



A new species of *Amyris* (Rutaceae, Toddalioideae, Amyridinae) from Mexico

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Abstract

Amyris jorgemeavei from the state of Oaxaca, Mexico, is described and illustrated. The new taxon is compared with *A. carterae* and *A. madrensis*, species with similar morphological characteristics. It is however easily differentiated from these two by having glabrous leaves and floral parts, a lobed nectar disc, and it is known only from southwestern Mexico. A comparative table and a distribution map of the three species are included.

Resumen

Se describe e ilustra *Amyris jorgemeavei*, especie procedente del estado de Oaxaca, México. El nuevo taxon se compara con *A. carterae* y *A. madrensis*, los cuales presentan características morfológicas similares. Se diferencia fácilmente de las otras dos especies por tener hojas y partes florales glabras, un disco nectarífero lobado y se conoce sólo del suroeste de México. Se incluye un cuadro comparativo así como un mapa de distribución de las tres especies.

Key words: Floristic, Nizanda, Oaxaca, Sapindales, Taxonomy

Introduction

Rutaceae comprise ca. 160 genera and between 1600 and 1900 species (Chase *et al.* 1999, Groppo *et al.* 2008). They are a cosmopolitan family of mostly tropical and subtropical distribution (Groppo *et al.* 2008, Kubitzki *et al.* 2011). According to Engler (1931), Rutaceae include seven subfamilies. One of them, Toddalioideae, was divided into six subtribes: Phellodendrinae, Sohneyiinae, Pteleinae, Oriciinae, Toddaliinae, and Amyridinae. The latter includes *Teclea* Delile (1843: 90), now recognized as a synonym of *Vepris* Jussieu (1825: 509) (Mziray 1992), *Stauranthus* Liebmann (1854: 91), and *Amyris* Browne (1756: 208).

Amyris is a neotropical genus with ca. 40 species distributed from the southern United States, Mexico, the West Indies, Central America to southern Venezuela and Peru (Gereau 1991, Gómez-Laurito & Jiménez 2003, Rebman & Chiang 2005).

The members of *Amyris* are trees or shrubs with multifoliolate or rarely unifoliolate leaves, lateral or terminal cymose inflorescences, white petals covered by punctate glands, stamens twice the number of petals, glands present on the connective of anthers, and baccate fruits with abundant glands on the surface (Gereau 1991, Rebman & Chiang 2005).

For Mexico, Wilson (1911) recorded the presence of six species of the genus while Standley (1923) reported eight. Villaseñor (2004) mentioned the presence of 15 taxa of *Amyris* for the country, and according to Chiang Cabrera & Ramos (2011) in Oaxaca there are only three species: *A. monophylla* Brandegees (1909: 381), *A. rekoii* Blake (1918: 56), and *A. sylvatica* Jacquin (1763: 107).

As part of a taxonomic revision of *Amyris* for Mexico, topic of the Master thesis of the first author, and as a result of a detailed review of herbarium material of the genus, we encountered some specimens from the Isthmus of Tehuantepec, in the state of Oaxaca, whose suite of characteristics does not match that of any of the described species of the genus, and we propose a new species here.

Taxonomy

Amyris jorgemeavei Hern.-Barón, Espejo, Pérez-García, Cerros & López-Ferr., *spec. nov.* (Figs. 1A, D, G, J, 2)

Amyris jorgemeavei is closely related to *A. carterae* and *A. madrensis* from which it differs by having glabrous leaves, obovate to orbicular leaflets with obcordate to cleft apex and rounded base, glabrous calyx, petals, and ovary, and a lobed nectar disc.

Type:—MEXICO. Oaxaca: distrito de Juchitán, municipio de Asunción Ixtaltepec, cerro de la Piedra Azul, 1 km en línea recta al NE (32°) de Nizanda, sobre la vereda ecoturística, 200 m, 16° 39' 53" N, 95° 0' 26" W, 20 June 2015, *E.A. Pérez-García 2615* & *G. Cervantes* (holotype UAMIZ!, isotypes FCME!, HUMO!, IEB!, MEXU!).

