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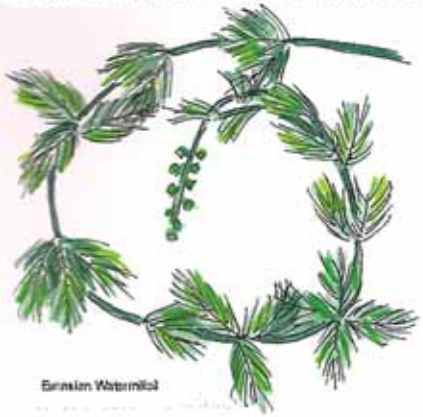
KANGAROO LAKE COMPREHENSIVE STUDY/MANAGEMENT PLAN

INVASIVE EURASIAN WATER-MILFOIL

EWM History--

This superweed is native to Europe, Asia and northern Africa. It's a foreign invader similar to the northern water milfoil which is native to Kangaroo Lake and doesn't have any of the negative characteristics of the Eurasian Water Milfoil.



Eurasian water milfoil
(invasive/destructive plant)

Northern water milfoil
(good aquatic plant)

EWM arrived in North America during the 1940s (probably in a ship's ballast). It moved to southern Wisconsin in the late 60s and hit some of the northern counties in the late 80s. In 1992 it was identified in Door County--primarily in the harbors/bays of Lake Michigan. EWM was identified in Kangaroo Lake about 1995 when a large colony was discovered in the center of the lake, south of the island. EWM probably came into Kangaroo Lake via a boat from Lake Michigan carrying EWM shoots on it.

In 1997-98 the KLA joined with the University of Wisconsin at Stevens Point and the DNR in a study to determine if the use of the milfoil weevil, which had shown promise in reducing colonies of EWM, would reduce the Kangaroo Lake EWM colony. The study was not the success anticipated--primarily because not enough weevils were planted on the colony (amounts varied by lake within the study). Also, the weevils spend the winters on the lakeshore, breed and return to the EWM in the spring. Apparently, it was too far for the weevils to swim to shore, plus there was not enough shore buffer (native plants/grasses) for them to nest and breed in. Therefore, few weevils made it back to the EWM colony the next year.

The EWM in Kangaroo Lake has now migrated and spread to all four shores and moved through the causeway culverts to the north basin. The past two years, however, not all of the EWM has matted/canopied on the water's surface.

What Is EWM?

EWM is an invasive and aggressive weed which, once introduced, produces pioneer colonies, that are spread by stolons--runners that creep along the lake bed claiming territory inch by inch. Along these stolons new shoots sprout and in turn produce new stringy stems that rise to the water surface with small flowers at their tips and branch into a canopy of sun-loving leaves.

Wind and motorcraft activity can cause EWM stems to break from the plant. These fragments will drift in the water and eventually settle in a base spot on the lake bottom. New roots will develop, and once anchored, the fragment will begin drawing nutrients from the lake bottom. Thus, a new pioneer colony of EWM will begin to grow and spread. Once the stems reach the water surface, they do not stop growing like most native plants. Instead they continue to grow along the surface at the rate of approximately one inch per day.

The EWM shoots stay green during the winter, sprout soon after "ice out" and rush for the water surface in the spring.

Native aquatic plants are the only natural barrier to the EWM. These native "good" aquatic plants compete and, in fact, can often limit the aggressive march of the EWM. Habitat disturbance via scouring of the lake bottom by motorcraft in shallow water, shoreline development and other factors favor colonization by EWM when competitor plants are removed and bare lake beds are open to milfoil rooting.

Why We Should Care

EWM is a living mass. It forms thick underwater beds of tangled stems and vast mats of vegetation at the water's surface. It threatens native aquatic plant communities, causes loss of plant diversity, degrades water quality and may reduce habitat/food supply for fish and wildlife.

Aggressive colonies of EWM can produce vast surface mats or canopies of vegetation at the water's surface. Should this condition occur, it could have major negative consequences in our ability to participate in and enjoy recreational boating, fishing and swimming.

vast EWM mats of vegetation at water's surface

What I Can Do Now

All lake users can help slow the spread of EWM by:

- Avoid motorcraft traveling through visible stands of EWM. This reduces the breaking off of the plant stems (fragments) thereby, reducing the ability of the plant stems to drift to a new bare spot on the lake bottom to start a new EWM plant colony.

