

Eurasian Watermilfoil-Florida's New Underwater Menace

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Eurasian watermilfoil (*Myriophyllum spicatum* L.) is spreading at an alarming rate in the United States. It was first reported in the USA late in the nineteenth century. However, only in the last decade has it become a serious aquatic weed problem. It has invaded over 200,000 acres in the Chesapeake Bay, 5,000 acres in the TVA reservoirs, and 67,000 acres in Currituck Sound (3, 4, 6). The manner in which it dominates the water surfaces and decreases utilization of water resources is causing alarm (2). Commercial and sport fishing, boating, hunting and other activities are being destroyed or severely damaged. The rapid rate of its growth, fragmentation, migration, and establishment makes it a serious threat (5). The plant thrives in water containing a salinity equivalent to one-third sea water (1). All of Florida's fresh and brackish waters are threatened.

Parrotfeather (*M. brasiliense*) and broadleaf milfoil (*M. heterophyllum*) infestations have occurred in Florida for many years. These two species have presented only minor problems in local areas. However, Florida now has eurasian watermilfoil well established in two areas.

This report presents information on identification of the three most common milfoils in Florida, where eurasian watermilfoil is established, and how rapidly it is spreading.

IDENTIFICATION

The three common species of milfoil in Florida will be discussed individually and the identifying characteristics compared. It is important that new infestations of eurasian watermilfoil in the State be reported immediately to the proper State agencies. To accomplish this objective one must be able to differentiate among the three species.

PARROTFEATHER, *Myriophyllum brasiliense* Camb.: A perennial aquatic rooted in the bottom mud. The stems are quite stout and are sparingly branched. The emerged tip may extend 3 to 12 inches above the water level. The individual leaves are all whorled, generally 1 to 2 inches long, and have 10 to 18 narrow segments on each side of the midrib. The above-water foliage is yellow-green and has a dainty graceful appearance. The flowers are formed in the axils of the submersed foliage. The fruit is 1.5 to 2 mm. long. It could also be classified as an emerged plant.

It grows well in aquariums, small fish ponds, as well as in larger bodies of water and slow-moving streams. It is found only in fresh water and seems to grow best in neutral or slightly alkaline ponds and streams.

Parrotfeather is a native of South America as the species name, *brasiliense*, denotes. Since the plant is commonly grown in aquariums, the spread has been facilitated with

escapes through the southern and some of the more northern States. Small drainage and irrigation channels also become clogged with the growth of this weed (Figure 1).

BROADLEAF WATERMILFOIL, *Myriophyllum heterophyllum* Michx.: A rooted perennial with most of the foliage submersed. The stems are quite variable in width, from 5 to 10 mm, but are generally stouter than other species in this group. The leaves are usually whorled in groups of 4 or 6. The submersed leaves usually have 6 to 10 pairs of dissected segments. The spikes are emersed and commonly 3 to 6 inches and occasionally more in length. The emersed leaves are 1.5 to 5 mm wide and up to 2 cm long. The margins are somewhat serrated. The fruit is formed on the emersed spike in the leaf axils (Figure 2).

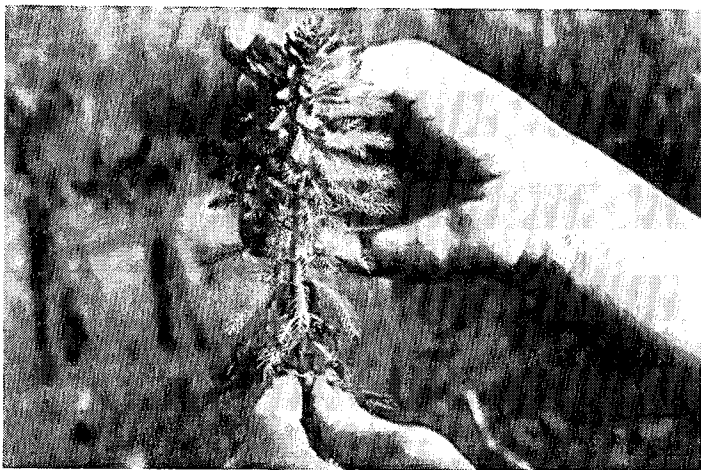


Figure 1.

