
Hernandia lychnifera (Hernandiaceae), a New Species from Coastal Ecuador

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Hernandia, of the small, laurlean family Hernandiaceae, comprises approximately 25 species of mainly evergreen, forest trees. Although nominally pantropical, the genus is most diverse in the Indo-Pacific region; only a third of the species are neotropical, and half of these are restricted to the West Indies. The most recent revision of *Hernandia* (Kubitzki, 1969) recognized only two Mesoamerican species, *H. didymantha* J. D. Smith and *H. stenura* Standley. *Hernandia* was long known from South America by just one species, *H. guianensis* Aublet, largely confined to the Venezuela/Guiana region. The genus was first reported from Pacific South America in 1948 by Little, on the basis of a single Ecuadorian collection (*Holdridge & Little 6191*) made five years previously and identified as *Hernandia sonora* L. This remained the sole specimen known from the region to Kubitzki (1969), who provisionally included it with *H. stenura* under the subheading "Abweichende Exemplare."

Collections accumulated and/or studied since Kubitzki's (1969) revision have resulted in the description of *Hernandia hammelii* D'Arcy (1981) from Panama (perhaps a synonym of *H. didymantha*; see Burger, 1990) and the extension of the range of *H. guianensis* deeper into the Amazonian region. *Hernandia didymantha* can now be reported south to Chocó Department (*E. Forero et al. 1937*, MO; *L. Forero 497*, MO) and Esmeraldas Province (*Jávita & Epling 2036*, MO) in the Pacific lowlands of Colombia and Ecuador, respectively. The entity previously known only by *Holdridge & Little 6191* is now represented by several additional collections, confirming it to be a distinctive species new to science. This, the southernmost *Hernandia* in Pacific South America, is apparently a narrow endemic in grave and imminent danger of extinction. It is described below.

Hernandia lychnifera Grayum & Zamora, sp. nov. TYPE: Ecuador. Los Ríos: Estación Biológica Río Palenque, Km 56 Quevedo-Santo Domingo, 150–220 m, 00°35.5'S, 79°22'W,

9 Apr. 1989, flowers and mature fruit, *Zamora & Grayum 1549* (holotype, QCNE; isotypes, AAU, COL, CR, HBG, MO, QCA, SEL, US). Figures 1, 2.

Arbor ca. 15–35 metralis. Caules juniores puberuli. Petioli 10–19(–23.5) cm longi. Laminae foliorum adultorum haud peltatae, 13.4–25.8 cm longae, 11.8–22 cm latae, late ellipticae, ovatae, oblongae vel rotundae, apice rotundatae vel obtuse breviacuminatae, basi truncatae, rotundatae vel cordatae, subcoriaceae, supra glabrae, infra sparsim puberulae vel dense tomentulosae. Inflorescentia corymbosa composita. Cymulae triflorae quattuor bracteis involucribus spathulatis 5.0–6.3 mm longis subtentae. Flores viridi-albi. Flores staminati trimeri, ca. 7.5–8.8 mm longi. Flores pistillati tetrameri, ca. 9.5–9.7 mm longi. Cupula sub anthesi ca. 3.5–4.0 mm longa, ovarium superans; cupula sub fructu pendula, accrescens, inflata, obturbinata, urceolata vel subglobosa, 4.5–7.2 cm longa, 4.4–8.6 cm lata, membranacea, translucens, viridi-alba. Fructus maturus ellipsoideus, ater, ca. 3.3–3.9 cm longus, 2.8 cm latus, longitudinaliter octocostatus, conspicue umbonatus.

Canopy tree, fertile individuals according to collectors' notes ca. 15–35 m tall, the trunk straight, cylindrical, to at least 35 cm dbh, with smooth, lightly fissured bark. Young stems minutely puberulent. Petioles 10–19 cm long (to at least 23.5 cm on juvenile plants), (0.61–)0.68–0.75 × length of lamina (0.80–0.87 on juveniles), minutely puberulent. Laminae epeltate, those of juvenile plants broadly ovate, to ca. 29 cm long and nearly as wide, long-acuminate (to ca. 2.3 cm) apically, cordate (to ca. 2.5 cm) basally, relatively thin, the laminar surface glabrous on both sides. Canopy leaves of adult plants broadly elliptical, ovate or oblong to rotund, broadest at or below the middle, rounded to abruptly and obtusely short-acuminate (to ca. 1.0 cm) apically, truncate or rounded to cordate (with sinus to ca. 1.1 cm deep) basally, subcoriaceous, the surface glabrous above, sparsely puberulent to (more usually) densely and finely tomentulose below, subpalmately 5–7-veined from the base (with 5–6 principal veins per side), 13.4–25.8 cm long, 11.8–22+ cm wide, the width ranging from 0.78 to 0.95 × the length on both juvenile and adult leaves.



