

New Combinations in the Coreopsidinae

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Transfers from Cosmos to Bidens

As a result of revisionary studies of the Mexican Coreopsidinae it has become evident that the primary reason Bidens and Cosmos appear to intergrade is due to the a priori inclusion of all annuals with beaked or rostrate achenes within Cosmos (sections Eucosmos and Klibea, Sherff 1955). Three of the five Bidens species traditionally included within Cosmos, C. exiguus, C. blakei and C. steyermarkii, occur in Guatemala. To allow their placement within Bidens in my treatment of this genus for the Flora of Guatemala, three new transfers are proposed below. Since the specific epithets steyermarkii and exiguus were used previously in Bidens (B. steyermarkii Sherff 1944 and B. exigua Sherff 1920), the names alata and rostrata are chosen for these two taxa, respectively.

1. BIDENS ROSTRATA Melchert, nom. nov.

Cosmos exiguus A. Gray; S. Wats. Proc. Am. Acad. 22:429. 1887. Type: Mexico: Jalisco, among grass and rocks, Rio Blanco near Guadalajara, June-Oct.

1886, Edward Palmer 559 (Holotype GH, Cotypes NY, Phila, US, UV).

Not Bidens exigua Sherff 1920.

The specific epithet rostrata was chosen because the blackish achenes of this species bear an elongate, flattened, olivaceous rostrum.

2. BIDENS ALATA Melchert, nom. nov.

Cosmos steyermarkii Sherff, Field Mus. Publ. Bot. 22:438. Type: Guatemala: Chiquimula, Montana Castilla, vicinity of Montana Cebollas, along Rio Lucia Saso, 3 mi. s.e. of Quezaltepec, 1200-1500 m, Nov. 6, 1939, J. A. Steyermark 31341 (Holotype F, Cotype GH).

Not Bidens steyermarkii Sherff 1944.

The name alata was chosen because the achenes of this species, which are flattened and rostrate, have thick, stramineous, wing-like margins formed from coalescent tuberculae.

3. BIDENS BLAKEI (Sherff) Melchert, comb nov.

Cosmos blakei Sherff, Bot. Gaz. 82:334. 1926.

Type: Guatemala: Retalhuleu, Jan. 1871, Bernoulli and Cario 1476 (Holotype Kew).

New Combinations in the B. pilosa Complex

With the exception of a few rarely collected endemics, the vast array of square-stemmed, white-rayed Bidens annuals found throughout Mexico and Central America have traditionally been treated as part of a single, highly variable species, B. pilosa. In his treatment of Bidens for the flora of North America, Sherff (1955), using herbarium materials only, recognized six loosely defined, ray-size and leaf-form varieties within B. pilosa. In a recent, yet unpublished, Ph.D. thesis, Robert Ballard (1975), combining evidence from field, cytogenetic, comparative biochemical and hybridization-breeding system studies, concluded that the Mexican "B. pilosa" populations conservatively include 5 specific and 6 subspecific taxa. Five of these taxa (3 species, 2 varieties) are known from Guatemala. In order that Ballard's treatment can be followed in the Flora of Guatemala, the following three new combinations are presented with his consent.

1. BIDENS ODORATA var. CALCICOLA (Greenman) Ballard, comb. nov.

Cosmos pilosus H.B.K. Nov. Gen. & Sp. 4:241. 1820.

- Bidens exaristata DC. Prodr. 5:600. 1836. TYPE:
MEXICO: Tamaulipas: between Victoria and Tula,
Nov 1830, Berlandier 2220 (Holotype: Geneva,
Cotype: Paris, GH).
- Bidens brachycarpa DC. Prodr. 5:600. 1836. TYPE:
MEXICO: Tamaulipas: Tampico, 1827, Berlandier
5 (Holotype: Geneva, Cotype: Paris).
- Bidens rosea Schultz-Bip. in Seem. Bot. Voy.
Herald 308. 1856.
- Bidens rosea var. calcicola Greenman, Proc. Am.
Acad. 41:264. 1905. TYPE: MEXICO: Morelos:
At an altitude of about 1225 m, on limestone
hills, Yantepec, near Cuernavaca, 21 Oct 1902,
Pringle 11340 (Holotype: GH!).
- Bidens pilosus var. S brachycarpus O.E. Schulz,
Symb. Ant. 7:138. 1911.
- Bidens pilosa var. calcicola (Greenman) Sherff,
Bot. Gaz. 80:337. 1925.
- Bidens orendainae M.E. Jones, Contr. W. Bot. 18:
82. 1933. TYPE: MEXICO: Jalisco: Orendain,
27 Nov 1930, Jones 27770 (Holotype: POM!
isotype: RSA! US!).
- Bidens barrancae M.E. Jones, Contr. W. Bot. 18:82.
1933. TYPE: MEXICO: Jalisco: La Barranca,
Guadalhara, 23 Nov 1920, Jones 27757 (Holotype:
POM!).

