

VASCONCELLEA JOSSEI (CARICACEAE): A NEW SPECIES OF HIGHLAND PAPAYA WITH EDIBLE FRUITS FROM THE ANDES OF ECUADOR

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Abstract. Based on previous molecular work, *Vasconcellea jossei*, a new species from the Andes of central western Ecuador, is formally described and illustrated, and its relationship to morphologically closely related species is discussed.

Keywords: Chimborazo, food resources, Neotropics

Resumen. Con base a un estudio molecular previo, *Vasconcellea jossei*, una nueva especie de los Andes al centro occidente de Ecuador, es formalmente descrita, se discute sus relaciones con las especies morfológicamente cercanas.

Palabras claves: Chimborazo, recursos alimenticios, neotrópicos

Vasconcellea A. St.-Hil. is a Neotropical genus in the Caricaceae, that comprises 23 to 26 species (including the new one presented here) and a [natural?] hybrid, *V. × heilbornii* (V.M. Badillo) V.M. Badillo, of shrubby to arborescent herbs commonly known as wild papayas. The genus is distributed from Mexico to Argentina and centered in Ecuador and Peru (Badillo, 2000; Peña et al., 2017; Tineo Flores et al., 2020). In the treatment of the Caricaceae for the Flora of Ecuador (Badillo, 1983), 10 species of *Vasconcellea* were recorded for the country. Subsequent field exploration led to the discovery of *Vasconcellea palandensis* (V.M. Badillo, Van den Eynden, & Van Damme) V.M. Badillo, an endemic to southeastern Ecuador (Van den Eynden, 2000; Badillo, 2000), and new records for the country for the mostly Colombian species, *V. goudotiana* Triana & Planch. (Peña et al., 2017) and *V. sphaerocarpa* (García Barr. & Hern. Cam.) V.M. Badillo. The latter was found in Cosanga, Napo, in northeastern Ecuador (*Jim McClarin s.n.*, GUAY). Molecular studies on *Vasconcellea* from northern Peru amazingly yielded five new species (Tineo Flores et al., 2020). In this paper, a new species of *Vasconcellea* from the central and southern Andes of Ecuador is formally presented, based on previous molecular work (Peña et al., 2017).

Vasconcellea jossei Cornejo, *sp. nov.*

TYPE: ECUADOR. Chimborazo: Reserva El Corazón, 2°03'S, 78°54'W, 2300 m, 23 March 2024 (fl, fr), *X. Cornejo, J. Josse, A. M. Josse, S. Noroña, & J. P. Noroña 10181* (Holotype: GUAY; Isotype: QCA). Fig. 1–2.

The new species of *Vasconcellea* is similar to *V. cundinamarcensis* V.M. Badillo, but differs by having leaf blades apparently glabrous with the naked eye, with abundant short, hyaline, glandular trichomes, ovoid to napiform fruit, and a verruculose epicarp, that is purple or burgundy to dark brown at maturity (versus leaf blades that are tomentose to tomentulose abaxially, elliptic-obovoid to obovoid fruit, and a smooth epicarp, that is yellow at maturity).

Arborescent *herb*, monocaule or few-branched, to 8 m tall, dioecious; bark light brown, covered with prominent petiolar scars; stipules present at the distal end of the stem, leaf-like, subpersistent, with hyaline, glandular trichomes. *Latex* milky white. *Leaves* chartaceous, spirally spreading, crowded at the top of the stem, simple-palmate, 5- to 7-lobes, deeply cut; petioles up to 100 cm long, somewhat compressed adaxially, hollow in upper leaves, light green; blades broadly ovate in outline, 30–40 × 35–50 cm, dark green, hemibullate, glossy and glabrous throughout, petiolar insertion with a glandular field and several narrow, short, conical-muricate projections, 1–2 mm tall, radial main veins at center of blade often pinkish, impressed to prominent throughout, and scattered, erect, multiseriate glandular trichomes along all veins adaxially; pale green, opaque, appears glabrous to the naked eye, but with abundant short, hyaline, glandular trichomes on epidermal leafy tissue; primary, secondary and tertiary veins prominent, veins of fourth and fifth order impressed, all veins apparently glabrous abaxially; radially arranged basal and lateral lobes 20–32 × 4–7 cm, each with 2 triangular to lanceolate secondary lobes on upper side, central lobe oblong-lanceolate, 28–43 × 4–7 cm, apex acuminate, with 2 pairs of opposite to subopposite lateral lobes, that are lanceolate to triangular, decreasing in size toward the apex; apex acute to acuminate. *Pistillate inflorescences* axillary, racemose, few-flowered, to 9 cm long; peduncle 10–35 × 3–4 mm, adaxially compressed; pedicels ca. 5 mm long, with a few small bracts ca. 1 mm long. *Pistillate flowers* 5-merous; sepals greenish, triangular, 3–4 × 2–3 mm; petals light green, purplish at base, mostly free, ligulate, ca. 20 × 3–4 mm, apex obtuse, reflexed, base laterally connate ca. 3 mm. *Ovary* superior, 5-carpelar, 5-locular, 5-angular, ca. 15–18 × 7–8 mm, attenuate toward the apex; numerous anatropous ovules, parietal placentation; style 2–3 mm long; stigmas 5, linear-digitate, 5–7 mm long, inconspicuously forked apically. *Male inflorescences* and staminate flowers unknown. *Fruit* a berry, ovoid to napiform, 80–95 × 50–70 mm,

