



Eugenia coetzalensis (Myrtaceae), a new species from central Veracruz, Mexico

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Abstract

This article describes and illustrates the new species *Eugenia coetzalensis*, considered as endemic to central Veracruz and northern Oaxaca. *E. coetzalensis* is part of the tree stratum of the subdeciduous tropical forest, growing on Orthic Luvisol with Lithosol soils, at altitudes ranging from 282 to 507 m elev. This taxon shows similarities with *Eugenia praeterita*, *Eugenia naraveana* and *Eugenia chahalana*; however, there are clear morphological differences that separate them; such as bark color, in leaflet and acumen size, number of secondary veins, racemose inflorescences, and flowers per axilla, as well as the shape and size of its fruits.

Key words: Oaxaca, Endemism, Conservation, Taxonomy

Resumen

Este artículo describe e ilustra la nueva especie *Eugenia coetzalensis*, y se considera a este nuevo taxón como endémico del centro de Veracruz y del norte de Oaxaca. *E. coetzalensis* forma parte del estrato arbóreo del bosque tropical subperennifolio, creciendo sobre suelos luvisol órtico con litosol, en altitudes que van de los 282 a los 507 msnm. Este taxón muestra similitudes con *E. praeterita*, *E. naraveana* y *E. chahalana*, sin embargo, se muestran claras diferencias morfológicas que las separan de ellas como el color de la corteza, tamaño de los folíolos y el acumen, número de venas secundarias, inflorescencias y flores por axila, y en la forma y tamaño de los frutos.

Palabras clave: Oaxaca, especie endémica, Conservación, Taxonomía

Introduction

In Mexico, the family Myrtaceae is represented by 10 genera with approximately 109 species (Sánchez-Chávez & Zamudio 2016). The genus *Eugenia* Linnaeus (1753: 470) is one of the most diverse taxa worldwide, with approximately 1000 species in the American continent, distributed from Florida and the Caribbean to Argentina (Barrie 2005; Sánchez-Chávez & Zamudio 2016, Mazine *et al.* 2017). In Veracruz, it is the best represented genus, with 25 species (Sánchez-Vindas 1990). A newly described species (Cházaro-Basañez & Francisco-Gutiérrez 2016) plus the species described herein make a total of 27 species, nine of which are endemic to Veracruz and six to Mexico. A total of 35 new species have been added to the Mesoamerican Flora, making a total of 140 species approximately (Barrie 2005, Barrie *et al.* 2016, Barrie 2017).

The species in the genus *Eugenia* are characterized by flowers either solitary or arranged in clusters, fascicles or glomeruli; calyx usually open in the floral bud with four well-differentiated sepals; ovary with two locules; fruits typically with one to two seeds, and embryo eugenoid, with cotyledons fused into a single mass and with no clear differentiation of the hypocotyl (Sánchez-Vindas 1990).

Material and methods

Specimens of *Eugenia* collected in Mexico and deposited in the largest herbaria of Mexico (CHAPA, ENCB, MEXU and XAL; acronyms according to Thiers 2018) were reviewed and compared with the descriptions of 41 species of *Eugenia* registered for Veracruz and the Mesoamerican Flora (Sánchez-Vindas 1990, Barrie 2017) and with specimens collected in central Veracruz and Oaxaca. Along this examination we have spotted a species from Veracruz which we consider as undescribed and here is proposed as new.

Taxonomy

Eugenia coetzalensis Durán-Esp. & Cast.-Campos, *sp. nov.* (Figures 1 and 2, Table 1).

TABLE 1. Comparison of morphological features of *E. coetzalensis* with related species (*E. naraveana*, *E. praeterita* and *E. chahalana*).