Tree to 6 m high, deciduous, with smooth, light-colored bark, glabrous except for petioles and the young portions of the inflorescence that have simple and short trichomes. Leaves opposite, imparipinnate, with 2–3 pairs of leaflets; petiole 5–10 mm long, green, terete, pubescent and densely covered by yellowish punctate glands; lateral petiolules 2–4 mm long, the terminal one 0.2–0.3 mm long; leaflets 5–7, green, darker beneath, 4.5–12 mm long, 4.2–19 mm wide, obovate to orbicular, crenate, obcordate to cleft at the apex, rounded to slightly cordate at the base, glabrous, densely and conspicuously covered by punctate glands. Inflorescences axillary thyrses, 2.3–4.5 cm long, with up to ten primary branches 0.7–1.2 cm long, glabrous, densely covered by yellowish-brown punctate glands; peduncle 1.4–2 cm long; inflorescence bracts light brown, ca. 0.5 mm long, ovate-triangular, acute to acuminate, glabrescent; pedicels up to 1 mm long; flowers glabrous, tetramerous; sepals connate at the base, greenish-yellow, calyx lobes 0.5–0.8 mm long, 0.2–0.3 mm wide, deltoid to triangular; petals free, white, 2.4–3 mm long, 1–1.6 mm wide, obovate to narrowly obovate, reflexed; stamens 8, in two unequal series, inserted below the nectar disc, the filaments white, 1–2.8 mm long, the anthers ovate, 0.35–0.4 mm long, 0.31–0.45 mm wide; nectar disc orange, lobed; ovary yellowish, ovate, ca. 0.48 mm long, ca. 0.41 mm diameter, glabrous, the style ca. 0.1 mm long, cylindrical-truncate, the stigmatic surface granulose. Fruit and seeds not seen.

Etymology:—The specific epithet honors Jorge Arturo Meave del Castillo, Mexican ecologist who has made significant contributions to the knowledge of the flora and vegetation of some regions of Oaxaca.

Distribution and Habitat:—*Amyris jorgemeavei* is known only from the municipalities of Asunción Ixtaltepec and Juchitán de Zaragoza in the state of Oaxaca. The predominant vegetation in the area is tropical deciduous forest (Pérez-García *et al.* 2001). The trees are rare and usually go unnoticed although they are easily recognizable by the unique odor of the leaves.

Amyris jorgemeavei grows on calcareous rocky soil at an elevation of 65–300 m. The new taxon is sympatric with *A. elemifera* Linnaeus (1759: 1000), a name not included by Chiang Cabrera & Ramos (2011), but the latter is more widely distributed in the region and occurs in other vegetation and soil types (Pérez-García *et al.* 2010).

Additional specimens examined (paratypes):—MEXICO. Oaxaca: distrito de Juchitán, municipio de Asunción Ixtaltepec, cerro de la Piedra Azul, a 1 km en línea recta al NE (32°) de Nizanda, 16° 39' 53" N, 95° 0' 26" W, 200 m, 17 July 2000, *E.A. Pérez-García 1913* (FCME); municipio de Juchitán de Zaragoza, cerro el Merodio, la Ventosa, 16° 34' 00" N, 94° 55' 40" W, 65 m, without date, *G. Martínez Guerra* & *G. Pérez Báez 15* (MEXU).

Comments:—The new species may be confused with *Amyris carterae* Rebman & Chiang (2005: 350) and with *A. madrensis* Watson (1890: 144). The three taxa have opposite leaves and share similarities in the number of leaflets, in the length of the foliar rachis, and in the number of floral parts. *Amyris jorgemeavei* is distinguished from the other two, however, by the presence of glabrous leaves with obovate symmetrical leaflets, glabrous flowers, and a lobed nectar disc. The three species differ in geographic range and elevational interval (Table 1, Fig. 2). *Amyris jorgemeavei* flowers in June and July. Apparently the production of flowers is synchronous and occurs for a relatively short period. The plants of the new taxon are used in the region to make posts and fences and are known by the common names *giichi* or *dxinya*, in zapotec.

