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## TWO NEW SPECIES OF *WAMALCHITAMIA* (ASTERACEAE: HELIANTHEAE) FROM OAXACA, MEXICO

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**Abstract:** Two new species of *Wamalchitamia* are described from Oaxaca, Mexico: *W. serboana* and *W. yautepecana*. Photographs of their holotypes are provided and their relationships to yet other species in the genus are discussed. A key to the accepted taxa in *Wamalchitamia* is provided, along with maps showing their distributions.

**Keywords:** Asteraceae, Heliantheae, *Wamalchitamia*, Mexico, Oaxaca.

Strother (1991) provided an overview of *Wamalchitamia*, including a key to the five species known to him. Here, I add two

species. The key that follows will distinguish the taxa.

### ARTIFICIAL KEY TO THE SPECIES OF *WAMALCHITAMIA*

1. Leaves sessile or nearly so; peduncles densely glandular-pubescent; Honduras . . . . . 6. *W. williamsii*
1. Leaves petiolate; peduncles variously pubescent; Mexico, Honduras, Nicaragua, Costa Rica . . . . . (2)
2. Involucral bracts (outer) 25–30, or more, linear-lanceolate; Mexico (Oaxaca) . . . . . 4. *W. serboana*
2. Involucral bracts (outer) 5–10; ovate to obovate or lanceolate; Mexico, Central America . . . . . (3)
3. Ray florets 21; ligules reddish; peduncles glandular-pubescent; hairs on under surface of leaves soft, appressed, 1.0–1.3 mm long; Oaxaca . . . . . 7. *W. yautepecana*
3. Ray florets 8–15, rarely 21; ligules yellow; peduncles variously hairy; hairs on under surface of leaves various, not soft and appressed; Oaxaca, Chiapas, Central America . . . . . (4)
4. Leaves lanceolate; ligules 25–35 mm long; Chiapas . . . . . 1. *W. appressipila*
4. Leaves ovate; ligules 8–25 mm long . . . . . (5)
5. Involucral bracts (outer) 9–20 mm long, 3–7 mm wide; Chiapas . . . . . 3. *W. dionysi*
5. Involucral bracts mostly 6–9 mm long, 1–3 mm wide; Oaxaca, Chiapas, Central America . . . . . (6)
6. Heads mostly 15–18 mm high; 25–50 mm across the extended rays; cypselae of rays mostly 5–6 mm long; peduncles mostly 5–10 cm long; Honduras, Nicaragua and Costa Rica . . . . . 2. *W. aurantiaca*
6. Heads mostly 11–15 mm high; 15–25 mm across the extended rays; cypselae of rays mostly 6–8 mm long; peduncles mostly 2–5(8) cm long; Mexico (Chiapas and Oaxaca) . . . . . 5. *W. strigosa*

*Wamalchitamia* Strother, Syst. Bot. Monographs 33: 30. 1991.

lance-linear involucral bracts, and longer ligules.

TYPE: *W. aurantiaca* (Klatt) Strother

2. *Wamalchitamia aurantiaca* (Klatt) Strother, Syst. Bot. Monographs 33: 32. 1991. Fig. 1.

1. *Wamalchitamia appressipila* (S.F. Blake) Strother, Syst. Bot. Monographs 33: 34. 1991.

*Zexmenia cholutecana* A. Molina  
*Zexmenia melastomacea* S.F. Blake  
*Zexmenia perymenioides* S.F. Blake  
*Zexmenia valeri* Standl. & Steyerf.

Known to me only by collections from Mt. Ovanda, Chiapas; these were described by Strother (1991, 1999). The taxon is seemingly closely related to *W. strigosa*; it is readily recognized by its more elongate,

SUBSHRUBS, SHRUBS, OR TREES, 1–6 m high. LEAVES broadly ovate, 8–15 cm long, 4–7 cm wide, hairy; petioles 1–3 cm long,

