small, orange, strongly asymmetrical, transversely obovoid fruits. By virtue of its 16 stamens it is allied to *A. pubescens*, *A. glabra*, and *A. ruizii*. It differs from *A. pubescens* by having glabrous leaves and racemose (not glomerulate) inflorescences, and from both *A. glabra* and *A. ruizii* by having entire (not dentate) leaves and larger fruits. Vegetatively *A. macphersonii* resembles *A. longissima* but can be separated easily by the characters provided in the key. The occurrence of *A. macphersonii* in deciduous and semievergreen forests is unusual for the genus.

This species is named in honor of Dr. Gordon McPherson whose collecting efforts in Panama have yielded many new and interesting plants.

9. Ampelocera ruizii Klotzsch, Linnaea 20: 541. 1847. TYPE. Peru: *Ruiz & Pavón s.n.* (holotype, B).

Ampelocera verrucosa Kuhlm., Arch. Jard. Bot. Rio de Janeiro 4: 352. 1925. TYPE. Brazil. Pará: Itaituba, Rio Tapajoz, 20 Oct. 1922, *Ducke 19135* (holotype, B; isotypes, K, US).

Plagioceltis dichotoma Mildbr. ex Baehni, Contrib. Field Mus. Nat. Hist., Bot. Ser. 13: 272. 1937. TYPE. Peru: *Ruiz & Pavón s.n.* (holotype, MA, n.v.; isotype, F).

Trees 10–35 m tall; trunk up to 2.5 m dbh, with brown, flaky bark, and medium-sized buttresses; younger stems brown, glabrous to sparsely puberulent; older stems gray, glabrous; stipules 3–5 mm long, lanceolate, sparsely puberulent to pilose. Leaf blades elliptic to obovate, 6.5–13 × 2.5–6.5 cm, the acuminate tips 0.5–1 cm long and 2–3 mm broad, attenuate to rounded at the base, often oblique, drying stiffly chartaceous to subcoriaceous, glabrous and smooth above and beneath, with 3–5 teeth per side, occasionally entire; lateral veins 5–8, arcuate, raised beneath, puberulent beneath when young, becoming glabrous with age; petioles 0.5–1 cm long, sparsely puberulent, drying dark brown. Inflorescences of axillary, compound dichasia, on leafless branches, apparently with bisexual and staminate flowers (staminate flowers not seen); rachises 0.9–1.5 cm long, sparsely puberulent, with 8–15(–23) flowers. Flowers subtended by ovate bracteoles, these 1.5–2 mm long, glabrous to sparsely puberulent; calyx 2–2.5 mm long, the lobes 4, united at the base, sparsely villous; stamens 16 in perfect flowers; filaments ca. 3 mm long, linear, slender throughout; anthers ca. 1 mm long, the connective extended into an apicule ca. 0.5 mm long; ovary very densely pilose, with style branches 3–5 mm long, united in lower 1 mm. Fruits yellow, asymmetrical, transversely ellipsoid, 1–1.2 cm tall, 1.2–1.6 cm broad, slightly flattened, densely pilose, with persistent style branches; endocarp thin, ca. 0.3 mm thick.

Distribution, habitat, and phenology. This species is known from 0–500 m in lowland rainforest in Brazil, Peru, and Bolivia (Fig. 3). Flowering time is not known; fruiting is reported from August to January.

Additional specimens examined. BRAZIL. ACRE: near mouth of Rio Macauhan (tributary of Rio Yaco), 7 Aug. 1933, *Krukoff 5316* (MO). MATO GROSSO: Serra do Cachimbo, 12 Nov. 1976, *Nascimento 445* (MG); Aripuanã, Projeto Juina, 6 June 1979, *Silva & Rosário 4805* (NY). PARÁ: Fazenda Rio Dourado, Rio Dourado, afluente do Rio Fresco, 28 June 1978, *Pires 16046* (MG); basin of Rio Xingu, Gleba Bacaja, lote 88, just below mouth of Rio Bacaja, 27 Nov. 1980, *Prance et al. 26502* (MO). PERU. LORETO: Veradero de Mazán from the Río Amazonas to Río Napo, 22 Aug. 1972, *Croat 19516* (MO). MADRE DE DIOS: Parque Nacional del Manu, Río Manu, vicinity of Cocha Cashu Station, 18 Nov. 1976, *Foster & Terborgh 5209* (F, US); 23 Nov. 1976, *Foster & Terborgh 5239* (F, NY); 350 m, 27 Nov. 1980, *Foster 5956* (F, MO); 380 m, 22 Oct. 1979, *Gentry et al. 27135* (MO). SAN MARTÍN: Prov. Mariscal Cáceres, Dtto. Uchiza, Caserío Nueva Unión Huicte, 450–500 m, 1 Aug. 1974, *Schunke 7964* (MO). BOLIVIA. SANTA CRUZ: Prov. Sara, Buena Vista, 450 m, *J. Steinbach 1309* (GH, NY, MO).

Ampelocera ruizii is distinguished from *A. glabra* by having smaller fruits and longer inflorescences. They are similar in having dentate, glabrous leaves and transversely ellipsoid, asymmetrical fruits.

Baehni (1937) separated *Ampelocera* from *Plagioceltis* and the other Peruvian genera of the Ulmaceae on the basis of the former having twice as many stamens as the latter. The isotype of *Plagioceltis dichotoma* at F, however, has a greater number of stamens than perianth parts. Since stamen number is not mentioned in the *Plagioceltis* description, Baehni's misplacement of the genus in the *Flora of Peru* key alongside genera possessing equal numbers of stamens and perianth segments is probably due to Mildbraed's inadequate notes (Gentry, 1983). As mentioned under taxonomic history, the similarity of the unnumbered Ruiz & Pavón type specimen of *Plagioceltis dichotoma* and the type of *Ampelocera ruizii* is the most likely because both originated from the same collection.

EXCLUDED TAXA

Ampelocera crenulata Urban, Repert. Spec. Nov. Regni Veg. 15: 399. 1919. TYPE. Cuba: *Ra-*

mon de la Sagra 413 (B, n.v.). = *Casearia praecox* Griseb. (Flacourtiaceae).

Ampelocera hondurensis J. D. Smith, Bot. Gaz. (Crawfordsville) 54: 244. 1912. TYPE. Honduras: Dept. Santa Bárbara, San Pedro Sula, 200 m, May 1890, *Thieme 5606* (US—3 sheets). = *Achatocarpus nigricans* Triana (Achatocarpaceae).

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