

tional Herbarium). NORTH DAKOTA: rich woods, Walhalla, July 8, 1912, *H. F. Bergman*. SOUTH DAKOTA: Piedmont, June, 1895, *Alice D. Pratt*. IOWA: woods, Fayette, May 20, 1894, *Bruce Fink*. WISCONSIN: Galesville, June 1, 1889, *Sidney C. White, Jr.* INDIANA: Lake Everett, Allen Co., May 26, 1916, *Chas. C. Deam*. NEW YORK: Sandy Creek Township, Oswego Co., Aug. 25, 1922, *M. L. Fernald, K. M. Wiegand & A. J. Eames* (Herb. Gray). MASSACHUSETTS: clay soil, Chicopee, May 18, 1913, *John Murdock, Jr. & G. S. Torrey* (Herb. N. E. Bot. Club—this specimen was kindly called to my attention by Professor Fernald).

It appears, therefore, that this essentially western variety, *M. canadense* var. *interius*, occurs sparingly eastward along the south side of the Great Lakes, and even in western New England. Apparently it does not follow the typical form into the more southern part of the latter's range in the southern Alleghenies, nor does it anywhere penetrate far into the northeastern coniferous forest.

The taxonomic relations of these two varieties have proved to be very interesting, but a discussion of these relations, and also of the taxonomy of the other species and varieties of the genus *Maianthemum* is reserved for another paper which is at present in preparation.

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POLYGONUM HYDROPIPEROIDES AND P. OPELOUSANUM.

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Polygonum hydropiperoides Michx., like many other early-described species, suffered from much early confusion in the literature. In its typical region it is an essentially well marked species, but material collected over a wide area, as represented by the collections of the Gray Herbarium, presents many puzzling variations in both habital and technical characters. Some, but by no means all, of these aberrancies have been described as varieties. The species often becomes semi-aquatic, but the characteristic ecological forms which mark *P. natans* and *P. coccineum* are absent. Many of the variations observed in the course of this study occur apparently as isolated examples in scattered areas; they are often characterized by a larger proportion of defective pollen than is usually found in more typical specimens, but, unlike the amphibious species, they are usually

productive of apparently normal achenes. Occasionally the characters suggest blending with other species. It has been conjectured in an earlier paper that many observable variations may be due in part at least to hybrid origins. It is not proposed, however, to publish the material which gives rise to such suspicion as hybrid; the evidence and conjecture are offered mainly to call the attention of students of variation to the phenomena, in order that further studies, particularly in the field, may more fully elucidate the matter. There remain, beside what is considered the type, several definite variations referable to *P. hydropiperoides*, and some account of the literature is in order to indicate something of their history and affinities.

Walter published *Polygonum barbatum* "stipulis truncatis setaceo-ciliatis dorso pilosis; spica virgata, basi scabra."¹ The brief description is applicable as far as it goes; it was published, however, under the general heading: "Persicariae pistillo bifido aut staminibus minus 8."

Except in *P. persicarioides* HBK. (which, as later stated, it is proposed to reduce to a variety of *P. hydropiperoides*), which is not reported in Walter's area, and a Californian variety herein described as new, *P. hydropiperoides* is characteristically trigynous, though the stamens are characteristically eight, but sometimes reduced in number. It may be pointed out, furthermore, that Walter, under the same heading, described *P. hirsutum*, in which the same conditions obtain. The name *P. barbatum* had been used for a Chinese plant described by Linnaeus, with which Walter doubtless confused his plant (Walter's work gives no citations). The name *P. barbatum* occurs in some later American works; e. g. Barton (1818) where from the description its applicability to *P. hydropiperoides* is more clear.

Polygonum hydropiperoides was published by Michaux.

"*P. stipulis undique hirsutis, promissa ciliatis: foliis angustolanceolatis, sessilibus, minutim asperiusculeque hirsutulis: spicis linearibus, debilibus; bracteis subimbricatis, ciliatis; floribus octandris, semitrigynis. Obs. Habitus Hydropiperis: non acre; folia angustiora: flores purpurascens, raro 7-andri. Hab. in Pennsylvania, Virginia, Carolina.*"²

The name was used by Pursh (1814) for the still more *Hydropiper* like plant later to be described by Elliott as *P. punctatum*. Bigelow used it for a "*Hairy Polygonum*."