Traits	<i>E. coetzalensis</i>	<i>E. naraveana</i>	<i>E. praeterita</i>	<i>E. chahalana</i>
Outer bark,	grayish-brown	yellowish to pink	reddish brown	reddish
Leaf length and width	2.3–6 × 1.8–3.3 cm	5.7–11.6 × 2.2–5.5 cm	10–14 × 4–6 cm	2.7–5 × 1–2.1 cm
Leaf apex and length	caudate, 0.3–1.4 cm	sharp-pointed to obtuse, rarely shortly acuminate	acuminate	caudate, 1–2 cm
Number of secondary veins	11–16 per side	7–13 per side	8–10 per side	6 per side
Indumentum of the upper surface and the underside	adpressed-strigose when newly formed, glabrescent when mature	glabrous	upper surface nearly glabrous, underside persistently tomentulose	glabrous or nearly glabrous
Inflorescence and number of flowers	racemose-axillary, 1 per axil, 2 per node, 2–4 flowers	fasciculate-axillary, 1–2 per axil	racemose, 1 or 2 overlaid, 2–5 pairs per inflorescence	racemose or solitary flowers, axillary, 4–6 flowers
Fruit shape, indumentum and size	globose, faintly strigose externally, granulose, 1.3 × 2 cm	subglobose, 1.1–4.3 × 0.9–3.4 cm	unknown	ellipsoidal or obovoid, glabrous or with scant hairs near the apex, 1–2.2 × 0.6–1.2 cm
Distribution and elevation (m)	Veracruz and Oaxaca (282–507)	Endemic to Veracruz (2100–2600)	Endemic to Veracruz	Endemic to Guatemala (0–300)

Type:—MEXICO. Veracruz: Tlaltetela, Coetzala, “Monterrey” ravine, 19° 18' N, –96° 42' O, 248–450 m, 21 June 2017, *M. López-Ortega* 3 (holotype XAL!; isotypes ENCB!, F!, MEXU!, MO!, NY!).

Eugenia coetzalensis shows similarities with *E. praeterita* McVaugh (McVaugh, 1963), *E. naraveana* Cházaro & Franc.-Gut. (Cházaro-Basañez & Franco-Gutiérrez, 2016) and *E. chahalana* Lundell (Lundell, 1968). However, *E. coetzalensis* differs by an outer bark that is grayish-brown and elliptical; leaves oblong-ovate, lanceolate or sometimes obovate, measuring 2.3–6 × 1.8–3.3 cm, with caudate apex, acumen 0.3–1.4 cm long, with 11–16 pairs of secondary veins per side, with adpressed-strigose upper surface and underside, glabrescent when mature; inflorescences racemose, axillary, 1 per axil, with 2–4 globose flowers and fruits, faintly strigose externally, granulose, 1.3–2 cm in diameter (see additional details in Table 1).

