

Pete Buechner



## Management Opinion

### Eagle Lake

Ticonderoga, New York

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#### Description of Current Conditions:

An inspection of the submersed flora of Eagle Lake on September 22, 1993, revealed that Eagle Lake is in the middle to late stages of infestation by Eurasian watermilfoil (*Myriophyllum spicatum* L.). It is obvious that vast areas that were formerly inhabited, dominated by native plant species have now been overwhelmed by a progressive domination of Eurasian watermilfoil. Despite the spread of this exotic plant, there remains a reasonably good native flora to recolonize the littoral zones of the lake following any selective Eurasian watermilfoil management program.

Eurasian watermilfoil was found in nearly all habitable portions of the lake on the date of this investigation. Other species present include native broad, narrow and thin leaf pondweeds (*Potamogeton* sp.).

#### Management Recommendations:

It is recommended that a systemic selective herbicide be used for the removal of Eurasian watermilfoil from the Eagle Lake submersed flora. Either the herbicide Sonar or 2,4-D should be used at rates to provide selective control and restoration of native floras. The recommended dose rate for 2,4-D would be somewhere between 70 and 85 pounds per surface acre treated. This would be a spot treatment or isolated area treatment, where only those areas that currently known to support Eurasian watermilfoil and a buffer zone around the outside of those areas which would equal not more than 50% of the total area currently inhabited would be treated at this rate with 2,4-D. There is increasing evidence indicating that Sonar may also be used in Eagle Lake at a dose rate that would be economical to use. This would be done by computing the volume of the area of the lake that is less than 10 feet deep. The target dose rate concentration for that water strata should be somewhere between 8 and 12 ppb. This has shown in a number of cases to provide quite selective control of Eurasian watermilfoil and allow for restoration of native floras to predominance during the year of application. It is noteworthy that some states will use higher rates of Sonar, and accept the non-target impacts that occur during the first year of treatment. In nearly every instance where these higher rates have been used, provided that concentrations did not

exceed 25 or 30 ppb in the upper water strata, all native plant species with only several exceptions do return the year after treatment. Furthermore, this provides certainty of gaining control and mastery over Eurasian watermilfoil in areas where there may be some dilution due to stream inflows, etc.

Either Sonar or 2,4-D are acceptable strategies for use in Eagle Lake. The use of Sonar, however, is perhaps given greater emphasis because it has an excellent toxicology package and because we are increasingly certain that selective control can be gained in the year of treatment. Selective treatment during the year of treatment is recommended and dose rates should be calculated accordingly. Should the Management Board of Eagle Lake arrive at the decision to use Sonar, I will gladly assist the Board in computing the most appropriate Sonar dose rate. Again, it is very possible to restore this lake to native plant predominance with this compound, as has been done in over 60 lakes located throughout the Great Lakes regions and the Pacific Northwest.

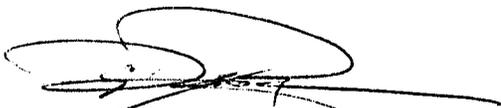
It is also recommended that the Board consider using what is referred to as renovative Sonar application rate. This is not a first priority recommendation although, because these rates would result in significant non-target impacts in the year of treatment, it has been proven to restore native plant communities to predominance in subsequent years after the treatment and provide certain control of native plant species. This approach is routinely taken in the state of Washington, and is considered as an acceptable means of plant control in Minnesota as well.

The Eagle Lake Management Board should consider with three possible scenarios:

1. The use of 2,4-D and this program may necessarily be continued for 3-4 years before eradication is attained.
2. The use of Sonar at extremely low rates, early season applications resulting in few non-target impacts during the year of treatment.
3. The use of higher rates of Sonar to insure Eurasian watermilfoil control, but accepting some non-target impacts, particularly on the broad leaf pondweeds during the year of treatment, recognizing that the native flora would be restored in the year following treatment.

Again, option 2 is the one recommended by this investigator, and should derive excellent results in restoration of this important resource.

