THE REDISCOVERY OF *POTAMOGETON FLORIDANUS* SMALL (POTAMOGETONACEAE)

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ABSTRACT

Potamogeton floridanus Small, first collected in Milton, Florida in 1886 and represented by two specimens, was named in 1903. Its taxonomic status has fallen since into ambiguity among students of the genus, owing largely to the fact that its existence has continued to be represented only by the two original collections. It has not been recognized as a distinct species by anyone other than Small since 1933. Recently the plant was rediscovered and is known now from four disparate populations. Specimens from these populations match exactly the type and the type description. Observations in the field suggest strongly that these specimens represent a valid species endemic to the lower Blackwater River drainage in Santa Rosa County, Florida.

In May, 1886, A. H. Curtiss sent to the Torrey Herbarium a pondweed from ". . . the Blackwater River, northwestern Florida." It was regarded simply as a ". . . peculiar form of *Potamogeton natans*" (Morong 1886). Morong, noting this collection, described it as having ". . . small, acute, elliptical leaves, 4 – 6 cm long by 5 – 15 mm wide, and erect peduncles about 6 cm long." He noted further that it looked ". . . exactly like specimens in the Torrey Herbarium from India which are labeled *Potamogeton natans* var." Curtiss subsequently sent a specimen collected from the same Blackwater River site in late June of the same year. Neither of these collections included fruiting material.

Small (1903) included in his manual a new pondweed from the "Blackwater River, W. Fla.," and named it *Potamogeton floridanus*. He compared it with and treated it next to *P. natans* L., giving the overall dimensions of *P. floridanus* as smaller than those of *P. natans*, and with narrower floating leaves. In his description of the species, Small did not indicate that he had seen fruiting material, although in his 1913 edition he made an inexplicable reference to the drupelet.

Bennett (1907) expressed little doubt that the specimen upon which Small based *P. floridanus* was one and the same as that upon which Morong commented in 1886; he was, however, of the opinion that the specimen

SIDA 11(3):340 – 346. 1986.

was actually *P. tepperi* Benn., a species which has much the appearance of a ". . . small *natans*, and is often so named." Bennett determined that the "*P. natans* var." specimens from India to which Morong referred were indeed *P. tepperi*.

The binomial *Potamogeton floridanus* Small was relegated to synonymy, with equivocations, under *P. tepperi* by Ascherson and Graebner (1907), apparently on the advice of Bennett.

Taylor (1909) included *P. floridanus* under *P. natans* on the basis of the speculation that the former was ". . . an immature form ..." of the latter. He noted also, however, the ". . . slender stem and leaves acute at both ends . . ." and that mature fruit was unknown. *Potamogeton tepperi* was not mentioned, either as a synonym or even as a species attributed to North America. Small (1913 & 1933), nevertheless, continued to recognize the two Blackwater River specimens as representing an indigenous, albeit rare, Florida species.

Ogden (1943), apparently reluctant to determine this plant as the Asian species *P. tepperi*, acknowledged that it might be ". . . a pronounced ecological form of *P. oakesianus* or *P. natans* . . ." but pointed out that neither species ". . . has been otherwise found within 600 miles of Florida." He preferred to regard the two Curtiss specimens as representing hybrids between some linear-leaved species and *P. illinoensis* Morong, although his own detailed studies of the stem anatomy caused him to cast considerable doubt upon this hypothesis.

As a result of the passage of the Endangered Species Act of 1973, the Smithsonian Institution was directed to review the status of the nearly 25,000 kinds of plants which are native to the United States. *Potamogeton floridanus* was among the plants that were nominated for additional consideration, but since it had not been seen alive since 1886, it was subsequently listed in the Federal Register as "possibly extinct."

Haynes (1978), nearly one hundred years after Curtiss collected his material, could add nothing more to our understanding of this plant. He retired the problem by noting that ". . . the exact nature of *P. floridanus* Small, based on two collections made by Curtiss in 1886 (NY), is uncertain."

The absence of additional collections, along with equivocations by the major students of the group, left the floristic botanist with little choice other than to relegate *P. floridanus* to synonymy or to ignore it altogether.

The only recent authors whom one might have expected to treat *P. floridanus* chose not to do so (Ward 1968, 1979; Godfrey and Wooten 1979). In 1980, when an update of the status of United States plants appeared in the Federal Register, *P. floridanus* had been dropped from the list because of its

reputed hybrid origin, since it had been decided by personnel charged to operate the endangered species program that hybrids no longer would be considered.

Three recent collections (*Wilhelm & Blackmon 9706*, 23 November 1981, NY; *Wilhelm & Blackmon 11522*, 10 Jul 1983, USF; and *Burkhalter 9398*, 3 Jun 1984, UWFP), with attendant field observations, have added more information regarding the taxonomic status of *P. floridanus*. Sadly, however, Small's (1913) inexplicable reference to the drupelet notwithstanding, fruits for this species have yet to be collected.

