

**LIFE IS ROUGH: *PETREA ASPERA* AND *P. ASPERIFOLIA* (VERBENACEAE),  
THE FIRST AN OLD, GOOD SPECIES, NEWLY RECOVERED FROM SYNONYMY  
AND NEWLY REPORTED FOR COSTA RICA,  
THE SECOND A NEW COMBINATION**

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**ABSTRACT**

The species treated as “*Petrea* sp. 1” in the recently published Vol. VIII of the *Manual de Plantas de Costa Rica* already has a name, ***Petrea aspera*** Turcz., here recovered from synonymy of *P. volubilis*. Because the new name *Petrea xolocotzia* for the transfer of *Xolocotzia asperifolia* to *Petrea* was unnecessary, the new combination ***Petrea asperifolia*** (Miranda) Hammel, **comb. nov.**, is here presented.

**RESUMEN**

La especie tratada como “*Petrea* sp. 1” en el recientemente publicado Vol. VIII del *Manual de Plantas de Costa Rica* ya tiene un nombre, ***Petrea aspera*** Turcz., aquí sacado de la sinonimia de *P. volubilis*. Dado que el nombre nuevo *Petrea xolocotzia* para la transferencia de *Xolocotzia asperifolia* a *Petrea* no fue necesario, la combinación nueva ***Petrea asperifolia*** (Miranda) Hammel, **comb. nov.**, se presenta aquí.

In preparing this manuscript to publish a name for “*Petrea* sp. 1” from the *Manual de Plantas de Costa Rica* (Rueda & Hammel 2015) we looked, somewhat belatedly, at Moldenke’s treatment for the Flora of Panama (1973). There we found a perfectly good, old name for it, *Petrea aspera* Turcz. **Confession:** although Rueda was first author of the *Petrea* treatment for the Manual, by mutual agreement with the second author, he had little to do with the taxonomic decision to recognize *P. sp. 1* distinct from *P. volubilis* L. By the same token, we take full blame for the taxonomy here presented. **Flashback and update:** Rueda (1994) reduced the number of extant, species of *Petrea* from ca. 32 (accepted by Moldenke, the previous monographer of the genus) to just 11, all restricted to the New World tropics. Sixteen of the new synonyms—including *P. aspera*—were subsumed under *P. volubilis* alone. No new species have been described subsequent to Rueda’s revision. However, the recent transfer (Christenhusz & Byng 2018) of monospecific *Xolocotzia* (either sister to or nested within *Petrea*; Marx et al. 2010) to *Petrea* adds one more (see note below). And now, this exhumation of *P. aspera* brings the total count to 13 species. We present the following in a format similar to that for a new species in order to distinguish *P. aspera* clearly and advocate for its reconsideration as a distinct species.

**PETREA ASPERA** Turcz., Bull. Soc. Imp. Naturalistes Moscou 36(3–4): 211. 1863. **LECTOTYPE** (designated by Rueda, Novon 3: 179. 1993): **VENEZUELA. Carabobo.** Near San Estevan, 300 m elev., Apr–May 1845–1846, *Funck & Schlim* 507 (BR-photos at F, MO, NY(2), TEX, U, W; isolectotypes: BM, G-2 sheets).

