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Nomenclatural corrections in Mesoamerican Plantaginaceae and a new species of *Tetranema* from Honduras

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Abstract

Study of the Plantaginaceae for the *Flora Mesoamericana* project has resulted in five lectotypifications, a new combination in *Rhodochiton*, and the discovery of a new species of *Tetranema* from Honduras. This species, *Tetranema michaelfayanum*, is described here, a key to the species of *Tetranema* is provided, and the *T. roseum* complex is discussed.

Introduction

The family Plantaginaceae *sensu* APG III (2009) and as discussed by Fay *et al.* (2010) includes a number of non-parasitic Scrophulariaceae *s.l.* In its modern sense it is difficult to define. Within the *Flora Mesoamericana* area (Chiapas, Tabasco, Yucatan peninsula, Belize, Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica and Panama) Plantaginaceae includes 25 genera; apart from the type genus *Plantago* L. (with 3 native and 2 introduced species), the genera: *Achetaria* Cham. & Schltdl. (1 species), *Angelonia* Humb. & Bonpl. (3 native species), *Antirrhinum* L. (1 introduced species), *Bacopa* Aublet (9 species), *Benjaminia* Mart. ex Benj. (1 native species), *Callitriche* L. (2 confirmed native species), *Conobea* Aublet (1 native species), *Cymbalaria* Hill. (1 introduced species), *Darcya* B.L.Turner & C.Cowan (2 native species), *Digitalis* L. (1 introduced species), *Gratiola* L. (1 native species), *Lophospermum* D.Don ex R.Taylor (2 native species), *Maurandya* Ortega (2 native species), *Mecardonia* Ruiz & Pavón (1 native species), *Penstemon* Schmidel (2 native species), *Rhodochiton* Zucc. ex Otto & Dietr. (2 native species), *Russelia* Jacq. (ca. 12 native species), *Schistophragma* Benth. ex Endl. (1 native species), *Scoparia* L. (2 native species), *Sibthorpia* L. (1 native species), *Stemodia* L. (5 native species), *Tetranema* Benth. (4 + 1 new species), *Uroskinnera* Lindl. (2 native species), and *Veronica* L. (2 native + 5 introduced species) are revised for the flora.

During my studies of Plantaginaceae for the *Flora Mesoamericana*, I found one new species of *Tetranema*. Additionally one new combination in *Rhodochiton* is proposed and five species are typified.

A new species of *Tetranema*

Introduction

Tetranema Benth. in Lindley (1843) is a small genus with five species occurring only in Mexico and Central America. It occurs from Puebla and Veracruz in Mexico south to Costa Rica. The genus was first thought to be part of Gesneriaceae when *Episcia rosea* Martens & Galeotti (1842: 39) was published. *Tetranema mexicanum* Benth. in Lindley (1843) was first mentioned as a member of Scrophulariaceae. No

type specimen was mentioned originally, but Bentham (1846) later cited *Galeotti* 1905 (among other specimens) on which *Episcia rosea* was based. That name having priority, the two names were united as *T. roseum* (M.Martens & Galeotti) Standley & Steyermark (1947: 235).

Allophyton megaphyllum Brandege (1914: 62) was then proposed, but Pennell (1925) decided that *Tetranema* and *Allophyton* were congeneric and accepted the second name for the genus because the name *Tetranema* Sweet was already in use for a genus of Fabaceae. *Tetranema* of Bentham was, however, conserved against *Tetranema* of Sweet by the IBCN Amsterdam in 1935, after which the combination *T. megaphyllum* (Brandegee) Williams (1972: 131) was made. In the same publication, a new species, *T. bicolor* Williams (1972: 127), was proposed, which was later found to belong to the genus *Napeanthus* (Gesneriaceae) (Stevens *et al.* 2001), continuing the confusion of the placement of *Tetranema*.

Méndez-Larios & Villaseñor (1995) published a revision of *Tetranema*, but this included no specimens from Costa Rica. In the same year, Grayum & Hammel (1995) published a revision of *Tetranema* in Costa Rica, and described two new species: *T. floribundum* Hammel & Grayum (in Grayum & Hammel 1995: 276) and *T. gamboanum* Grayum & Hammel (1995: 270).