The idea that *P. floridanus* may represent an early introduction is, on the face of it, not altogether spurious. The old port of Pensacola long has been a place of entry into this country for ballast weeds and other species native to areas remote from the central Gulf coast region (Mohr 1878). *Najas ancistrocarpus* Magnus, for example, was collected ". . . in tidal creeks near Milton at the head of Pensacola Bay" and reported under the name *N. conferta* A. Br. (Fernald 1902).

Specimens, however, of the Asian species *Potamogeton tepperi* (*Litvinov 3352* MO, determined by Bennett, and *Merrill 1723* MO) are coarse broad-leaved plants with rounded leaf bases and stout petioles and peduncles, resembling *P. natans* much more closely than the Florida material. The recent collections of *P. floridanus* match exactly the description of Small's species and the type specimens (Fig. 1). Examination of all the herbarium specimens and plants in the field reveals a degree of uniformity in floating-leaf morphology which is typical of other *Potamogeton* species. The floating leaves are lanceolate, tapering at both ends, and with long slender petioles. The length/width ratio of *P. floridanus* is 5.1 ± 0.8; that of *P. tepperi* is 1.8 ± 0.3.

Taylor's implication that the Curtiss specimens are likely to be nothing more than immature forms of *P. natans* is to us unacceptable. Obvious morphological differences notwithstanding, *P. natans* remains unknown from the southeastern United States (Godfrey and Wooten 1979). *Potamogeton oakesianus* Robb., the other possible species of which Ogden speculated *P. floridanus* might be a "pronounced ecological form," is even more remote from the Gulf coastal plain than *P. natans* (Fernald 1950).

Ogden's equivocal speculation that Curtiss' collections represent hybrids between a broad-leaved and narrow-leaved species is not only inconsistent with his own anatomical studies, but field observations on the habitat and associates of the plant further frustrate the hybrid hypothesis.

There currently are four small disparate populations of *P. floridanus* known, all in the vicinity of Milton. Two are in Pond Creek, a clear-flowing tributary of the Blackwater River; one just south of the U.S. Route

90 bridge, the other about ¼ mile southwest of there in the NE¼ SW¼ Sec. 9, T1N, R23W. A third population is in the tidal channel connecting Bob's Bayou with the Blackwater River north of East Milton, and the other is at the entrance to a tidal channel of an unnamed bayou off the west side of the Blackwater River in the SW¼ Sec. 25, T2N, R28W. In each case the plants were found growing in two to four feet of water and in the vicinity of

