



A new species of *Psidium* (Myrtaceae) from Cuba

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Abstract

A new species, *Psidium urquiolanum*, from eastern Cuba is described, illustrated, and its distribution is mapped. It has previously been incorrectly identified as *P. calycolpoides*, a species now assigned to *Mosiera*. The differences between *Psidium* and *Mosiera* are discussed.

Resumen

Se describe, se ilustra y se provee un mapa para esta nueva especie, *Psidium urquiolanum*, del oriente de Cuba. Anteriormente fue identificada incorrectamente como *P. calycolpoides*, una especie que ahora se asigna a *Mosiera*. Se discuten las diferencias entre *Psidium* y *Mosiera*.

Key words: Baracoa, charrascal, endemic, Pimentinae, taxonomy

Introduction

Psidium Linnaeus (1753: 470) is a genus of at least 60 species and perhaps as many as 100 (McVaugh 1968; Govaerts *et al.* 2008), ranging from Mexico and the Caribbean to Argentina and Uruguay. Recent estimates of the number of species in Cuba are 21 (Govaerts *et al.* 2008) and 26 (Greuter and Rankin 2022). The distinguishing characters of *Psidium* are discussed in Landrum (2003) and in Landrum and Sharp (1989) and are: flowers (4–)5(–6)-merous (occasional flowers rarely with more petals) with multi-ovulate locules; placenta often peltate; seed coat rough or dull, covered with a pulpy layer when wet (rarely lustrous in immature seeds); hard portion of seed coat (5–)8–30 cells thick at the narrowest point, with the cells thick-walled, elongate, and overlapping; and embryo cylindrical, conforming to the C-shaped cavity of the seed coat, with cotyledons reflexed, much shorter than the hypocotyl. Proença *et al.* (2022) provide an extensive discussion of important taxonomic characteristics of *Psidium* and descriptions of the four sections they recognize.

We here describe a new species of *Psidium* that has commonly been identified as *P. calycolpoides* Grisebach (1860: 183). *Psidium calycolpoides* was transferred to *Mosiera* Small (1933: 936), the new combination being *Mosiera calycolpoides* (Griesb.) Borhidi (1994: 78). We agree with that decision, but the several specimens of *Psidium* previously assigned to that taxon still require a name. Two names, *P. versicolor* Urban (1923: 85) and *P. jackii* Urban (1928: 467) that were considered synonyms of *M. calycolpoides* by Salywon (2003) have been investigated but the types of both appear to be *Mosiera*.

Psidium and *Mosiera* frequently appear near each other in molecular studies (Vasconcelos *et al.* 2017; Flickinger *et al.* 2020) and although similar in many ways, they can be distinguished morphologically (Landrum 1992; see key below). They share characters of the seed coat: hard with a C-shaped cavity (except two species of *Mosiera* with coriaceous seed coats); and embryo: cylindrical, with the hypocotyl much longer than the reflexed cotyledons. The seed coat and embryo structure are typical of several other genera of the traditional, paraphyletic subtribe Myrtinae,

and may be similar to the primitive structure of the tribe Myrteae. Based on molecular studies, the traditional Myrtinae have been subdivided into various subtribes and *Psidium* and *Mosiera* both belong to the Pimentinae (Lucas *et al.* 2019).

Key distinguishing *Psidium* and *Mosiera*

1. Flowers tetramerous, the calyx with 4 distinct lobes; seed coat smooth, lustrous with surface cells forming a mosaic pattern, or leathery-verrucose, 1–6(–10) cells thick; anthers usually with a single terminal gland in the connective; peduncles uniflorous, solitary or borne in pairs at a node on a very short axillary shoot; tertiary veins between lateral veins if visible usually forming a reticulate, web-like pattern *Mosiera*
- 1' Flowers pentamerous or tetramerous, the calyx closed in the bud or if open with 5 more or less distinct lobes; seed coat dull to rough, not lustrous, covered with a thin layer of pulpy tissue when wet (or a glaze or crusty layer when dry), the hard portion of the seed coat (5–)8–30 cells thick at narrowest point; anthers with a terminal gland and usually with a few to several glands in the connective below; peduncles uniflorous or sometimes bearing a 3-flowered dichasium, or sometimes borne on bracteate shoots (racemes), but not normally appearing as pairs on very short axillary shoots; tertiary veins between lateral veins when visible forming a ladder-like (e.g., *P. guajava* Linnaeus (1753: 470) or dendritic pattern [e.g., *P. salutare* (Kunth 1823: 132) O. Berg (1855–1856: 356)] *Psidium*