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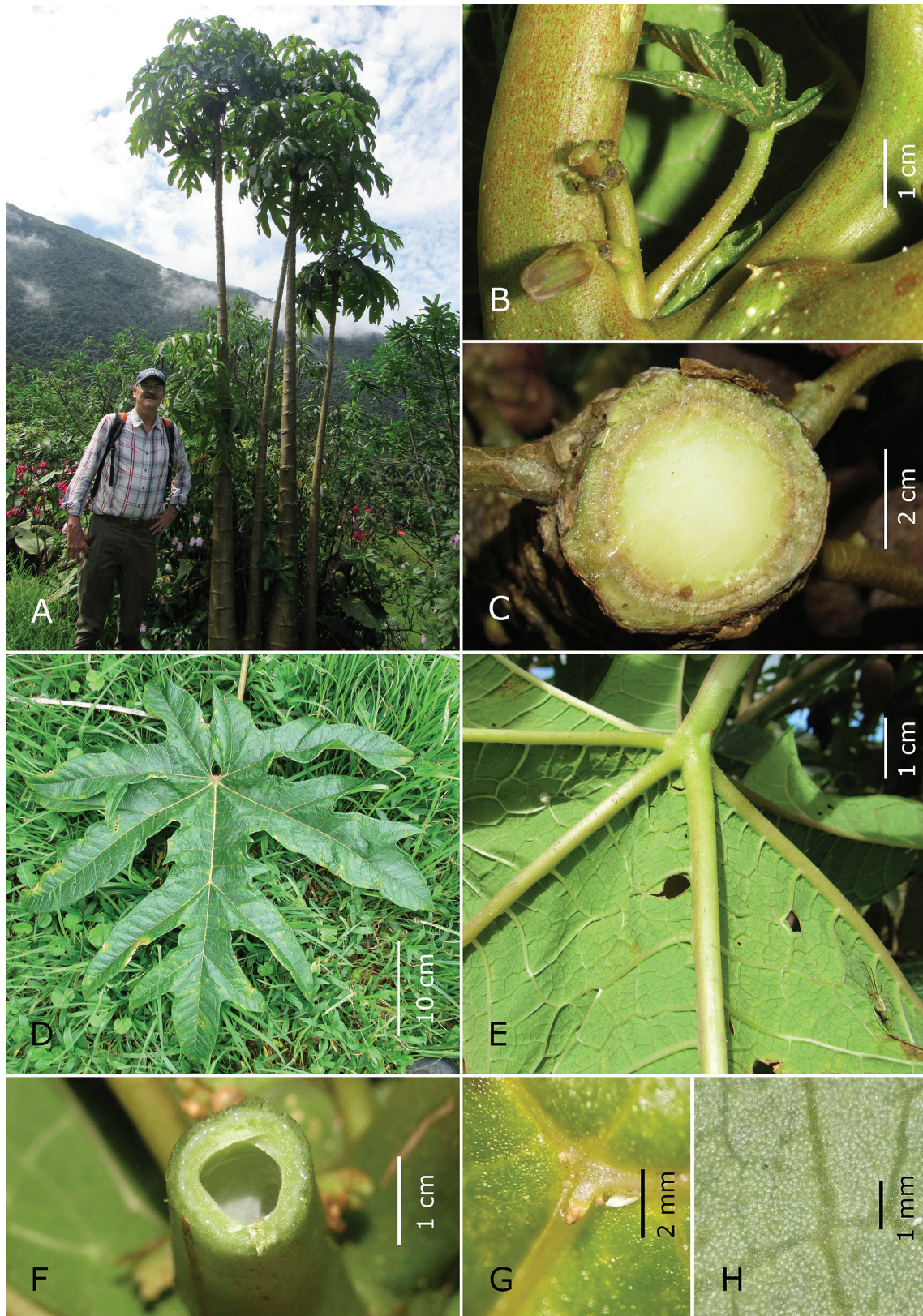


