

HYDROPECTIS STEVENSII (TAGETEAE) POSITIONED IN A NEW MONOTYPIC GENUS HYDRODYSSODIA

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The genus Hydropectis was first proposed as a monotypic element by Rydberg (1915) to house Pectis aquatica S. Wats., a simple-leaved, annual aquatic which is native to the Sierra Madre of Western Chihuahua where it occurs in shallow pools with Potamogeton and yet other acknowledged aquatics. He positioned this in his subtribe Pectidinae with Pectis, the only other genus recognized in the group. In proposing Hydropectis stevensii McVaugh, its author stated that "I originally thought the Hydropectis stevensii might represent an aberrant species of Dyssodia, and I am indebted to Dr. John L. Strother for reminding me of Hydropectis." Strother (1969, 1986) is the acknowledged doyen of the tribe Tageteae, contributing a systematic review of that tribe for the Reading Symposium (Heywood, Harborne and Turner, 1977). Nevertheless, in this overview he retained H. stevensii within Hydropectis noting "that the genus is better treated as a member of Tagetinae [as opposed to Pectidinae]. I suggest an alliance with Dyssodia subgen. Hymenatherum." Keil and Stuessy (1977) subsequently obtained a chromosome count of $n = 9$ pairs for Hydropectis aquatica and observed that no other member of the Tageteae had been reported with $n = 9$, but that the number was closer to Dyssodia and relatives ($x = 7, 8, 10$ and 13) than it was to Pectis ($x = 12$) and, considering all available evidence, generally concurred with Strother's evaluation that it "would be better placed in the Tagetinae than in the Pectidinae."

In the preparation of a treatment of the tribe Tageteae for the Asteraceae of Mexico (Turner and Nesom, in prep.) I have had occasion to reevaluate the relationship of Hydropectis. In this I conclude that Hydropectis, as presently construed, is biphyletic, composed of 2 discordant elements, H. aquatica, which relates more closely to Tagetes than it does to its congener, H. stevensii, the latter of which appears much closer to Dyssodia. Indeed, apart from chromosome number and pappus features, H. aquatica shares most of its morphological features with Tagetes: 5 involucre bracts in a single series united for 4/5 of their length or more and without a calyculus; linear-oblong achenes; a pappus of tawny bristles, instead of sclerose scales as in most Tagetes.

Hydropectis stevensii, on the other hand, has involucre features of the genus Dyssodia, 5 free phyllaries in seemingly 2 series; achenes also like that genus (clavate, relatively short with mostly trifid scales). The disk florets of both species, however, possess similar style branches (short, with papillose obtuse appendages); they also have more or less similar corollas. In short, the two species seem to be included together in Hydropectis largely because they are both aquatics.

Aquatic species also occur in Tagetes, namely T. pringlei S. Wats and T. epapposa B. Turner (Turner, 1988). Both of these, however, are clearly members of Tagetes, possessing most of the features of that genus. What I am suggesting here is that, within the tribe Tageteae in Mexico, adaptation to aquatic conditions (i.e., restriction to vernal pools and dependent upon such sites for germination and productive growth), has occurred independently in several lines as contrasted in the following:

Comparison of aquatic taxa with Dyssodia.

	<u>T. pringlei</u>	<u>Hydropectis</u>	<u>Hydrodyssodia</u>	<u>Dyssodia</u>
Habitat:	aquatic	aquatic	aquatic	terrestrial
Head shape:	fusiform	narrowly turbinate	globoid	turbinate campanulate
Phyllaries:	connate	connate	free	free
Calculus:	absent	absent	absent	present
Receptacles:	convex knobby	subconical knobby	subconical knobby	subconical fimbriate
Style branches:	long, apiculate	short, obtuse	short, obtuse	short, obtuse
Achenes:	Linear- clavate not stipitate	linear- oblanceolate stipitate	clavate not stipitate	obpyramidal not stipitate
Pappus:	scales and awns w/o bristles	bristles only	scales with 3-5 bristles	scales with 5-10 bristles
Anther appendages:	ovate, ratio length/wid. = 2/1	ovate 2/1	broadly ovate 1/1	lanceolate 5/1
Corolla tube/throat ratio:	2/1	ca 1/1	ca 1/1	ca 1/1
Chromosome ? number		$\underline{X} = 9$?	$\underline{X} = 13$

In summary, Hydropectis aquatica appears more closely related to Tagetes than to its congener, H. stevensii, which appears more closely related to Dyssodia. Neither appear to belong to one or the other genus;

however, each possesses one or more unique traits that preclude inclusion in the generic groups to which they relate. Perhaps inclusion of H. stevensii within Dyssodia, as originally envisioned by McVaugh, might be defensible, but Strother's (1986) recent dismemberment of that large variable complex prevents any meaningful inclusion; at least it would not fit comfortably into any of his segregate genera.

HYDRODYSSODIA B. Turner, gen. nov.

Dyssodiae Cav. simile sed habitu aquatico, capitulis ovoideis sine calyculo, bracteis involucri 5-6 liberis fere eglandulosis, appendicibus antherarum ovatis, receptaculis convexis nodosis, et squamis pappi setis 3-5 differt.

The genus contains the single following species:

HYDRODYSSODIA STEVENSII (McVaugh) B. Turner, comb. nov.

Based upon Hydropectis stevensii McVaugh, Contr. Univ. Michigan Herb. 9:416. 1972.

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