AN OVERVIEW OF THE MEXICAN GENUS DIGITACALIA
(ASTERACEAE, SENECIONEAE)

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ABSTRACT

A taxonomic treatment of Digitacalia is rendered. Five species are recognized, two of these newly described, D. crypta sp. nov., from Guerrero and adjacent Morelos, and D. hintoniorum sp. nov of southwestern Michoacán. Illustrations of both are provided. A new variety, D. jatrophoides (H.B.K.) Pippen var. pentaloba var. nov., from Puebla and Oaxaca is also described. A map showing the distribution of the six taxa is provided.

KEY WORDS: Digitacalia, Asteraceae, Senecioneae, México.

In connection with a treatment of Digitacalia for the Asteraceae of México (Turner & Nesom, in prep.), I have revised the treatment of Pippen (1968). The results and reasons for my treatment are presented herein.

Digitacalia was first proposed by Pippen (1968) and subsequently retained by McVaugh (1984). It is closely related to Psacalium, as noted by Pippen, having the white corollas with deeply lobed throats of that genus, but it differs in having robust (1-4 m high), stiffly erect, simple stems with numerous, gradually reduced cauline leaves (vs. well developed basal and lower cauline leaves, those along the middle and upper stem relatively few and much reduced). At maturity, the stems of Digitacalia become hollow; those of Psacalium are mostly filled with pith and associated tissue at maturity.

Occasional species of the sect. Palmatinervii of Senecio, approach Digitacalia in habit, the most notable being Senecio ehrenbergianus Klatt, which has robust simple stems with pinnately lobed leaves which are numerous and rather evenly distributed along the stems. Senecio ehrenbergianus, however, has radiate heads with yellow corollas and is presumably properly positioned in sect. Palmatinervii.

Pippen (1968) recognized 5 species in Digitacalia, including D. heteroidea (Klatt) Pippen. Robinson & Brettell (1974) correctly transferred the latter to their proposed genus Roldana (= sect. Palmatinervii of Senecio, sensu Barkley
[1985]). In the treatment that follows, I have combined _D. napeifolia_ (DC.) Pippen and _D. tridactylitis_ B.L. Robins. & Greenm., thus effectively reducing Pippen's genus to three species, but have raised it again to five species with the description of two new species. In addition, I have recognized two regional varieties within the widespread _D. jatrophoides_. The taxonomy of _Digitacalia_ follows.

**DIGITACALIA** Pippen

Type species, _Digitacalia jatrophoides_ (H.B.K.) Pippen.

Stiffly erect perennial herbs to 4 m high, the stems evenly leafy throughout. Leaves alternate, palmately or subpalmately nerved to penninervate. The blades usually 3-9 lobed, often deeply so. Heads radiate, numerous in terminal divaricate cymose panicles. Involucres turbinate to narrowly campanulate, calyculate with 1-7 much reduced bracts, the inner bracts equal, 5-8, biseriate but often appearing uniseriate. Receptacles plane, epaleate, alveolate. Florets with white or cream colored corollas, the tube about as long as the limb, the latter with lobes much longer than the throat (except rarely in _D. crypta_). Achenes somewhat fusiform to oblong, glabrous, nearly terete in cross section, ribs 8-10, well defined, the pappus of numerous barbellate bristles in 1-3 series. Base chromosome number, \( x=30 \).

**KEY TO SPECIES**

1. Heads 5-6 mm high; pappus 2-3 mm long; Chiapas ......... _D. chiapensis_

1' Heads 7-9 mm high; pappus 5-7 mm long; not in Chiapas ......... (2)

2. Blades of midstem leaves deeply divided, the lobes extending to the midrib or nearly so; margins of lobes entire or rarely with only 1-3 broad teeth ............................................ _D. jatrophoides_

2' Blades of midstem leaves not deeply divided, the lobes not extending to the midrib; margins of lobes dentate to remotely denticulate (3)

3. Involucral bracts 5, semisucculent in texture, oblanceolate, broadest well above the middle; Sierra San Felipe, Oaxaca ............. _D. napeifolia_

3' Involucral bracts 6-8, not semisucculent in texture, narrowly ovate to narrowly elliptic, widest at the middle, or nearly so; Michoacán, Morelos, Guerrero ......................................................... (4)
4. Leaves uniformly 3 lobed; pappus bristles white or dirty white, 5-6 mm long; Morelos, Guerrero ............................. D. crypta
4' Leaves 3-5 lobed; pappus bristles rusty brown, 7-8 mm long; Michoacán ............................. D. hintoniorum


Pippen (1968) provides an excellent description of this species, albeit based upon only two collections, the type and Nelson 3467 (GH, US). I have seen the following additional collections; taken together these serve as the basis for the map showing its distribution (Figure 1).