FIGURE 1. *Vasconcellea jossei* Cornejo. **A**, arborescent habit and co-collector, Jorge Josse; **B**, leafy stipule, young pistillate inflorescence, and petiole, lateral view; **C**, stem, cross section; **D**, mature leaf blade, adaxial view; **E**, close up of mature leaf blade with radial main veins, reticulate tertiary veins, and distal part of petiole, abaxial view; **F**, hollow petiole; **G**, multiseriate, erect, glandular trichome on leaf blade surface, adaxial view; **H**, close up of leaf blade with abundant short, hyaline, glandular trichomes, abaxial view. A–E, are based on the holotype. F–H, are based on *Cornejo et al. 10180*. Photographs by X. Cornejo.

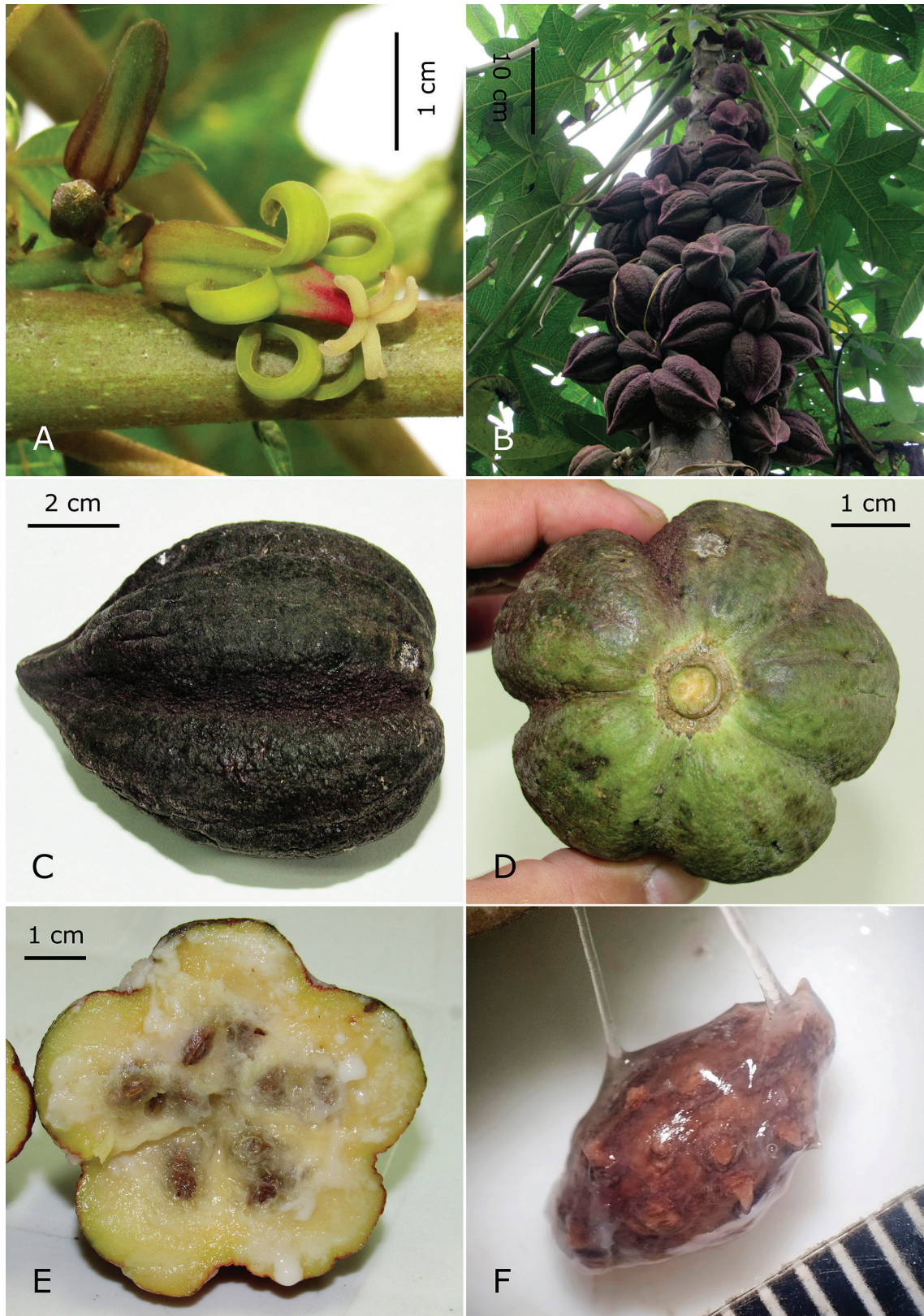


FIGURE 2. *Vasconcellea jossei* Cornejo. **A**, pistillate inflorescence and flower at anthesis; **B**, pistillate monocaulis individual bearing fruit, lateral abaxial view; **C**, fruit near maturity, lateral view; **D**, 5-sulcate fruit near maturity and central circular pedicel scar, basal view; **E**, fruit at maturity, cross section; **F**, removed fresh seed embedded in a mucilaginous, hyaline sarcotesta, note the conical tuberculate protuberances. A, E, F, are based on the type (Cornejo *et al.* 10181). B–D, are based on Cornejo *et al.* 10180. Photographs A–H by X. Cornejo.

longitudinally 5-sulcate, purple-red or burgundy to dark brown at maturity, base broadly obtuse to emarginate, apex acuminate; exocarp verruculose, glabrous; mesocarp 5–10 mm, yellowish at maturity; pedicel of fruit 10–16 × 6–9 mm. Seeds light brown, 6–8 × 3–4 mm, narrowly ovoid to ellipsoidal-ovoid, sclerotesta with 1 to 2 lateral longitudinal ridge(s) and conical to short-truncate protuberances, each seed surrounded by a mucilaginous, hyaline sarcotesta, seeds arranged in 5 groups. Central cavity absent. The sugar content (tested twice on fruit from two collections, type and paratype) is 10° Brix.

Additional specimens examined: ECUADOR. Chimborazo: Jalubi, 2°03'S, 78°55'W, 2250 m, 23 March 2024 (fl, fr), X. Cornejo, J. Josse, A. M. Josse, S. Noroña, & J. P. Noroña 10180 (GUAY, QCA).