A problematic species, *Calycorectes ekmanii* Urban (1923: 110, not *Mosiera ekmanii* (Urb.) Bisse (1985: 4), based on *Myrtus ekmanii* Urban (1923: 79)), is similar to *Mosiera* and we believe it to be conspecific with *M. nipensis* Salywon & Landrum (2014: 275). It has seeds similar to *Mosiera*, but the 4-lobed calyx lobes are valvate in the bud. Molecular studies (Flickinger *et al.* 2020) indicate an affinity to *Calycolpus* O. Berg (1855–1856: 348).

Materials & Methods

Dried herbarium specimens were examined from ASU, HAJB, and JE (acronyms follow Thiers 2023) of this new species and possible relatives using an Omano dissecting microscope with a camera attachment. Selected photos have been posted on CoTRAM.org (<https://cotram.org/index.php>). Type images of potential relatives or possible earlier names were examined at JSTOR Global Plants (JSTOR 2023). SEM photos of the seeds of *Mosiera calycolpoides* (Griseb.) Borhidi were consulted in Salywon (2003).

Taxonomic treatment

Psidium urquiolanum Landrum & Z. Acosta *sp. nov.* Type:—CUBA. Guantánamo: Baracoa, al sur de la loma del Yunque, (20.34°N, 74.57°W), 9 February 1972 (fl), *Bisse 21450* (holotype: HAJB-G001291!; isotypes HAJB-G001292!, JE!) Figures 1–3.

Diagnosis:—Similar to *Psidium amplexicaule* Persoon (1806: 27) but differs in having flower buds 5–7 mm long (versus 6–12 mm), style 3–5 mm long (versus 6–12 mm), stamens ca. 100 (versus 150–270), most leaves elliptic to obovate or oblanceolate (versus usually suborbicular), and petioles 2–4 mm long (versus 0–2 mm long).

Shrub or small tree up to 5 m tall, mainly glabrous but with minute hairs on some young growth and inner surface of calyx, the leaves and external surfaces of flowers densely glandular; *hairs* reddish brown, up to ca. 0.2 mm long; *young twigs* compressed to subterete, unwinged, glabrous to densely puberulent. LEAVES elliptic, oblong, obovate, or oblanceolate, (2.5–)3–8.7 cm long, (1.5–)2–4.2 cm wide, 1.3–2.3 times as long as wide; *apex* rounded to obtuse, sometimes emarginate; *base* rounded, cuneate, or broadly cuneate; *petiole* 2–4 mm long, 1.5–2 mm thick; *venation* brochidodromous, obscure to faintly visible, the midvein impressed or nearly flat above, prominent below, the lateral veins 4–6 pairs, leaving the midvein at an angle of 45–60 degrees, the marginal vein following the margin, arcing slightly between laterals, mainly running between 1 and 4 mm from margin, the tertiary veins rarely clear, dendritic, appearing to arise from the marginal vein; *blades* coriaceous, drying dark reddish-brown, densely glandular above and below, dull to slightly lustrous above and below, the margin revolute. FLOWER BUDS pyriform, 5–7 mm long, glabrous, densely and conspicuously glandular, the hypanthium ovoid to subcylindrical, 3–4 mm long, the distal portion of bud subglobose, 2–3 mm long; *indumentum pattern of buds* with all external surfaces glabrous, the inner surface of calyx and staminal ring minutely puberulent, the hairs mainly appressed; *peduncles* 1-flowered, (2–) 4–20 mm long, 0.8–1 mm wide, flattened or subterete, borne in