- Avoid motorcraft in the voluntary 500-foot slow/no-wake zone to avoid scouring the shallow portion of the lake bottom and the uprooting of our native plant population which competes with the EWM.

- Avoid phosphorus from entering the lake via run-off from lawn fertilizer, septic systems, etc. EWM needs nutrients, such as phosphorus and nitrogen, to build dense leaf canopies. Its roots can extract these nutrients from the lake bottom and store them in growing foliage. A reduction in the amount of phosphorus in a lake can have a limiting effect on EWM. A shore buffer of native plants/grasses can help prevent phosphorus from reaching the lake. It should be noted that the amount of phosphorus in our lake, as of 2003, was the highest level in almost twenty years.

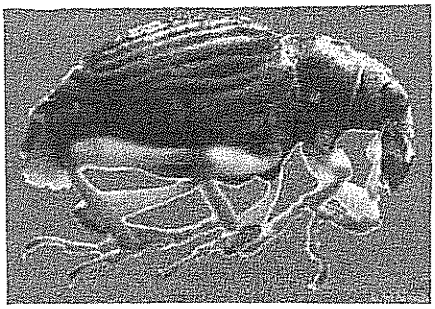
Next Step

Mike Kubiak, a member of the KLA Board of Directors, is chairing a committee which will address the EWM challenge. Mike has also attended an all-day Eurasian Water Milfoil Symposium that featured EWM experts from various states, federal government, lake districts, private support companies and other involved entities.

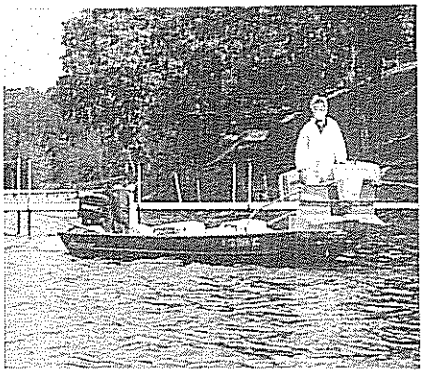
The EWM committee will be addressing how best to map the scope of the EWM spread. (The Lake Management Study was to include this element utilizing GPS, but all the colonies did not canopy in 2003-04.)

EWM control strategies will also be reviewed, including:

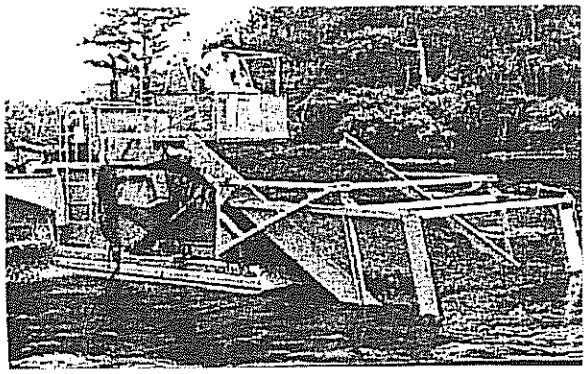
- Hand pulling and/or rakes for small, isolated discrete colonies
- Milfoil weevils and/or chemicals for clusters of colonies
- Mechanical harvesters for dominant surface canopies



Milfoil weevil



Chemical Application



Mechanical Harvestors

Other than hand pulling or rakes, all the other EWM controls involve substantial costs, as well as multiple pros and cons.

We will keep you informed.