MEXICO. Chiapas: Mpio. Amatenango del Valle, Ton 1493 (F, CAS, NY); Mpio. Soyalo, Breedlove 23342 (NY, TEX). Mpio. Venustiano Carranza, Breedlove 41140 (CAS, TEX); Laughlin 1932 (CAS, F).

According to label data, the species occurs on mostly dry steep slopes (1700-1800 m) with pine or oak trees and occasional with Ficus and Juniperus; flowering October-December.

Digitacalia crypta B. Turner, sp. nov. Figure 2. TYPE: MEXICO. Guerrero: Mpio. Chichihualco, km 20 on road from Chilpancingo to Chichihualco, pine-oak zone, 1600 m, 24 Nov 1983, Fred R. Barrie 722 (HOLOTYPE: TEX!; Isotype: MEXU).

D. napeifoliae (DC.) Pippen similis sed foliis aequabiliter trilobatis, petiolis brevibus (1-4 cm longis) partim aialiisque, bracteis involucri plerumque 8 (vs. 5), et antheris flavis (vs. atropurpureis) differt.

Stiffly erect, single stemmed suffrutiaceous herb or shrublet 1-3 m high. Stems puberulent, pithy at first but hollow at maturity. Leaves trilobed, those at midstem 10-25 cm long, 8-15 cm wide; the petioles 1-4 cm long, these gradually tapering into the blades, gradually reduced upwards; blades glabrescent above, moderately puberulent below (glabrescent with age), the margins entire or very remotely denticulate. Heads numerous in terminal obpyramidal or ovoid cymose panicles 15-25 cm across. Involucres 4.5-5.0 mm high, the bracts mostly 8, linear lanceolate, glabrous except for the acute ciliate apices. Florets mostly 10 per head, the corollas glabrous, white, ca. 6 mm long, the
DIGITACALIA

- chiapensis
- crypta
- hintoniorum
- jatrophoides
  - var. jatrophoides
  - var. pentaloba
- napeifolia

FIG. 1. DISTRIBUTION OF DIGITACALIA SPECIES
FIG. 2. DIGITACALIA CRYPTA
from holotype
Digitacalia crypta is readily distinguished from *D. napeifolia*, which is apparently restricted to the Sierra San Felipe, Oaxaca, by its uniformly trilobed leaves, ill defined, shorter petioles, smaller heads with more numerous involucral bracts (8-10 vs. 5), and yellow anthers (vs. purple-black).


*D. napeifoliae* (DC.) Pippen similis sed foliis profunde palmatis-partitis paginis infernis glabrescentibus, bracteis involucris minus carnosis ad medium latissimisque, et antheris flavis (vs. atropurpureis) differt.

Stiffly erect suffrutiocose herbs or shrublets 1-3 m high. Stems puberulent to glabrate, hollow at maturity. Leaves up to 25 cm long and 23 cm wide; petioles not winged, up to 10 cm long; blades rounded in outline, about as wide as long, the lobes decidedly serrate, lanceolate, 8-12 cm long, 2-4 cm wide, glabrescent above and below. Heads numerous in terminal cymose panicles, the ultimate peduncles mostly 5-10 mm long. Involucres 4.0-4.5 mm high, the bracts 5, glabrous or nearly so. Florets mostly 5 per head, the corollas white, glabrous, 7-8 mm long, the throat ca. as long as the limb, the lobes 3.0-3.5 mm long. Anthers yellow. Achenes 4-5 mm long, fusiform, glabrous, the pappus of numerous rusty brown ciliate bristles 5-6 mm long.