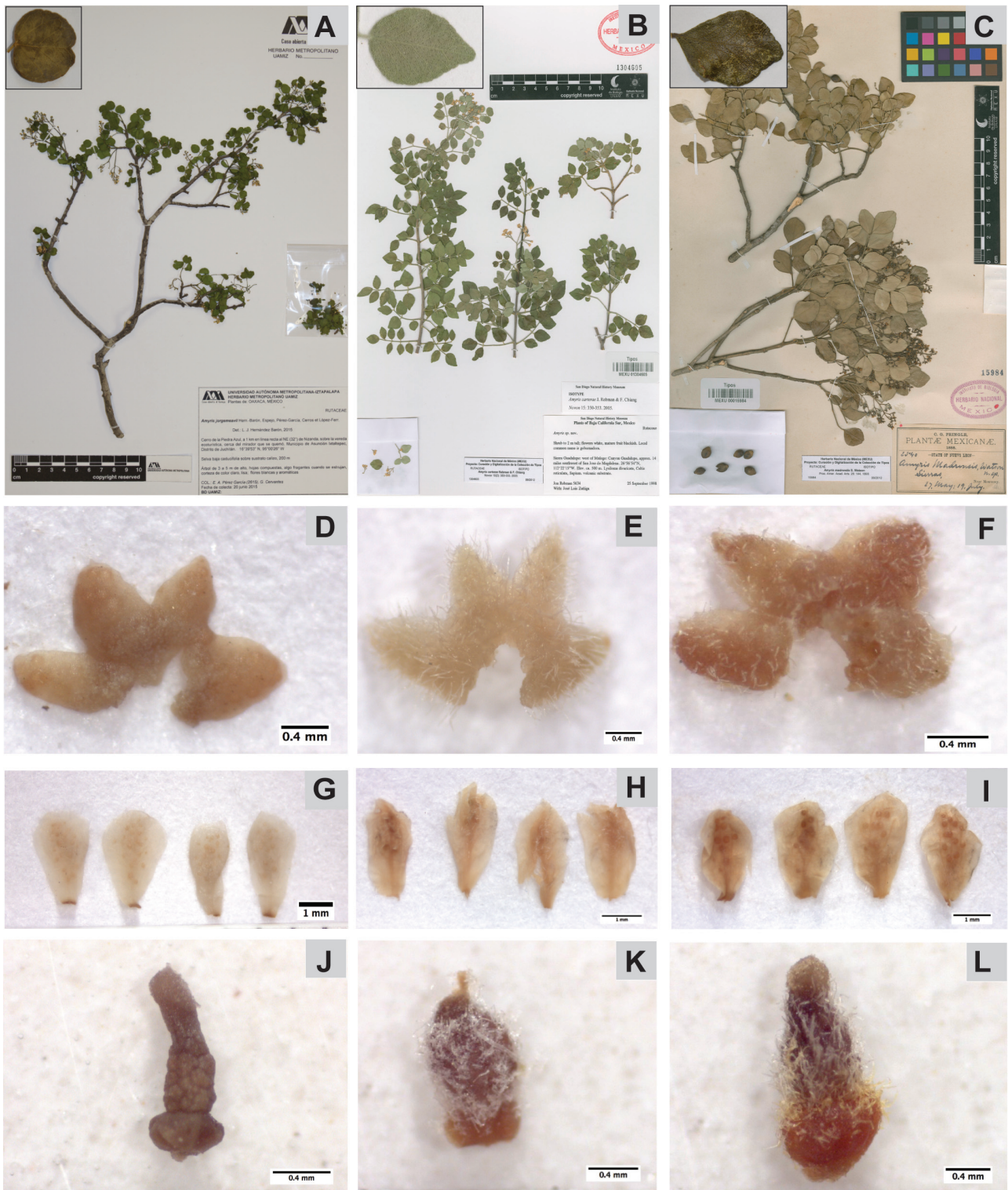


FIGURE 1. A) herbarium specimen of *Amyris jorgemeavei*; B) herbarium specimen of *A. carterae*; C) herbarium specimen of *A. madrensis*; D) glabrous sepals of *A. jorgemeavei*; E) pubescent sepals of *A. carterae*; F) pubescent sepals of *A. madrensis*; G) glabrous petals of *A. jorgemeavei*; H) pubescent petals in the apical-abaxial portion of *A. carterae*; I) glabrous petals of *A. madrensis*; J) glabrous ovary of *A. jorgemeavei*; K) pubescent ovary of *A. carterae*; L) pubescent ovary of *A. madrensis*. Voucher specimens: *A. jorgemeavei*: Pérez-García 2615 & Cervantes; *A. carterae*: Rebman 5634; *A. madrensis*: Pringle 2540, dissected flowers: Martínez & Martínez 476.

