

1 A new species of *Psidium* (Myrtaceae) from Ecuador and Colombia

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11 **Abstract.** *Psidium occidentale* (Myrtaceae) from Colombia and Ecuador is described and
12 illustrated. It is compared with its presumed closest relatives, and differs from them by its larger
13 leaves and multiflowered inflorescences. It generally grows at lower elevations than these other
14 species. Its conservation status is evaluated.

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16 Key words: Andes, Colombia, Ecuador, Myrtaceae, *Psidium*, taxonomy.

17

18 **Resumen.** *Psidium occidentale* (Myrtaceae) de Colombia y Ecuador se describe e ilustra. Se
19 compara con sus presuntos parientes más cercanos y se diferencia de estos por las hojas más
20 grandes e inflorescencias con más flores; generalmente crece en elevaciones más bajas que estas
21 otras especies. Se evalúa su estado de conservación.

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24 *Psidium* is a genus of at least 50 species and perhaps as many as 100 (McVaugh, 1968;
25 Govaerts et al., 2008), ranging from Mexico and the Caribbean to Argentina and Uruguay. It is
26 one of about 50 genera in the tribe Myrteae (Lucas et al. 2007). The distinguishing characters of

1 *Psidium* are discussed in Landrum (2003) and in Landrum and Sharp (1989) and are flowers 5-
2 merous with multiovulate locules; placenta often peltate; seed coat rough or dull, not lustrous,
3 covered with a pulpy layer when wet; and the hard portion of seed coat (5-) 8-30 cells thick at
4 the narrowest point, with the cells thick-walled, elongate, and overlapping. Recent molecular
5 studies of Myrtaceae (Lucas et al. 2007; Murillo et al. 2013) indicate that *Psidium* is a
6 monophyletic group and place it in a clade with such genera as *Acca*, *Amomyrtus*,
7 *Campomanesia*, *Legrandia*, and *Pimenta*. These are all members of the morphologically based
8 subtribe Myrtinae (i.e., those genera with embryos with relatively small cotyledons and a large
9 hypocotyl), that appears to be the basal, paraphyletic group in the tribe Myrteae.

10 In our studies of *Psidium*, we have discovered a new species, apparently confined to
11 Ecuador and Colombia on the western slopes of the Andes and adjacent lowlands. It belongs to a
12 complex of three species that all have the calyx open and shallowly lobed, relatively small flower
13 buds (2.5-7 mm long), and often have 3-flowered dichasia. These species (*P. pedicellatum*
14 McVaugh, *P. fulvum* McVaugh, and *P. occidentale* sp. nov.) are found from Peru to Venezuela
15 in the Andean region. They may be related to *P. oligospermum* DC. [= *P. sartorianum* (O. Berg)
16 Nied.], which has similar leaves and venation and sometimes has small flower buds and a
17 dichasial inflorescence, but which has a closed calyx that opens as a calyptra or irregularly. We
18 here compare these three related species of the Andean region in a key.

19 *Psidium raimondii* Burret, described in 1941, may belong to this complex and is perhaps
20 an earlier name for *P. pedicellatum*. Burret's holotype and three paratypes were Raimondi
21 specimens at Berlin (B), and later destroyed and so far no duplicates have been found. His
22 description is similar to our concept of *P. pedicellatum* but differs notably in having the leaves
23 and twigs glabrous. It is possible that Burret overlooked the sparse and obscure indumentum that

1 we see in *P. pedicellatum*. We believe that it is best not to use this name until conclusive
2 evidence (in the form of type material) is found that demonstrates that it should be used.

3

4 Key to *Psidium occidentale* and relatives

5 1. Hairs erect, yellow to golden, densely covering young leaves with erect hairs; leaf blades
6 submembranous, the lateral veins impressed; Chachapoyas region of Peru. *P. fulvum*

7

8 1. Hairs appressed or erect, yellowish brown to whitish, never densely covering young leaves
9 with erect hairs; leaf blades coriaceous to submembranous, the lateral veins impressed or not;
10 Venezuela to Peru.

