Weed Potential of Cone-Spur Bladderwort *Utricularia biflora*

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The bladderwort family, Lentibulariaceae is comprised of two genera in the Southeastern U.S., *Pinguicula* and *Utricularia*. Only a few of the 14 species of *Utricularia* that occur in Florida cause significant problems, most notably *U. foliosa, U. purpurea, U. biflora* and *U. floridana. Utricularia biflora* has become a nuisance in a variety of habitats, particularly canals in southwest Florida and is being encountered as a weed more frequently in recent years. (Fig. 2).

U. biflora Lam., synonomous with *U. pumila* Walt., grows in a characteristic intertwined net-like form (Fig. 1), often forming dense floating mats. The only other *Utricularia* species closely resembling *U. biflora* is *U. fibrosa* and differs from *U. fibrosa* in having a shorter scape (a leafless flowering stem). In *U. biflora* the scape reaches a length of about 10 cm, whereas in *U. fibrosa* the scape attains 15 cm or longer.

U. biflora is a rather widespread species occurring along the coastal plain from New England to Texas and in West Virginia, Arkansas, Oklahoma and New Mexico[1]. Schardt and Nall[5] report *U. biflora* primarily in slightly acidic shallow lakes and reservoirs in north and central Florida. Beal[1] also reports that *U. biflora* was found in somewhat acidic habitats (pH 4.6 -7.0) in North Carolina. However, we find the plant at high densities in urban canals with pH ranges of 7.7 - 8.6 indicating that a relatively low pH is not necessarily a characteristic of its habitat. An inspection of *U. biflora* herbarium specimens at the University of Florida indicate that this species occurs throughout Florida in a variety of primarily lentic habitats including one on Big Pine Key as a southern extreme. *U. biflora* is most often found growing in association with other aquatic macrophytes. I have observed dense growths of *U. biflora* growing at a depth of 2 - 2.5 m, while thoroughly penetrating and possibly shading stands of *Chara* and *Najas* in an almost paracitic fashion. Since *Utricularia* spp. lack roots, other submersed macrophytes seem to provide a stable substrate or matrix that keeps *U. biflora* protected from excessive wind and wave action at the surface. It is doubtful that *U. biflora* obtains any nutritive benefits from the macrophytes it is so closely associated with since it has bladders for capturing microcrustaceans as with other *Utricularia* species (Fig. 1).

U. biflora presents itself in its most obnoxious form usually in late summer when dense submersed growths detach and float to the surface. Boat traffic and the buoyancy derived from photosynthetic gases aid in its movement to the surface where it rivals most floating mats of filamentous algae as a pest. Despite its delicate form, I am always amazed how little *U.*