¹ Walt. Fl. Car. 131 (1788).

² Michx. Fl. Bor.-Am. i. 239 (1803).

“Stamens eight, styles three, half-united; stipules hairy and ciliate; leaves lanceolate, sessile, somewhat hairy; spikes linear, weak; bractes subimbricate, ciliate.

This plant, which is occasionally found about Boston in low grounds, is not the *P. hydropiperoides* of Pursh, nor *P. mite* of Elliott. The whole stem is hairy and branched, and the spikes numerous. The rest agrees exactly with Michaux's description, except that the flowers, as far as I have observed, have fewer stamens.”¹

Bigelow's description is cited without question under *P. hydropiperoides* in the bibliographies of both Meisner and Small; but, except for the three-cleft style, the description suggests nothing but *P. Carey* Olney, a characteristic species of eastern Massachusetts, of which Bigelow's description is probably the first published notice, the “fewer stamens” of Bigelow agreeing with the five to eight stamens found in *P. Carey*.

The name of Michaux was correctly used by Gray in the first edition of the Manual (1848) and it has been generally interpreted correctly in subsequent treatments of the group.

A name frequently used in the older works is *P. mite* Pers.² not Schrank. *P. hydropiperoides* Michx. was cited by Persoon as a synonym, and the description is applicable except for “fol. anguste lanceolatis hirsutis” which, in point of hairiness, seems a little excessive. No type locality is given except “Amer. boreali.” Elliott, under *P. mite* Pers., stresses the same character: “leaves lanceolate, acuminate, entire, hairy”

“Stipules about an inch long, very hairy, and terminated by a long fringe Corolla white”³

Elliott's characterization, with what can be inferred of the size of the plant from the rather large stipules, seems to run close to *P. setaceum* Baldwin, a considerably larger, more robust, and scabrous plant evidently closely related to *P. hydropiperoides*. But *P. setaceum* was first published by Elliott for Baldwin on the preceding page. Material of *P. hydropiperoides* from Elliott's section of the country is not particularly well represented in the specimens at hand, but one gets the impression from examination of southern types of both species that *P. hydropiperoides* and *P. setaceum* sometimes approach each other more closely than the extreme type of either would suggest. The quoted portions of Elliott's description would seem to apply

¹ Bigel. Fl. Bost. ed. 2: 156 (1824).

² Pers. Syn. i. 440 (1805).

³ Ell. Sk. i. 456 (1817).

to a median form rather than the usually purplish-flowered and barely strigose *P. hydropiperoides*. This leaf-hairiness seems to be associated with the early descriptions of *P. mite* Pers. which otherwise correspond closely to Michaux's plant.

Polygonum hydropiperoides, or material referable to it, has also been reported from outside the United States and Canada. *P. persicarioides* HBK. was described in 1818 from "aquis stagnantibus Regni Mexicani prope Queretaro." The description¹ is on the whole more suggestive of *P. hydropiperoides* than of the *P. Persicaria* which the plant suggested to Kunth. Points of difference from the more Northern plant (which may not have been seen by Kunth) are: "CALYX quadripartitus, glaber, albidus. STAMINA sex teste Bonplandio. STYLUS bifidus . . . AKENIUM lenticulare, umbonatum." Chamisso and Schlechtendal reported² from Chile a plant which they referred with some doubt to *P. persicarioides*. Meisner, confirming the identification and extending the range to include Colombia, Guiana, Peru, and Brazil, included in the description of the South American material of *P. persicarioides* these variations: "staminibus 7-8 styloque semi-2-3-fido subinclusis; nucula parvula biconvexo-lenticulari v. trigona . . . SPICAE . . . densi-florae. CALYX 5-partitus (ex Kunth. l. c. 4-partitus, qualem nunquam inveni)."³ In the same publication Meisner also described *P. hydropiperoides* from Brazil. Describing *P. persicarioides* again he stated it to be "Proximum *P. Ludoviciano* et nodoso, ab illo praecipue pedunculis glabris, ab hoc bracteis truncatis ciliolatis etc. dignoscendum."⁴