11

12 2. Leaves elliptic, ovate or lanceolate, 1.5–6 (–9.5) cm long; lateral veins nearly straight,
13 usually leaving the midvein at an angle of more than 45 degrees, the distance between
14 lateral veins in the center of the leaf usually less than 1 cm; marginal vein closely following
15 the margin, 0.5–2 (–4) mm from margin; peduncles not grouped together in bracteate
16 shoots, sometimes borne at leafless nodes proximally on otherwise leafy shoots; tears
17 between calyx lobes none or up to 1 mm long; generally growing above 2000 m elevation.

18 *P. pedicellatum*

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20 2. Leaves elliptic, obovate or oblanceolate, (4–) 6–20 cm long; lateral veins arching
21 towards apex, leaving the midvein at an angle of ca. 45 degrees, the distance between
22 lateral veins in the center of the leaf more than 1 cm; marginal vein broadly arching
23 between laterals, 2–15 mm from the margin; peduncles often grouped together in bracteate

1 shoots, forming a panicle-like inflorescence; tears between calyx lobes usually 1–1.5 mm
2 long; generally growing below 2000 m. *P. occidentale* sp. nov.

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5 *Psidium occidentale* Landrum & C. Parra-O., sp. nov. Type: Ecuador. Esmeraldas: San Lorenzo
6 Canton, 10 km al suroeste de Lita, subiendo al sector El Cristal, 78°30' W, 00°48'N, 800 m, 10
7 Sep 1990, D. Rubio & C. Quelal 659 (holotype, QCNE; isotypes, ASU, MO).

8 *Psidium occidentale* differs from *P. pedicellatum* in having larger leaves [(4–) 6–20 cm
9 long]; peduncles often grouped together in bracteates shoots, forming a panicle-like
10 inflorescence; tears between calyx lobes usually 1–1.5 mm long; and generally growing below
11 2000 m.

12
13 TREE 10–30 m high, the trunk smooth, yellowish (ex Tipaz et al. and Ortiz), the young
14 growth strigose, short pubescent, or subglabrous; *hairs* yellowish brown to whitish, up to ca. 0.3
15 mm long; *young twigs* subglabrous to densely pubescent or strigose, drying dark to light reddish-
16 brown, the bark of older twigs becoming flaky, rough. LEAVES elliptic, obovate or
17 oblanceolate, (4–) 6–20 cm long, 2–7.5 cm wide, 1.6–2.9 times as long as wide, when young
18 moderately to sparsely pubescent or strigose (especially along veins below), or subglabrous, with
19 age glabrescent; *apex* acute, acuminate, or rounded; *base* acute to rounded, sometimes oblique;
20 *petiole* 3–6 mm long, 1–1.5 mm thick, strigose to glabrous, sometimes channeled; *venation*
21 brochidodromous, the midvein flat to slightly raised above (or sulcate above, perhaps upon
22 drying), prominent below, strigose to glabrous, the lateral veins 5–10 more or less prominent
23 pairs, leaving the midvein at an angle of ca. 45 degree, arching towards apex, the marginal vein
24 broadly arching between the laterals, 2–15 mm from the margin, the tertiary veins connecting the
25 larger veins in an irregular dendritic pattern; *blades* coriaceous to submembranous, drying
26 reddish brown (nearly black) to gray-green or light reddish brown. FLOWER BUDS pyriform,

1 4–7 mm long; *peduncles* 1–3 flowered, 10–35 mm long, 0.5–1 mm wide, glabrous to strigose,
2 borne in the leaf axils or at leafless nodes, sometimes aggregated on bracteate shoots in a
3 panicle-like inflorescence up to 6 cm long, the lateral arms of the dichasia up to ca. 10 mm long;
4 *bracteoles* ovate, 0.8–1 mm long, strigose, caducous at about anthesis. CALYX open in bud,
5 cup-like, with lobes broadly rounded and up to ca. 1 mm long before anthesis, tearing between
6 lobes 1–1.5 mm to staminal ring at anthesis; *petals* suborbicular, 3–5 mm long; *hypanthium*
7 obconic to campanulate, flaring outward at summit of ovary, 1–2 mm long from bracteoles to
8 summit of ovary; *disk* 4 mm across, the staminal ring often puberulent; *stamens* 130–220, 3–5
9 mm long; *anthers* up to ca. 0.5 mm long, eglandular; *style* ca. 5 mm long; *ovary* 3–4-locular;
10 *ovules* 20–32 per locule. FRUIT subglobose, 1–1.5 cm wide, turning purple (ex Clavijo); *seeds*
11 3–24 in fruits seen, 4–7 mm long, angular.

