

**A NEW SPECIES OF *LICANIA* (CHRYSOBALANACEAE)  
FROM NORTHEASTERN COSTA RICA**

**NELSON A. ZAMORA**

Instituto Nacional de Biodiversidad (INBio)  
Apdo. 22-3100, Santo Domingo  
Heredia, COSTA RICA  
nzamora@inbio.ac.cr

**ABSTRACT**

***Licania arachicarpa*** N. Zamora, **sp. nov.**, from Costa Rica is described and illustrated, with photographs and distribution maps provided. A member of sect. *Hymenopus* Benth., it is most similar to and has been confused with *L. glabriflora*.

**KEY WORDS:** Central America, Chrysobalanaceae, Costa Rica, *Licania*; taxonomy

The tree genus *Licania* Aubl. (Chrysobalanaceae) is essentially neotropical in distribution, with the exception of four species in tropical Asia. A total of 214 species is known from the Neotropics, with the greatest diversity and abundance in the Guianas and Amazon Basin (Prance 1972, 1989, 2004). Seventeen species have been recorded from Costa Rica (Zamora et al. 2004), including the one herein described as new.

**LICANIA ARACHICARPA** N. Zamora, **sp. nov.** **TYPE: COSTA RICA. Heredia.** Sarapiquí, Finca La Selva, the OTS Field Station on the Rio Viejo just E of its junction with the Rio Sarapiquí, about 100 m, 14 Feb 1982 (fl), *Hammel 11149* (holotype: CR; isotypes: CAS, LSCR, MO, NY). Figures 1-3.

The new species is most similar to *Licania glabriflora* Prance, from which it differs chiefly by its flowers with four petals and three or (rarely) four stamens, fruits with many longitudinal ridges and sulcate, and surface conspicuously rugulose or blistered (vs. five petals, five stamens and smooth fruits).

Small to medium size tree, 6–15 m; trunk with reddish and smooth bark; very young twigs densely sericeous; stipules linear to lanceolate, 5–7 mm long, intrapetiolar, hispidulose and persistent. **Petioles** 6–10 mm long, sparsely sericeous, eglandular, terete. **Leaf blades** elliptic, 5.5–16 cm long, 2.5–8.2 cm wide, usually apiculate at the apex and cuspidate or abruptly acuminate (the acumen to 15 mm), cuneate to acute or obtuse at the base, plane or nearly so above upon drying but slightly bullate-reticulate when fresh, glabrous on both surfaces (except sometimes sparsely sericeous on the midrib near the base below); midrib prominent; primary veins 4–9 pairs, prominent below; paliside glands often present below near the base. **Inflorescences** paniculate-racemose, sessile, usually axillary or sometimes ramiflorous, 1–4 cm long, the rachis and branches densely whitish sericeous or hirsutulose; bracts and bracteoles 1–2 mm long, usually persistent and densely hirsutulose. **Flowers** yellow-green, ca. 2 mm long; pedicels ca. 0.5–1 mm, glabrous, articulate at the base; receptacle urceolate, glabrous at the base and sparsely hirsute at the apex, densely hirsute within. **Sepals** 4; calyx lobes obtuse, puberulous; petals 4, subulate, densely pubescent; stamens usually 3 (rarely a fourth smaller and abortive), equal or shorter than the calyx lobes, the filaments fully connate; ovary ovoid, ca. 0.5 mm, hispidulose, with 2 ovules; style glabrous, curved, arising from the base of the ovary. **Fruits** drupaceous, oblong or cylindrical, 3–4 cm long, 1.5–1.8 cm wide, rounded at both ends, glabrous, with many longitudinal ridges and sulcate (more visible especially when dry), the surface conspicuously rugulose or blistered; mesocarp thin and fleshy; endocarp bony and thick, with

many longitudinal muricate to pustulate ridges, the surface sulcate and densely granulose surface. **Seed** 1, oblong, reddish, filling the whole seed chamber.

**Etymology.** The epithet alludes to the distinctive fruits of this species, much resembling those of the peanut (*Arachis hypogaea* L., Fabaceae).

