EURASIAN WATER MILFOIL IN OKLAHOMA

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This study describes the distribution and occurrence of Eurasian water milfoil (*Myriophyllum spicatum* L.) in Oklahoma. Plans for control should become a part of future water resource management in Oklahoma.

INTRODUCTION

Eurasian water milfoil (*Myriophyllum spicatum* L.) has been reported in several Oklahoma lakes (1,2). This study was undertaken to verify Jarman's reports (1,2) and to search for new introductions.

METHODS

We consulted with staff members at Oklahoma State University, the University of Oklahoma, Southeastern Oklahoma State University, the University of Tulsa, the Oklahoma Water Resources Board, the Department of Wildlife Conservation, the Soil Conservation Service, the Robert S. Kerr Water Quality Research Laboratory in Ada, the Samuel Roberts Noble Foundation in Ardmore, and out-of-state authorities in Texas, Tennessee, and Florida to solicit information about aquatic plants in Oklahoma, especially Eurasian water milfoil. A literature search was conducted in university and private libraries. Local reservoir, lake, and city managers were reached by letter and telephone to solicit information about their local situations. Field surveys were then conducted in reported problem areas to verify and document the existence and extent of Eurasian water milfoil in the location.

RESULTS AND DISCUSSION

Eurasian water milfoil was probably introduced into Oklahoma by aquarium dealers. de Gruchy (3) reported *Myriophyllum* to be in Murray County, Oklahoma, prior to 1938. These collections were not necessarily *M. spicatum*, however.

M. spicatum was first reported as a weed problem in Lake Humphries in 1964 and soon thereafter in the Wichita Mountains Wildlife Refuge Lakes (1,2). It is now being spread by boats, trailers, fishing gear, birds and other means (1,2). It can be propagated by seeds, but the more common means is by vegetative fragments. Plant fragments can withstand up to 21 days of drying without dying (4,5,6). Table 1 lists the present distribution of this plant in Oklahoma waters.

TABLE I. *Eurasian water milfoil distribution in Oklahoma waters.*

Lake	Location	Year of introduction	Surface area of lake (hectares)	Infested area (hectares)	Source of data
Lake Carl Etling	Kenton	1968	64	14	a
Fort Cobb Reservoir	Fort Cobb	1969	1,648	486	b
Wichita Mountains and Ponds (including Lake Elmer Thomas)	Cache-Lawton-Medicine Park	1965 or earlier	301	203	b
Lake Lawtonka	Lawton	1974	971	1	b
Lake Humphries	Duncan	1964	357	209	b
Clear Creek Lake	Duncan	1965	227	29	b
Soil Conservation Lakes (2)	Duncan	1972	101	85	a
Lake Thunderbird	Norman	1973	2,458	1,475	b
Lake Stanley Draper	Oklahoma City	1967	1,134	117	a
Shawnee Twin Lakes	Shawnee	1968	987	439	b
Chandler Lake	Chandler	1964	50	26	b
Kerr Reservoir	Sallisaw	1970	17,010	133	b
		Total Hectares[c]	25,308	3,217	

[a] Local reservoir manager.
[b] Local reservoir manager and on-site visit.
[c] To obtain acres, multiply hectares by 2.47

Eurasian water milfoil growth in Fort Cobb Reservoir became so rampant by the early 1970's that swimming, boating, and fishing activities were affected (5). The problem was so serious that an experimental control program was initiated in 1974 using the herbicide 2,4-D (7). It was a joint effort by the Bureau of Reclamation, Fort Cobb Master Conservancy District, Oklahoma Water Resources Board, Oklahoma State Department of Agriculture, Oklahoma State Department of Health, and the Oklahoma Cooperative Fisheries Unit at Oklahoma State University. The upper reaches of the reservoir were successfully treated in 1974. The program continued in 1975 with the treating of the more infested coves near the dam. In these areas, the water is clearer, so that water milfoil growth occurs in water up to 5 m deep.

Lake Thunderbird, another Bureau of Reclamation reservoir, represents a potential threat. So far, the infestation has not seriously interfered with water supply from the lake nor with recreation. But the introduction is recent, being first observed in 1973. It may eventually cause problems, especially since this is a lake with a mean depth of 6 m.

Eurasian water milfoil was first observed in Robert S. Kerr Reservoir in 1970 and has been spreading within the reservoir since that time. This infestation poses one of the most serious present threats - not only to Oklahoma waters, but to the entire McClellan-Kerr Navigation System. The entire system, from Tulsa to New Orleans, could be sprigged with the water milfoil via barge traffic in just a matter of days or weeks. TVA's experience with this plant is a case in point (4,6).

The other lakes listed in Table 1 are mostly water-supply sources for the cities by which they are operated. They are all relatively clear and shallow. Therefore, the water milfoil populations currently present are likely to continue causing management problems in these lakes.

As Oklahoma's relatively young, shallow lakes continue aging and undergoing eutrophication, an intensified level of management will most likely be needed to control this troublesome aquatic weed.

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5) Mr. Robert James, City Manager, Chandler, Oklahoma
6) Mr. Raymond Beck, Superintendent of Lakes, City of Duncan, Duncan, Oklahoma.
7) Mr. Curt Weddle, Resident Engineer, Robert S. Kerr Project Office, Star Route 4, Box 182, Sallisaw, Oklahoma.

REFERENCES

1. R. JARMAN, Proc. Okla. Acad. Sci. 49: 171-173 (1970).
2. R. JARMAN, Outdoor Oklahoma 26(5): 8-10 (1970).
3. J. B. H. DE GRUCHY, Okla. Agri. Exp. Sta. Tech. Bull. No. 4, Oklahoma A.&M. College, Stillwater, Oklahoma, 1938.
4. G. E. SMITH, T. F. HALL, and R. A. STANLEY, Weeds 15: 95-98 (1967).
5. ANONYMOUS, *A Study Committee Report*, Oklahoma Water Resources Board, Jim Thorpe Building, Oklahoma City, Oklahoma, 1973.
6. ANONYMOUS, *Environmental Statement*, TVA-OHES-EIS-72-9, Chattanooga, Tennessee, 1972.
7. ANONYMOUS, Oklahoma Water Resources Board, Jim Thorpe Building, Oklahoma City, Oklahoma, 1975.