

Euleria (Anacardiaceae) is *Picrasma* (Simaroubaceae): The genus *Picrasma* in Cuba

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Abstract. The monotypic Cuban endemic genus *Euleria* (Anacardiaceae) is shown to be a species of *Picrasma* and the new combination, ***Picrasma tetramera***, is made. Also, a misapplication of the name *Picrasma cubensis* is corrected. Complete descriptions and illustrations are presented for both *P. tetramera* and *P. cubensis*, as is a key to the Cuban genera of Simaroubaceae and species of *Picrasma*.

Key Words: Anacardiaceae, Cuba, endemism, *Euleria*, *Picrasma*, Simaroubaceae.

Resumen. Se demuestra que el género monotípico y endémico cubano, *Euleria* (Anacardiaceae), es en realidad una especie de *Picrasma* (Simaroubaceae). Adicionalmente, una nueva combinación, ***Picrasma tetramera***, es presentada y la errónea aplicación del nombre *Picrasma cubensis* es discutida. Descripciones completas con ilustraciones son presentadas para *Picrasma tetramera* y *Picrasma cubensis*, junto con una clave para los géneros cubanos de Simaroubaceae y para las especies cubanas de *Picrasma*.

The genus *Picrasma* was described by Blume in 1825 based on *P. javanica* from tropical Asia. Characteristics of the genus include androdioecy (separate staminate and bisexual individuals), imparipinnate leaves usually with serrate margins, unappendaged stamens alternate the petals, an intrastaminal disc, separate ovaries and coherent styles, and drupe-like monocarps (druparia). *Picrasma* consists of seven species, three of which are found in Cuba. In 1922, Radlkofer and Urban described *Picrasma cubensis* from an E. L. Ekman collection from Pinar del Río in western Cuba. Apparently, the species has never been collected again.

In 1925, Urban described a new genus and species of Anacardiaceae, *Euleria tetramera*. The species had characteristics of Anacardiaceae, including androdioecy; alternate, imparipinnate, stipulate leaves with serrated margins; actinomorphic flowers with imbricate aestivation; and an intrastaminal disc. He observed that the ovary seemed deformed (but had a single

ovule per locule as in all Anacardiaceae) and that the stigmas were sometimes difficult to discern, thereby overlooking a key characteristic of Simaroubaceae, i.e., the separate ovaries. Had he observed this feature, having co-authored *Picrasma cubensis* only three years earlier, he no doubt would have seen this species for what it was, a new species of *Picrasma*.

While working on his doctorate, Arthur Cronquist undertook a study of the New World Simaroubaceae. He prepared treatments of most genera, including *Picrasma* (Cronquist, 1944). Because it was the height of World War II, he had no access to European type material and based his work solely on material in U.S. herbaria. Thus, he never saw the type of *P. cubensis* at Stockholm. The Cuban material of *Picrasma* he examined, all from central Cuba and not from Pinar del Río, was all identical to specimens described as *Euleria tetramera*. Nevertheless, Cronquist identified the specimens as *Picrasma cubensis*, probably under

the assumption that more collections would reveal a wider distribution and a broader range of morphological variation than were documented in the original description of *P. cubensis*. None of the material Cronquist apparently annotated as *P. cubensis* had been previously annotated as *Euleria tetramera*, so we can assume that Cronquist was not aware of this supposed genus of Anacardiaceae.

An analysis of the pollen also showed that *Euleria* did not fit in the Anacardiaceae. The pollen of nine genera of Cuban Anacardiaceae was examined by Machado Rodríguez (1995) and included the pollen of *Euleria tetramera*. The pollen morphologies of eight genera were considered similar and the ninth, *Euleria*, discordant. Two pollen types were established, the *Rhus* type and the *Euleria* type—with the latter found only in *E. tetramera* and characterized by a well defined, reticulate ornamentation that is heterobroccate with thin walls and microthickenings in the upper portions. Interestingly, this description of pollen is similar to that of *P. excelsa* described by Moncada and Machado Rodríguez (1987) in their study of pollen of Cuban Simaroubaceae.