**Phenology.** Flowers are been observed from February to March, fruits in February and September.

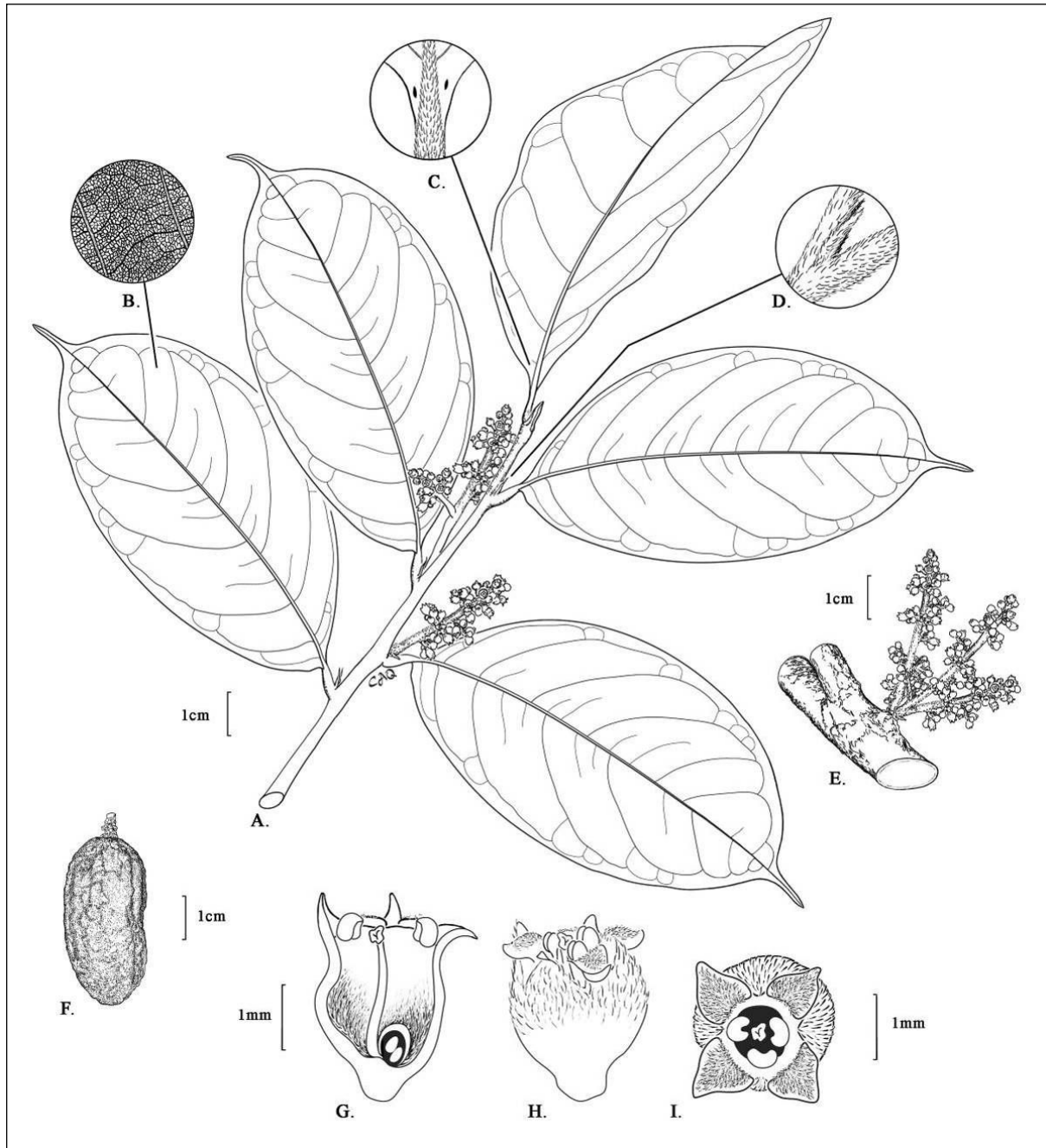


Figure 1. *Licania arachicarpa*: A-twig with axillary inflorescences; B-laminar reticulation; C-glands at leaf base below; D-stipule; E-ramiflorous inflorescence; F-fruit; G-flower, internal view; H-flower, lateral view; I-flower, top view. Flowering material from Aguilar 7642 (LSCR); fruit from Aguilar 7603 (LSCR). Drawn by Claudia Aragón.