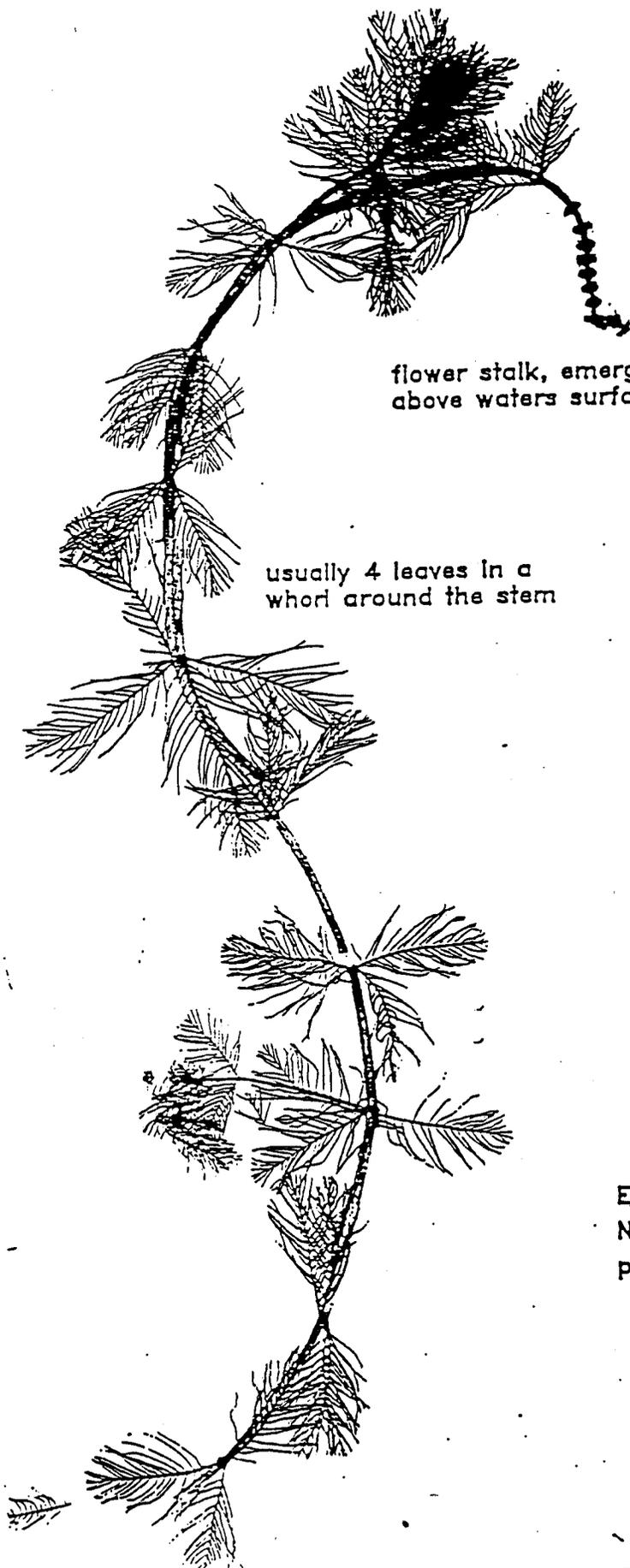
If you have any questions, please contact our office at (810) 736-5251.



G. Douglas Pullman, Ph.D.  
President/Limnologist

GDP/jlw

EURASIAN WATERMILFOIL  
(*Myriophyllum spicatum*)

