

# New Underwater Menace

## Eurasian Watermilfoil

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Parrotfeather, above, is shown growing in association with cattail and aquatic grasses. It is one of three common species of milfoil in the southeastern U.S. and has populated the state for a number of years. More serious is the newly established Eurasian watermilfoil.

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.

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.

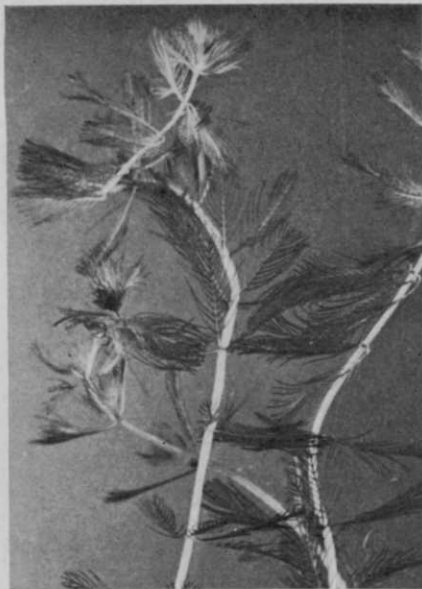
Parrotfeather, *Myriophyllum brasiliense* Camb. is a perennial aquatic rooted in the bottom mud. The stems are quite stout and are sparingly branched. The emerged tip may extend 3 to 12 inches above the water level. The individual leaves are

### Abstract

Eurasian watermilfoil (*Myriophyllum spicatum* L.), a submersed aquatic weed, is a serious threat to the 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.



**Above-water portion** of parrotfeather, a perennial aquatic plant which roots in bottom mud.



**Eurasian watermilfoil** is also a rooted perennial, is newly established and spreading rapidly.



**Close-up of Eurasian watermilfoil leaf.** Plant is a threat to all of Florida's fresh and brackish waters.

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 emersed 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 throughout the southern and some of the more northern States. Small fishponds may become completely infested with the plant excluding other desirable plants and

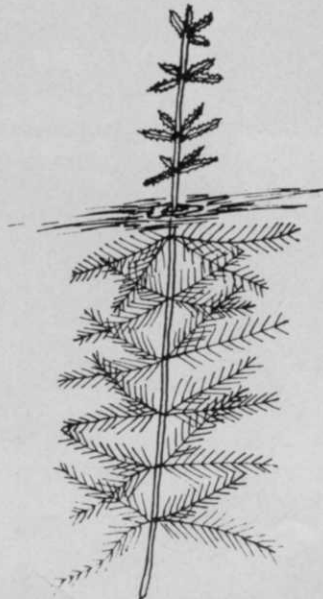
fish. Small drainage and irrigation channels also become clogged with growth of this weed.

Broadleaf watermilfoil, *Myriophyllum heterophyllum* michx. is 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 dis-

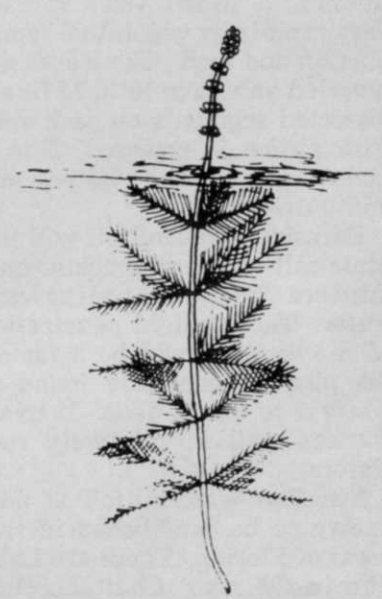
**Parrotfeather**, long an inhabitant of Florida is minor problem.

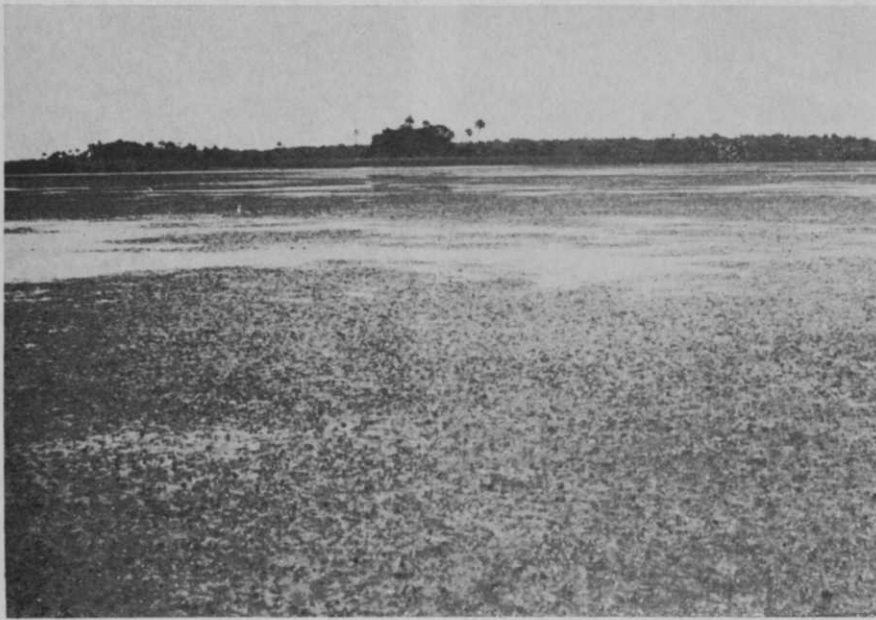


**Broadleaf watermilfoil.** Note serrated above water leaf.



**Eurasian watermilfoil** can be compared to the common milfoils.





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

sected 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.