With types in hand, it is clear that *Euleria tetramera* is a species of *Picrasma* and that it differs from *Picrasma cubensis* and all other described species of this genus including *P. excelsa* Planch., a widespread species also found in western Cuba. Therefore, we are transferring *E. tetramera* to the genus *Picrasma*, making a new combination, offering revised descriptions and illustrations of both species, and providing a key to all three species of Cuban *Picrasma* and to all three Cuban genera of Simaroubaceae.

Erik L. Ekman, whose collections are the types for both species treated here, was one of the most prolific and important collectors in the West Indies. He collected in Cuba and Hispaniola from 1914 until his death in 1931. Rather than numbering his specimens sequentially and chronologically, he maintained separate number sequences for different places (e.g., Argentina, Brazil, Cuba, and Hispaniola), distinguishing them with prefixes (T. Zanoni, pers. comm.). For example, his collections from Hispaniola have the collection number preceded by an “H” on the label and should be referred to this way in publications. His Cuban collection numbers are without a prefix or have the prefix “LS.”

Key to the Cuban genera of Simaroubaceae and species of *Picrasma*

1. Leaves simple, often caducous; plants spiny; flowers borne on few-flowered axillary fascicles *Castela*
1. Leaves pinnately compound, persistent; plants not spiny; flowers borne on long, terminal or subterminal, branched inflorescences.
 2. Stamens as many as the petals, 4 or 5, appendaged at the base of the filaments; leaflets with secondary veins obscure; fruit 15–25 mm long, ellipsoid *Simarouba*
 2. Stamens twice as many as the petals, 8–12, not appendaged at the base of the filaments; leaflets with secondary veins evident; fruit ca. 5–8 mm long, roughly spherical *Picrasma*
 3. Small or large trees, rarely a shrub; leaflet margins entire *Picrasma excelsa*
 3. Shrubs; leaflet margins serrate or toothed.
 4. Rachis narrowly winged; leaflet margins not revolute, the veins not sunken adaxially; sepals abaxially pubescent only along the midvein *Picrasma cubensis*
 4. Rachis not winged; leaflet margins revolute, the midvein and secondary veins sunken adaxially; sepals abaxially densely pubescent *Picrasma tetramera*

Picrasma tetramera (Urb.) W. W. Thomas, J. D. Mitchell, & A. Noa Monzón, **comb. nov.** *Euleria tetramera* Urb., Repert. Spec. Nov. Regni Veg. 21: 66. 1925. Cuba. Santa

Clara: In montibus inter El Purial et Los Guineos, locis saxosis cr. 850 m, 27 Jan 1923, *E. L. Ekman 16244* (holotype: S; isotypes: HAC no. 18408, NY). (Fig. 1)

