Managing Aquatic Plants

Mike Roegge and Sean Evans, University of Illinois Extension

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The presence of aquatic plants in ponds and lakes offer both advantages and disadvantages for pond owners and pond inhabitants. Being green plant material, those plants that reside at or below the water surface contribute oxygen to the pond. Aquatic plants are beneficial to many fish and aquatic invertebrates because they can serve as both habitat and a source of food. Therefore, a certain amount of aquatic plants are considered beneficial and essential for a healthy pond. However, excessive plant growth can create problems by directly interfering with the uses of the pond by humans as well as reducing the diversity of the aquatic community. Fishermen become frustrated when lures become tangled in weed growth. Swimming can become less enjoyable or is curtailed due to "green scum" floating over a majority of the pond. Furthermore, a single aggressive aquatic species may displace other living organisms reducing the number of plant and animal species that can reside within that body of water. In many situations, management is required to reduce infestations of aquatic plants.

Managing Aquatic Plants

Managing aquatic plants through reduction of nutrient and silt runoff from fields or other areas (such as septic systems) will greatly reduce potential problems. Grass filter strips around the pond can reduce the influx of silt and nutrients, both of which can promote rank plant growth. Maintaining adequate water depth can reduce the incidence of many shallow-water aquatic plants. Removing problem plants before they become widespread and problematic reduces the cost and labor involved if they are allowed to spread.

Methods of Control

Methods of aquatic plant control can include chemical, biological (grass carp), and mechanical (actual physical removal of plants) strategies, either singly or in combination.

Biological control via *triploid* grass carp is legal in Illinois ponds. This carp is sterile and cannot reproduce. These fish will only feed on certain aquatic plant species (not algae). Overstocking is not advised. Contact your Illinois Dept. of Natural Resources Fisheries Biologist or U of I Extension Natural Resources Educator for specific stocking recommendations. Recommendations are based upon the size of the body of water, it's location in the state, and the extent of plants present. Restocking with grass carp will be necessary after several years (5-7), and as with all biological controls, immediate and complete control should not be expected.

Mechanical control of aquatic plants either through pulling, dredging or cutting is effective on small problem areas. However, this can require a significant expenditure of time and labor. Some plant species are perennial in nature (meaning they will live more than 2 years) and can have a sizeable root system. Elimination of the entire root of perennials will be necessary as remaining pieces of the root can initiate new growth.

Floating plant species (algae, duckweed, etc.) can be successfully removed by physical methods if the area targeted is small. Using the wind to your advantage (where the plants have accumulated) scoop or rake out onto the bank to allow them to die. Remove the plants far enough away from the water line that they cannot be washed back into the pond. Remember, a very small amount of remaining plants can repopulate a pond in a short amount of time.

Proper identification of aquatic plants is essential if **chemical control** options are utilized. Chemical control options will vary for many of these aquatic plant species (Table 1). This publication does not attempt to identify all aquatic plants that may be present, but only to identify those most common. Aquatic plants can be broadly divided into several groups: floating, shoreline, submersed and emergent.

Floating Aquatic Plants

Algae is probably the most common and diverse of all aquatic weeds. Filamentous algae, often called moss, is free floating and demonstrates mat-like growth (Figure 1). Another type is microscopic algae, which forms a scum and, at high populations, can contribute to a yellow or green tint to the water.

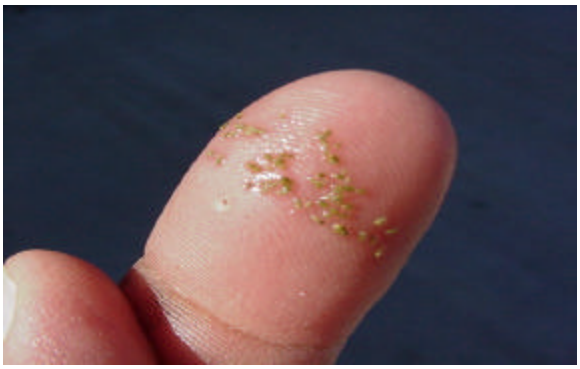
Figure 1: A body of water infested with spirogyra, a filamentous, mat-forming algae.

Duckweed (Figure 2) is another common aquatic plant. Each plantlet can have from one to 5 or 6 leaflets, with a short root attached.

Figure 2: Individual duckweed plantlets with 3 leaflets.

Watermeal is even smaller, less than $^{1}/_{8}$ inch in diameter, and resembles green floating seeds (Figure 3). Watermeal can be very difficult and expensive to control. Both duckweed and watermeal flourish in nutrient rich waters. Therefore, eliminating sources of nutrients will help reduce populations.

Figure 3: Watermeal plantlets. Note the "mealy" appearance of this aquatic plant.



Shoreline Aquatic Plants

Another common aquatic plant is cattail (Figure 4). These perennial plants have extensive root systems, which require a systemic herbicide that will translocate throughout the entire plant, including the root, to provide control. Repeated applications may also be necessary. For optimal control, applications should be made in the summer prior to seed head formation.