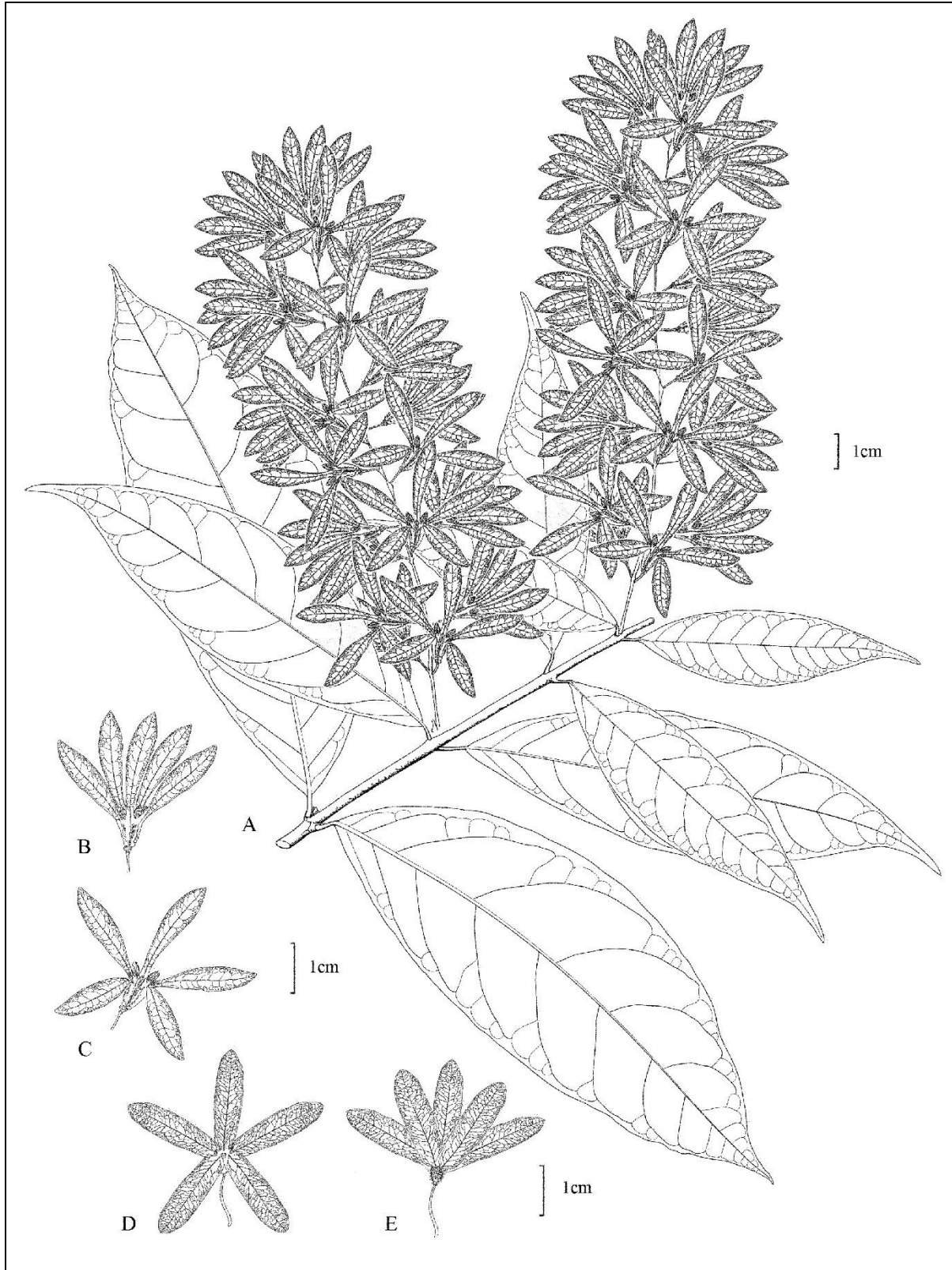


Figure 1. *Petrea aspera*. A. Habit. B, C. Fruiting calyx. D, E. Fruiting calyx of *P. volubilis*. A-C from Aguilar 3209; D, E from Fuentes 291.

Similar to the Panamanian and South American *Petrea blanchetiana* in its smooth to subscabrous leaves and lack of glandular trichomes on the calyx tube, but differing from it principally by its axillary (vs., mostly terminal) inflorescences and flowers with a shorter pedicel and smaller corolla. Differing, at least in Costa Rica, from the sympatric, widespread and also with axillary inflorescences *P. volubilis* (with markedly scabrous leaves and glandular pubescent calyx tube) not only by those two characters, but also by the shape of its calyx lobes (elliptic to narrowly spatulate with the sinus between adjacent lobes open, vs oblong with the sinus closed) and size (in fruit) of the lobes of the calycine crest 2.5–3.5 (vs 1–1.5) mm.