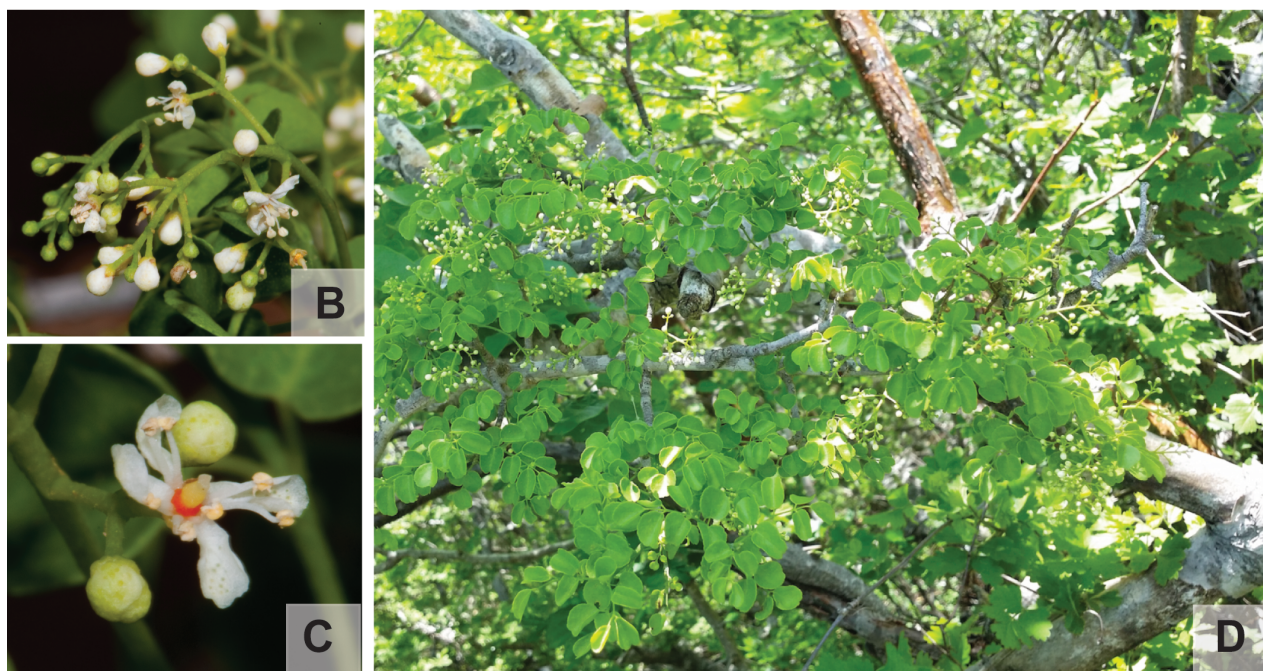
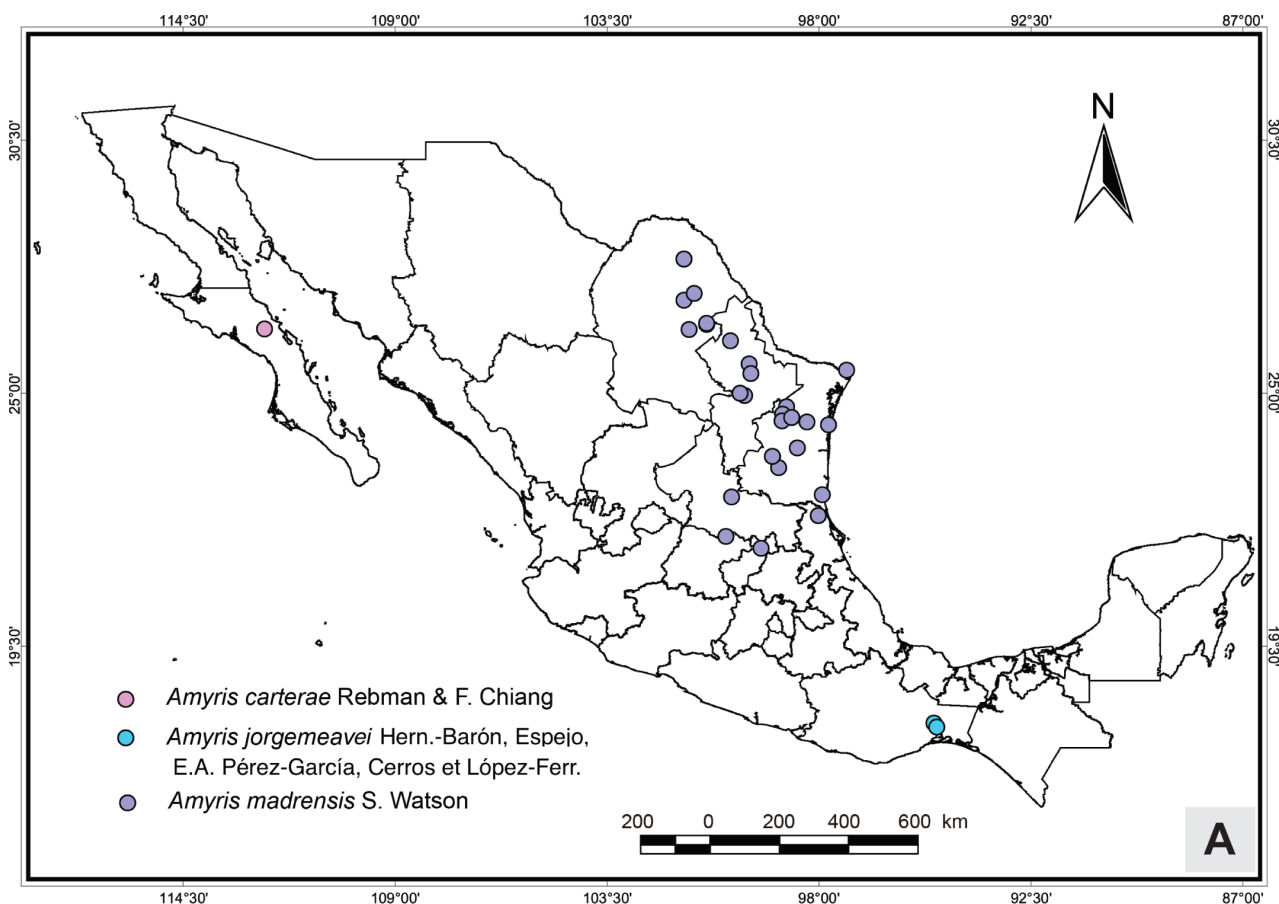