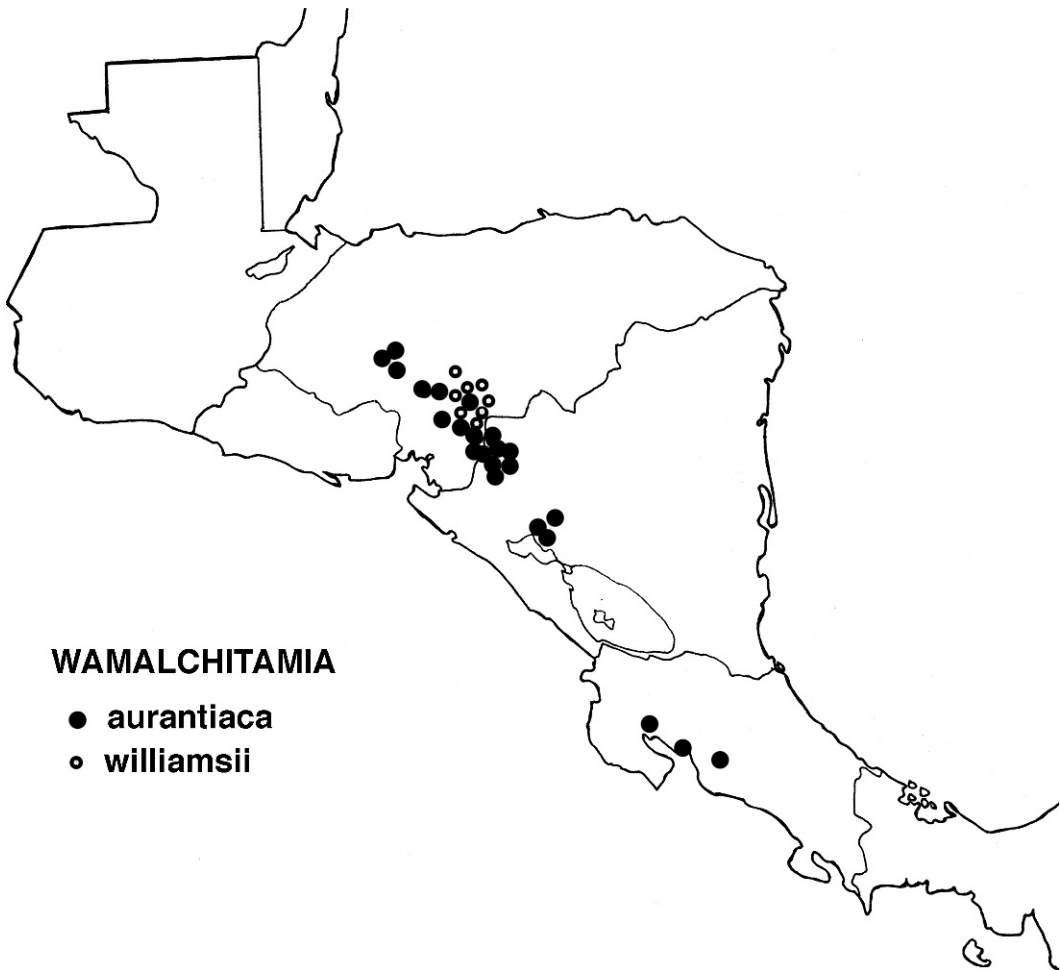


FIG. 1. Distribution of *Wamalchitamia aurantiaca* and *W. williamsii*.

grading into the blades. HEADS 15–18 mm high, mostly single on peduncles 4–8(12) cm long. INVOLUCRAL BRACTS and pales similar to those of *W. strigosa* but 1–3 mm longer. RAY FLORETS 8–15, the ligules yellow-orange, mostly 10–15 mm long. DISC FLORETS numerous (40+); corollas 8–9 mm long, otherwise similar to *W. strigosa*. CYPSELAE of ray and disc florets similar to those of *W. strigosa* but smaller, with shorter pappus bristles.

Blake (1938), in his original description of *Zexmenia perymenioides*, noted the plants to be trees 4.5–6.0 m high with trunks to 7.5 cm in diameter; most collectors have

described their specimens as 1–3 m high; he also noted that its “closest ally is clearly *Z. aurantiaca* Klatt, of Costa Rica.”

Strother (1991) treated *Wamalchitamia aurantiaca*; I treat all specimens from Chiapas that Strother referred to *W. aurantiaca*, as members of *W. strigosa*. As noted in the above “key to species,” and discussed below under *W. strigosa*, the two taxa are very similar and might readily be combined, as suggested by Strother. Strother (1991) recognized *W. aurantiaca* as occurring in Chiapas and stated, “Known only from the type” for *W. strigosa*.

3. *Wamalchitamia dionysi* Strother, Syst. Bot. Monographs 33: 35. 1991.



FIG. 2. *Wamalchitamia serboana* (Holotype).