The chief demonstrable difference in the material at hand may be summed up as a somewhat more dense type of inflorescence in *P. persicarioides* (a character in which *P. hydropiperoides* varies considerably), the presence of lenticular as well as trigonous achenes, and a tendency of the latter (not always evident) to somewhat greater proportionate elongation. There is also a tendency toward a greater strigosity. The South American material in the Gray Herbarium (with the exception of certain Chilean specimens) belongs here rather than with *P. hydropiperoides* proper. In view of the generally narrow range of difference and the tendency of the types to inter-

¹ HBK. Nov. Gen. et Sp. ii. 179 (1818).

² C. & S. Linnaea, iii. 44 (1828).

³ Meisn., in Mart. Fl. Bras. v. pt. 1: 16, 17 (1855).

⁴ Meisn. in DC. Prodr. xiv, 117 (1856).

grade at the southern limit of typical *P. hydropiperoides* in the south and southwest, it seems appropriate to reduce *P. persicarioides* to a variety of *P. hydropiperoides*.

Chamisso & Schlechtendal published a detailed description of *Polygonum virgatum*¹ from Chile and Brazil; but Meisner in 1855,² citing the original material, reduced the species to varietal rank under *P. hydropiperoides* and he later summed up the differences; as to the var. *virgatum*:

“ochrearum bractearumque ciliis longioribus (illis 3–4 lin., his 1–2 lin. longis), foliis utrinque diutius pubescentibus . . . Forma *P. persicarioide* et setaceo valde similis, sed ab illo discrepans ciliis longioribus, spicis tenuioribus et achaenio, etc.; ab hoc spicis tenuioribus, ochrearum setis brevioribus, foliorum pilis tenerioribus nec setiformibus.”³

This is certainly suggestive of Elliott's somewhat hairy *P. mite*. Meisner, furthermore, cited material from Louisiana, Florida, and Mexico. *P. virgatum* was reduced by Small to synonymy with *P. hydropiperoides*, and the material at hand does not justify other disposition of it, though search for a form intermediate between *P. hydropiperoides* and *P. setaceum* might re-establish *P. hydropiperoides* var. *virgatum* (C. & S.) Meisner.

In 1892, Small described *P. hydropiperoides* var. *strigosum*:

“One and a half to two feet tall. Stem clothed with stout, appressed hairs; leaves lanceolate to linear-lanceolate, obtuse, strigillose; sheaths averaging half an inch long, densely strigose and long-ciliate; bracts strigillose and ciliate; flowers whitish.

Indiana: Indianapolis, along the White River (Britton); West Virginia: Preston Co., along the Cheat River (J. D. Smith); Canada: Gatineau River (Macoun)

Its almost white flowers, dense strigoseness and heavier habit separate it very clearly from the typical form.”⁴

In 1895, however, Small changed the name to *P. hydropiperoides Macouni*, and gave the range as “Ontario, West Virginia, Indiana and California.”⁵ This is again suggestive of Elliott's hairy *P. mite* and of the *P. virgatum* of Chamisso & Schlechtendal, though from quite a different range. Material, including a specimen of Macoun's from Gatineau River, Quebec, shows fine strigosity of the

¹ C. & S. l. c. 45 (1828).

² Meisn. in Mart. Fl. Bras. v. pt. 1: 18 (1855).

³ Meisn. in DC. Prodr. xiv. 103 (1856).

⁴ Small, Bull. Torr. Bot. Cl. xix. 355 (1892).

⁵ Small, Mem. Dept. Bot. Columb. Col. i. 81 (1895).

stem, barely visible without a hand-lens, but scarcely "stout appressed hairs." Strigose material from California appears, on account of the tendency to production of lenticular achenes, referable to a new variety to be described in this paper. Small's variety is recognized in the 7th edition of Gray's Manual and in the first edition of Britton & Brown, but reduced (under the genus *Persicaria*) to synonymy in the second edition. It is not recognized in Small's Flora of the South-eastern United States; the description of *Persicaria hydropiperoides* as "sometimes slightly strigillose" would seem to include the plant. If the variety is to be recognized to include all strigillose material, the description should be emended to include flowers of the typical color. The varietal name *strigosum* has priority over the later chosen var. *Macouni*. To the present writer the plant appears of formal rather than varietal rank.