Top—A pond with parrotfeather growing in association with cattail and aquatic grasses.

Bottom—The above-water portion of parrotfeather.

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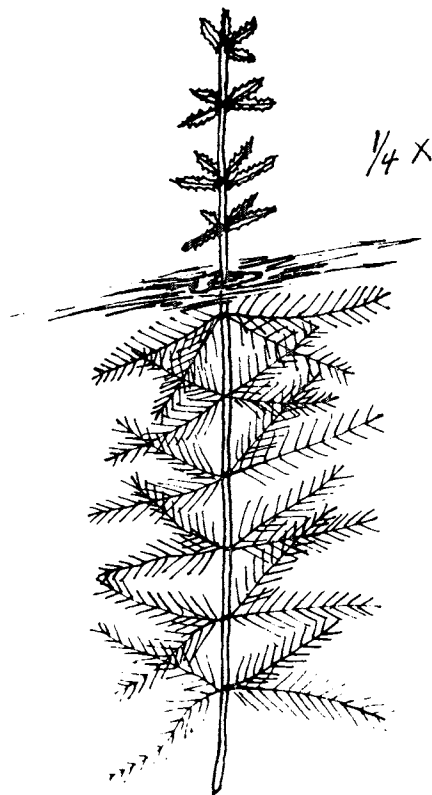


Figure 2. Broadleaf watermilfoil showing the serrated above-water leaf.

This species is very widespread and is found throughout the country. It is most common in shallow ponds and lakes in the northern part of the State. Large growths interfere with fish production and harvesting.

EURASIAN WATERMILFOIL, *Myriophyllum spicatum*: A perennial submersed plant that spreads very rapidly by vegetative reproduction and seed. The leaves are whorled and have 10 to 14 finely dissected segments on each side (Figure 3). The spike is emersed, 2 to 4 inches above the water, and without leaves (Figure 4).

Eurasian watermilfoil will tolerate salt water as much as one-third sea strength as well as fresh water. Though light penetration of the water would be a factor, the plant is generally found in water 1 to 9 feet deep. It overwinters well in relatively cool water.

ESTABLISHMENT OF EURASIAN WATERMILFOIL IN FLORIDA

Eurasian watermilfoil is now known to be established in two areas of Florida. These are Lake Seminole near Chattahoochee and the Crystal-Homosassa River Basin. The rapidity with which it has become established in our waters, and the history of its spread in other areas of the USA illustrates the potential problem that an unchecked spread of the plant may cause to our water resources.

LAKE SEMINOLE: The infestation of eurasian watermilfoil in Lake Seminole is located in the Spring Creek arm of the lake in Georgia. However, the dam of the lake is located in Florida on the Apalachicola River. Nothing prevents the plant fragments from floating out of the lake into the Apalachicola River and infesting Apalachicola Bay (Figure 5). Once established, it could severely damage the Florida oyster industry.

It is believed that eurasian watermilfoil was introduced into Lake Seminole in 1965.² It was first collected and identified in September, 1966, and at that time was infesting over 500 acres. In April, 1967, the infestation had spread over an estimated 1,200 acres. Fragments of the

²Angus Gholson, personal communication.