the axils of leaves, or small bracts, often grouped together in short bracteate shoots, these usually at the tips of branches, but sometimes at the base of a young leafy shoot, the buds often of various sizes and stages of maturity in a single inflorescence, the bracts ovate to triangular, ca. 1–1.5 mm long; *bracteoles* narrowly triangular, ca. 1 mm long. CALYX closed in bud, with a terminal pore through which minute reddish brown hairs emerge, usually tearing in 4 nearly equal, subtriangular lobes, these 3–5 mm long, ca. 3 mm wide, the tears between lobes not cutting deeply into the staminal ring; *petals* 5, suborbicular, not persisting; *disk* 3–4 mm across, the staminal ring densely puberulent, 1–2 mm wide, the disk within staminal ring sparsely pubescent to glabrous; *stamens* ca. 100; *anthers* ca. 0.5 mm long, with a terminal gland and a few smaller glands below; *style* 3–5 mm long, glabrous, glandular; *ovary* 2–4-locular; *ovules* 16–20 per locule, mainly uniseriate, the placenta peltate. FRUIT globose, ca. 1 cm wide; *seeds* ca. 7, lenticular to reniform, somewhat flattened, ca. 4 mm long, the seed coat several cells thick at narrowest point, the embryo ca. 2 mm long in curved state.

