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A new species of *Dahlia* (Asteraceae, Coreopsideae) from the state of Oaxaca, Mexico

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Abstract

Dahlia calzadana Villaseñor & Redonda-Mart. (Asteraceae, Coreopsideae), a new species from the district of Cuicatlan, state of Oaxaca is described and illustrated. It grows in the ecotone between the seasonal dry tropical forest and the *Quercus* forest. This new taxon differs from all other known species of *Dahlia* by its simple, conspicuously petiolate leaves and its white with pink tones ray florets.

Keywords: Compositae, endemism, new taxon, Tehuacan-Cuicatlan Valley

Resumen

Se describe e ilustra *Dahlia calzadana* Villaseñor & Redonda-Mart. (Asteraceae, Coreopsideae), nueva especie del distrito de Cuicatlán, en el estado de Oaxaca. Esta especie crece en ecotonías de bosque tropical caducifolio y bosque de *Quercus*; se diferencia de otras especies conocidas de *Dahlia* por las hojas simples, conspicuamente pecioladas y por las flores radiadas, blancas con tonos rosados.

Palabrasclave: Compositae, endemismo, nuevo taxón, Valle de Tehuacán-Cuicatlán

Introduction

The genus *Dahlia* Cavanilles (1791: 56) is one of the 24 genera of the tribe Coreopsideae. This tribe is considered monophyletic, formerly placed in Heliantheae (Jansen *et al.* 1991; Kim *et al.* 1992; Panero & Funk 2002; Goertzen *et al.* 2003; Funk *et al.* 2005), including about 500 species (Crawford *et al.* 2009), 40 of them corresponding to the genus *Dahlia*. The genus is native mostly in the mountainous region of México and Central America (Sørensen 1969), with two species (*D. coccinea* Cavanilles (1796: 33) and *D. imperialis* Roezl ex Ortgies (1863: 243)) reaching South America (Sørensen 1969; Crawford *et al.* 2009). *Dahlia* finds its diversification center within México where occur 39 species, 33 of them endemic (Villaseñor 2016) and constitutes a genus of horticultural importance (Sørensen 1969; Giannasi 1975; Saar *et al.* 2003), and even is considered the national flower (Diario Oficial de la Federación 1963).

The genus *Dahlia* is considered monophyletic (Gatt *et al.* 2000; Kimball & Crawford 2004), and closely related to *Dicranocarpus* Gray (1854: 322) (Mort *et al.* 2008). It is distinguished by its leaves opposite, pinnately compound, or rarely simple; heads heterogamous, radiate; ray florets pistilate or neutral; disc florets fertile, pentamerous; cypselae linear, oblanceolate, obcompressed, spatulate or 3-angulate in cross section; pappus absent or rarely with 2 teeth or small rudimentary scales (Panero 2007; Crawford *et al.* 2009).

The genus is subdivided in four sections: *Dahlia*, *Epiphytum*, *Entemophyllon*, and *Pseudodendron* (Sørensen 1969; Saar *et al.* 2003); each section has distinctive morphological characteristics based chiefly on their growth habit. *Epiphytum* includes a single scandent species, similar to a liana. Sections *Dahlia* and *Entemophyllum* group species

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with herbaceous or suffruticose growth habit, with stems of the previous year lignified at the base. Finally, section *Pseudodendron* includes arborescent species (Sørensen 1969).

As a result of the continuous review and determination of botanical material in the National Herbarium of Mexico (MEXU) of the Instituto de Biología, Universidad Nacional Autónoma de México, a new species of *Dahlia* belonging to section *Dahlia* was found, which is described and illustrated below.

Taxonomic treatment

Dahlia calzadana Villaseñor & Redonda-Mart., **sp. nov**. (Fig. 1)

Type:—México. Oaxaca: Dto. Cuicatlán, Mpio. San Juan Bautista Cuicatlán, 3 km antes del poblado San Juan Coyula, sobre la carretera vecinal de terracería de Quiotepec a San Juan Coyula, elev. 1250 m, 17°55'24.74" N, 96°56'15.6" O, 20 julio 2003, *J.I. Calzada 23910* (holotype: MEXU!; isotypes: IEB!, TEX!, XAL!).

FIGURE 1. Holotype of *Dahlia calzadana*.