Tree, 4–18 m tall, 5–95 cm d.b.h.; bark brown-grayish in the trunk, longitudinally fissured, not exfoliating; inner bark yellowish, branches greenish-gray, fissured, glabrous; branchlets cylindrical, greenish-gray, with light-gray lenticels, glabrous (figure 1B). *Leaves* opposite, perennial, glossy green in the upper surface, pale-green on the underside, elliptical, oblong-ovate, lanceolate or sometimes obovate, 2.3–6 × 1.8–3.3 cm, coriaceous leaflets, with adpressed-strigose upper surface and underside, glabrescent when mature, with visible, convex and dark glands scattered in the upper surface, and with visible concave brown glands scattered on the underside, margin entire, revolute, caudate apex, acumen 0.3–1.4 cm long, acute to cuneiform at the base, glabrescent midrib, impressed in the upper surface, prominent in the underside, glabrescent, camptodrome secondary nervation, impressed in the upper surface, prominent on the underside, lateral veins 11–16 at each side, including some intermediate veins, rising at an angle of 40°, marginal vein arched between lateral veins, at 0.5–1.8 mm from the margin, as prominent as lateral veins; petiole straight, grooved in the upper surface, 6–8 × 0.6–1 mm, adpressed-strigose to glabrescent. *Inflorescence* racemose, 1 per axil, sometimes with solitary flowers, central axis 3–8.4 × 0.8–1 mm, adpressed-strigose, producing 2–4 flowers in opposite pairs, stalk of 0.4–2 mm; bracts ovate, concave, 0.6–0.8 × 0.4–0.6 mm, faintly adpressed-strigose externally; 2 bracteoles, lanceolate, 1.2–1.4 × 0.1–0.3 mm, adpressed-strigose externally; pedicels 8–17 × 0.4–0.5 mm, adpressed-strigose; hypanthium campanulate, 1.6–2.6 mm long, adpressed-strigose; calyx with 4 lobes in two unequal pairs, yellow-greenish, ovate, with rounded to acute apex, 1.4–3 × 1.2–2.2 mm, concave, adpressed-strigose externally, glabrescent, with strigose margins, internally strigose at the base; glands convex, brown, scattered externally; petals 4, white, ovate-elliptic, 4.8–7 × 2.4–3.4 mm, adpressed-strigose externally, glabrescent, with strigose margins, glabrous internally, with glands convex, brown, scattered externally; stamens 60–100, 2.6–4.2 × 0.1 mm, glabrous; disk square, 2 × 2 mm, strigose; anthers 0.5–0.6 × 0.3–0.5 mm; style 3.4–5.6 mm long, glabrous (figure 1A); ovary bilocular, with 8 ovules per locule. *Fruit* drupe, reddish-yellow, black when ripe, globose, 1.3–2 cm long and wide, faintly strigose externally, granular, crowned at the apex with the calyx lobes; stalk 9.6–1.6 cm long, adpressed-strigose to glabrescent (figure 1C); seed 1, globose, 1 × 1 cm in diameter (figure 1D).