12
13 ÁRBOL 10-30 m de altura, con la corteza del tronco lisa, amarillenta (ex Tipaz et al., y
14 Ortiz), con los renuevos estrigosos, con pelos cortos o subglabros; *pelos* marrón-amarillentos a
15 blancuzcos, hasta ca. 0,3 mm de largo; *ramitas jóvenes* subglabras a densamente pubescentes o
16 estrigosas, rojizo-marrones claras a oscuras en seco, la corteza de las ramas viejas volviéndose
17 escamosa y rugosa. HOJAS elípticas, obovadas u oblanceoladas, (4–) 6–20 cm largo, 2–7,5 cm
18 ancho, 1,6–2,9 veces tan largas como anchas, cuando jóvenes modera a esparcidamente
19 pubescentes o estrigosas (especialmente a lo largo de las venas por el envés), o subglabras,
20 cuando senesceste glabrescentes; *ápice* agudo, acuminado o redondeado; *base* aguda a
21 redondeada, algunas veces oblicua, *peciolo* 3-6 mm de largo, 1–1,5 mm de grosor, estrigoso a
22 glabro, algunas veces acanalado; *venación* broquidódroma, la vena media plana a ligeramente
23 elevada por la haz (o sulcada por la haz, quizás por el secado), prominente por el envés, estrigosa
24 a glabra, las venas laterales de 5–10 pares más o menos prominentes, formando con la vena
25 media un ángulo de ca. 45 grados, arqueándose hacia el ápice, la vena marginal formando un
26 amplio arco entre las laterales y de 2–15 mm de la margen, las venas terciarias conectando las
27 venas más largas en un patrón dendrítico irregular; láminas coriáceas a submembranosas, rojizo-

1 marrones (casi negras) a verde-grisáceas o ligeramente rojizo-marrones cuando secas.
2 BOTONES FLORALES piriformes, 4–7 mm de largo, *pedúnculos* con 1–3 flores, 10–35 mm de
3 largo, 0,5–1 mm de diámetro, glabros a estrigosos, desarrollándose en las axilas de las hojas o en
4 nodos sin hojas, algunas veces agregados en racimos formando una inflorescencia similar a una
5 panícula hasta ca. 6 cm de largo, las ramas laterales del dicasio hasta ca. 10 mm de largo;
6 *bractéolas* ovadas, 0,8–1 mm de largo, estrigosas, caedizas cerca de la antesis. CÁLIZ abierto en
7 el botón, en forma de copa, con lóbulos anchamente redondeados hasta ca. 1 mm de largo antes
8 de la antesis, desgarrándose entre los lóbulos ca. 1–1,5 mm hasta el anillo estaminal en la antesis;
9 *pétalos* suborbiculares, 3–5 mm de largo; *hipanto* obcónico a campanulado, ensanchándose en la
10 porción superior del ovario, 1–2 mm de largo desde las bractéolas hasta la parte superior del
11 ovario; *disco* 4 mm de diámetro, el anillo estaminal a menudo puberulento; *estambres* 130–220,
12 3–5 mm de largo; *anteras* hasta ca. 0,5 mm de largo, sin glándulas; *estilo* ca. 5 mm de largo;
13 *ovario* 3–4-locular; óvulos 20–32 por lóculo. FRUTO subgloboso, 1–1,5 cm de ancho, de color
14 púrpura (ex Clavijo); *semillas* 3–24 en los frutos vistos, 4–7 mm de largo, angulares.