KLA Education Committee

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Informational Sources--

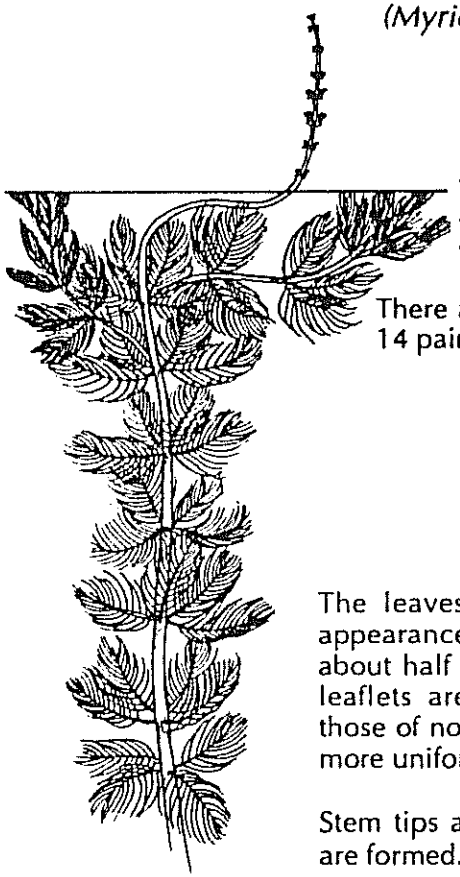
- Kangaroo Lake Management Study; NES
- Eurasian Water Milfoil Symposium, WI Dells, 10/04
- The Facts on Eurasian Water Milfoil; WDNR, UW Extension
- Status of Eurasian Water Milfoil in WI; Sandy Engel, WDNR
- Fighting Eurasian Water Milfoil in WI; Sandy Engel, WDNR
- KLA Milfoil File
- Lake Line; publication of North American Lake Management Society

Recognizing Eurasian Water Milfoil

As Wisconsin waters warm up this spring, one of the first submersed plants to start growing is Eurasian water milfoil. This is a good time to check your lake for this non-native problem plant while water clarity is still good. The best opportunity to control Eurasian water milfoil is when it first appears in a lake and the pioneer colonies can be removed. This illustrated guide should help you distinguish Eurasian water milfoil from native plants that are commonly confused with it.

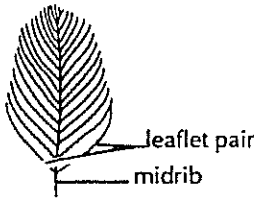
Eurasian water milfoil

(Myriophyllum spicatum)



Eurasian water milfoil is a submersed aquatic plant with feather-like leaves arranged in whorls (circles) on the stem.

There are usually more than 14 pairs of leaflets per leaf.



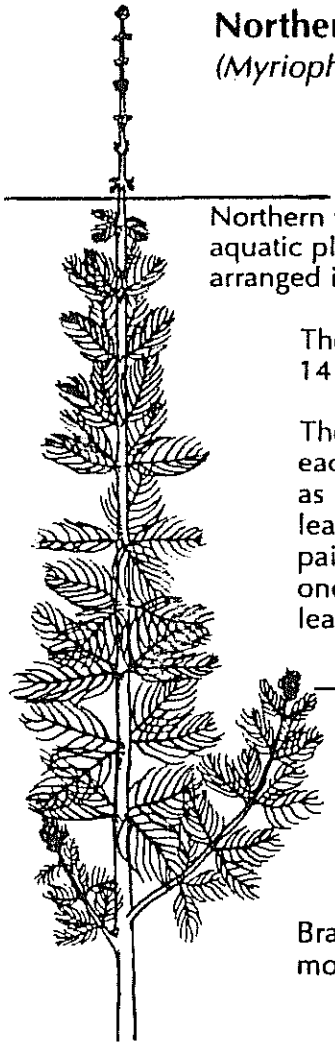
The leaves have a distinct feather-like appearance, with the lower leaflet pairs about half the length of the midrib. The leaflets are more equal in length than those of northern water milfoil, creating a more uniform leaf margin.

Stem tips are tassel-like. No winter buds are formed.

Branching is abundant in water 3-10 ft. deep.

Northern water milfoil

(Myriophyllum sibericum)



Northern water milfoil is a submersed aquatic plant with feather-like leaves arranged in whorls on the stem.

There are usually less than 14 pairs of leaflets per leaf.

The lower leaflet pairs of each leaf are often almost as long as the midrib of the leaf. Because the lower leaflet pairs are longer than the upper ones, the overall shape of the leaf is "tree-like".

winter bud

Stem tips may have a knob-like appearance.

Winter buds are formed that taper to a point.

Branching is sparse in water more than 3 ft. deep.