Liana climbing to at least 15 m, the stem up to ca. 10 cm in diameter; the branchlets terete to obtusely tetragonal flattened, puberulent to glabrescent. **Leaves** with the petiole 0.5–1 cm, glabrate or subpuberulent, glabrescent; blade 7–25 × 4–9(–11) cm, elliptic to lanceolate, the base obtuse to acute, the apex obtuse to acuminate, smooth to the touch or slightly asperous on both surfaces, glabrate on both surfaces. **Inflorescences** axillary, racemiform, 9–39 × 5–8 cm. **Flowers** with the pedicel 5–11 mm, glabrous, the bracteoles 3.5–4.8 mm, early deciduous (gone by the time the corolla opens); calyx lavender, the tube ca. 4.8 mm, obconic, corrugated, sparsely and minutely substrigulose, without glandular trichomes, 5-lobed, the sinuses open, the lobes, (8–)15–21(–25 in fruit) mm, elliptic to narrowly spatulate, the apex obtuse to acute, glabrous; calycine crest with the lobes 2–2.4 mm, the apex obtuse to acute, glabrate or glabrous; corolla lavender to dark lavender, the tube 6.7–8 mm, the lobes 5, 5–8 mm, puberulent, the largest lobe with a white spot adaxially at the base, the remaining lobes slightly smaller and lavender throughout; stamens with the filaments ca. 2 mm long, sparsely pilose; anthers ca. 1.5 mm long and 0.5 mm wide; ovary oblong, glabrous; style 2.5 mm long, glabrous; stigma subcapitate. **Fruits** with the sinuses of the calyx lobes open, the calycine crest with the lobes 2.5–3.5 mm. Figure 1.

Phenology (in Costa Rica), habitat, and distribution. Flowering Feb, Apr–Jun. Climbing on vegetation, often near water 0–200 (–650, cult.) m. In Costa Rica, wild only on the Pacific slope (Puntarenas), Golfo Dulce region, especially Osa Peninsula, also cultivated on the Caribbean slope (Cartago), vicinity of Turrialba. Known overall from Costa Rica, Panama, Colombia, Venezuela, French Guiana, and Brazil.

**Specimens examined. COSTA RICA. Cartago.** Cantón de Turrialba, Instituto Interamericano De Ciencias Agrícolas (cult.), 17 Feb 1968 (fr), *Córdoba 833* (CR); CATIE (cult.), 15 Jun 1977 (fl), *Poveda y Albertín 1647* (CR). **Puntarenas.** Cantón de Osa, Dist. Palmar, 2–3 km NW de Chacarita, bosques poco o nada alterados a la orilla de la Carretera Interamericana, 3 Feb 1994 (fl), *Hammel et al. 19417* (CR); Dist. Sierpe, península de Osa, Aguabuena, 14 Apr 1994 (fr), *Aguilar 3209* (CR, MO); borde del manglar entre Rincón y puente sobre el Río Rincón, 1 May 2020 (fl), *Aguilar 17367* (CR); P.N. Corcovado, on mirador trail near Río Sirena, 19 Feb 1988 (fl), *Kernan 203* (CR); Cantón de Golfito, Dist. Jiménez, Parque Nacional Corcovado, Estación El Tigre, Río Tigre, Fila Rompepecho, 2 May 1997 (fl), *Azofeifa 299*, (CR, MO).

**Representative images examined. PANAMA. Veraguas.** San Francisco, Feb 1924 (fl.), *Powell s.n.* (US #1206763, Barcode: 03203037). **Panama.** Forests along Río Boquerón above Peluca Hydrographic Station, 22 Feb 1935 (fl.) *Hunter & Allen 658* (US). **Darien.** Río Sambu between Sambú y Río Venado 18 Jan 1967 (fl.) *Duke 9303* (US). **COLOMBIA. Antioquia.** Along river above Chigorodo, 40 km. S of Turbo, 16 Apr 1945 (fl.) *Haight 4569* (US). **Santander.** Vicinity of Barranca Bermeja, Magdalena Valley, between Sogamoso and Colorado rivers, 19 Feb 1935 (fl.), *Haight 1568* (US). **VENEZUELA. Carabobo.** Apr–May 1845–1846 (fl.), *Funck & Schlim 507* (BM, BR, G, LD, KM, KW, P). **Delta Amacuro.** Serranía Imataca, El Palmar-Raudal Trail, upper Río Toro drainage, 10 Nov 1955 (fl.) *Wurdack & Monachino 39641* (US). **BRAZIL. Mattogrosso.** Dec 1914 (fl.) *Kuhlmann 1296* (NY).

Etymology. One can only wonder why Turczaninow chose the epithet “aspera” for a species in his own words described as having exasperate leaves. Perhaps the epithet relates to the stems,

which he described as asperate. In fact the leaves of the present species can be slightly asperous, but never as strongly so as those of *P. volubilis*.