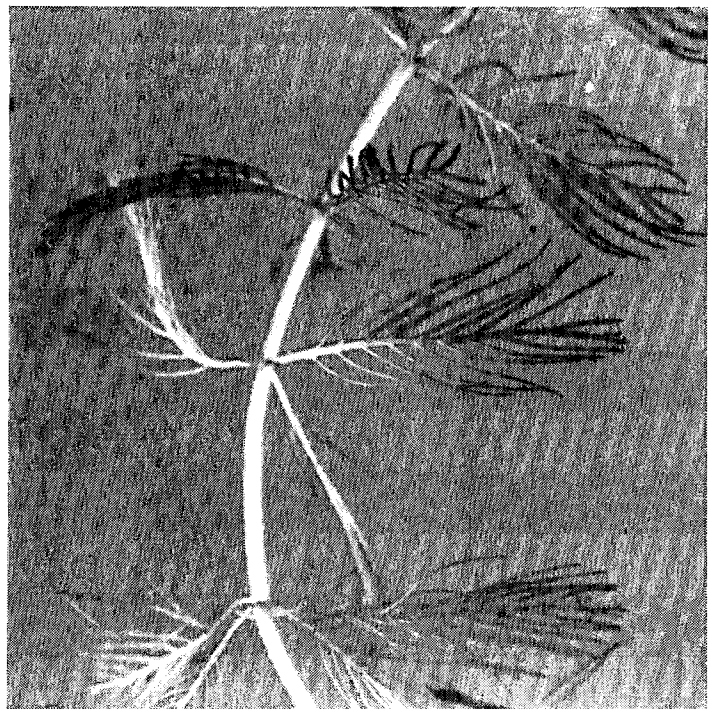
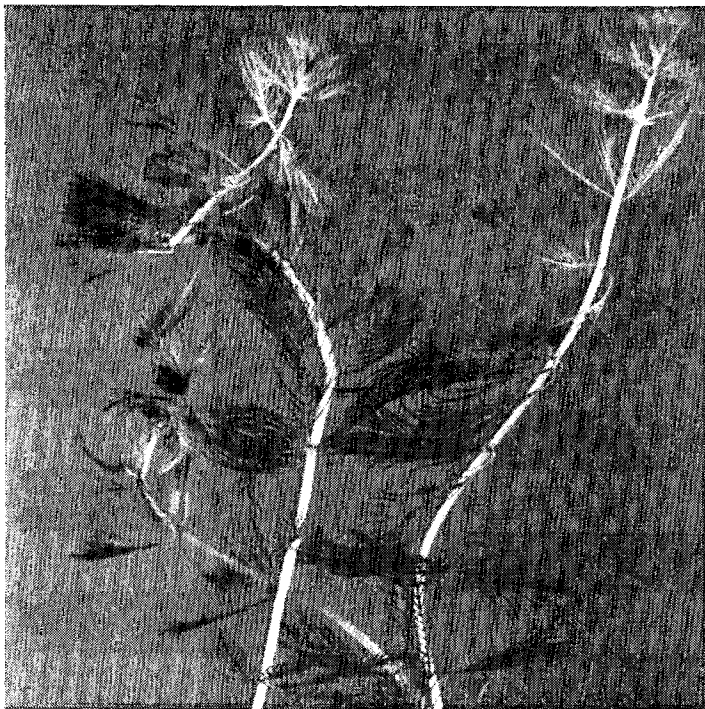


Figure 3. Eurasian watermilfoil (left) with a close-up of an individual leaf (right).