FIG. 3. Distribution of *Wamalchitamia serboana*, *W. strigosa*, and *W. yautepecana*.

This species is known to me only by the specimens cited by Strother (1991).

4. *Wamalchitamia serboana* B. L. Turner, **sp. nov.** Fig. 2, 3.

SHRUBS to 2 m high. STEMS (upper) striate, hairy, hairs upwardly appressed, minute, white. LEAVES opposite throughout, 10–18 cm long, 4–7 cm wide; petioles 1–2 cm long; blades ovate, upper and lower surfaces sparsely hairy, hairs appressed, broad-based, bases acute, passing into the petioles, apices attenuate, acute, margins minutely serrate. HEADS single, terminal, ca. 2 cm high, 1.5–2.0 cm diam. (rays excluded); peduncles 5–8 cm long, ebracteate, densely hairy, hairs ascending, often mixed with glandular hairs ca. 0.25 mm high. INVOLUCRAL BRACTS 30, or more, scarious, 2–3 seriate, linear-lanceolate, markedly uniform,

an outer herbaceous series lacking, ca. 15 mm long, 1.5 mm wide. RECEPTACLES ca. 4 mm across, plane. PALES about as long as the disc florets, or shorter, linear-lanceolate, tri-lobed apically, the middle lobes hairy. RAY FLORETS 11, pistillate, fertile; tubes ca. 2 mm long; ligules reportedly orange, appearing yellow, ca. 1.5 cm long, 0.4 cm wide; styles ca. 7 mm long, their branches linear, ca. 2 mm long; stigmatic lines ca. 1 mm long. DISC FLORETS 30–40; corollas 6–7 mm long; tubes 1–2 mm long, the basal cells seemingly indurate; throats glabrous, 4–5 mm long; lobes 5, ca. 1 mm long, sparsely hairy. OVARIES (immature cypsalae), 4-sided, apically pubescent; pappus bristles 2–3, fragile, mostly 5–7 mm long, plus ca. 8 fimbriate scales ca. 0.5 mm high.

TYPE: MEXICO. Oaxaca: Distrito Tehuantepec, Mpio. Santiago Astata, “Vereda

al Aguaje, arriba del arroyo.” ca. 70 m, 15°54'11"N, 95°37'27.8"W, 1 Sep 2009, *Emily Lott 5915* [with A. Sanchez and F. Gopar] (HOLOTYPE: TEX).

According to the collector, the plant is a shrub to 2 m high having “fl naranja” and occurring in “Selva baja caducifolia con vegetacion secundaria. suelo rojo.”

The species name is derived from SERBO, the group that funded its collection.

5. *Wamalchitamia strigosa* (DC.) Strother, Syst. Bot. Monographs 33: 36. 1991. Fig. 3.

*Lipochaeta strigosa* DC.

*Wedelia fertilis* McVaugh

*Zexmenia strigosa* (DC.) Sch.-Bip.

SUFFRUTICOSE HERBS OR SHRUBLETS, 1–2 m high. LEAVES 6–8 cm long, 3–4 cm wide; petioles 0.5–1.2 cm long, hairy, in part, hairs spreading, 1–2 mm long; blades ovate to ovate-lanceolate, grading into the petioles, moderately hairy on both surfaces, hairs appressed or spreading. HEADS 10–15 mm high, 10–20 mm diameter (rays excluded), terminal, mostly single on peduncles 2–10 cm long, the latter hairy, hairs both glandular and eglandular, spreading. INVOLUCRE 2–3 seriate, the outermost consisting of 5 herbaceous, oblanceolate bracts, 6–10 mm long, 2–3 mm wide, the innermost series not herbaceous, grading into the pales. RECEPTACLES ca 4 mm across, plane. PALES linear-lanceolate, ca. 15 mm long, 3-notched apically, the central lobe lanceolate, ca. 3 mm long. RAY FLORETS 8–11, pistillate, fertile; ligules yellow, ca. 10 mm long, 3–4 mm wide; cypselae 6–7 mm long, maculate, 3-sided, wingless, strigose, hairs 0.2–0.7 mm long; pappus of 3–4 broad-based bristles, 3–8 mm long, between these 3–4 fused fimbriate scales ca. 1 mm long. DISC FLORETS 40 or more per head; corollas yellow, 6–8 mm long; tubes 1–2 mm long; throat glabrous; lobes ca. 0.5 mm long, pubescent; anthers brown, the appendages linear-lanceolate, yellow, ca. 0.75 mm

long; achenes ca. 7 mm long, the pappus bristles 4–8 mm long, plus 2–4, fused, fimbriate scales ca. 1 mm long.