Pippen (1968) and McVaugh (1984) included this taxon in their concept of *Digitacalia napeifolia*, both citing the above type, and only known collection of
FIG. 3. DIGITACALIA HINTONIORUM

from holotype.
D. hintoniorum. The latter is readily distinguished from the former by its more deeply palmately lobed leaves, which are glabrescent beneath at maturity, less carnose involucral bracts, which are widest at the middle, yellow anthers, and shorter, rusty brown pappus bristles.


Pippen (1968) and McVaugh (1984) have rendered excellent inclusive descriptions of this species, so I will not add yet another. I recognize two regional, seemingly intergrading varieties under this species, as indicated in the following couplet:

Midstem leaves mostly 7 lobed, the rachis (from apex of petiole to base of terminal leaflet) mostly 10-20 mm long; florets 8-10 per head, Zacatecas to Michoacán .............................................. var. jatrophoides

Midstem leaves mostly 5 lobed, the rachis of midstem leaves mostly 1-8 mm long; florets 5-8 per head; Puebla and Oaxaca .......... var. pentaloba


In addition to the above cited specimens, Pippen (1968) and McVaugh (1984) cite additional specimens from the area concerned which I have not examined. but these have been included in Figure 1.

This is the more widespread, common variety, occurring from southern Zacatecas to Michoacán, as indicated in Figure 1.

D. jatrophoides (H.B.K.) Pippen var. jatrophoides similis sed foliis aequabiliter atque profunde 5-lobatis ad medium caulium, rhachidi laminae plerumque 1-8 mm longa (vs. 10-20 mm), et capitulis flosculis plerumque 5-8 (vs. 8-10) differt.


The variety is readily distinguished from the typical variety by the characters given in the key. Nevertheless, occasional plants of var. pentaloba have characters which approach those of var. jatrophoides. According to label data (Torres & Torres 6939), the taxon is a suffrutiaceous herb to 3 m high and is said to be very frequent at the locality cited.


Suffrutiaceous herbs or shrublets, 1.0-2.5 m high. Stems glabrous, pithy at first, but hollow at maturity. Leaves 3-7 lobed, often deeply so, those at midstem mostly 5-7 lobed, up to 25 cm long and 25 cm wide, gradually reduced upwards, those below the capitulescence mostly trilobed; petioles to 10 cm long; blades glabrate above, persistently densely puberulent beneath, the margins serrulate to nearly entire. Heads numerous in terminal obpyramidal cymose panicles 20-40 cm across. Involucres 4.5 mm high, the bracts 5, glabrous or with a few ciliate hairs apically; florets mostly 5-6 per head,
the corollas glabrous, cream colored, 8-9 mm long, the tube ca. as long as the limb, the lobes narrow, mostly 3-4 mm long. Anthers blackish purple. Achenes cylindrical, ca. 5 mm long, glabrous, the pappus of numerous ciliate tawny bristles 6-7 mm long.

ADDITIONAL SPECIMENS EXAMINED: MÉXICO. Oaxaca: near summit of highway 175 between Cd. Oaxaca and Tuxtepec, 19 Oct 1986, Barkley & Villasenor 3907 (KSC, TEX, WIS); Llano de Las Flores, 2800 m. 5 Aug 1981, Lorence 3650 (CAS); 50 mi by road from Valle Nacional, 13 mi S of the first high pass, just below the fir zone, 2850 m, 10-12 Oct 1962, McVaugh 21823 (LL, NY); 2.7 mi S of Llano de Las Flores, near top of pass, 27 Aug 1983, Turner 15190C (TEX).

Pippen (1968) recognized Digitacalia tridactylitis as a good species, distinguishing this from D. napeifolia by its trilobed leaves, "the lobes forming an angle, with the midrib, of less than 45 degrees." Leaf shape and lobing is very variable in the Digitacalia complex, as indicated in the above description, which is based solely upon collections from Sierra San Felipe, Oaxaca, the type locality for both taxa. Pippen included within his concept of D. tridactylitis, specimens from Guerrero and Morelos which I place elsewhere. McVaugh (1984) followed Pippen's treatment, at least in part, citing material from western Michoacán (Hinton 12572) as belonging to D. napeifolia. The latter collection typifies D. hintoniorum in the present treatment.

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