Figures 1, 2. *Hernandia lychnifera* (Zamora & Grayum 1549). —1. Apex of canopy branch bearing mature cupule and inflorescences (with flowers at anthesis). —2. Mature cupules (upper row); ripe fruit (center, lower row), flanked by immature cupules. Scale bars = 10 cm.

Inflorescence a compound corymb, the cymules generally borne on (2° –) 3° (– 4°) peduncles; ultimate inflorescence branches, bracts, cupules (at anthesis), perianths, and styles all uniformly tomentulose. Primary axillary peduncles (1.5–)7.5–12.9(–14.6) cm long, the primary corymbs (3.1–)6.2–16.6 cm long, (3.5–)7.8–14.9 cm wide. Cymules regularly 3-flowered (2 male flowers with 1 female), subtended by 4 spatulate involucre bracts ca. 5.0–6.3 mm long. Flowers greenish white. Staminate flowers 3-merous, ca. 7.5–8.8 mm long, the tube 2.7–3.1 mm long; outer perianth lobes 4.7–4.9 mm long, the inner ones 4.5–4.6 mm long. Stamens ca. 3.7–4.0 mm long, the filaments and connective densely pubescent; anthers 1.5–1.6 mm long; staminodes 6–10, 0.6–1.0 mm long, variable in size and morphology within a single flower. Pistillate flowers 4-merous, ca. 9.5–9.7 mm long, the tubule comprising half the total length; outer and inner perianth members subequal. Staminodes 4, ca. 1.4 mm long. Cupule at anthesis ca. 3.5–4.0 mm long, 3.0–3.1 mm wide, narrowed at the base, fleshy, truncate apically or virtually so, surpassing the ovary, in fruit pendulous, accrescent, inflated, obturbinate or urceolate to subglobose, becoming 4.5–7.2 cm long and 4.4–8.6 (–10 according to Dodson & Gentry, 1978) cm wide, stipitate by 0.6–1.0 cm, membranous and

translucent, pale green to greenish white, the orifice ca. 1.2–1.5 cm diam. Ripe fruit ellipsoid, black, substipitate, ca. 3.3–3.9 cm long and 2.8 (–4.0 according to Dodson & Gentry, 1978) cm wide, longitudinally 8-costate, conspicuously umbonate at the apex, the umbo 0.6–1.1 cm diam. Seed oblate to globose, whitish, ca. 2.2–2.4 cm diam.

Additional specimens examined. ECUADOR. LOS RÍOS: Río Palenque Science Center, 150–220 m, *Dodson* 5232 (QCA, SEL, US), 6135 (MO, QCA), *Dodson et al.* 7571 (MO, SEL), *Gentry* 9877 (MO), 9939 (MO—2 sheets), *Gentry & Dodson* 35731 (MO), *Schupp* 53 (SEL); Hacienda Manfrei, 14 km W of Buena Fe, 2 km S of road, 100 m, *Gentry & Loo* 30796 (MO, SEL). PICHINCHA: from 43 to 68 km along trail from Santo Domingo to Quinindé, *Holdridge & Little* 6191 (US).

Hernandia lychnifera, on the basis of its epeltate, subacuminate leaves and connate female bracteoles, is most closely related to the nine species assigned by Kubitzki (1969) to his rather weakly defined “*ovigera*-Gruppe,” which also includes *H. guianensis* and *H. stenura*. Little (1948) was mistaken in equating the original collection of *H. lychnifera* with the West Indian *Hernandia sonora*, a very different species with peltate leaves belonging to Kubitzki’s “*peltata*-Gruppe.” As previously noted, Kubitzki tentatively referred that specimen to *Her-*

nandia stenura. Dodson & Gentry (1978) also adopted the latter name in their Río Palenque flora, noting Little's error but making no reference to Kubitzki's work.

It was immediately evident to the present authors, on encountering fertile individuals of *Hernandia* in the Río Palenque reserve, that we were confronted with something other than *Hernandia stenura*. The type specimen of *H. stenura* (Brenes 13655, F) was collected in Costa Rica, where we are both resident, and this is a species we know quite well. More detailed investigation confirmed our suspicion that the Río Palenque entity was new to science.