*Petrea aspera* is known from the wild in Costa Rica only from the Pacific slope, in the Golfo Dulce region where the otherwise more common *P. volubilis* is apparently known only from cultivation. Of *P. aspera* we have seen only two specimens from cultivated plants, both of them from the Atlantic slope, from the same campus in Turrialba, Cartago. *Petrea volubilis*, on the other hand, is commonly cultivated as an ornamental, but it is also more widespread in the wild. From the Golfo Dulce region on into adjacent Panama, *P. aspera* is by far the more commonly collected species. All but one (Colwell 374) of the 18 images currently det. to *P. volubilis* at US (<https://collections.nmnh.si.edu/search/botany/?ti=3>) were originally det. to *P. aspera* by Moldenke and (when fertile) we confirm them as fitting the concept of the latter as presented here. As indicated in the Manual, *P. aspera* (as *P. sp. 1*) differs from the only other Costa Rican species *P. volubilis* by its smooth to subscabrous (vs. notably scabrous) leaves that are glabrate on both surfaces (vs. sparsely to densely pilose on the lower surface) and its glabrate (minutely and sparsely substrigose) calyx tube that lacks glandular trichomes (vs. densely hirsute with numerous glandular trichomes). For the first and last of these features, *P. aspera* resembles *Petrea blanchetiana* (= *P. morii* Moldenke) from Panama, Colombia and Peru, Venezuela, French Guiana and Brazil. It differs from that species principally by its axillary (vs., terminal) inflorescences and flowers with a shorter pedicel (5–11 vs 10–31 mm) and smaller corolla (the tube 6.7–8 vs 13–22 mm. In Costa Rica *Petrea aspera* also differs consistently from *P. volubilis* in the shape of its calyx lobes (elliptic to narrowly spatulate with the sinus between adjacent lobes open, vs oblong with the sinus closed) and size (in fruit) of the lobes of the calycine crest 2.5–3.5 (vs 1–1.5) mm. Figures 2–4.

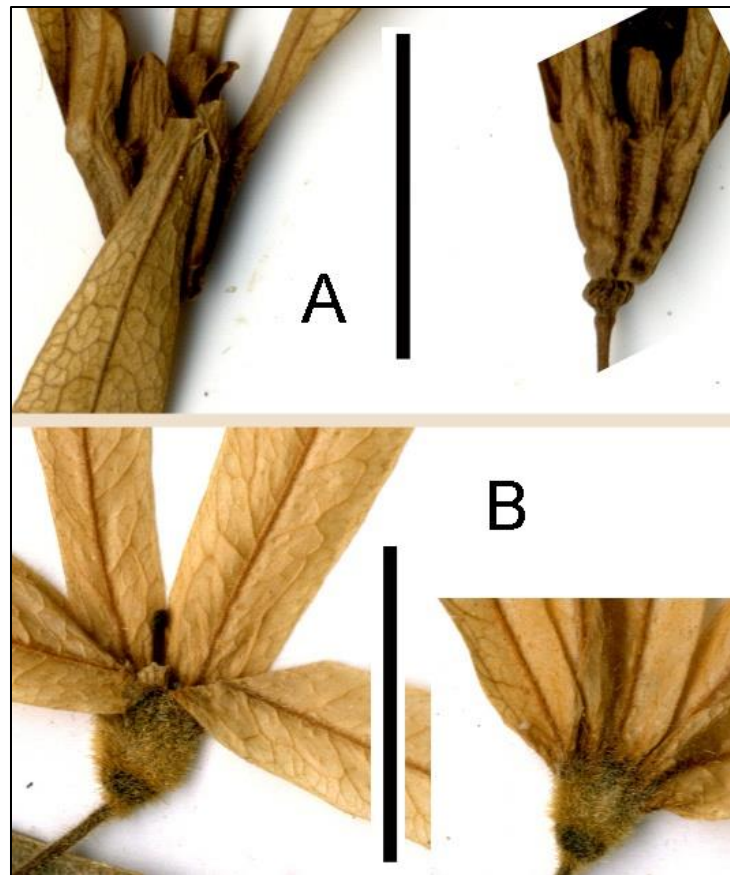


Figure 2. Details at of base of fruiting calyx. A. *Petrea aspera*. B. *Petrea volubilis*. A from Aguilar 3209, B from Fuentes 291. Scale bars = 10 mm.



Figure 3. Comparison of live material. A, B, *P. aspera*; C, D, *P. volubilis*. A, B from Aguilar 17367; C from Hammel 27784 (cult.), D from Hammel 27118 (wild). Scale bars = 10 mm.