**Paratypes. COSTA RICA. Heredia:** Cantón de Sarapiquí, Parque Nacional Braulio Carrillo, Cuenca del Sarapiquí, Estación Magsasay, 10°24'04"N, 84°02'57"W, 200 m, 5 Sep 1997 (fr), *Aguilar et al.* 5247 (CR, NB, MO); Cantón de Sarapiquí, Estación Biológica La Selva, 10°25'52"N, 84°00'13"W, 1410 m, 27 Feb 2003 (fr), *Aguilar* 7603 (LSCR); Cantón de Sarapiquí, Estación Biológica La Selva, alrededor de la Estación del Río, 08°00'22"N, 10°25'51"W, 190 m, 24 Mar 2003 (fl), *Aguilar* 7642 (LSCR); Sarapiquí, Finca La Selva, the OTS Field Station on the Río Puerto Viejo just E of its junction with the Río Sarapiquí, about 100 m, 14 Feb 1982 (fl), *Hammel* 11149 (CAS, CR, LSCR, MO, NY); Finca La Selva, Puerto Viejo, Sarapiquí, 10°26'N, 84°01'W, 11 Jul 1977, *Hartshorn* 1858 (CR); Sarapiquí, Cuenca del Río Sarapiquí, Parcela # 10 José Antonio Guzmán, 10°38'31"N, 84°02'41"W, 100 m, 4 Oct 2005 (fl), *Solano et al.* 2719 (INB, MO); Sarapiquí, Cuenca del Río Sarapiquí, Parcela # 10 José Antonio Guzmán, 10°38'31"N, 84°02'41"W, 100 m, 6 Oct. 2005 (fl), *Solano et al.* 2722 (INB. MO).

*Licania arachicarpa* belongs to subgen. *Licania* sect. *Hymenopus* Benth. by virtue of its leaf blades glabrous below and flowers borne on slender, primary inflorescence branches or in small cymules with few [3(4)] stamens, equal to or shorter than the calyx lobes.

The first flowering material collected of this species (*Hammel* 11149, CAS!, CR!, LSCR!, MO!, NY!), from the OTS La Selva Biological Station, was identified by G.T. Prance in October, 1983, as *Licania glabriflora* Prance, previously reported only from South America. But later, Prance (1989: 40) pointed out that the Costa Rican material differed from *L. glabriflora* "only in having three rather than five stamens and often four rather than five petals." A careful study of more fertile available material, including fruiting specimens (see exsiccatae), reveals that the floral differences between *L. arachicarpa* (here described) and *L. glabriflora* are consistent in terms of the number of petals and stamens. This study reconfirmed that the flowers of *L. arachicarpa* have four petals and three stamens (sometimes with a smaller, abortive fourth one).

According to Prance (1972, 1989), the number of petals and stamens are very important characters at species rank in sect. *Hymenopus*. For example, 16 of the 24 neotropical species in this section (Prance 1989) consistently have five petals, and the rest lack petals. Stamen number is variable among the neotropical species, but many species have five to eight, while only one species (*Licania littoralis* Warm.) has four. Four species (*L. fanshawei* Prance, *L. latistipula* Prance, *L. minuscula* Cuatrec., and *L. silvae* Prance) have three stamens. Those with three stamens have either five or no petals.