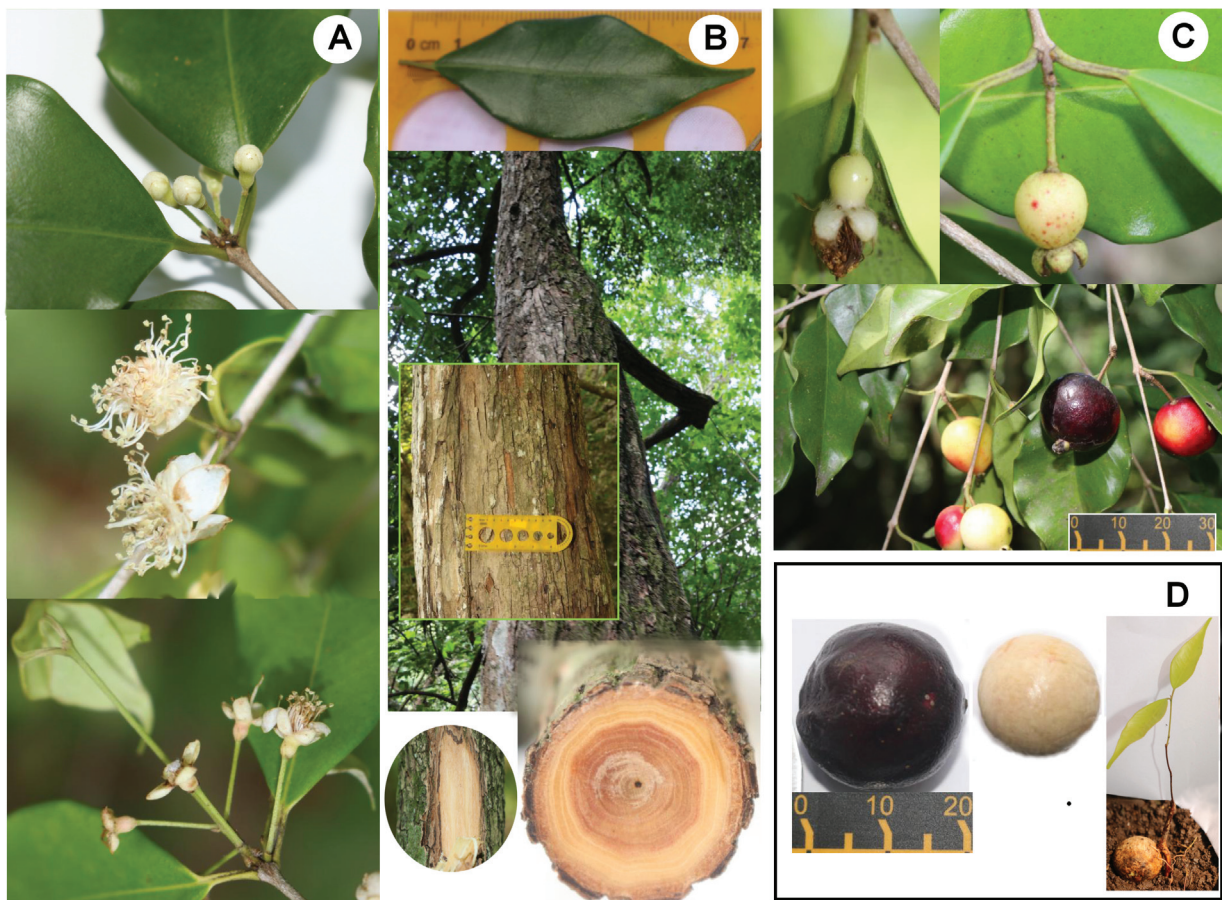


FIGURE 1. *Eugenia coetzalensis*: A. flowers and flower buds, B. trunk, general view and cross-section of the tree, leaf size, C. fruits in various maturity stages, D. ripe fruit and a seed. Photographs Maurilio López Ortega.