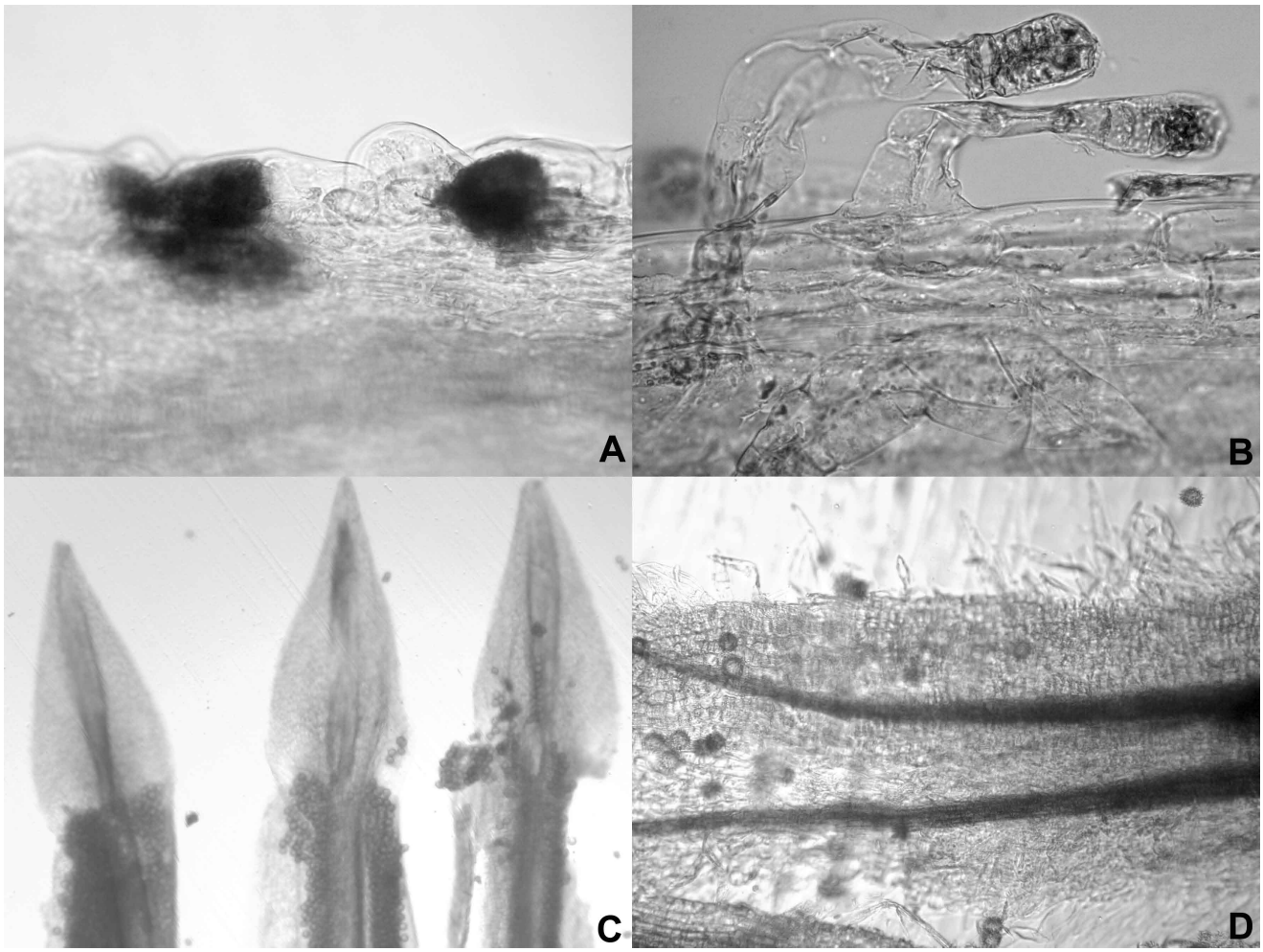

FIGURE 2. Floral characters of *Dahlia calzadana*. A. Papillae on the petals surface of disc florets. B. Glandular trichomes on the corollae tube of ray florets. C. Anthers apical appendices. D. Branch of stigma of a disc floret.

Description:—Suffrutices 0.4–0.6 m tall. Stems terete, succulent, striate, glabrous. Leaves simple, opposite, petioles (1.1–2.8–)6.1–9.5 cm long; blades (2.2–)10.3–12 cm long, (1.4–)5–9.5 cm wide; ovate, margin crenate or dentate, adaxial and abaxial surfaces glabrous, young leaves scarcely pilose below. Heads heterogamous, solitary or in clusters of 2–3, terminals, peduncles (5.3–)9.2–12.5 cm long, glabrous; involucre campanulate to hemispheric, 2-seriate, glabrous, (1–)1.2–1.8(–2.4) cm long, (1.5–)1.8–2.5(–3.2) cm wide; phyllaries 8–10, the outer series green, shorter than the inner series 4.2–5 mm long; the internal series brown, 1.2–1.8(–2.4) mm long, margins scarious. Ray florets 8–10, neutral, corollae whitish with pink tones, flattened, tube (2.8–)3.5–4.4 mm long, glandular, laminae (1.3–)2.6–3.2 cm long, papillose; disc florets 55–60, hermaphrodite, yellow, corollae tubular, pentamerous, 6.5–7.2(–10.2) mm long, tube 2.2–2.6 mm long, lobules 4.3–6.6(–8) mm long, pilose; style 5.5–5.8 mm long, branches flattened, acute and pilose, 3.4–3.6 mm long; anthers 5.1–5.3 mm long, apical appendices lanceolate–apiculate, base sagittate; cypselae ellipsoid, 5–6-ribbed, 9.8–10.2 mm long, puberulent to sparsely pilose; pappus absent.