Figure 4: A dense stand of cattails growing at a ponds edge.

Submersed and Emergent Aquatic Plants

Water lilies are floating plants that are rooted in shallow areas of the pond. Their leaves are rounded and lay on the water surface. Spatterdock resembles lily in that they too are found in shallow areas and are rooted. However, their leaves are more spade or heart shaped and sometimes rise above the water surface. Both are perennial plants and may require more than one chemical application for complete control.

Creeping water primrose is another rooted plant that grows in shallow water areas, and is more commonly found in the southern half of Illinois. It has hollow red stems, with green leaves. It's bright yellow flowers during summer help to identify it. This is a perennial plant that may require more than one application for complete control.

Other submerged plants such as milfoils, American Elodea, and numerous species of pondweeds may also be found in ponds and lakes throughout Illinois.

Eurasian watermilfoil (Figure 5) is a highly invasive aquatic plant that has been accidentally introduced into the waters of Illinois. Milfoils have feather-like leaves at their nodes with varying numbers of leaflet pairs per leaf. Eurasian watermilfoil has four leaves per node and usually ten or more leaflet pairs per leaf. Other native milfoils can be distinguished from Eurasian watermilfoil due to the fact that native species will have fewer than 10 leaflet pairs. Only a few select herbicides will control Eurasian watermilfoil with complete control rarely achieved with a single application.

Figure 5: Eurasian watermoilfoil. Note the presence of four leaves at each node with at least 10 leaflet pairs.

American Elodea is a very common plant in lakes and ponds and can be identified from other submersed plants by the fact that it has three simple lanceolate shaped leaves at each node. Chemical control of American Elodea can be achieved with mutliple applications of herbicides.

Numerous species of pondweeds can be found throughout the waters of Illinois that vary in appearance and utility. The most common pondweeds are Illinois, American, and leafy pondweed. Illinois and American pondweeds are very similar in appearance as they possess both linear submersed leaves and floating elliptic shaped leaves. Floating leaves of both species are typically 1 to 4 inches in length with those of Illinois pondweed (Figure 6) being slightly larger and more oval in shape in comparison to the narrower and more elliptic shaped leaves of American pondweed. Leafy pondweed (Figure 7) is one of the most common of all the pondweeds and is distinguished from other aquatic weeds by the multiple submersed leaves that resemble short blades of grass attached to the main stem.

Figure 6: Illinois pondweed

Figure 7: Leafy pondweed

Chemical control applications for non-perennial aquatic plants are best made in late spring, prior to extensive weed growth when oxygen levels in the water are elevated. Dead and decaying plant vegetation (as a result of plant control) will lead to a decrease in oxygen levels, which can cause fish kill. Therefore, don't delay herbicide applications to late summer, when plant growth is extensive. If applications must be made during the summer, treat only a portion of the pond at any one time to avoid potential fish kills attributed to decomposition of dead plant material.

As with any plant control method, a single chemical application often times will not provide season-long control. Be prepared to reapply if necessary. Follow all label directions and restrictions indicated for swimming, fishing, drinking and irrigating.

Water dyes (Figure 8) can be used to reduce light transmission to underwater plants (plants rooted in water depths below 2-3 feet) helping to slow or eliminate their growth. Because the concentration of the dye must be maintained for long periods, the use of dyes may not be effective in ponds with substantial out flow.

Figure 8: A pond that has been treated with an approved dye to help reduce aquatic plant growth.

Table 1. Non-inclusive list of aquatic herbicides* and species controlled[1]

Weed Type	Diquat/Reward[2]	SonarAS or Avast![3]	Hydrothol or Aquathol	Copper Sulfate	Rodeo[4]
Algae	Yes[5]		Yes	Yes	
Duckweed	Yes	Yes			
Watermeal		Yes[6]			
Cattail	Yes	Yes[6]			Yes
Spatterdock		Yes			Yes
Creeping water primrose		Yes[6]			Yes
American elodea	Yes	Yes	Yes		
Eurasian watermilfoil		Yes			
Pondweeds	Yes	Yes[6]	Yes		

*Not a comprehensive of all the herbicides available for use for controlling aquatic weeds in Illinois. Inclusion or exclusion is not meant to promote specific herbicides. Always read and follow label instructions.

[1] \Restricting flow of water through the pond may improve the results for some products
[2] \For Reward, apply to still waters only.
[3] \For Sonar AS and Avast! eliminate outflow of water from pond for a minimum of 30 days to improve control of duckweed.
[4] \Rodeo and other glyphosate products
[5] \Filamentous algae
[6] \Control may be difficult or only partial control provided

For additional information on aquatic weed control, contact your local University of Illinois Extension Office (http://www.extension.uiuc.edu/) or your Illinois Department of Natural Resources Office (http://dnr.state.il.us).

References

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