**Species Common  
In Ponds And Lakes**

Broadleaf watermilfoil is common 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*, is 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. The spike is emersed, 2 to 4 inches above the water, and without leaves.

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.

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 an unchecked spread of the plant may cause to our water resources.

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 Apalachi-

cola River and infesting Apalachicola Bay. Once established, it could severely damage the Florida oyster industry.

It is believed that eurasian watermilfoil was introduced into Lake Seminole in 1965.\* 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 plant were observed floating in most of the Spring Creek area of the lake.

Eurasian watermilfoil, being a beautiful and popular aquarium plant, is reported by local fishermen to have been planted in the Crystal-Homosassa river basin in 1964 by tropical aquatic plant dealers.\*\* 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.

The establishment of eurasian watermilfoil in this area of Florida could drastically affect the economy of the State. Homo-

\*Angus Gholson, personal communication.  
\*\*William McClellan, personal communication.

**Outboard motorboat** loaded from Crystal River is entwined with eurasian milfoil on both motor and trailer.



sassa Springs, Crystal River, and Weekiwachee Springs are only a few of its famous water attractions.

### **Eurasian Watermilfoil Dominates and Damages Water Resources**

Eurasian watermilfoil, now well established along the west coast of Florida, is a submersed vascular aquatic plant which produces a mat of vegetation several feet thick. 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.

Florida now has three common species of watermilfoil. Parrot-feather 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 the other watersheds. 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 water hyacinth (*Eichhornia crassipes*) and 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 re-

sources 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.

#### **Literature Cited**

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6. Steenis, John H., Vernon D. Stotts, and Charles R. Gillette. 1961. Observations on distribution and control of eurasian watermilfoil in Chesapeake Bay. Proc. NEWCC 16:442-448.

*Information for this material is from cooperative investigations of the Crops Research Division, Agricultural Research Service, U.S. Department of Agriculture; the Central and Southern Florida Flood Control District; and the Florida Agricultural Experiment Station, Fort Lauderdale, Fla. The original paper was presented by author Blackburn at the 1967 annual meeting of the Hyacinth Control Society and will be published in the proceedings of the Society.*

## **Meeting Dates**



**Fertilizer Industry Round Table, 17th Annual Meeting, Hotel Mayflower, Washington, D. C., Nov. 15-17.**

**Entomological Society of America, Annual Meeting, Hotel New Yorker, N.Y.C., Nov. 27-30.**

**National Fertilizer Solutions Association, Annual Convention, Denver-Hilton Hotel, Denver, Colo., Nov. 27-30.**

**National Aerial Applicators Association, Annual Conference, Marriott Hotel, Dallas, Tex., Dec. 3-5.**

**North Central Weed Control Conference, Civic Auditorium, Fargo, No. Dak., Dec. 5-7.**

**Louisiana Turfgrass Association, Annual Conference, University of Southwestern Louisiana, Lafayette, La., Dec. 7-8.**

**Illinois Turfgrass Conference, University of Illinois campus, Urbana, Ill., Dec. 7-8.**

**Ohio Turfgrass Foundation Turfgrass Conference, Sheraton-Cleveland Hotel, Cleveland, O., Dec. 11-13.**

**American Society of Agricultural Engineers, Winter Meeting, Cobo Hall, Detroit, Mich., Dec. 13-15.**

**Northeastern Weed Control Conference, Hotel Commodore, New York, N. Y., Jan. 3-5.**

**Southern Weed Conference, 21st Meeting, Deauville Hotel, Miami Beach, Fla., Jan. 16-18.**

**Virginia Turfgrass Conference, Virginia Turfgrass Council and V.P.I., Golden Triangle Motel, Norfolk, Va., Jan. 23-24.**

**California Weed Conference, 20th Annual, El Rancho Hotel, Sacramento, Calif., Jan. 22-24.**

**Weed Society of America, 1968 Meeting, Jung Hotel, New Orleans, La., Feb. 5-8.**

**American Sod Producers Association, First Annual Meeting, In conjunction with Golf Course Superintendents Assn. Convention, San Francisco Hilton Hotel, San Francisco, Calif., Feb. 18-23.**

**Western Society of Weed Science, formerly Western Weed Control Conference, Owyhee Hotel, Boise, Idaho, Mar. 19-21.**

**Michigan Turfgrass Conference, Annual Meeting, Kellogg Center, Michigan State University, East Lansing, Mich., Mar. 20-21.**