Key to the species of *Tetranema*

1. Stamens included; corolla funnel-shaped, white with violet streaks to purple or blue 2
1. Stamens exerted from the throat of the corolla (but not exceeding the upper corolla lobe); corolla tubular, red or scarlet 3
2. Leaves condensed in a pseudo-rosette, obovate, the internodes short (≤ 1 cm) ..... *T. roseum*
2. Leaves spaced along the stem, oblanceolate, the internodes longer (≥ 3 cm) ..... *T. michaelfayanum*
3. Plant 25–50 cm; corolla lobes 2–4 mm, $< 1/5$ the total corolla length; floral bracts ca. 6–10 mm ..... *T. megaphyllum*
3. Plants (35–)80–200 cm; corolla lobes 11–13 mm long, $> 1/5$ the total corolla length; floral bracts 0.5–5 mm 4
4. Corolla 2.6–3.5 cm, pubescent within in a band of flat, yellow hairs along the entire ventral surface and onto the lower lobe; inflorescence many-flowered (14–30 flowers), the peduncle purple; leaf apex rounded to short-acuminate ..... *T. floribundum*
4. Corolla ca. 4.9–5.5 cm, glabrous throughout or (rarely) pubescent on lower lobe and at mouth; inflorescence few-flowered (2–12 flowers), the peduncle green; leaf apex long-acuminate ..... *T. gamboanum*

Tetranema michaelfayanum Christenh., *sp. nov.*

Species cum Tetranemate roseo optime congruens sed differt foliis oblanceolatis et internodiis multo longioribus.

Type:—HONDURAS. Comayagua: ridge of Cerro El Maneadero, ca. 11 km of Lago Yojoa, Parque Nacional Azul Meámbar, 1740 m, 14°48'00"N, 87°52'30"W, primary forest, 11 March 1993, *Evans 1354* (holotype BM!, isotype MO!).

Herbs to at least 50 cm. Stems elongate, pubescent, the internodes 3 cm or longer. Leaves subsessile to short-petiolate, petioles (when present) to ca. 1 cm. Leaves 11.5–19 × 3–5.5 cm, oblanceolate, the base attenuate, the apex acute to acuminate, the margins distantly crenate, ciliate with bicellular trichomes, glabrous above, villous on the veins beneath. Inflorescences densely clustered, cymose, pseudo-umbellate; peduncles ca. 12–16 cm (usually longer than the leaves), green, quadrangular with the angles narrowly winged; bracts 1.5–2 mm, linear. Flowers (4–)6–12, with pedicels ca. 5–10 mm. Calyx 3–5 mm, the lobes imbricate, lanceolate, the apex acuminate. Corolla ca. 1.5 cm, infundibular, white with violet tube, bilabiate, the upper lip ca. 4 mm, bilobed, the lobes partly fused, rounded, the lower lip ca. 5–6 mm, trilobed, the middle lobe elliptic-ovate, the lateral lobes ovate. Stamens included, the shorter pair ca. 4 mm, the longer pair ca. 5 mm, the staminode ca. 3 mm. Style included. Capsule ca. 5 mm, ovoid. Seeds subquadrangular, ca. 4 mm. Flowering in March.

Etymology:—This species is named in honour of Dr. Michael F. Fay, head of Genetics at the Jodrell Laboratory, Royal Botanic Gardens, Kew. His extensive work on plant conservation and great achievement as editor in chief of the *Botanical Journal of the Linnean Society*, and editorial work for other journals including *Phytotaxa* are hereby acknowledged.

Discussion

In *Tetranema*, two different types of flowers occur: white to violet corollas with incised upper lobes and included stamens, and red corollas with fully fused upper lobes and exerted stamens. The first is most likely bee-pollinated and is found usually on plants with short stem internodes, making the leaves appear rosulate (e.g. *T. roseum*). The second is probably pollinated by hummingbirds and is found on bushy plants with long stem internodes (*T. megaphyllum*, *T. gamboanum*, *T. floribundum*). The new species, *T. michaelfayanum*, combines these characters in having bee-pollinated violet flowers on large plants with long stem internodes.