Fruit characteristics have not been taken much into account to distinguish species in sect. *Hymenopus*, apparently because fruits are still unknown for a significant number (ca. 8) of its species (see Prance 1972, 1989). However, many species (ca. 14) are reported to have mainly smooth fruit surfaces, while rugose or costate surfaces are rare. Fruits of *L. glabriflora* were unknown when the species was described (Prance 1972); however, based on subsequent determinations (Prance 1991) of some fruiting specimens (*Froehner* 362, NY; *Granville* 6571, NY; *Zarucchi* 1278, NY), the fruit surface of *L. glabriflora* is smooth. One of the most striking characters of *L. arachicarpa* is the fruit type (the basis of the selected epithet): oblong or cylindrical, with many longitudinal ridges and a very conspicuously rugulose or blistered surface (see Figs. 1F and 2G).

Other important morphological differences separating *L. arachicarpa* from *L. glabriflora* (in the sense of its type) are the usually apiculate, cuspidate or abruptly acuminate (with the acumen to 15 mm) leaf apices (vs. acuminate, with the acumen 5–9 mm, in *L. glabriflora*), usually densely whitish-hirsutulose inflorescence rachises (vs. sparsely hirsute), and fully connate (vs. connate only in the basal half) stamen filaments.

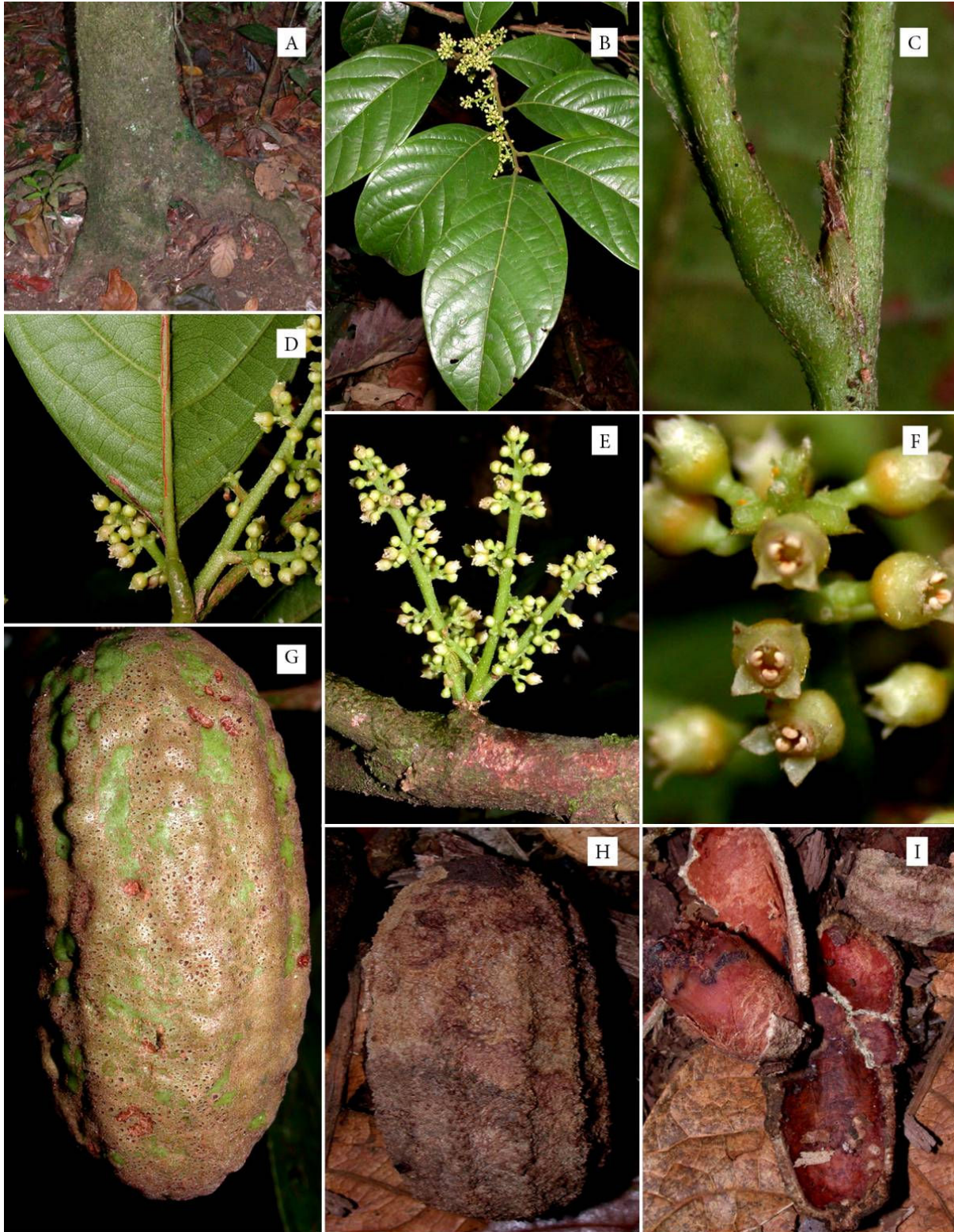