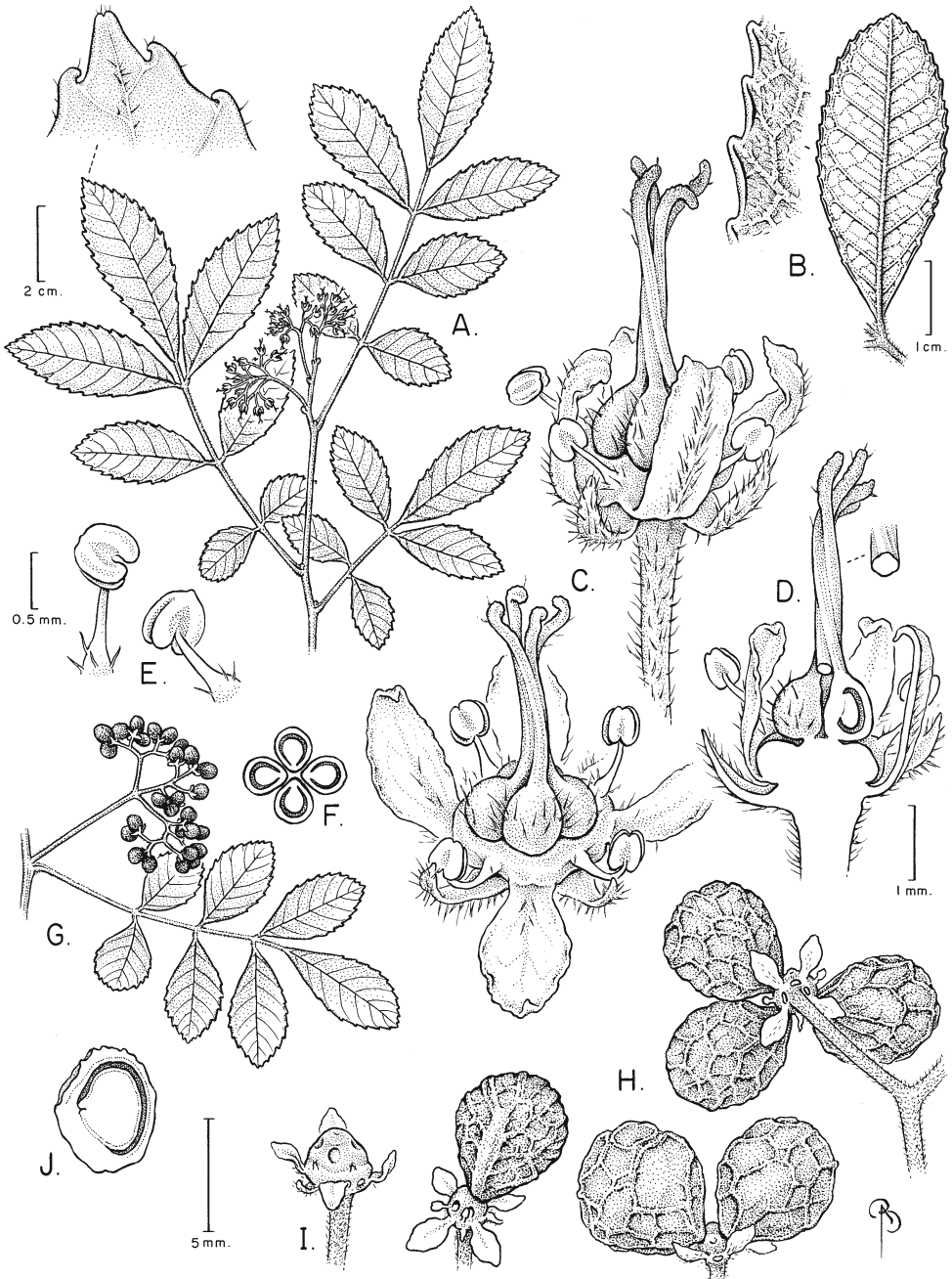


FIG. 1. *Picrasma tetramera*. A. Branch with inflorescence. B. Leaflet, abaxial surface and margin. C. Pistillate flower, whole, lateral view and opened view. D. Bisexual flower, longitudinally bisected. E. Stamens. F. Carpels, transverse section. G. Infructescence and subtending leaf. H. Monocarps, showing one, two and three from a single flower. I. Receptacle without monocarps. J. Monocarp bisected longitudinally. (A, C–F from *Capote s.n.*, HAC no. 37567; B from *Bro. Alain 6393*, GH; G–J from *Jack 7430*, NY).

Shrub, 6–8 ft high (*Jack 7430*) twigs reddish brown, puberulent, longitudinally striate with beige fissures. *Leaves* imparipin-

nate, 6–13 cm long, the leaflets 5–9, opposite to subopposite, the distal ones largest; petiole 1.2–2.5 cm long, puberulent; rachis 1.5–5.2 cm

long, puberulent; blades obovate to elliptic, the apex acute to rounded, the base acute to acuminate, the margins serrate with teeth apically oriented, adaxial surface mostly glabrous but sparsely puberulent at very base, along midvein and along secondary veins, the abaxial surface densely pubescent; terminal leaflet usually with a well-defined petiolule, but occasionally with a short petiolule and resembling lateral leaflets, the petiolule 2–12 mm long, puberulent, the blade 2.3–5.5 × 1.3–2.5 cm; largest lateral leaflets with petiolules sessile to 3 mm long, the blades 2.2–4.4 × 1.2–2.5 cm. *Inflorescence* a subterminal or axillary cymose panicle, ferruginous pubescent; staminate inflorescence unknown; bisexual inflorescence 1.5–3.5 cm long. *Flowers* 4-merous, greenish white (*Jack 7430*); pedicels 3–6 mm long; sepals narrowly elliptic, 1.3–1.6 × 0.3–0.5 mm, glabrous adaxially, densely ferruginous pubescent abaxially; petals elliptic to narrowly so, 1.7–2.2 × 0.6–0.9 mm, glabrous adaxially, glabrous except for pubescence along midvein abaxially; disc intrastaminal, 4-lobed, each lobe at the base of a filament; stamens 1.2–1.5 mm long; filaments inserted on the intrastaminal disc, tapering, 0.9–1.2 mm long, sparsely hispid on basal half; anthers longitudinally dehiscent, dorsifixed, 0.5–0.6 mm long; carpels 4, distinct, roughly spherical, 0.8 mm in diameter, reddish brown with scattered hairs; styles apical on each carpel, distally connate, the free portion 0.2–0.3 mm long, the connate portion ca. 1.5 mm long; stigmas 4, free, recurved, 0.4–0.6 mm long, darker than the style, ventral surface papillose. *Infructescence* 4–7 cm long. *Fruit* comprising one or more drupe-like monocarps (collectively a druparium), roughly spherical, 5 mm in diameter, black, shiny, the exocarp thin, fleshy, wrinkled when dry, the endocarp bony.