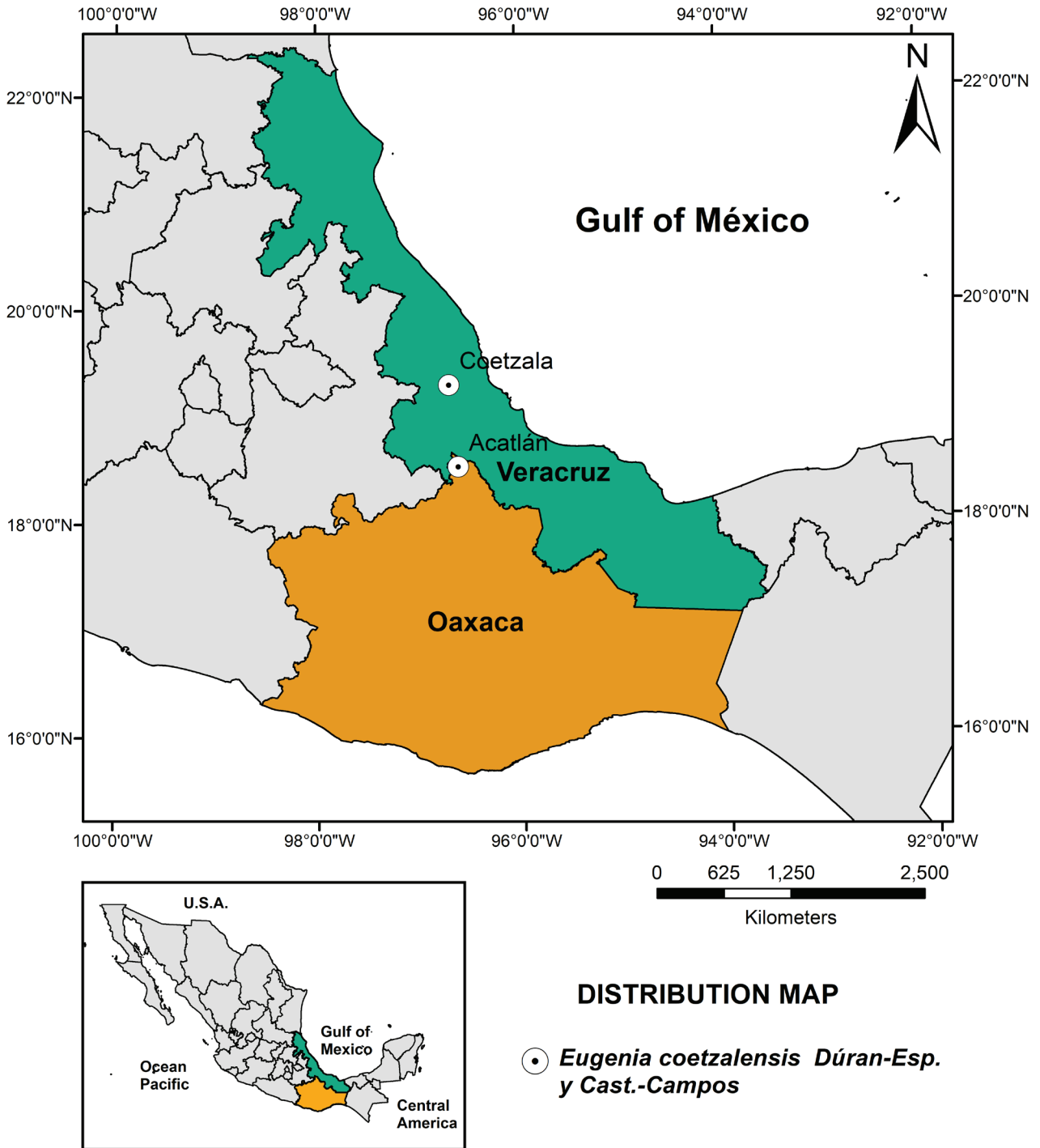


FIGURE 2. *Eugenia coetzalensis*: Distribution map.

Phenology:—Flowers from May to June and fructifies from July to November.

Seed germination:—Seeds enter dormancy and seedling emergence was recorded after 12 months (figure 1D).

Common names:—Locally known as “Brasilillo” in Veracruz.

Etymology:—The name of this new species refers to the town of Coetzala, Veracruz, a locality where it grows and from which the type specimen is reported.

Paratypes:—MEXICO, Tlaltetela, Coetzala, approximately 2 km southeast of Coetzala, at the upper part of the Monterrey ravine, *G. Castillo C., O.M. Palacios W. and J. Ornelas* 29196 (CAS!, CHAPA!, ENCB!, F!, GH!, IEB!, MEXU!, MO!, XAL!); Tlaltetela, Coetzala, “Monterrey” ravine, *M. López O.1* (MO, XAL!), 2, 4 (XAL!). Oaxaca, municipality Acatlán de Pérez Figueroa, district of Tuxtepec, in ejido Selva 2, *E. Guízar N. & J.C. Echeverría* 5688 (MEXU!, XAL!).

Geographic distribution & ecology:—After several collection field trips, specimens were found in the locality of Coetzala and Acatlan in the states of Veracruz and Oaxaca; the species is probably endemic to this region of Mexico (figure 2). *Eugenia coetzalensis* is a species found in the tree stratum of the subdeciduous tropical forest in the broad sense Miranda & Hernández (1963), growing on Orthic Luvisol with Lithosol soils from 248 to 507 m elev., mainly in slopes of the “Monterrey” ravine in the Tlaltetela region, more frequently in the upper areas. It is also found in Acatlán de Pérez Figueroa, district of Tuxtepec (Oaxaca). It is locally known as “Brasilillo” in Veracruz, being valued for the hardness of its wood. Local inhabitants mentioned that this tree species is found in this area exclusively. The local climate is Aw1”(w) (i) g (García 2004), which is warm-subhumid with summer rainfall and a dry season from November to March (Tlaltetela region).

Conservation:—*Eugenia coetzalensis* is a plant species with restricted distribution in central Veracruz and northern Oaxaca, in the district of Tuxtepec, adjacent to Veracruz to the east in the Papaloapan river zone, in areas that are being heavily disturbed and threatened by humans. Therefore, preserving these sites is of the utmost importance. Since this species is not abundant in the areas mentioned, surveys are needed to determine the population size and status of this species. Subsequently, a case can be made for inclusion in the endangered species category by the International Union for Conservation of Nature (IUCN) under the appropriate category.

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