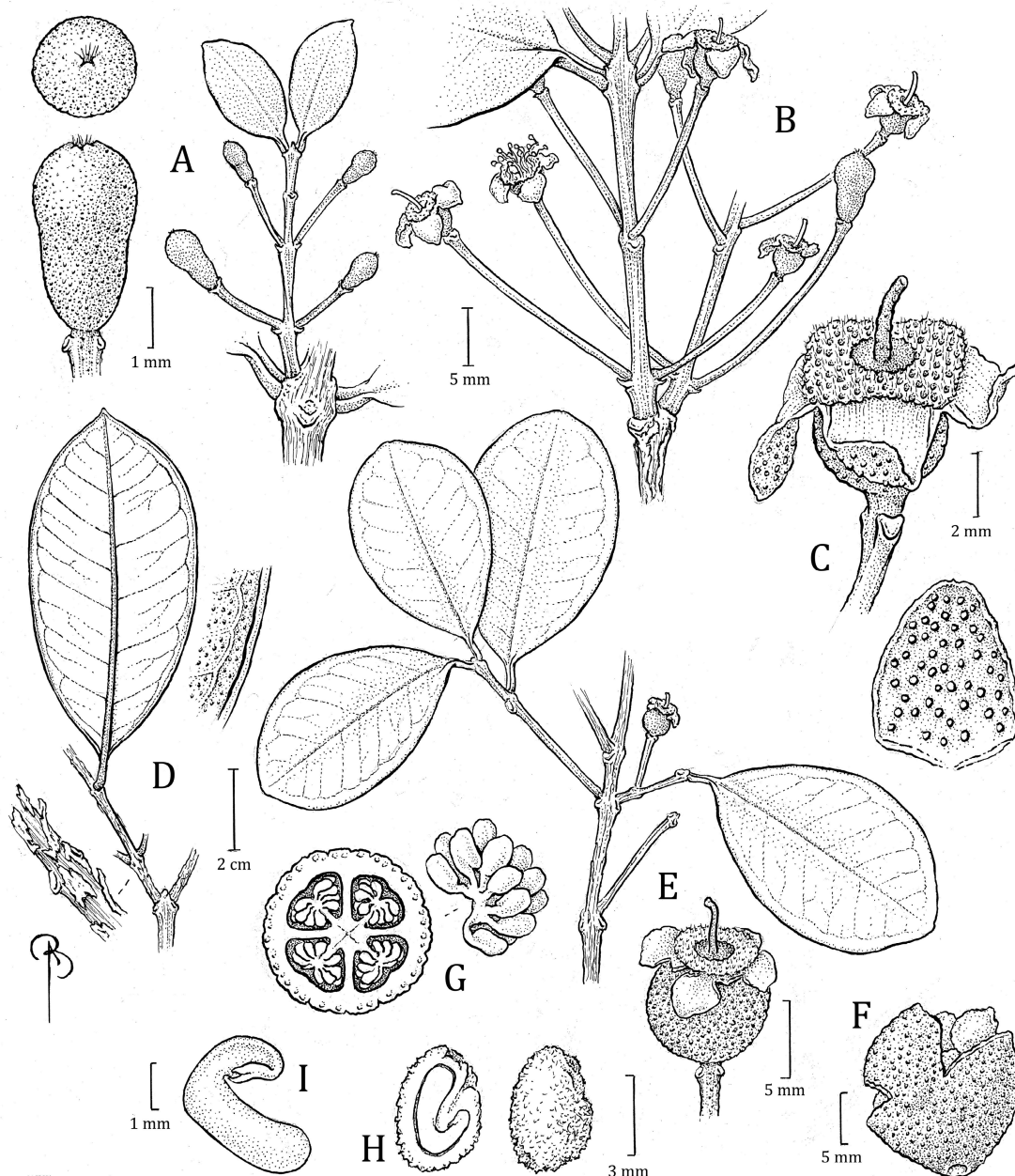


FIGURE 1. A. Closed flower bud from side and above, showing apical pore in closed calyx with small hairs protruding; young leafy shoot with flower buds at first two nodes. B. Two older shoots with one closed bud and flowers at first two nodes. C. Flower after anthesis, with enlarged calyx remnant showing external glandular surface. D. Twig and leaf, with enlarged part of margin and twig; venation more evident than usual. E. Developing fruit on branchlet with leaves attached; closer view of young fruit. F. flattened mature fruit, with seeds emerging. G. Cross section of ovary showing 4 locules with peltate placentas with ovules; one placenta extracted with ovules. H. Seed in section showing C-shaped inner cavity with embryo in place. I. Extracted embryo with reflexed cotyledons.