15

16 *Distribution.*— Known from wet forests along the Pacific lowland areas and submontane
17 forests in Colombia and Ecuador, at elevations of 325–2100 m.

18 *Phenology.*— Collected with flowers in January, February, June and September; collected
19 with fruits in April and July.

20 *Etymology.*— *Psidium occidentale* is one of the most western species of *Psidium* and
21 mainly occurs on the western slopes of the Andes.

22 **Additional specimens examined. COLOMBIA. NARIÑO:** Corregimiento Chucunéz,
23 Reserva Natural La Planada, 7 km al S de Ricaurte en el camino Tumaco-Pasto, sendero las
24 Cañadas, 1°10'N, 77°59'W, 1800–2100 m, 16–24 Jul 1995 (fr), *Barreto et al. 161* (MO); Mun.
25 Ricaurte, Cordillera Occidental, Reserva Natural La Planada, 1800 m, 8 Feb 1989 (buds),
26 *Beltrán 10* (ASU, PSO); Ricaurte, resguardo indígena Pialapí-Pueblo Viejo, Reserva Natural La
27 Planada, sendero natural El Tejón, 1700–1850 m, 19 Jul 2011 (fr), *Clavijo 1586* (COL, CAUP,

1 CUVC, HUA, PSO); La Planada, Salazar Finca 7 km above Ricaurte, 1°8'N, 77°58'W, 1750 m,
2 28 Nov 1981 (buds), *Gentry et al. 35097* (COL); Mun. Ricaurte, Cordillera Occidental, Reserva
3 Natural La Planada, 1800 m, 9-27 May 1988 (fr), *Restrepo 425* (PSO).

4 **ECUADOR. AZUAY:** Canton Cuenca, Parroquia Molleturo, San Lucas (campamento),
5 325–500 m, 25–27 Jan 1991 (old fl), *Ortiz 207* (ASU, QCNE). **CARCHI:** Canton Tulcan,
6 Parroquia Tobar Donoso, sector Sabalera, Reserva Indígena Awá, 78°24'W, 1°0'N, 650–1000 m,
7 19–28 Jun 1992 (buds, fl), *Tipaz et al. 1275* (ASU). **ESMERALDAS:** San Lorenzo, Parroquia Alto
8 Tambo, Sect. El Cristal, carretera de bosque secundario, 78°30'W, 0°50'N, 600 m, 13 Apr 1992
9 (fr), *Quelal et al. 443* (ASU, QCNE). **PICHINCHA:** Canton Quito, Parroquia Nanegal, Reserva
10 Maquipucuna, above Hacienda Esparragos, 78°38'W, 0°7'N, 1450 m, 10 Jan 1995 (fl), *Webster*
11 *& Castro 31112* (ASU).

12 *Conservation.* —*Psidium occidentale* is found over a wide geographic range in Ecuador
13 and southern Colombia. Seven collections come from reserves (five from Reserva Natural La
14 Planada in Colombia; one each from Reserva Maquipucuna and Reserva Indígena Awá in
15 Ecuador). We know little about the amount of disturbance in its habitat, which may be of
16 importance. We think the best IUCN classification is Least Concern (LC) for now, but we do
17 encourage further field studies.

18 There is a report (*Clavijo 1586* at COL) that fruits of this species are eaten by red howler
19 monkeys (*Allouatta seniculus*).

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3 secondary structures of ITS and ETS sequences. *Plant Syst. Evol.* 299: 713–729.

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Figure Captions

6

7 **FIG. 1.** *Psidium occidentale* Landrum & C. Parra-O. **A.** Flowering branch. **B.** Inflorescences
8 after anthesis. **C.** Flower buds on a dichasium. **D.** Flower after anthesis. **E.** Petal. **F.** Stamen. **G.**
9 Longitudinal and transversal section of ovary. **H.** Fruiting branch. **I.** Seeds. (A, drawn from
10 *Webster & Castro 31112*; B, D-G drawn from the isotype *Rubio & Quelal 659*; C, drawn from
11 *Tipaz et al. 1275*; H-I, drawn from *Quelal et al. 443*); all specimens at ASU.

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