2. *BIDENS ALBA* var. *RADIATA* (Schultz-Bip.) Ballard,
comb. nov.
- Coreopsis leucanthema* L. Cent. I. 29 (Excl. syn.
Tournef.) 1755.
- Coreopsis coronata* L. Sp. Pl. ed. 2. 1281. 1763.
(ex syn. Vaill. and Plum., but not to descr.
or type locality.)
- Coreopsis leucantha* L. Sp. Pl. ed 2. 1282. 1763.
- Kerneria tetragona* Moench, Meth. 595. 1794.
(ex descr.)
- Bidens leucantha* Willd. Sp. Pl. 3:1719. 1804.
- Kerneria leucantha* Cass. Dict. Sci. Nat. 24:398.
1822.
- Bidens abortiva* Schum. & Thonn. Beskr. Guin. Pl.
381. 1827. (ex descr.)
- Bidens adhaerescens* Veil. Fl. Flum. 348, pro parte.
1827.
- Bidens striata* Sweet. Brit. Fl. Gard. pl. 237.
1828.
- Bidens oxyodonta* DC. Prodr. 5:600. 1836.
- Bidens leucantha* B Meyen & Walp.; Walp. Nova Acta
Acad. Leop. -Carol. 19 (Suppl. 1):271. 1843.
- Bidens pilosa* f. *radiata* Schultz-Bip. Flora 27:
673. 1844. (ex syn. *B. leucantha* Willd., excl.
Krauss' spec.)
- Bidens pilosa* var. *radiata* Schultz-Bip. in Webb

& Berth. Phyt. Canar. 2:242. 1844. TYPE:
not exactly stated, but somewhere in America.

Bidens pilosa var. β leucantha Harv.; Harv. &
Sond. Fl. Cap. 3:133. 1864.

Kerneria pilosa α radiata Lowe, Man Fl. Madeira
1:474. 1868.

Bidens pilosus α leucanthus 1. subsimplicifolicus
Kuntze, Rev. Gen. 1:322. 1891. (nomen nudum.)

Bidens pilosus α leucanthus 2. ternatus Kuntze,
Rev. Gen. 1:322. 1891. (nomen nudum.)

Bidens pilosus α leucanthus 2. f. polosior Kuntze,
Rev. Gen. 1:322. 1891. (nomen subnudum.)

Bidens pilosus α leucanthus 4. subbiternatus Kuntze,
Rev. Gen. 322. 1891. (nomen nudum.)

Acocotli quahuahuacensis Hernandez; Altam. Mat.
Med. Mex. 2:154. 1898.

Bidens pilosa var. humilis Walp.; Reiche, Anal.
Univ. Chile 112:153. 1903.

Bidens leucanthema E.H.L. Krause in Sturm, Fl.
Deutsch. ed. 2. 13:159. 1905.

Bidens pilosa subvar. α radiata Pitard: Pitard
& Proust, Iles Canar. 226. 1908.

Bidens wallichii var. albiflora Maxim.; Matsum.
Ind. Pl. Jap. 2:631, as syn. 1912.

Bidens pilosa var. albiflora Maxim.; Makino,
Iconogr. Pl. Nippon 15:pl. 58. 1912.

3. BIDENS BIGELOVII var. ANGUSTILOBA (DC.) Ballard,
comb. nov.

Bidens anthriscoides var. angustiloba DC. Prodr.
5:601. 1836. TYPE: MEXICO: Berlandier 1010
(Holotype: Herbarium of the British Museum,
Cotype: Herb. Drake, Paris).

Bidens duranginensis Sherff, Bot. Gaz. 70:90. 1920.
TYPE: MEXICO: Durango: west side of Iron Moun-
tain, vicinity of city of Durango, April-Nov
1896, Palmer 756 (Holotype: GH! Isotype: US!
MO! F! NY! C!).

Bidens bigelovii var. pueblensis Sherff, Bot. Gaz.
88:287. 1929. TYPE: MEXICO: Puebla: vicinity
of Puebla, Oct. 1908, Arsene 7211 (Holotype:
US).

Bidens amphicarpa Sherff, Bot. Gaz. 88:290. 1929.
TYPE: MEXICO: Lower California: 23 Jan 1899,
Brandegge s.n. (Holotype: UC, no. 134269).

Bidens oligocarpa Sherff, Bot. Gaz. 92:206. 1931.
TYPE: MEXICO: Sonora: Sonora, 1890, Lloyd 409
(Holotype: GH!).

Literature Cited

- Ballard, Robert E. 1975. A biosystematic and chemosystematic study of the Bidens pilosa complex in North and Central America. Ph.D. dissertation, Univ. of Iowa, Iowa City.
- Sherff, E. E. 1955. Cosmos p. 130-137. Bidens p. 111-116. In E. E. Sherff and E. J. Alexander, North American Flora, Series II, part 2.

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