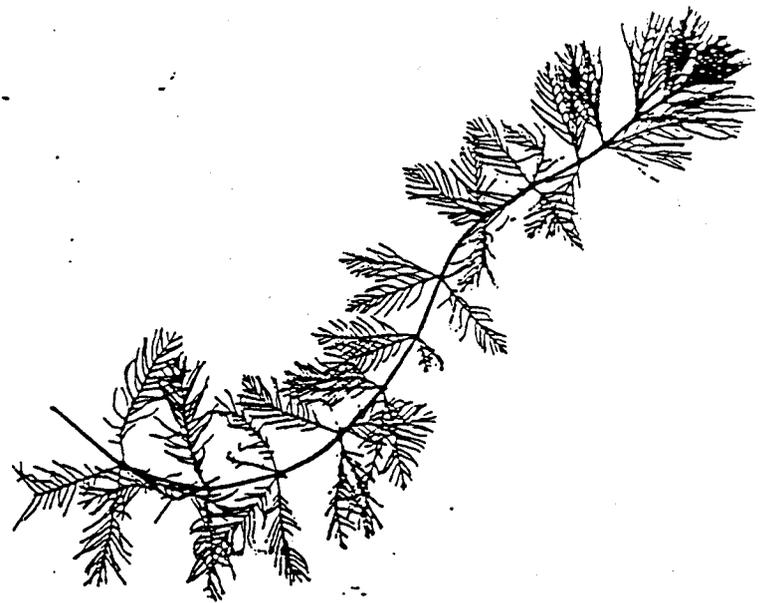


flower stalk, emerges above waters surface

usually 4 leaves in a whorl around the stem



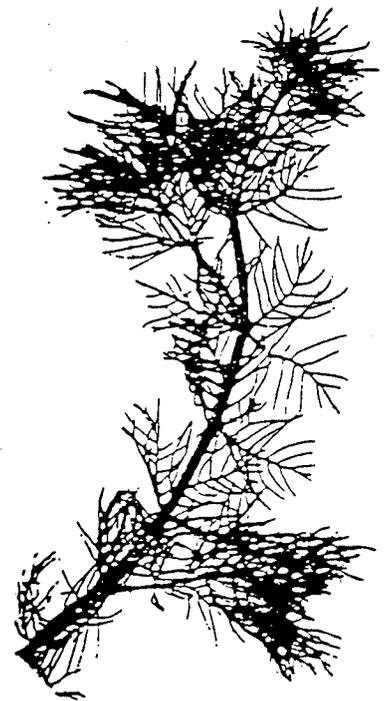
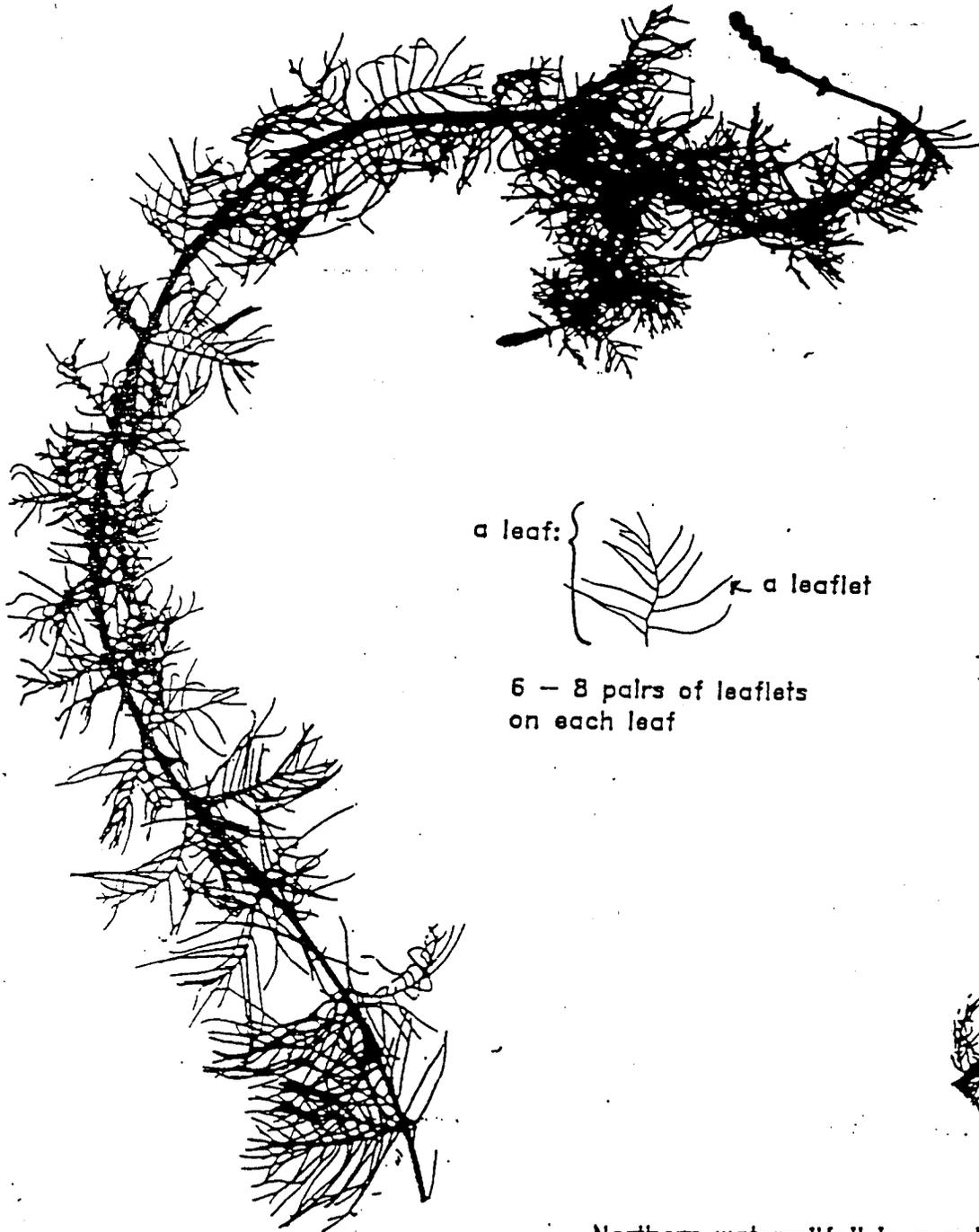
12 or more pairs of leaflets on each leaf