Note on the transfer of *Xolocotzia asperifolia* Miranda to *Petrea*. When Christenhusz & Byng (2018) transferred *Xolocotzia asperifolia* (an erect shrub or small tree of relatively xeric forests of Chiapas Mexico, Honduras, and Nicaragua) to *Petrea* they unnecessarily created the new name *P. xolocotzia* under the assumption that “*Petrea asperifolia* Brongn.” was blocking a direct transfer. However, the latter is nothing but a herbarium name, cited in synonymy by Moldenke (1938, p. 161) under *P. bracteata* Steud. (see Art. 36. 1, Turland et al. 2018); it was never published by Brongniart, let alone accepted or published as a distinct species by Moldenke nor anyone else since. As such it does not block the following transfer.

**PETREA ASPERIFOLIA** (Miranda) Hammel, **comb. nov.** Basionym: *Xolocotzia asperifolia* Miranda, Bol. Soc. Bot. México 29: 40. 1965. *Petrea xolocotzia* Christenh. & Byng.

The moderately supported finding of *Xolocotzia asperifolia* as nested in *Petrea* (Marx et al., 2010) was based on two collections of *P. volubilis* and one of *P. kohautiana* Presl, the later itself a synonym of *P. volubilis* according to Rueda (1994) — a fact that Marx et al. apparently overlooked. Marx et al. also erroneously reported their voucher (*Clark 6554*, US) as being from Ecuador, when in fact it was collected in Dominica. Nevertheless, their findings (*P. volubilis* would be polyphyletic by current taxonomy), if corroborated with further study, indicate that at least one other species, the Antillian *P. kohautiana*, should be resurrected from synonymy. Only by the literature (and the few images we could find of Antillian *Petrea*), one obvious morphological character in support of that possibility are the terminal inflorescences of material formerly determined as that species (see, eg. Moldenke 1938; Nicholson 1991). In spite of including *P. kohautiana* in synonymy, Rueda (1994) only described axillary inflorescences for *P. volubilis*.

The Mesoamerican species of *Petrea* can be distinguished as follows:

1. Calyx tube densely pubescent to hirsute and with glandular trichomes, the calycine crest inconspicuous (1–1.5 mm in fruit) or lacking; leaves strongly scabrous.
    2. Erect shrub or small tree of relatively xeric sites; calyx not accrescent, deciduous in fruit, the lobes less than 10 mm long, calycine crest lacking; Mexico, Honduras, Nicaragua ..... **Petrea asperifolia**
    2. Liana (woody vine) or scandent shrub of relatively mesic sites; calyx accrescent and persistent in fruit, the lobes 8–21 mm long, calycine crest 1–1.5 mm; Mexico–Panama ..... **Petrea volubilis**
  1. Calyx tube sparsely substrigulose to puberulent pilose, lacking glandular trichomes, the calycine crest conspicuous (2.5–4 mm in fruit); leaves smooth to subscabrous.
    3. Inflorescences axillary, the pedicels 5–11 mm; corolla tube 6–11 mm; Costa Rica and Panama ..... **Petrea aspera**
    3. Inflorescences terminal, the pedicels 10–31 mm; corolla tube 13–22 mm; eastern Panama ..... **Petrea blanchetiana**
- or
1. Erect shrub or small tree of relatively xeric sites; calyx not accrescent, deciduous in fruit, the lobes less than 10 mm long, calycine crest lacking; Mexico, Honduras, Nicaragua ..... **Petrea asperifolia**
  1. Lianas (woody vines) or scandent shrubs of relatively mesic sites; calyx accrescent and persistent in fruit, the lobes 8–20(–26 in fruit) mm long, with a distinct calycine crest.
    2. Inflorescences terminal; corolla tube 13–22 mm; eastern Panama ..... **Petrea blanchetiana**
    2. Inflorescences axillary; corolla tube 6–11 mm.
      3. Calyx tube sparsely and minutely substrigulose, lacking glandular trichomes; Costa Rica and Panama ..... **Petrea aspera**
      3. Calyx tube densely hirsute and with scattered glandular trichomes; Mexico–Panama ..... **Petrea volubilis**



Figure 4. *Petrea aspera*. Mándala by R. Aguilar, from *Aguilar 17367* <<https://www.flickr.com/photos/plantaspeninsulaosa/49956610856/in/photolist-2j7rHke-2j7ugN9-2j7w98m-2j7ugLW-2j7uFWQ/>>.

#### ACKNOWLEDGEMENTS

Thanks go to Claudia Aragón for the black and white illustration. Many thanks to all institutions involved in projects to digitize libraries and herbaria. In these troubled times, where access to the tangible has been very limited or impossible, the importance of such endeavors hits home.

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