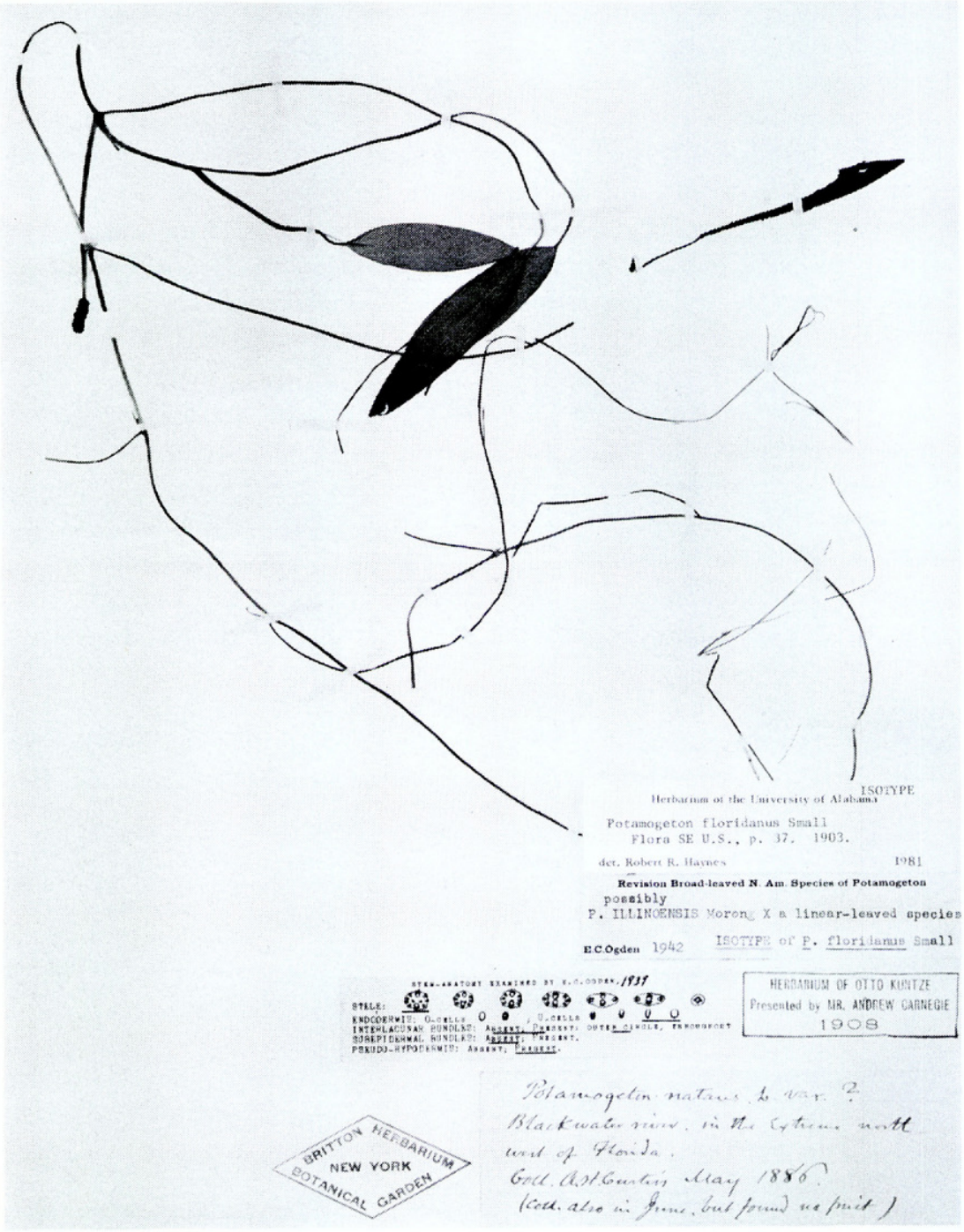

Figure 1. Isotype of *Potamogeton floridanus* Small (NY).

Potamogeton diversifolius Raf. No other species of *Potamogeton* were observed. The narrow-leaved species *P. curtissii* Morong (=*P. foliosus* var. *macellus* Fern.) was described by Morong (1886) based upon material collected by Curtiss from the same location he collected *P. floridanus*. We have been unable to relocate these plants.

The reluctance by students of the genus to recognize *P. floridanus* as a species seems to have originated not so much from a lack of morphological distinctness as from the fact of its very restricted range, and from the fact that it remained unrepresented by additional collections.

Endemism in the central Gulf coast area, however, is not uncommon. There are quite literally dozens of species with very restricted ranges in the region. *Baptisia calycosa* var. *villosa* Canby, *Chrysopsis godfreyi* Semple, *C. gossypina* ssp. *cruiseana* (Dress) Semple, *Conradina glabra* Shinn., *Crataegus lacrimata* Small, *Eriocaulon lineare* var. *gigas* Mold., *Hymenocallis choctawensis* Traub, *H. henryae* Traub, *Hypericum chapmanii* P. Adams, *H. lissophloeus* P. Adams, *Lilium iridollae* Henry, and *Verbesina chapmanii* J. R. Colem. are only a few of many examples. It is likely that *Potamogeton floridanus* was somewhat more widespread in the Milton area in the 1880's when Curtiss was able simply to visit reaches of the river in the vicinity of the railroad whistle-stops, but the water in such areas today apparently is no longer suitable for the plant. It is certain, with the chronic degradation of our rivers, streams, and lakes, that the presettlement populations of most of our native aquatic plants have been decimated several times over.

Potamogeton floridanus is clearly not an immature form of *P. natans*, nor is it a "pronounced ecological form" either of *P. natans*, *P. oakesianus*, nor any other *Potamogeton*. It is not the Asian *P. tepperi*. It is our opinion that *P. floridanus* is a valid native North American species, unlikely to be of hybrid origin. It is still extant in at least four locations near Milton, Florida. Be-

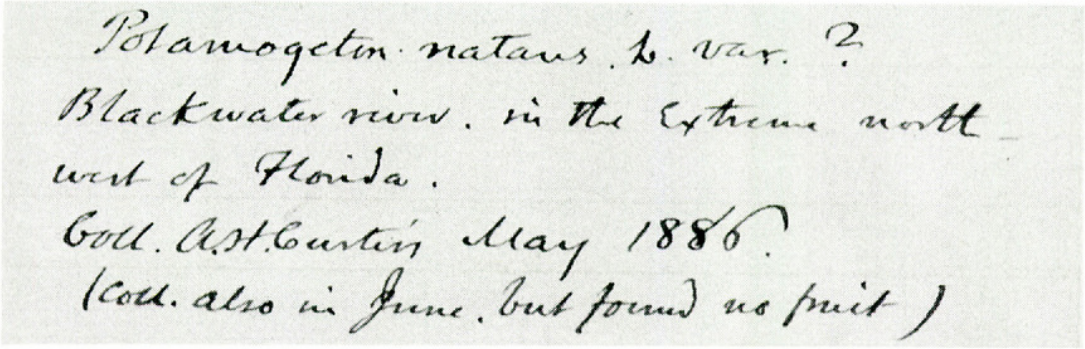
Potamogeton natans L. var. ?
Blackwater river. in the extreme north-
west of Florida.
Coll. A.H. Curtiss May 1886.
(Coll. also in June. but found no fruit)

Figure 2. Label with original handwriting from isotype of *Potamogeton floridanus* Small, collected by A. H. Curtiss, May, 1886.

Figure 3. Specimen of *Potamogeton floridanus* Small, collected by Wilhelm & Blackmon (9706) NY, 23 Nov 1981.

cause of its extreme rareness, narrow distribution, and obvious vulnerability, we feel it would be appropriate to reconsider it as a federally endangered species.

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