Eurasian watermilfoil is most easily confused with Northern watermilfoil, shown at the back of this page. To distinguish them:

- Count the pairs of leaflets as pictured above. Eurasian has 12 or more pairs of leaflets.
- Eurasian has a finer, more feathery appearance than Northern, and the leaves collapse about the stem when removed from the water.
- The uppermost leaves of Eurasian have a reddish cast.
- The stem often branches several times at the top.

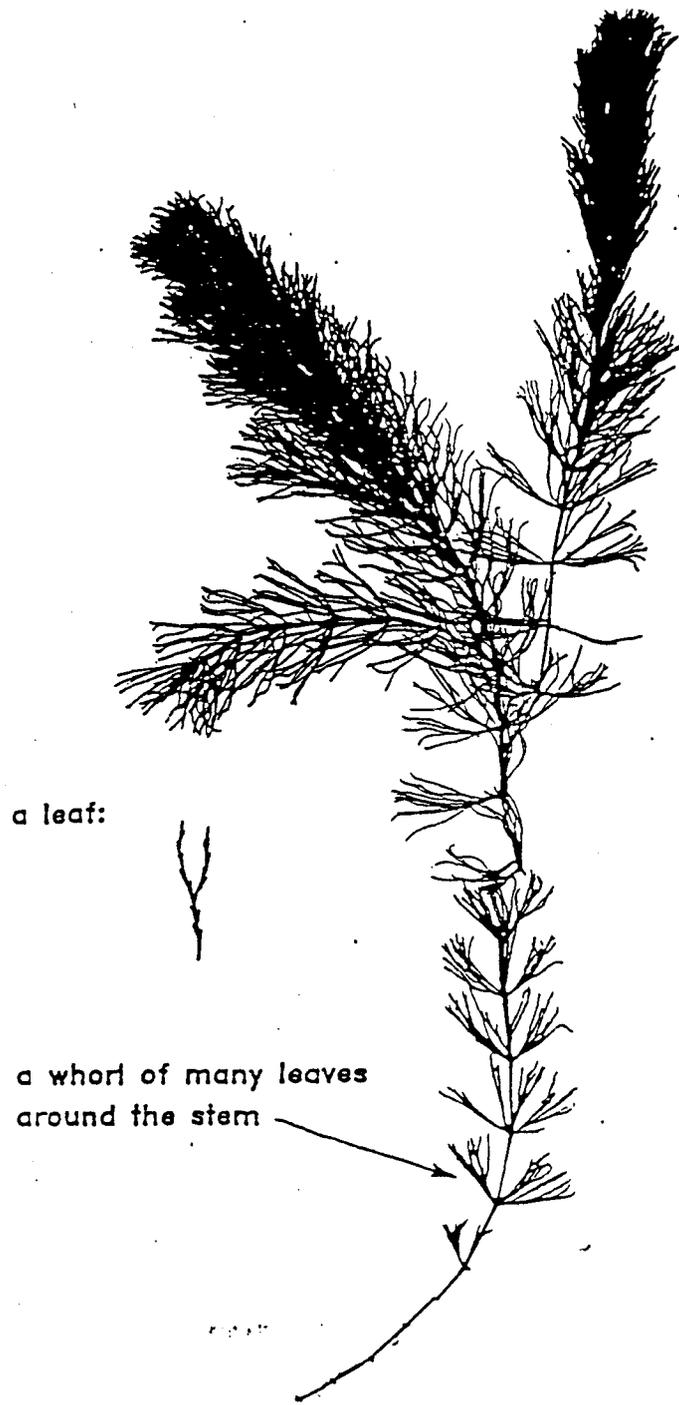
NORTHERN WATERMILFOIL  
(*Myriophyllum sibiricum*)