Because the flower-type of *T. michaelfayanum* resembles that of the *T. roseum* complex, I feel it is necessary to discuss this species here. Traditionally, three taxa were recognised in this complex: *Tetranema cymosum* Williams (1972: 129), *T. evolutum* Smith (1889: 29), and *T. roseum*. *Tetranema evolutum* was distinguished by its multicellular cilia along the leaf margins and lax cymes, whereas *T. roseum* has bicellular cilia and pseudo-umbellate inflorescences. These differences are, however, not consistent in combination, and thus I opted for merging these species. Méndez-Larios & Villaseñor (1995) distinguished *T. evolutum*, *T. cymosum* and *T. roseum* based on corolla colour, respectively red, white and violet, but all the specimens I studied labeled *T. evolutum*, including the type, list the colour as violet-purple or white with a violet or purple throat. The type specimen of *T. cymosum* describes the corolla as ‘white, dull purple at base of tube with dull purplish spots on upper side’, which is not very different from other Guatemalan specimens. It does have a more lax inflorescence and shorter stamens, but these traits may reflect individual phenotypic variation.

New combination

Rhodochiton Zucc. ex Otto & Dietrich and *Lophospermum* D. Don share many characters, and have been suggested to be congeneric. Elisens (1985) makes strong arguments for this and merged the two genera, but they differ in characters of the calyx and peduncle. Phylogenetic analysis (Ghebrehiwet *et al.* 2000) shows the two genera as sister taxa, and because the name *Rhodochiton atrosanguineum* (Zucc.) Rothmaler (1943: 25) is commonly in use in the horticultural trade, I opted in the *Flora Mesoamericana* to keep them separate. But to do this, one Mesoamerican *Lophospermum* species needs to be transferred to *Rhodochiton*, as proposed here:

***Rhodochiton nubicola* (Elisens) Christenh., comb. nov.**

Basionym: *Lophospermum nubicola* Elisens (1985: 83). Type: MEXICO. Chiapas: Matuda 2359 (holotype MEXU, isotypes F!, LL, MICH)

Typifications

Angelonia angustifolia Bentham (1846: 254). Lectotype (designated here): MEXICO. anno 1840, Galeotti 1013 (K!, duplicate MO!).

Note:—The protologue lists six syntypes: ‘In campis prope Xalapa et Vera-Cruz, in Mexico (Alaman!, Galeotti! n. 1013, Linden! n. 206)’, ‘v. in herb. DC et Hooker’.

All six original specimens (three in G-DC and three in K) are in existence; the specimen selected here is annotated by Bentham, is well-preserved and shows all characters necessary for identification of the species.

Bacopa aquatica Aublet (1775: 129, t. 49). Lectotype (designated here): FRENCH GUIANA. *Aublet s.n.*, BM-000838070!).

Note:—Two original specimens are preserved (in BM and LINN-SM-279.1 in the J.E. Smith Herbarium). The specimens are equal; the BM specimen is selected here as the lectotype.

Bacopa monnierioides (Cham.) Robinson (1909: 614). *Ranaria monnierioides* Chamisso (1833: 31), *Linnaea* 8: 31 (1833). Lectotype (designated here): BRAZIL. *Sellow s.n.* (K-000533423!).

Note:—No precise location of the *Sellow* specimen was cited in the original protologue. There is a good representative original specimen at K, which will serve well as the lectotype for this name.

Schistophragma mexicanum Benth. ex Endl. in Dietrich (1843: 513). Lectotype (designated here): MEXICO. anno 1837, *Alaman s.n. ex Herbarium Benthonianum*, (K-000529076!).

Note:—The name was based on a manuscript by Endlicher and no specimens were cited. There is original material from the Bentham Herbarium at K, which is hereby selected as the lectotype.

Veronica plebeia Brown (1810: 435). Lectotype (designated here): AUSTRALIA. New South Wales: Port Jackson, *Brown s.n.* (BM!).

Note:—Briggs & Ehrendorfer (2006) wrote ‘Holotype: [New South Wales] in humidis prope Sydney, *R. Brown*, May 1802 (BM!)’, but this is incorrect because there is no holotype selected in the original description. The protologue is accompanied by ‘(J)’, which refers to specimens collected at Port Jackson, as observed or collected by Brown himself (see Brown 1810: vi–viii). Therefore the specimen chosen here is a more appropriate lectotype for this name.

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