FIGURE 2. A) Distribution map of *Amyris carterae*, *A. jorgemeavei* and *A. madrensis*; B) inflorescence and axillary thyrse of *A. jorgemeavei*; C) details of flower of *A. jorgemeavei*; D) tree of *A. jorgemeavei* in cerro de la Piedra Azul. Photos by E.A. Pérez-García.

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TABLE 1. Comparative characters of *Amyris jorgemeavei*, *A. carterae* and *A. madrensis*

	<i>Amyris jorgemeavei</i>	<i>Amyris carterae</i>	<i>Amyris madrensis</i>
Petiole	glabrescent	pubescent	pubescent
Leaflets	oblate to orbicular, symmetrical, obcordate to cleft at apex, rounded to slightly cordate at base	ovate to orbicular, symmetrical, rounded at apex, obtuse at base	ovate to widely ovate, asymmetric, emarginate to rounded at apex, cuneate to obtuse at base
Sepals & petals	glabrous	pubescent	pubescent
Ovary	0.48 × 0.41 mm, glabrous	0.66 × 0.63 mm, pubescent	0.34 × 0.49 mm, pubescent
Style	ca. 0.1 mm long	absent	0.1 mm long
Nectar disc	lobed	angulate	angulate
Elevation	65–300 m	390–1000 m	100–1400 m
Mexican distribution	Oaxaca (endemic)	Baja California Sur (endemic)	Coahuila, Guanajuato, Nuevo León, Querétaro, San Luis Potosí, Tamaulipas & Veracruz

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