Northern watermilfoil is a native milfoil species. To distinguish it from Eurasian watermilfoil:

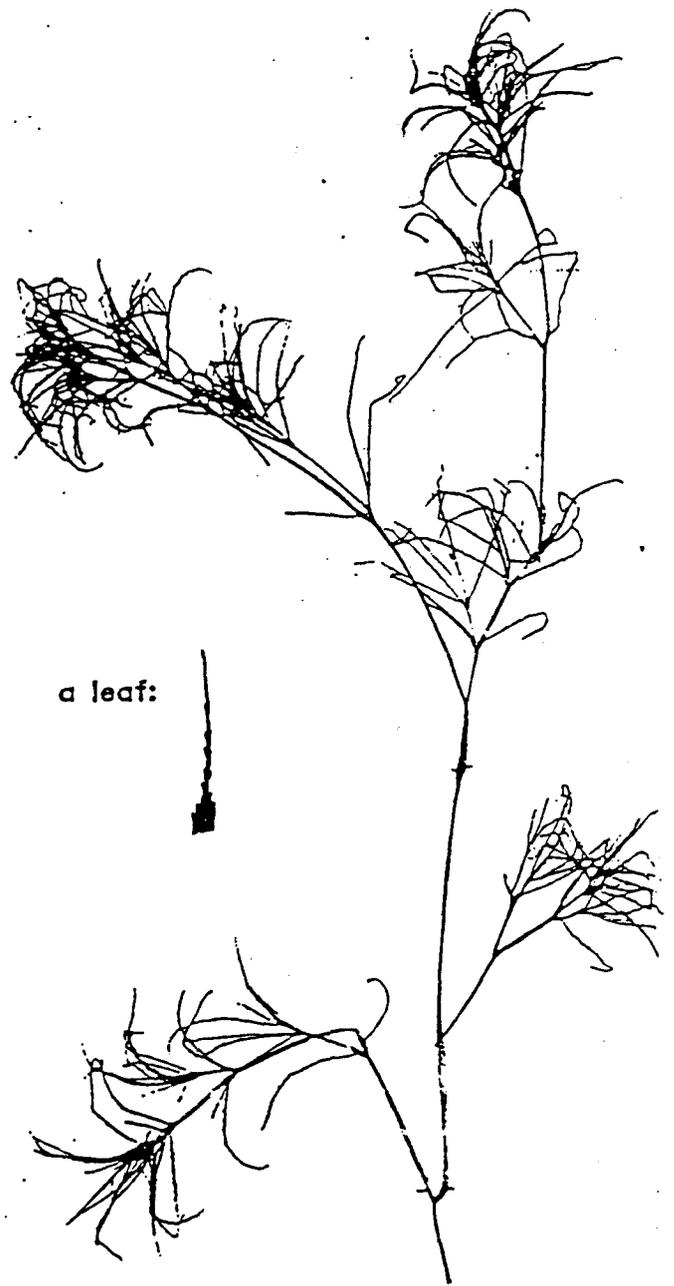
- Count the pairs of leaflets as pictured above. Northern usually has 6 - 8 pairs of leaflets on each leaf.
- Northern is a "coarser" plant than Eurasian, and the leaves do not collapse about the stem when removed from the water.
- The leaves of Northern are usually green, although the stem is often pink.
- The stem does not often branch.

Other plants (continued):



COONTAIL  
(*Ceratophyllum demersum*)