The species is similar to *Dahlia brevis*, *D. cordifolia* and *D. purpusii* in sharing simple leaves, but differs from them in its habit (suffruticose vs. herbaceous) and its whitish with pink tones (vs purplish or lavender) radiate florets.

Distribution, habitat and phenology:—*Dahlia calzadana* is currently known from the type collection and one additional record, collected in seasonal dry tropical forest, at its ecotony with *Quercus* forest. It grows on dark, rocky soil with limestone outcrops. The two known localities are placed inside the Valle de Tehuacán-Cuicatlán Biosphere Reserve. Flowers and fruits from May to July.

Etymology:—The specific epithet honors Ismael Calzada, an enthusiastic and prolific plant collector who for many years has explored the Biosphere Reserve where this species was found.

Conservation Status:—According to IUCN (2004), *Dahlia calzadana* must be considered Vulnerable B2a, largely due to its restricted distribution (known only from two localities) in a well studied region with a conservation status notably the Valle de Tehuacán-Cuicatlán Biosphere Reserve.

Additional specimen examined:—MEXICO. Oaxaca: Loma de Buena Vista, 10 km al E de Quiotepec, elev. 1300 m, 17°55'26" N, 96°56'57.5" O, 5 mayo 1990, *A. Salinas et al. 5421* (MEXU!).

Discussion:—The new species is included in *Dahlia* section *Dahlia* because, like the other known species of the section, it has reflexed outer involucral bracts and leaves simple and opposite. However, it differs from the other species of the section because of the woody basal part of the stem, a character only observed in this new taxon.

Dahlia calzadana may be related to *D. brevis* P.D. Sørensen (1969: 368), *D. cordifolia* (Sessé & Moc.) McVaugh (2000: 148), and *D. purpusii* Brandegee (1914: 76), by sharing simple leaves; however, only *D. calzadana* develops a suffruticose habit. On the other hand, *D. calzadana* may be confused by its habit with *D. scapigeroides* Sherff (1947: 145) and *D. sublignosa* (P.D. Sørensen) Saar & P.D. Sørensen (2005: 545), although the two latter species have pinnate leaves with elliptic or lanceolate segments, lower number of ray florets (≤ 8 vs. 8–10) with purple or pink colorations. By contrast, *D. calzadana* produces whitish ray florets with pink tones; in addition, this is the only species of the section growing further south (Oaxaca); the other members of the section are mostly found in central and northeastern Mexico (Guanajuato, Hidalgo, Queretaro and northwards).

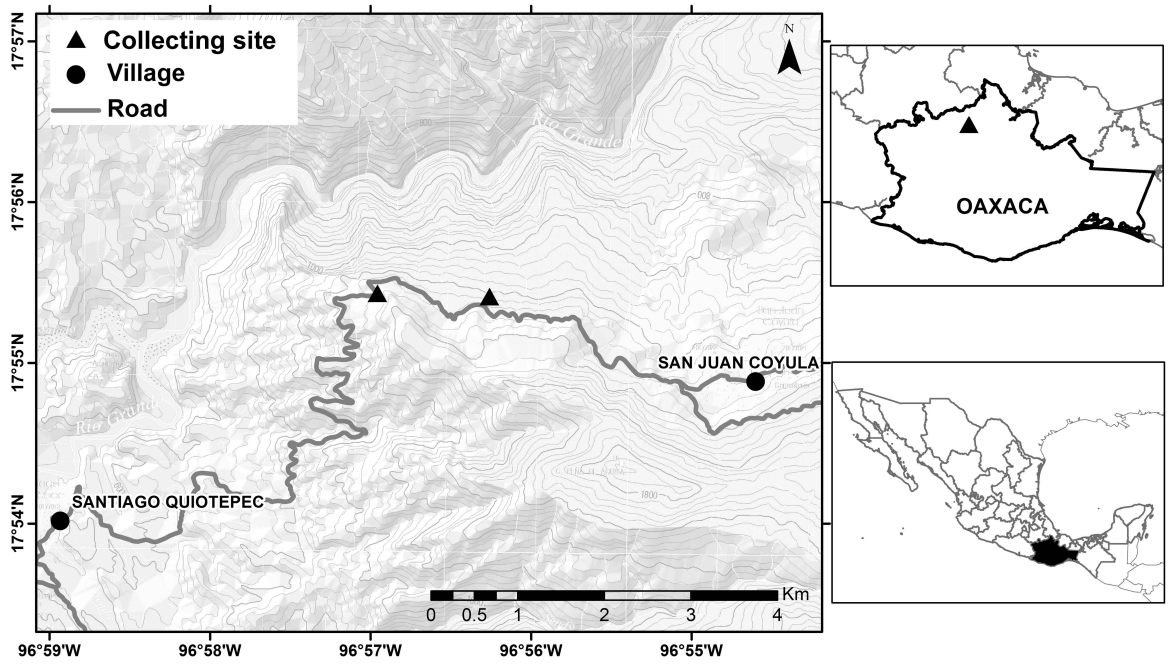

FIGURE 3. Known geographical distribution of *Dahlia calzadana* in Oaxaca, México.

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