Distribution and ecology.—*Picrasma tetramera* is a prominent shrub of the “montane karstic forest,” the karst vegetation of the high limestone peaks of the Macizo Guamuhaya (Escambray) at elevations over 800 m (Borhidi, 1996). The dominant trees in this association are *Tabebuia sauvalliei* Britt. and *Garrya fadyenii* Hook.

Additional specimens examined: CUBA. Cienfuegos: Buenos Aires, 3000 ft, 11 Jul 1929 (fl, fr), *Jack 7430* (NY); Buenos Aires, Trinidad Hills, 2500–3500 ft, 11 Jul

1929 (st), *Jack 7441* (A); Buenos Aires, Lomas de Trinidad, 21 Nov 1971 (st?), *Riego et al. 27286* (HAC); Escambray, lomas en los alrededores de Mantaniales, 3 Nov 1986 (fr), *Toscano et al. s.n.* (HAC 35530); Buenos Aires, Lomas de Trinidad, Jun 1943, (st) *F. E. Walsingham 11634* (HAC), *11639* (HAC). **Sancti Spiritus:** Trinidad Mts., region of Pico Potrerillo, woods, ca. 750–850 m, 16 Jul 1957 (st), *Alain 639 3* (GH, HAC); cumbre de Pico Potrerillo, Sierra de Escambray, 3 Oct 1978 (immat), *Borhidi & Pócs 28052* (HAC), *28053* (HAC); Topes de Collantes, Cueva de Altar, 8 Nov 1986 (fl), *Capote et al. s.n.* (HAC nos. 37567, 37593); Topes de Collantes, Mogote Mi Retiro, Cima del Mogote, 22 May 1999 (st), *Castañeda & Vera 6847* (ULV); Topes de Collantes, Mogote Mi Retiro, Ladera norte, 15 Jul 1999 (st), *Castañeda & Vera 6965* (ULV); Topes de Collantes, Mogote Mi Retiro, Ladera norte cerca de la cima, 24 Apr 2006 (st), *Castañeda & Noa 9059* (ULV); Pico Potrerillo, Topes de Collantes, Escambray, 7 Nov 1986 (immat), *Herrera et al. s.n.* (HAC no. 38791b, NY); Topes de Collantes, Mogote Mi Retiro, Cima del Mogote, 9 Dec 2006 (fl & fr), *Noa et al. 9336* (ULV); Pico Potrerillo, base del Pico, 750–800 m, 10 Nov 1989 (fl), *Noa et al. 2720* (ULV); Topes de Collantes, Mogote Mi Retiro, Cima del Mogote, 900–920 m, 15 Nov 1991 (fl), *Noa et al. 4329* (ULV); Pico Potrerillo, Topes de Collantes, Escambray, 8 Sep 1984 (st), *Oviedo et al. s.n.* (HAC nos. 30479, 30480). **Villa Clara:** Manicaragua. Alturas de Trinidad, Jibacoa, Lomas de Viscallo, 2 Mar 1994 (st), *Marimón 4749* (ULV).