Figure 2. *Licania arachicarpa*: A-trunk; B-leaves and inflorescences; C-stipule; D-lower leaf surface at base and axillary inflorescence; E-ramiflorous inflorescence; F-flowers; G-fruit; H-endocarp; I-seed. Flowering material from Aguilar 7642 (LSCR); fruit from Aguilar 7603 (LSCR). Photos by R. Aguilar (OET/OTS).



Careful study of all Costa Rican material previously identified as *Licania glabriflora* has revealed that the real *L. glabriflora* (in the sense of its type) occurs only on the Osa Peninsula, in the lowlands of the southern Pacific slope. Several collections from that area (e.g., *Aguilar 1567*, CR, INB, MO; *Aguilar & Hammel 1391*, INB, MO; *G. Herrera 4767*, CR, INB, MO) agree very well in leaf size and shape, petal and stamens numbers, and fruit type with the type and original description of the aforementioned species. A fruiting collection from this region (*Aguilar 1567*) is consistent with the notion that fruits of *L. glabriflora* have a smooth surface.

Numerous additional collections from the Osa Peninsula previously identified as *Licania glabriflora* (e.g., *Aguilar 4817*, CR, INB, NY; *Gentry et al. 78769*, CR, MO; *Thomsen 8*, CR; *Thomsen 812*, CR; *Thomsen 1051*, CAS, CR, NY; *Thomsen 1062*, CR; *Thomsen 1265*, CAS, CR, NY) belong to yet a different species and need further study. This entity is characterized by its larger ( $4.6 \times 2.3$  cm), oblong fruits with a conspicuously and densely granulose-lenticellate surface.