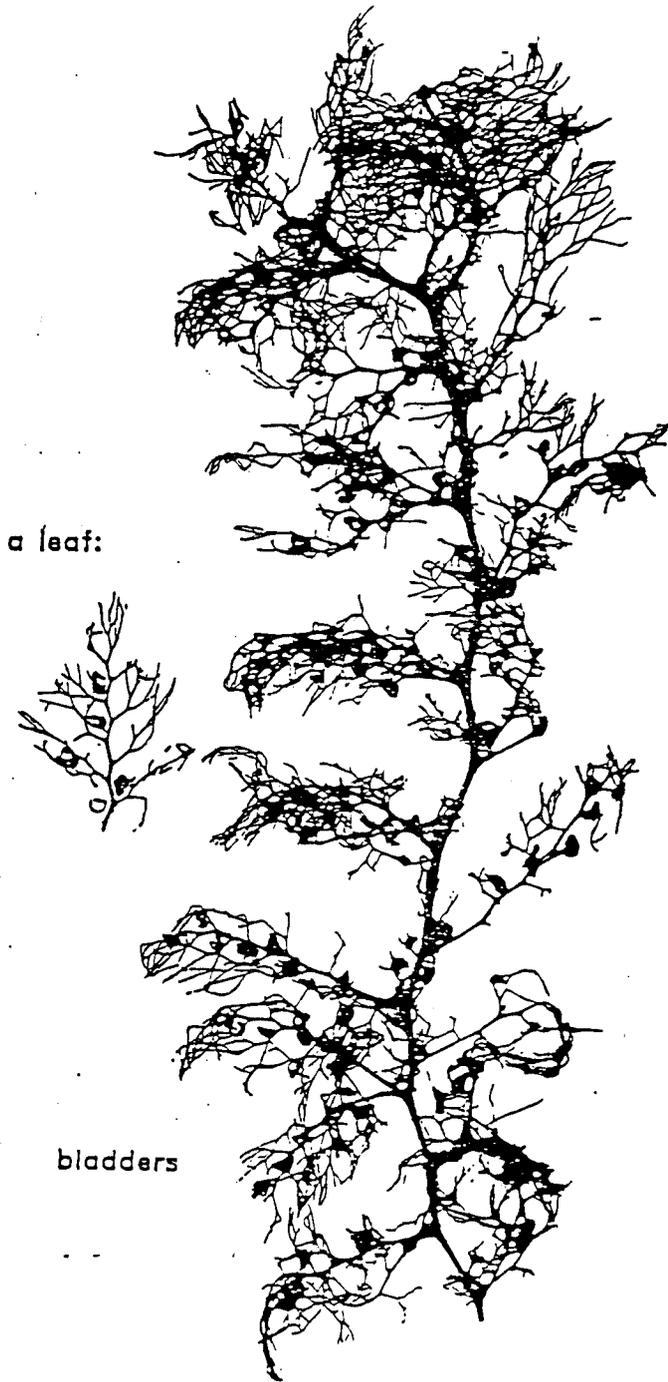
Each leaf is irregularly shaped and branches only once or twice.



BUSHY PONDWEED  
(*Najas flexilis*)

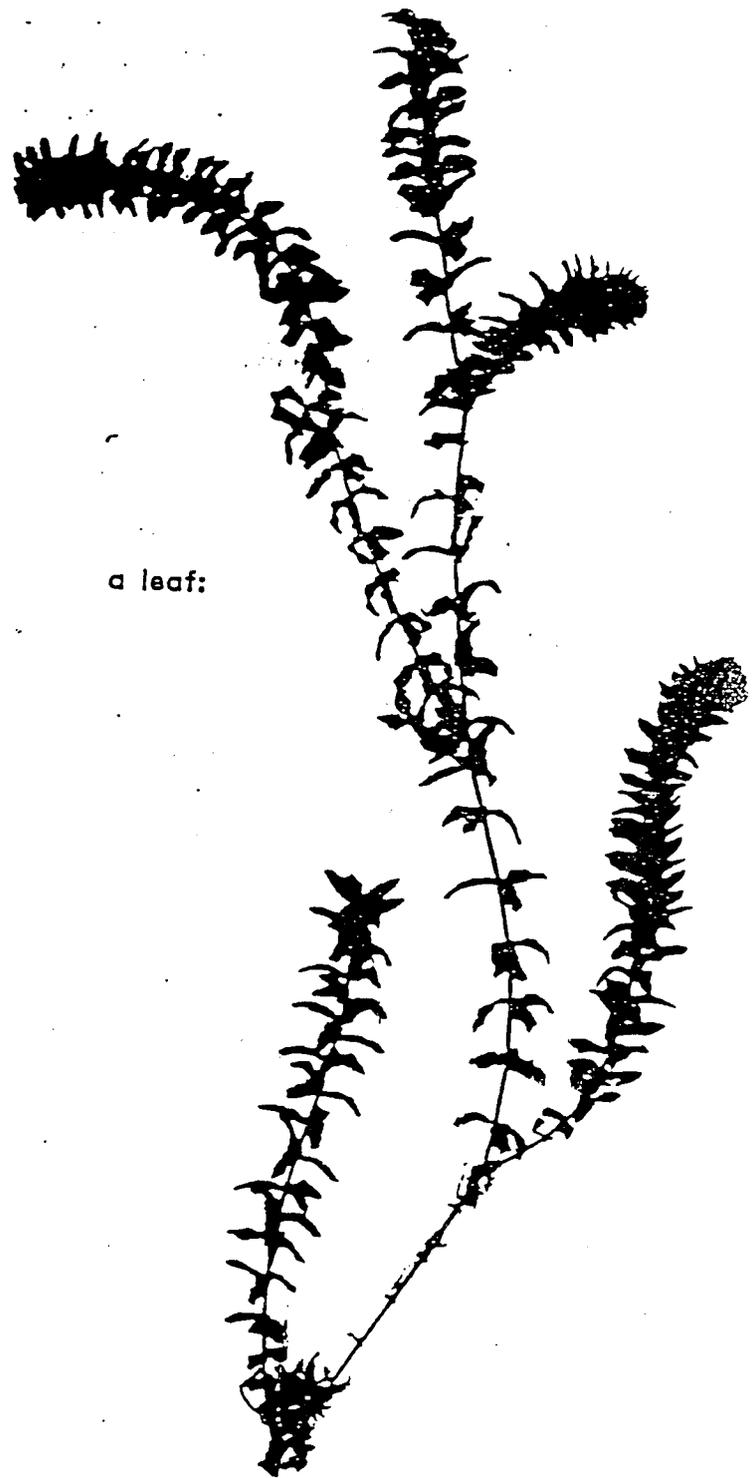
Each leaf tapers to a sharp point and does not branch.