***Picrasma cubensis* Radlk. & Urb., Repert. Spec. Nov. Regni Veg. 18: 363. 1922.**
Type: Cuba. Sierra de los Organos, San Diego de las Tapias, in sylvis–frutex, 3. 4. 1920, *E. L. Ekman 10655* (S). (Fig. 2)

Shrub, height unknown, twigs castaneous, lustrous, puberulent and glabrescent. *Leaves* imparipinnate, 8–13 cm long, the leaflets 7, opposite or subopposite, decreasing in size towards base, the petiole and rachis segments narrowly winged, with the widest portion of wing at the base of the distal leaflet insertion and 0.2–0.5 mm wide; petiole 1.9–2.7(–3.7) cm long; rachis 3.5–6 cm long; blades glabrous above, glabrous below except for petiolule and base of midrib which are puberulent to glabrous but usually with sparse hairs, the apex acute to acuminate, the base acute, the margins serrate with apically oriented teeth; terminal leaflet with petiolule 5–12 mm long, the blade margins decurrent and forming wings up to 0.4 mm wide laterally along the petiolule, the blade elliptic, 3.8–4.2(–5.4) × 2–2.3(–3.1) cm; lateral leaflets with petiolules of largest leaflets 1–2 mm long, the

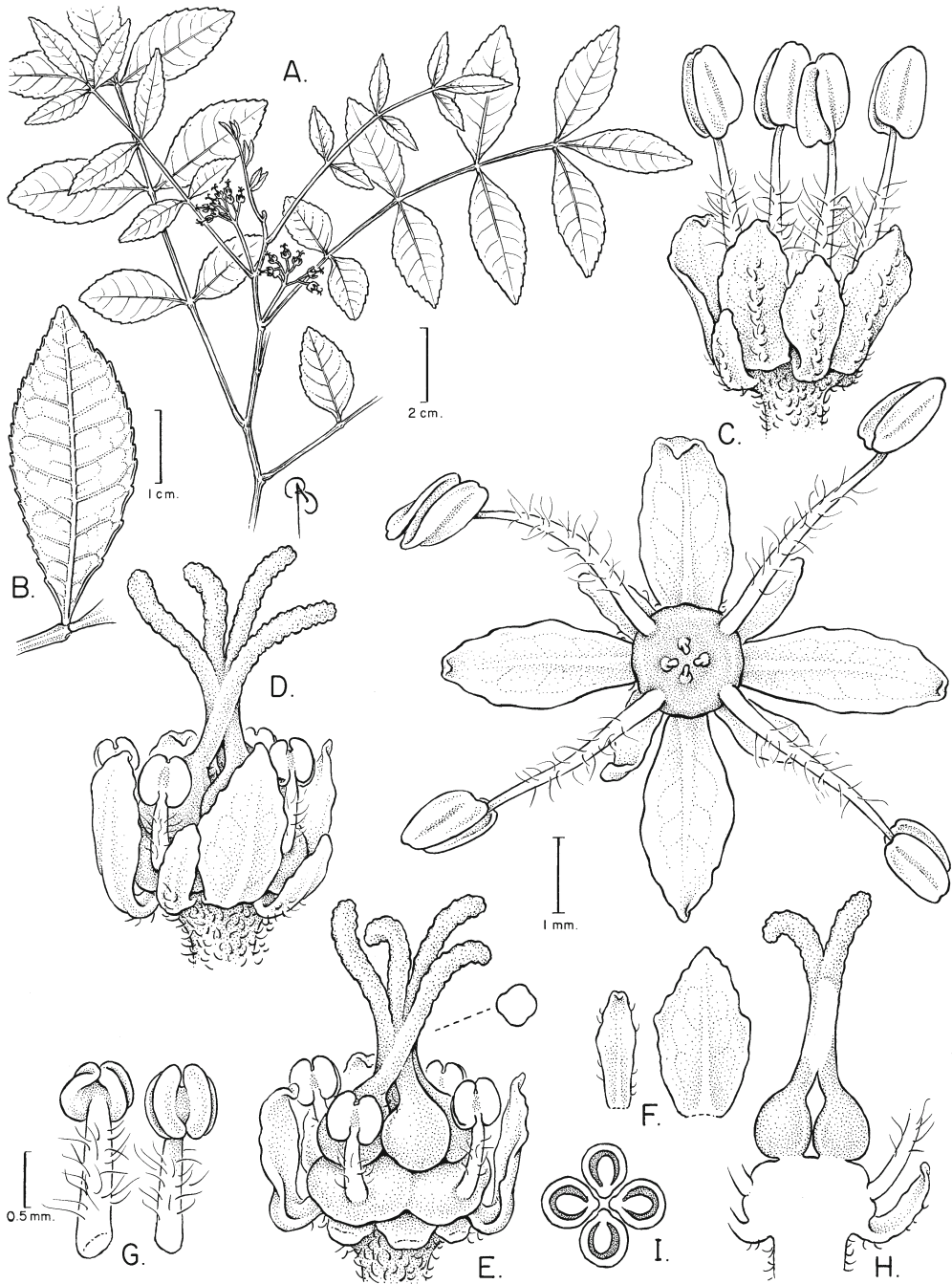


FIG. 2. *Picrasma cubensis*. A. Branch with inflorescence of bisexual flowers. B. Leaflet, abaxial surface. C. Staminate flower, lateral and opened views, D. Bisexual flower, lateral view. E. Pistillate flower, lateral view with some sepals and petals removed. F. Sepal and petal, adaxial surfaces. G. Stamens from bisexual flower. H. Bisexual flower, base, bisected longitudinally. I. Carpels, transverse section. (From the holotype.)

blades elliptic to ovate or broadly so, 2.9–4 × 1.3–2.3 mm. *Inflorescence* at the base of new growth, axillary cymose panicle, 1.4–4 cm long, puberulent; staminate inflores-

cence of 10–14 flowers; pistillate (possibly bisexual) inflorescence of 3–6 flowers. *Staminate flowers* 4-merous; pedicels 0.5–2 mm long, densely puberulent; sepals narrowly elliptic, 1.2–1.6×0.3–0.5 mm, stramineous with darker midvein, with scattered hairs especially along the midvein abaxially; petals elliptic, 1.9–2.5×0.8–1 mm, apex rounded to acute, stramineous with a darker midvein, with scattered hairs especially along midvein