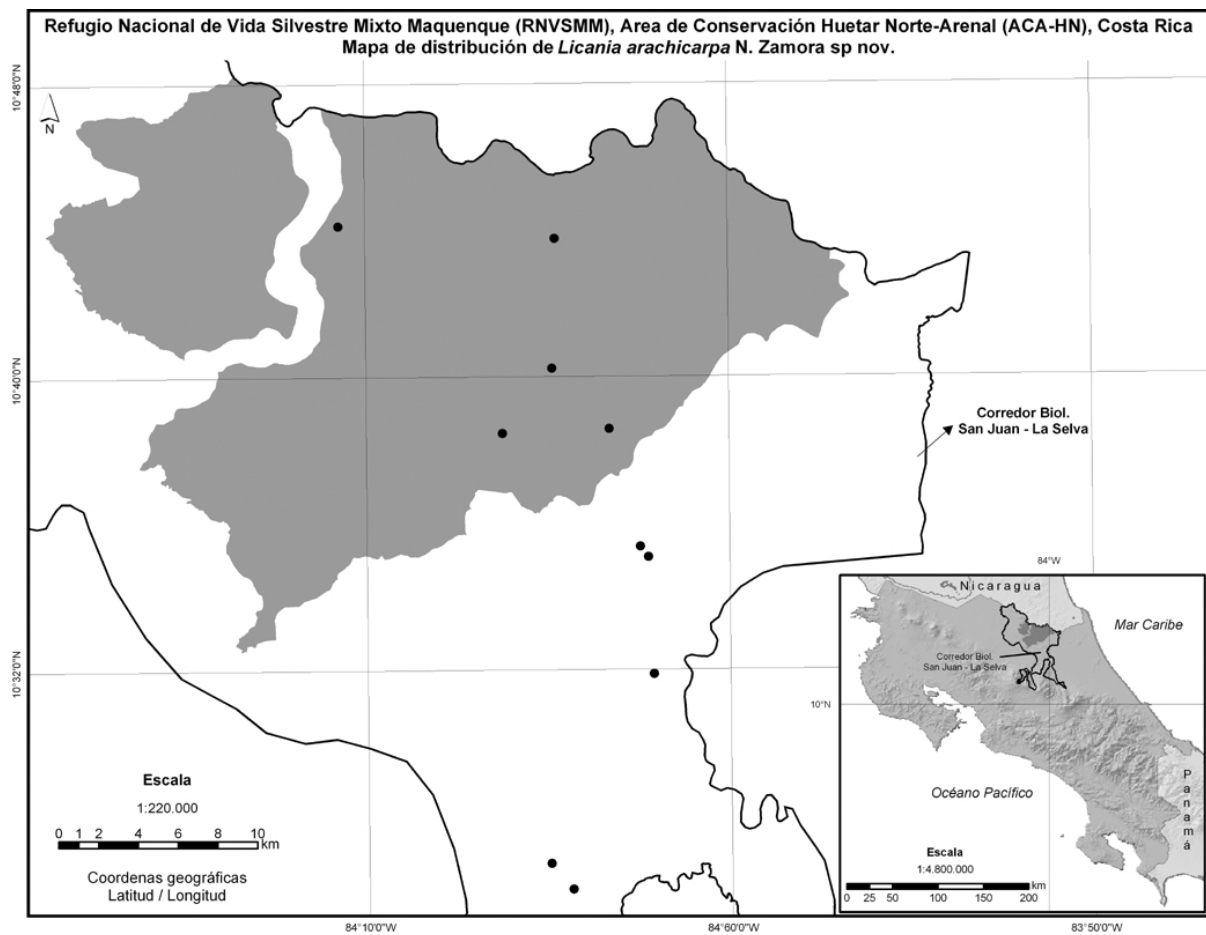


Figure 3. Geographical distribution of *Licania arachicarpa*.

### Distribution, habitat, and conservation

*Licania arachicarpa* is considered a locally endemic species, restricted geographically to the northern zone of Costa Rica. An intensive vegetation survey by two major projects (see Acknowledgments), in which the author was involved, and a national tree account (Zamora et al. 2004) confirm that its distribution is mainly within the San Juan-La Selva Biological Corridor (Fig. 3), where it occurs in tropical wet forest formations over a more or less flat, undulate or hilly terrain. A tree survey using 1 ha plots in the San Juan-La Selva Corridor demonstrated that this species has a

low abundance, and it was categorized as rare. Important populations or individuals are protected in the Maquenque National Wildlife Refuge, the Organization for Tropical Studies La Selva Biological Station, and other remaining areas of this Corridor.

#### ACKNOWLEDGEMENTS

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#### LITERATURE CITED

- Prance, G.T. 1972. Chrysobalanaceae. Fl. Neotrop. Monogr. 9: 1–409.
- Prance, G.T. 1989. Chrysobalanaceae. Fl. Neotrop. Monogr. 9S: 1–267.
- Prance, G.T. 2004. Chrysobalanaceae. Pp. 100–102 in N. Smith, S.A. Mori, A. Henderson, D.W. Stevenson, and S.V. Heald (eds.). Flowering Plants of the Neotropics. Princeton Univ. Press, Princeton, New Jersey.
- Zamora, N., Q. Jiménez, and L.J. Poveda. 2004. Árboles de Costa Rica. Vol III. Centro Científico Tropical, Conservación Internacional and Instituto Nacional de Biodiversidad. Ed. INBio.