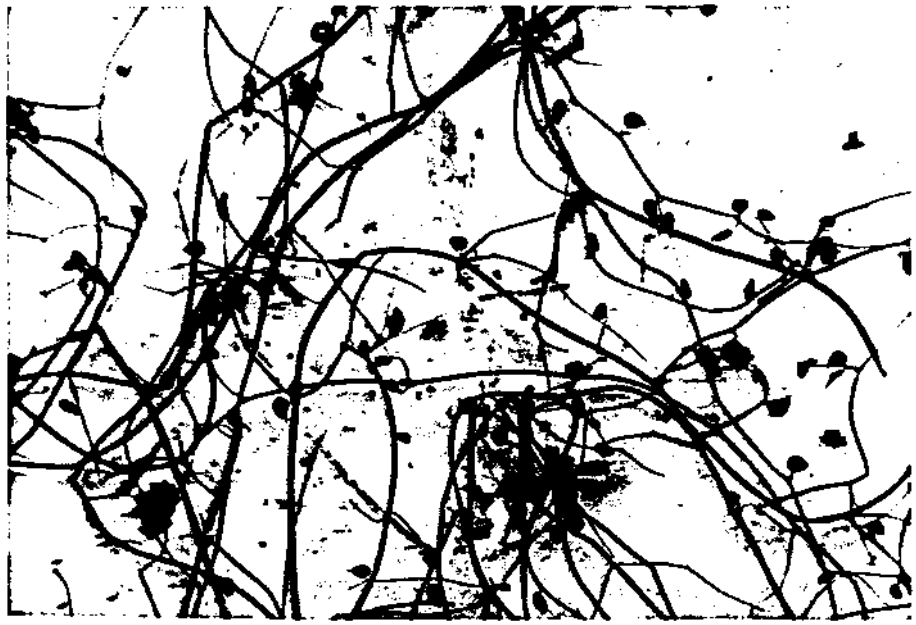

Fig. 1 Close-up of U. biflora *displaying filament-like stems and associated bladders.*

Fig. 2

biflora it takes to foul the prop on our 25 HP outboard.

Heavy summer rains are sometimes very effective at dissipating floating mats and probably act as a natural control to keep this species from major weed status in some situations. This effect of heavy rain on dissipating the plant at the surface may be anticipated and utilized before scheduling herbicide treatments.

My observations of *U. biflora* in canals in Lee County indicate that it may be more sensitive to winter conditions of lower water temperature and shorter day length than associated *Chara* or *Najas* species. Between late November and March, when water temperatures average below 23°C in this area, *U. biflora* is rarely a problem and demonstrates a marked decline in biomass after October.

Schardt and Nall[5] report that *U. biflora* has little wildlife value and I have found that grass carp prefer it less than *Najas* or *Chara* when occurring with these species. Grass carp should be stocked during the winter months in Florida when *U. biflora* is the primary target and the plant is at its lowest density.

The statewide occurrence of *U. biflora* in Florida has remained at about 60 - 70 sites during the last four years, primarily in lakes and canals comprising 700 -1,000 surface acres[3,4]. The acreage estimate for canals in South Florida is probably significantly underestimated since several hundred acres of *U. bilfora* occur in the freshwater canal system in Lee County alone. Another possible reason for its underestimation as a weed is that it is probably misidentified as a filamentous alga which is a mistake easily made unless it is examined closely. The emergent yellow flowers, often occurring quite densely during mid and late summer, are the best indication that the disgusting looking mat is something other than a filamentous alga. However, filamentous algae are occasionally found growing associated with *U. biflora*, and in mixed mats, the whole thing is sometimes written off understandably as just algae.

In summary, *U. biflora* has apparently adapted well to a variety of aquatic habitats over a broad geographic range. During its peak growth season of late summer in South Florida, it often outcompetes other native vegetation and requires management especially when it is highly visible in mat form at the surface.

Literature Cited

1. Beal, E.O. 1977. *A manual of marsh and aquatic vascular plants of North Carolina with habitat data*. N. Carolina Agr. Exper. Sta., Tech Bull. No. 247.
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Cancer Hazards from Pesticides

The possible lifetime cancer hazard from consuming residues of suspected pesticide carcinogens in the U.S. food supply is similar to that from drinking 1.6 quarts of chlorinated tap water per day. It is far less than the cancer hazard from daily consumption of a peanut butter sandwich or a mushroom. These comparisons are based on a pesticide study released by the National Academy of Sciences and on a new hazard-ranking technique developed by biochemist, Bruce Ames, and his colleagues at the University of California, Berkeley, and published in *Science Magazine*. (CAST News Release, June 1987 via Ohio Pesticide Newsletter 5-88)

What are the Concentrations of Pesticides that can be Detected?

Current technology can measure levels as low as one part per billion (ppb). To comprehend how minute this is in terms that are easily understood, the following is offered:

Understanding parts per million and parts per billion

Term	Amount in Length	Amount in Area
parts per million (ppm)	1 inch in 189 miles	1 ft. in 23 ac.
parts per billion (ppb)	1 inch in 189,000 miles	1 ft. in 23,000 acres

(North Carolina Ag. Extension Service Veg-i-News, May 1988