abaxially; stamens ca. 4 mm long, the filaments 2.7–3.1 mm, sparsely hispid, the anthers longitudinally dehiscent, dorsifixed, 1–1.1 mm long; disc intrastaminal, circular, consisting of 4 indistinct lobes, one at the base of each filament; carpels rudimentary, reduced to 4 minute styles imbedded in the center of the disc. *Pistillate flowers* 4-merous; pedicel 3–4.5 cm long; sepals elliptic or narrowly so, 0.7–1.4×0.25–0.4 mm, stramineous, glabrous or glabrate; petals elliptic, 1.8–2.4×0.9–1.2 mm, stramineous, apex acute to rounded, glabrous or glabrate; stamens 1.8–2 mm long; anthers 0.6–0.8 mm long; filaments 0.9–1.2 mm long, sparsely hispid; intrastaminal disc comprising 4 lobes, one at the base of each filament; carpels separate, each attached basally at the center of the disc, obovoid to spherical, 0.8–1.6×0.8–0.9 mm, glabrous, brown to black; styles emerging from the summit of each carpel and uniting, each separate for 0.2–0.3 mm and connate for 0.7–1 mm; stigmas 4, separate, recurved, 1.2–1.5 mm long, papillate on the ventral surface. *Fruit* unknown.

Distribution and ecology.—Known only from the type collected in Artemisa, formerly part of Pinar del Río. The locality of the collection of *Picrasma cubensis* is the Sierra de los Organos near “San Diego de las Tapias.” San Diego de las Tapias is south of Bahia Honda and Bahia de Cabañas near San Diego de Nuñez on the road crossing the mountains to Soroa and Candelaria (Ramona Oviedo Prieto, pers. comm.) at approximately 22°48'N, 83°14'W. Borhidi's (1996) map and description of the vegetation in that region indicates that the locality is “submontane rain forest.”

Discussion

Although sinking *Euleria* into *Picrasma* reduces by one the number of genera endemic to Cuba (Francisco-Ortega et al., 2007), it increases by one the number of endemic species of Simaroubaceae. *Picrasma tetramera* appears to be endemic to the Macizo Guamuha (Escambray) of central Cuba where it has been collected in several localities on many occasions. *Picrasma cubensis*, on the other hand, is both endemic and rare—it remains known only from a single collection made in Artemisa.

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