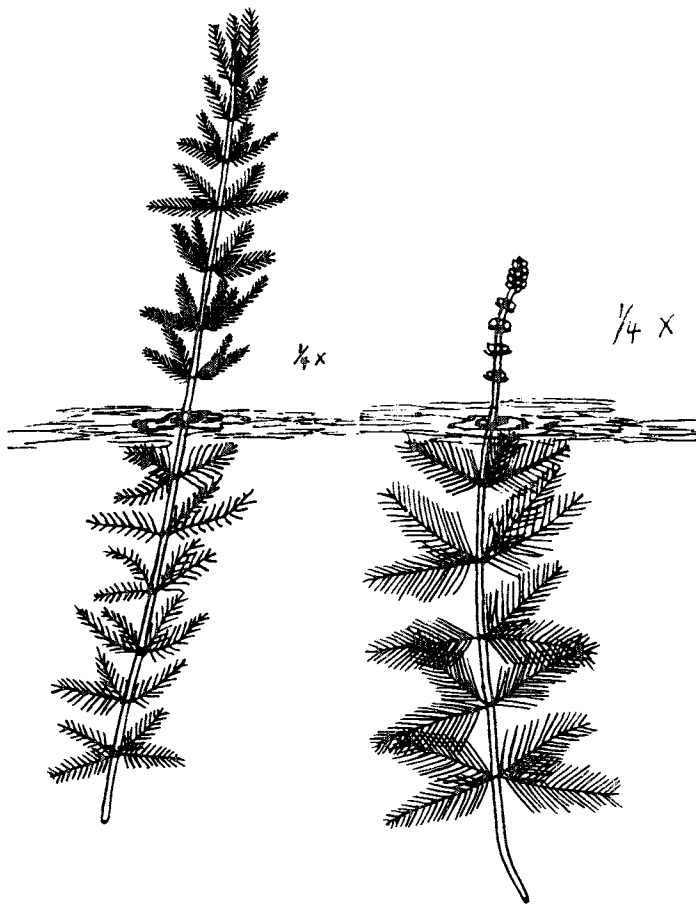


Figure 4. A comparison of parrotfeather (left) and eurasian watermilfoil (right).

plant were observed floating in most of the Spring Creek area of the lake.

CRYSTAL-HOMOSASSA RIVER BASIN: Eurasian watermilfoil is a beautiful and popular aquarium plant. Local fishermen have reported that it was planted here in 1964 by tropical aquatic plant dealers.³ It was not positively identified as eurasian watermilfoil until the summer of 1966. In March, 1967, watermilfoil had spread over an estimated 3,000 acres in an area from the Withlacoochee River to Weekiwachee Springs. It is also well established in the brackish waters of Chassahowitzka Bay where the Homosassa River empties into the Gulf of Mexico (Figure 5).

The establishment of eurasian watermilfoil in this area of Florida could drastically affect the economy of the State. Homosassa Springs, Crystal River, and Weekiwachee Springs are only a few of its famous water attractions.

DISCUSSION

Eurasian watermilfoil is now well established along the west coast of Florida (Figure 6). It is a submersed vascular aquatic plant which produces a mat of vegetation several feet thick, and it dominates the water where it grows. It can severely damage water resources by stopping recreational activities such as fishing, skiing, boating, and swimming; by clogging channels used for navigation and drainage; by destroying commercial fisheries; and by limiting the appeal of these areas as tourist attractions.

³William McLane, personal communication.

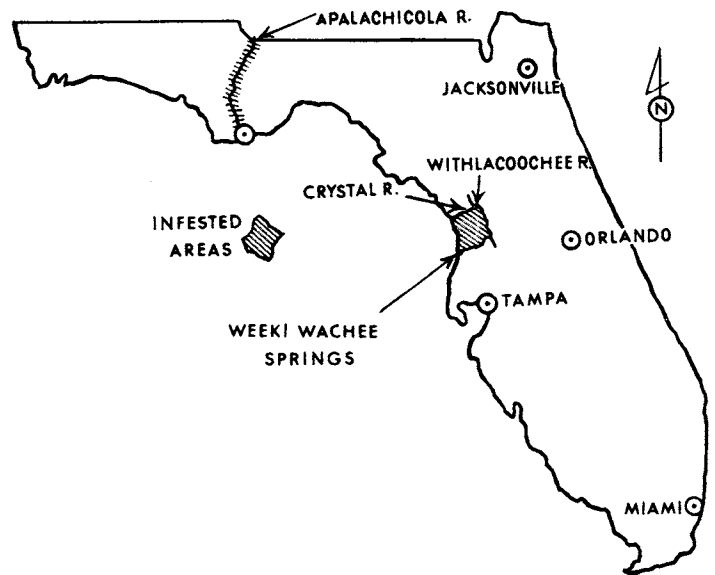


Figure 5. Map showing areas of state infested with eurasian watermilfoil.