*Wamalchitamia strigosa* was retained in *Zexmenia* by Blake (1926) and positioned in *Wamalchitamia* by Strother (1991). It was first collected by Andrieux in 1834 near Tehuantepec, and was collected from nearby Cerro Guiengola in 1986 [“Ladera S del Cerro Guiengola. Cerca al Ocotol,” 28 Oct 1986, *Leticia Torres C. 665* (TEX, UC)]. My description is largely derived from these. Strother (1991) accepted the taxon as occurring in Oaxaca, but failed to extend its distribution into closely adjacent Chiapas, as done here; instead, he treated the Chiapas plants as belonging to *W. aurantiaca*, the type from Costa Rica.

After examination of 26 collections ranging from Mexico (12) to Costa Rica (14), most of which were examined by Strother, I have opted to recognize both *W. strigosa* and *W. aurantiaca*, as did Strother, the former restricted to Mexico (Fig. 3), the latter to Central America (Fig. 1). The two taxa are readily recognized by a combination of features, as noted in the above key to species, none of which is absolute. In short, *W. strigosa* tends to be a smaller plant having mostly smaller leaves, with smaller heads and shorter rays on longer peduncles; additionally, it has somewhat larger cypselae. As circumscribed here, *W. aurantiaca* is variable. Molina’s *Zexmenia cholutecana*, which has a combination of interesting large heads on very elongated peduncles, and seemingly restricted to riverine habitats, might prove worthy of recognition. Strother also called attention to the likelihood of hybridization between *W. williamsii* and *W. auriculata* (as interpreted here), an observation with which I agree. Indeed, *Zexmenia perymenioides*, discussed above, what with its more lanceolate leaves with shorter petioles, might be of hybrid origin, showing gene flow from *W. williamsii*. Finally, it should be noted that I toyed with the idea of treating *W. auriculata*

