

Rediscovery of *Marsilea vestita* subsp. *vestita* in Pulaski County, Arkansas After 162 Years

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We report the first vouchered record of *Marsilea vestita* Hook. and Grev. subsp. *vestita* from Pulaski County Arkansas in 162 years. Two patches of the hairy water fern, *M. vestita* subsp. *vestita* were discovered by W. Shepherd on 20 September 1997 at the edge of a backwater pond along the Arkansas River at Murray Park in Little Rock. Prior to this record, the most recent collection of this species from Pulaski County was taken from "the margin of small swamps in the deep bottom woods on the Arkansas River, not far below Little Rock" in July of 1835 by the German botanist and physician George Engelmann. Witsell visited Shepherd's site to make collections on 24 September 1997 and again on 9 October 1997 with J.H. Peck to conduct a census and evaluate the status of the population. A total of 53 patches covering 124 m² was discovered along the shoreline of backwater ponds behind a series of five wingdam-dredge-spoil islands created by the Corps of Engineers' McClellan-Kerr Navigation Project. Voucher specimens are located in the LRU herbarium at the University of Arkansas at Little Rock [*Shepherd 452* (LRU), *Witsell 18* (LRU)].

Marsilea vestita subsp. *vestita* occurs over the western U.S., but is most abundant in the central Great Plains region (Johnson, Systematics of the new world species of *Marsilea* (Marsileaceae). Vol. 11. Systematic Botany Monographs. University of Michigan at Ann Arbor. 1986). Arkansas populations are at the eastern edge of the species's range and are rare enough for the species to be on the Arkansas Natural Heritage Commission's special plant list of rare and sensitive species. Other occurrences of *Marsilea vestita* subsp. *vestita* in Arkansas have been recorded in Arkansas, Ashley, Bradley, Chicot, Crawford, Desha, and Faulkner counties as *Marsilea mucronata* A. Braun, *M. uncinata* A. Braun and *M. vestita* var. *uncinata* (A. Braun) Baker (Peck, J. and C. Taylor. Checklist and distribution of Arkansas Pteridophytes. Proc. Arkansas Acad. Sci. 49:130-137, 1995).

There is great genetic and environmental variability in the genus *Marsilea* and taxa are often difficult to determine in the absence of the more taxonomically reliable sporocarps. However, the relative development of roots and lateral shoots, the degree of development of lateral shoots, and leaflet shapes are of some value to distinguishing taxa (Johnson, Systematics of the new world species of *Marsilea* (Marsileaceae). Vol. 11. Systematic Botany Monographs. University of Michigan at Ann Arbor. 1986). Since no

sporocarps were present in these Pulaski County populations, we had to rely on vegetative characters in making our identification.

Plants exhibiting two distinct growth forms were found during all three visits to the site: a short form growing on sandy-to-muddy substrate at the edge of the water with some plants entirely submerged and a taller form found on the bank above the water level. Heterophylly in amphibious plants is not uncommon and is exhibited in *Marsilea* by the phenotypic plasticity of the leaves resulting in distinct floating, submerged, or aerial (land) leaves (Johnson, Systematics of the new world species of *Marsilea* (Marsileaceae). Vol. 11. Systematic Botany Monographs. University of Michigan at Ann Arbor. 1986). Johnson (1986) reported that land leaves are smaller than aquatic leaves, though the opposite was observed at this site. The plants with the largest leaves, in excess of 20 cm tall, were found growing on dry land behind a partially submerged log along the edge of the water. The taller terrestrial plants had fewer leaves than the smaller aquatic ones.

Patch size ranged from isolated individual plants to dense clusters up to 20 m long and 3 m wide. 56.6% of the patches covered less than 1 m², 24.5% covered from 1 to 5 m², 13.2% covered from 5 to 10 m², and 5.7% covered from 10 to 20 m². A typical patch was shoreline linear, extending less than 1 m into the water but often twice as far onto the shore, depending on the slope of the bank. The area of greatest density fell within 0.5 m of the shore in either direction, with the plants farthest from the water's edge being fewer and more widely spaced. Patches on more steeply sloping banks were restricted to the shoreline more than patches on less steeply sloping banks. *Marsilea* was absent from flat areas along the shoreline, possibly excluded by abundant grasses. The plants were concentrated on the calm banks of the backwater ponds and gentle, meandering streams connecting these ponds to the river. Only one small patch of plants was found on the more turbulent river-side of the islands, and it was approximately 2.5 m up the bank from the waters edge. Associated genera were *Pluchea*, *Rotala*, *Polygonum*, *Sagittaria*, and several grasses.

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