St. John, in 1921, described *Polygonum hydropiperoides* var. *psilostachyum* from Sable Island and the state of Washington:

"Differing . . . in having glabrous eciliolate ocreolae which have scarious transparent margins, and in the glabrous or glabrate comparatively short leaves, 4-8 cm. long, 0.8-2.4 cm. wide."¹

The Sable Island type material is well marked; in habit it resembles a reduced specimen of the hybrid *P. hydropiperoides* × *robustius* rather more closely than typical *P. hydropiperoides*. It also possesses a larger proportion of defective pollen than the latter usually exhibits. Fruit production appears normal. St. John's publication cites *P. lapathifolium* L., and its var. *prostratum* Wimmer, *P. scabrum* Moench, *P. Hydropiper* L. and *P. Persicaria* on the island. The appearance of *P. hydropiperoides* var. *psilostachyum* does not particularly suggest admixture from any of these stocks. The Washington specimens cited by St. John are slightly less marked in the technical characters given. Other material from the Pacific Northwest in the Gray Herbarium represents a median form in possessing the ciliation and puberulent tendency of the typical species with the habital aspect of the variety *psilostachyum*.

The panicle of *P. hydropiperoides* is usually slender and simple. In some localities, particularly in Nova Scotia and California, the peduncle shows a tendency to branch in a digitate manner. Fernald in 1922, described from Nova Scotia a particularly vigorous and long-leaved plant as *P. hydropiperoides*, var. *digitatum*:

¹ St. John, Proc. Bost. Soc. Nat. Hist. xxxvi. 71 (1921).

“Plant 1–1.5 m. high; leaves linear-lanceolate, attenuate, mostly 1.3–2 dm. long: spikes densely flowered, 0.5–1 cm. thick, mostly crowded at the tips of the branches . . . Differing . . . in its great height, very elongate leaves, thick crowded spikes and very late flowering.”¹

This latter character was again emphasized by the same author in a later publication.² Typical *P. hydropiperoides* in the same region was in maturity from mid-July through August, while the variety *digitatum* barely showed color in the inflorescences on August 23, and was in anthesis in October.

Moore, in 1914, published a white-flowered plant as *P. hydropiperoides*, forma *leucochranthum*.³

(To be continued.)

A FURTHER NOTE ON CIMICIFUGA RACEMOSA IN MASSACHUSETTS.—In 1920, I found *Cimicifuga racemosa* growing naturally and abundantly in Sheffield, in the southwest corner of Massachusetts.

Believing after some research that the plant had “rarely, if ever, been found in New England north of Connecticut except in cultivation or as a garden escape,” I made a record of my discovery and some observations concerning this interesting plant and its occurrence in Massachusetts. (See RHODORA, xxiii. 202, Sept. 1921.)

Its range had been given in the Gray Manual (1908) as “s. N. E. to Wisc., and southw.; cultivated and escaped eastw.” I therefore cited two collections in the herbarium of the New England Botanical Club as probably such escapes, viz. one by Parlin in 1899 from “North Berwick, Maine, growing in an orchard from planted roots”; the other by John Murdoch, Jr., July 22, 1913 from “Bernardston, Mass., woods in east part of town.”

Mr. Murdoch died in 1915 and I could only express the hope that my note might be productive of information which would verify not only the occurrence of the plant here, but determine its status as indigenous, or as “cultivated and escaped eastward.” My wish was soon gratified and I received reliable information from two persons living in Greenfield who knew the plant well, and to whose gardens plants had long ago been transplanted from this station in the adjoining town of Bernardston.

¹ Fernald, RHODORA, xxiii. 260 (1922).

² Fernald, RHODORA, xxiv. 173 (1922).

³ A. H. Moore, RHODORA, xvi. 129 (1914).