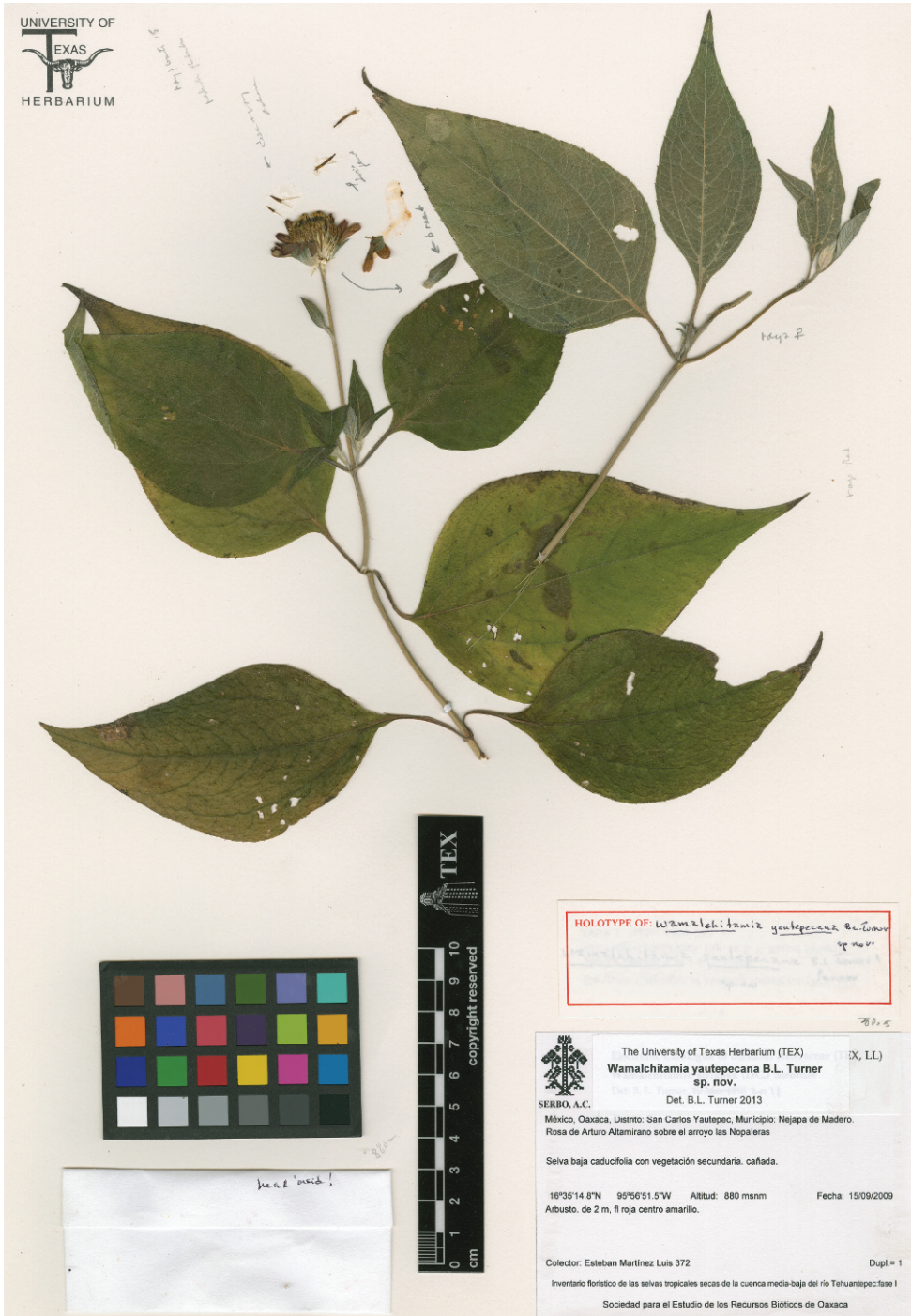


FIG. 4. *Wamalchitamia yautepecana* (Holotype).

as but part of a highly variable *W. strigosa*, as suggested might be done by Strother; biogeographical considerations swayed my judgment.

6. *Wamalchitamia williamsii* (Standl. & Steyer.) Strother, Syst. Bot. Monographs 33: 37. 1991. Fig. 3.

Strother (1991) provided a description of this taxon, which is known by numerous collections, 25 from the Field Museum. The species is readily recognized by its sessile leaves and prominently glandular hairs on peduncles and involucre bracts. Strother aptly observed, that occasional plants intermediate to *W. aurantiaca* occur, suggestive of hybridization, as noted above.

7. *Wamalchitamia yautepecana* B. L. Turner, **sp. nov.** Fig. 3, 4.

SHRUB to 2 m high. STEMS (upper) striate, densely hairy, hairs upwardly appressed, white. LEAVES opposite throughout, 12–15 cm long, 5–7 cm wide; petioles 2–3 cm long, hairy like the stems but bearing some hairs 2–3 mm long; blades ovate, 3-nervate from above the base, grading into the petioles, hairy above, hairs stiff, ascending, 0.5–1.0 mm long, and below with hairs more appressed, 1.0–1.5 mm long, their apices acuminate. HEADS ca. 2 cm high, and as wide (rays excluded), single on peduncles 3 cm long, the latter to some extent minutely glandular pubescent. INVOLUCRAL BRACTS (2 outer series) ca. 10, herbaceous, ovate, the inner series ca. 6 mm long, the outermost 9–12 mm long, 3–6 mm wide. RECEPTACLES, ca. 6 mm across, plane. PALES 6–8 mm long, linear-lanceolate, trifid apically, the middle lobe ca. 2 mm long. RAY FLORETS ca. 21,

pistillate, fertile; ligules linear, reportedly “roja,” ca. 8 mm long, 4–5 mm wide; cypselae 3–4 mm long, 3-sided, wingless; pappus bristles 4–6 mm long, plus 2–3 fimbriate scales ca. 1 mm long. DISC FLORETS ca. 50; corollas yellow, ca. 8 mm long; tubes ca. 1.5 mm long, sclerose at the base; throats ca. 6 mm long; lobes 5, ca. 1 mm long; ovaries 3–4 mm long; pappus bristles readily deciduous, 4–7 mm long, plus 2–4 fimbriate scales ca. 1 mm long.

TYPE: **MEXICO. Oaxaca:** Distrito San Carlos Yautepec, Mpio. Nejapa de Madero, “Rosa de Arturo Alta mirano sobre el arroyo los Nopaleras,” ca 880 m, 16°35'14.8"N, 95°56'51.5" W, 15 Sep 2009, *Esteban Martinez Luis 372* (HOLOTYPE: TEX).

According to the collector, the plant occurred in “Selva baja caducifolia con vegetacion secundaria. canada.”

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