Other plants commonly mistaken for Eurasian watermilfoil:



BLADDERWORT  
(*Utricularia vulgaris*)

Each leaf branches many times and often bears small bladders.



COMMON ELODEA  
(*Elodea canadensis*)

Leaves are opposite on the stem, or in whorls of 3.

## Appendix B: HOW TO HAND HARVEST EURASIAN WATERMILFOIL.

The main idea is to harvest as much of the individual plant as possible so that it won't come back and to harvest with the least possible disturbance to the bottom sediments so that it does not interfere with anyone else's use of the water and it does not obscure your visibility while trying to collect plants. There may be more than one way to do this, but we suggest the following techniques based on the hand harvesting experiences to date in Lake George.

It would help to have two people working together. One person could hand pull the plant while the other assisted in catching fragments. Collection of these fragments is important because they can float away, sprout roots and begin a new plant somewhere else. It is not easy to pull the roots, but it is necessary to try otherwise the plant will simply re-sprout. The best thing to do after locating the milfoil plant(s) is to reach or swim down toward the bottom of the lake, then running your hand along the main stem of the plant, reach into the sediment and grab hold of the root bundle. Carefully pull, trying to get as much of the roots and stem as possible. Then gently roll the whole mass up in a ball and collect in a mesh dive bag of some sort. It is advised that the mesh opening of the bags be small enough (1/8 to 1/4 inch) to hold in plant fragments. This type of mesh bag will hold all the plant material while allowing sediment to be washed from the plant before taking it ashore or putting it in a boat. It is quite possible that an ordinary grocery store mesh vegetable bag, such as the type used for onions, might be suitable. Fragments that get away from the person harvesting should be collected with a dip net or something like that.

Once the plants have been harvested, they should be properly disposed of on land, far enough away from the shore so that there is no chance that the material can wash back into the lake. A garden, flower bed or compost pile would be ideal.

## Appendix C: THE IMPORTANCE OF PROTECTING NATIVE VEGETATION.

Native aquatic plants are vital to the stability of the Lake George ecosystem. Native aquatic plants create what biologists call the emergent and deep water marsh wetlands which provide spawning, nursery, feeding and cover habitat for many species of fish and wildlife. These areas of plant cover also stabilize bottom sediments, filter stormwater to remove suspended sediments thus protecting water clarity, and they help cycle nutrients in the food web.

There are over 48 different submerged aquatic plant species in Lake George, some of them resembling Eurasian watermilfoil. It is important to correctly identify Eurasian watermilfoil because the mistaken picking of beneficial native plants will not only be undesirable to the fish and wildlife that depend on those plants, but that the removal of these beneficial plants would offer a new bare space on the bottom for less desirable plants (such as Eurasian watermilfoil) to take hold. If you have plants in the water off your property and they are not Eurasian milfoil, they could be your best defense against milfoil, so leave them alone.