Vasconcellea jossei resembles *V. cundinamarcensis*, another Andean highland papaya with edible fruits that is distributed from Panama to Peru, but the former species differs from the latter by the characters provided in the diagnosis. In a previous molecular study (Peña et al., 2017), the subgroup B4 represented by a species of *Vasconcellea* that is “clearly defined” and “could not be placed in any of the known species” (see also field images of fruit and leaf blade in Peña et al., 2017: 101, “Anexo” 3b, d, respectively), forms a sister clade to that of subgroup B5, which is *V. cundinamarcensis*. The *Vasconcellea* sp. of subgroup B4 (sensu Peña et al., 2017), that is molecularly related to *V. cundinamarcensis*, is formally presented and named here *V. jossei*.

Etymology: The epithet honors Jorge Josse, a nature lover and agronomic engineer with vast experience in

papaya cultivation and other crops in Ecuador. Josse provided logistic support and was a field companion and co-collector on six trips between 2020 and 2024 to the type locality and areas nearby, that led to the discovery of this new *Vasconcellea* and several other taxonomic novelties.

Common names: Jigacho is the indigenous name (Marcos Sinoluisa, pers. comm.).

Uses: The mature and sweet raw mesocarp is edible; the epicarp is boiled in water and mixed with cinnamon and other ingredients for preparing tasty desserts.

Habitat and distribution: This species is restricted to the central and southern Andes of Ecuador, between 2000 and 2500 m, in the provinces of Chimborazo, Azuay, and Cañar (Peña et al., 2017).

Field observations: *Vasconcellea jossei* is often monocaule; however, it is said that the species can produce one to few lateral branches if the stem is cut off. A monocaule pistillate individual can produce 20 to 50 fruits. *Vasconcellea jossei* can be vegetatively propagated by cuttings (Marcos Sinoluisa, pers. comm. to XC), and it is sometimes planted along trails. Solitary individuals can be floristic elements in living fences. If the milky white latex comes in contact with skin, it may produce a burning sensation and irritation.

Phenology: During six field trips to the type locality and environs between 2020 and 2024, flowers were observed from January to July, and fruits from March to August.

Conservation status: At present, due to the scarce information, the new species is designated as DD (data deficient; IUCN 2022).

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