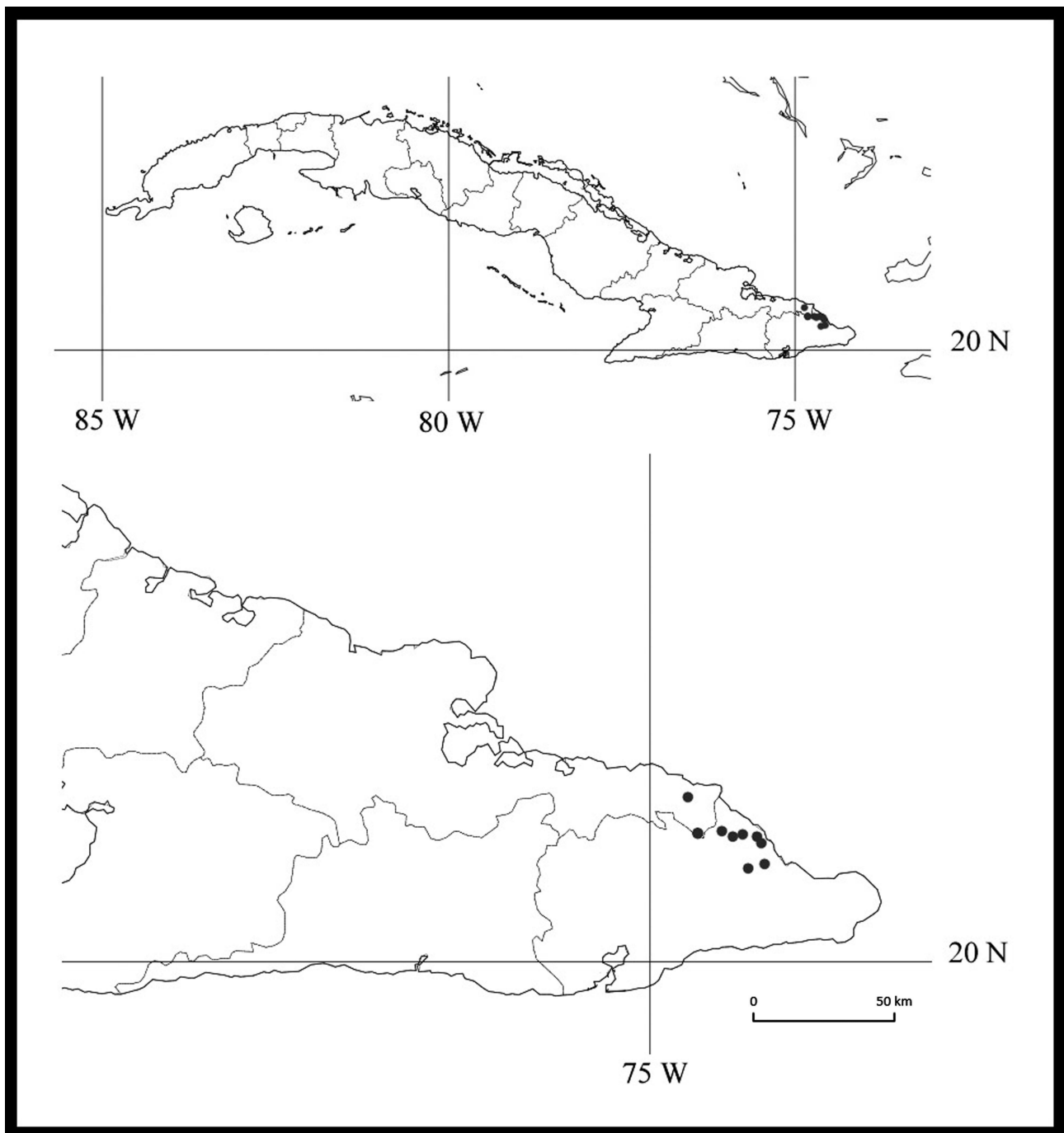


FIGURE 2. Maps of distribution of *Psidium urquiolanum*: above, showing all of Cuba; below showing only eastern Cuba.

Etymology:—The epithet honors Dr. Armando Jesús Urquiola Cruz (1949–2009), eminent Cuban botanist, founder of the Botanical Garden of Pinar de Río, who dedicated his life to the study and conservation of the flora of Pinar de Río, the family Myrtaceae, and Cuban aquatic plants.

Paratypes:—CUBA. Guantánamo: Baracoa, alto entre Loma del Mirador y Loma de Buena Vista (al oeste de Camarones), (20.44°N, 74.60°W), 500 m, 6 August 1975 (fl), *Álvarez et al. 27136a* (HAJB!, JE!), (fr), *Álvarez et al. 27137* (HAJB!, JE!); cabezada del Río Naranjo, (20.44°N, 74.69°W), 27 February 1975, *Álvarez et al. 27136b* (HAJB!); Baracoa, camino de Los Naranjos a la Loma de Buenavista, (20.45°N, 74.65°W), 200 m, 21 January 1977 (fl), *Álvarez et al. 33784* (HAJB!, JE!); camino a vega de la Palma, orillas de Arroyo Blanco, (20.33°N, 74.63°W), 27 February 1979, *Areces et al. 40095* (HAJB); Baracoa, valle al noroeste del Yunque de Baracoa, (20.34°N, 74.55°W), 31 January 1968 (bud), *Bisse & Kohler 5291* (JE!); Baracoa, altiplano de la Mina Iberia, (20.46°N, 74.73°W), 600 m, 29 February 1968 (fr), *Bisse 6818* (JE!); Baracoa, valle del Río Maraví, (20.42°N, 74.58°W), 31 March 1970 (st), *Bisse 16967* (HAJB!, JE!); Baracoa, al sur de la Loma del Yunque, (20.34°N, 74.55°W), 300 m, 31 March 1970 (ofl),

Bisse 17073 (JE!); Baracoa, orillas del Río Báez, cerca del campamento 'Los Naranjos', (20.45°N, 74.58°W), 1 August 1975 (fl), *Bisse 27000* (HAJB!, JE!). **Holguín:** Moa, Cuchillas de Moa, alrededores del aserrio La Melba, (20.45°N, 74.82°W), 28 April 1980 (fl), *Álvarez et al. 42244* (HAJB!, JE!); Moa, orillas del Río Jiguani, cerca del segundo aserrio de La Melba, (20.45°N, 74.82°W), 31 March 1968 (bud), *Bisse & Kohler, E. 6774* (HAJB!, JE!); Moa, La Melba, (20.45°N, 74.82°W), 27 December 1968 (bud, fl), *Bisse & Lippold 11888* (HAJB!, JE!); charrascal de Cayo Guam, Moa, al W del campismo, (20.58°N, 74.86°W), 30 June 1991 (yfr), *Urquiola 7108* (ASU0060189!).



FIGURE 3. Image of holotype specimen at HAJB.

Distribution, habitat, and conservation status:—*Psidium urquiolanum* is only known from eastern Cuba, and its habitat is described on specimen labels as charrasco, charrascal, pluviosilva, or monte nublado at elevations of 200 to 700 m. Charrascal vegetation is associated with serpentine soils, so we suspect that this species is one of the several endemic plants of such soils in eastern Cuba (Borhidi 1996). *Psidium urquiolanum* has been collected several times and does not seem to be of urgent conservation concern, but we recommend that field studies be conducted to assess its conservation status.

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