



THE DIAGNOSTIC CHARACTER OF VALLISNERIA AMERICANA

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THE DIAGNOSTIC CHARACTER OF VALLISNERIA
AMERICANA.

M. L. FERNALD.

It has become so fixed a tradition in North America that our fresh-water Eel Grass or Tape Grass is *Vallisneria spiralis* L. that very few students of our flora have made a critical comparison of the American plant and the true *V. spiralis* of Europe. The European species is found only from the Mediterranean region northward into southern and southeastern Europe and adjacent Asia, not in the northern portions of the continent nor the British Isles, and therefore, as an essentially Mediterranean species, is not to be expected as a widely distributed plant of temperate eastern North America. Our own plant is found in fresh waters from central Maine to South Dakota and south to Florida and the Gulf States. In 1803 Michaux described the North American plant as a distinct species, *V. americana*, as follows:

"AMERICANA. V. foliis erectis: pedunculis non spiralibus.

Obs. Folia minus quam in *spiralis* elongata, stantia, inferne non angustata.

Hab. In flumine *Mississipi* et in fluvio *S. Joannis* Floridae." ¹

Subsequent authors for some years took up *V. americana* as distinct but added nothing particularly significant to the description until Nuttall in 1818 stated that the male peduncles are "very short" but that the plant is "Apparently a mere variety of *V. spiralis*." ² In 1826 Torrey definitely treated the American plant as a variety, calling it *V. spiralis*, β *americana* and again stating the character pointed out by Nuttall, "sterile peduncles very short." ³ After Torrey's publication the varietal designation was soon dropped and our plant has subsequently been treated as quite identical with the European. It is not perfectly clear that Nuttall and Torrey, in speaking of the short peduncle of the staminate inflorescence, were contrasting it with the peduncle in the European for they may have intended merely a contrast with the long peduncle of the pistillate flower which becomes in fruit more or less spiralled.

¹ Michx. Flor. Bor. Am. ii. 220 (1803).

² Nutt. Gen. ii. 230 (1818).

³ Torr. Compend. 365 (1826).

Examination of European specimens and of European plates shows at once that, as would be expected, there is a very definite difference between the European and American plants. In the staminate inflorescence the pouch or spathe of the European plant, as shown in all good European specimens and illustrations, is borne upon a slender filiform scape, which in maturity is 1.6–7 cm. long and only 0.5–1.2 mm. thick, and the spathe itself is ovoid, strongly rounded at base and only 6–9 mm. in length. The staminate spathe in the American plant is often nearly sessile, but more often on a short club-shaped thick scape 0.2–2 cm. long and 1.5–3 mm. thick, the spathe itself being much larger than in the European, 1–1.6 cm. long, and narrowed gradually into the thick scape. This pronounced difference in the staminate inflorescences is constant in all material examined which has been in condition to display the character, although definite diagnostic characters in the pistillate flowers and fruit have not been found. It would seem, however, in view of the striking differences in the staminate inflorescences, that we should recognize *Vallisneria americana* Michx. as the common American plant.

Very recently Rydberg¹ has revived *V. americana*, but not in the sense of the present writer, for Rydberg has treated the common North American plant as quite identical with the European *V. spiralis*, citing various European illustrations as representing it and treating *V. americana* as a local species found from "Florida to Mississippi" with the type locality "Mississippi River." Rydberg attempts to separate the southern plant, which he calls *V. americana*, from the widely dispersed species on the following characters:

Stigmas 2-cleft for less than half their length; sepals 2–3 mm. long; pistillate peduncles usually spiral-twisted in fruit; leaves 3–8 mm. wide.

1. *V. spiralis*.
Stigmas 2-cleft to near the base; sepals 5–6 mm. long; pistillate peduncles scarcely spiral-twisted in fruit; leaves 6–20 mm. wide. . . 2. *V. americana*.

The writer has not seen sufficient material from the Gulf States to feel confident that the stigma-characters indicated by Rydberg are important, but such material as he has before him shows a plant from Florida (*Hitchcock*, no. 376) with sepals only 3.5 mm. long (instead of 5–6 as Rydberg requires for the Florida plant) and material from Mississippi (*Skehan*) with leaves 5–7 mm. broad (instead of 6–20 mm. as required of the Mississippi plant by Rydberg), while among the

¹ Rydb. N. A. Fl. xvii. 68, 69 (1909).

northern specimens it is frequent to find sepals 5 mm. in length (Rydberg restricts the sepals of the northern plant to a length of 2–3 mm.) or the leaves well over 1 cm. broad (for example *Gleason* and *Shobe*, no. 184 from Illinois, with leaves 12 mm. broad). It does not seem very probable that there are two American species; at any rate, most of the characters stated by Rydberg are thoroughly inconstant and it is very certain, if Michaux's *V. americana* is typified by his plant from the Mississippi River, that the type did not come from the range "Florida to Mississippi" assigned to *V. americana* by Rydberg. The Mississippi River known to Michaux was entirely in western Illinois, Michaux making his trip to the Mississippi in 1795–96 and exploring along the Mississippi in Illinois southward as far as the mouth of the Ohio, thence along the Ohio and tributary rivers eastward. Any material of *V. americana* which he collected in the Mississippi River must, then, have come from Illinois, and *V. americana*, if it rests alone upon the Mississippi River material, is clearly the common species of the North and not a different plant which may or may not exist in the Gulf States. From what has been stated, it is clear that our American *V. americana* differs very definitely from the southern European species, *V. spiralis*, in its staminate inflorescences and that treated as a species it is *V. americana* Michaux, or as a variety it would be *V. spiralis*, var. *americana* (Michx.) Torr.

GRAY HERBARIUM.

JOSSELYN BOTANICAL SOCIETY OF MAINE.—The Twenty-fourth Annual Field Meeting will be held at Phillips, July 2, 1918, with headquarters at the Willows Hotel. Further notice will be sent to members, and to others interested, on request, at least two weeks previous to the meeting.—MISS ADALINE WILLIS, Secretary, Naples, Maine.