The most probable cause for prior confusion of the Río Palenque *Hernandia* with *H. stenura* is the close resemblance of leaves of juvenile plants of the former to adult leaves of the latter. This consideration is especially significant inasmuch as several collections of *Hernandia lychnifera* are either from sterile juveniles or were concocted from leaves of juvenile plants combined with cupules and fruits picked up from the ground. Juvenile leaves of *H. lychnifera* and canopy leaves of *H. stenura* converge in being broadly ovate, subcordate at the base, and typically long-acuminate to caudate at the apex (whence the epithet *stenura*). Canopy leaves of *H. lychnifera* (Fig. 1), on the other hand, have relatively shorter petioles and are thicker in texture, more densely tomentulose below, noncordate (or less deeply cordate) basally, and nonacuminate (or at best obtusely short-acuminate) apically.

The most obvious differences between *Hernandia stenura* and *H. lychnifera* involve the cupules and fruits. Whereas the cupule in *H. stenura* remains tightly adherent to the fruit and never completely covers it, that of the new species (Fig. 2) is markedly accrescent, becoming inflated ("resembles *Physalis*," as noted on the label of Holdridge & Little 6191) and forming a distally aperturate chamber which completely encloses the fruit. At maturity, the black fruit sits free in the bottom of the greenish white, membranous, translucent cupule. The pendent cupules have the appearance of lanterns or lamps hanging from the tree (inspiring the specific epithet). Both the cupule and fruit of *Hernandia lychnifera* far exceed those of *H. stenura* in absolute size and are, in fact, the largest yet reported for the genus (although the dimensions given by Dodson & Gentry, 1978, appear somewhat exaggerated). Furthermore, fruits of *H. lychnifera* are conspicuously umbonate, whereas those of *H. stenura* lack umbos altogether. The latter species differs additionally from *H. lychnifera* in its usually glabrate leaves and less ramified, fewer-flowered inflorescences with larger (to over 1 cm) involucre bracts.

The character of accrescent, membranous, inflated cupules vs. thick, fleshy, adherent cupules, which so strikingly distinguishes *Hernandia lychnifera* from *H. stenura*, has not been employed or adequately investigated in the genus by previous workers (e.g., Kubitzki, 1969). Perhaps this is because the nature of the cupule may be difficult to interpret on dried specimens. Although both species (*Hernandia didymantha* and *H. stenura*) previously known to the present authors possess the adherent type of cupule, *H. lychnifera* is by no means unique in having inflated cupules. In fact, this seems to be the more usual condition in the genus, and some authors (e.g., Burger, 1990) apparently believe it to be universal. *Hernandia guianensis* appears to have inflated cupules, but differs from *H. lychnifera* in generally being a much smaller tree (5–10 m tall, according to collectors' notes), with smaller leaves, shorter petioles and smaller cupules and fruits. The adult leaves are glabrate below instead of finely tomentulose. More significantly, the fruits of *H. guianensis* possess no umbo, a consideration that also eliminates from contention the two remaining neotropical representatives of the "ovi-gera-Gruppe," *Hernandia catalpifolia* Britton & Harris, of Jamaica, and *H. cubensis* Griseb.

The West African *Hernandia beninensis* Welw. ex Henriq. appears to show the closest overall resemblance to *H. lychnifera*, sharing large, broad, subcordate leaves and large, prominently umbonate fruits. However, *H. beninensis* is described as having nearly glabrous foliage, as well as shorter petioles (to 8.5 cm) and somewhat smaller fruits (2–3 cm long) than *H. lychnifera*.

Hernandia lychnifera was described as "common, in mature forest" at the Río Palenque Science Center by Dodson & Gentry (1978), and this was still the case in 1989. The trees are conspicuous when in fruit, as we encountered them, with cupules hanging abundantly from the crowns and littering the ground below. Nonetheless, we failed to encounter this species at several other forested sites (Reserva Endesa, Tinalandia, Centinela ridge) in the same general area, visited during the same period. These latter sites are all at somewhat higher elevations (600–800 m), and we conclude that *H. lychnifera* is probably endemic to lowland forests below 500 m (perhaps even below 300 m) on Ecuador's Pacific slope. This zone is now largely deforested, with suitable habitat being practically nonexistent. The species has never been refound in the vicinity of Holdridge & Little's original (1943) collection (still the only record from outside Los Ríos Province), despite intensive local botanizing. Thus, the Río Palenque reserve may well harbor the only

remaining population of *Hernandia lychnifera* of any significant size, and one can only wonder whether there are enough individuals in the tiny (167 ha) sanctuary to ensure the continued survival of the species.

As indicated by Dodson & Gentry (1978), *Hernandia lychnifera* is known by the common name "pechuga" in the Río Palenque region. This translates literally as "breast," and is the usual Spanish term for the breast portion of dressed poultry. Local residents familiar with the tree were unable to explain the relevance of this appellation.

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