Florida now has three common species of watermilfoil. Parrotfeather and broadleaf milfoil have been established for many years. Eurasian watermilfoil's adaptation to a wide range of environmental conditions makes it a potential problem plant throughout Florida. It can be distinguished by its emersed flower spikes 2 to 4 inches long, or by its leaf whorls which are 10 to 14 finely dissected segments on each side.

The complex problem facing Florida is where and how rapidly watermilfoil will spread. The most efficient method of reproduction and spread is by fragmentation (4). A single 2-inch fragment may take root and grow 4 feet or more in 3 months (5). The interconnection of many of the rivers, and the movement of small boats from one area to another, increase the chances of its spreading to other watersheds (Figure 7). The spread of milfoil over 200,000 acres in Chesapeake Bay in 10 years should illustrate the problem. Florida is well aware of how rapidly a plant can be disseminated, as a result of experience with the



Figure 6. Infestation of eurasian watermilfoil in Homosassa River near Chassahowitzka National Wildlife Refuge.

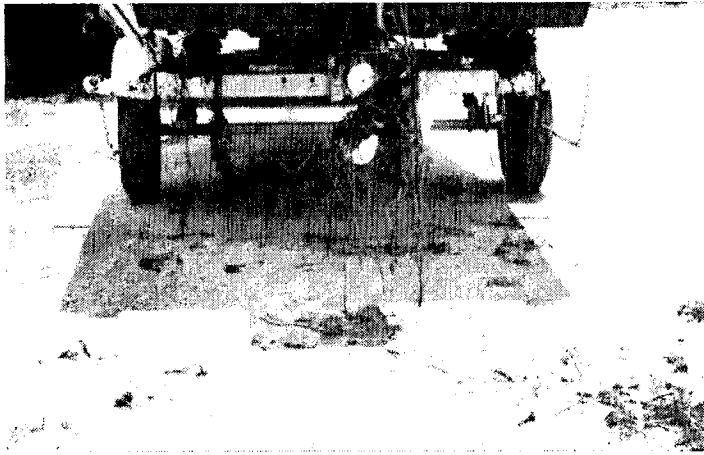


Figure 7. Outboard motorboat loaded onto trailer at Crystal River. Note eurasian milfoil hanging on motor and trailer.

water hyacinth (*Eichhornia crassipes*), and with a more recent aquatic plant, Florida elodea (*Hydrilla verticillata*). The public and also its State agencies must be convinced that eurasian watermilfoil is a serious threat.

The future of the water resources may be determined by action taken in the next few years. Research is urgently needed on the ecology of the plant and on its control. Florida should evaluate methods successful in other parts of the USA. A successful method of control should be found and then utilized in a program. This will depend on early identification of the weed and on prompt treatment. Anyone who finds this plant in areas other than those discussed here should report it to a local Florida Game and Fresh Water Fish Commission office. Cooperation between the

public and its State agencies will be an important factor in preventing spread.

SUMMARY

Eurasian watermilfoil (*Myriophyllum spicatum* L.), a submersed aquatic weed, is a serious threat to commercial and sport fishing, to boating and swimming, and to other uses of Florida's abundant water resources. Watermilfoil has recently become established in Lake Seminole at Chattahoochee, and in the Crystal-Homosassa River Basin. The Crystal-Homosassa River Basin is estimated to have 3,000 partially to heavily infested acres. In these areas the weed is already hampering fishing, boating, and swimming and it is choking out waterfowl plants, providing mosquito breeding habitats, and lowering real estate values. Two related species, parrotfeather (*Myriophyllum brasiliense*) and broadleaf milfoil (*Myriophyllum heterophyllum*), are described as a means of differentiating the three species.

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