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Managing Hydrilla

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Hydrilla verticillata (L.F.) Royle is a member of the Hydrocharitaceae family that was first introduced to North America from warmer areas of Asia through the aquarium trade. It is now considered the most problematic aquatic plant in the United States. It has many effective means of reproduction and is very difficult to control once established.

Identification

Hydrilla is the only species in its genus, but it shares characteristics with other genera in its family, thus correct identification is essential. A submersed aquatic perennial, hydrilla grows rooted to the bottom and grows submersed in either still or flowing water. Its leaves that grow in whorls of four to eight along the stem are small and pointed with serrated margins and one or more sharp teeth under the midrib (Fig. 1). The midrib of each leaf is often reddish when fresh. There are small, axillary leaf scales found next to the stem and inserted at the base of the leaves.

Hydrilla can be either monoecious or dioecious. Monoecious plants (those with both male and female flowers on the same plant) produce female flowers attached to the leaf axils with three translucent petals and three whitish sepals. Male flowers also form at the leaf axils, but they have three white to red narrow petals and three white, red, or brown sepals. The male flowers expel pollen that is caught by the female flowers. Dioecious plants with either only male flowers on the plant or only female flowers have similar flowers.

Hydrilla spreads by underground rhizomes and aboveground stolons. It also forms vegetative propagules called tubers and turions that are unique to hydrilla. Turions are compact buds produced in leaf axils of dioecious plants and on stem tips of monoecious plants that break off and start a new plant. Tubers are underground turions that form at the end of rhizomes. While hydrilla has many effective means of reproduction, tubers and turions are the main sources of hydrilla's spread. It can also develop new plants from stem fragments, rhizome pieces, root crowns, and very rarely seeds.

Figure 1. Hydrilla leaves are arranged in whorls.

Habitat

Hydrilla is a freshwater perennial. It roots in the bottom of watercourses in water 20 feet deep or more if the water is clear. It is found in lakes, rivers, reservoirs, ponds, and ditches. It often forms monospecific stands that cover hundreds of acres in lakes or the entire area of small water bodies (Fig. 2).

Hydrilla has spread throughout the southeastern states and has reached as far west as Texas and California. It grows at temperatures of 50° to 95° F, and can tolerate low light and variable water quality. The turions can survive near freezing temperatures. Any water body can become infested if a portion of the plant is discarded into it, such as from an aquarium or if a boat or its trailer leaves parts behind.

Impact

Hydrilla grows aggressively and is very competitive. It spreads through shallow areas and forms thick mats in surface waters. This blocks sunlight to native plants growing beneath the mat. Water with large monospecific stands of hydrilla are poor habitat for fish and other wildlife. The dense mats alter water quality by raising the pH, decreasing oxygen under them, and increasing the water temperature. The mats create stagnant

water, increasing good breeding grounds for mosquitoes. Hydrilla also interferes with recreational activities like swimming, boating, fishing, and water skiing. In the western United States, hydrilla impacts power generation, irrigation, and water delivery systems by clogging trash racks and intake pipes.

Hydrilla has many competitive advantages over native aquatic vegetation. It can grow at lower light intensities than many aquatic plants, absorb carbon from water more efficiently, store extra phosphorus, tolerate a wide range of water conditions, thrive in flowing water and still water, and tolerate salinity in the water up to nine to ten parts per thousand.

Figure 2. Hydrilla infestation (above).

Figure 3. Hydrilla plant (above).

Management Options

Hydrilla's tremendous reproductive potential creates the biggest problem for its eradication. The tubers are a source of regrowth where hydrilla shoots have been previously controlled by chemical or mechanical methods. Since hydrilla spreads so quickly, preventing its introduction into a body of water is paramount. When the water is infested, its early detection and management are important.

If hydrilla is found, report its location to the landowner, manager, or park ranger. Remove plant fragments from your boats, boat trailers, and trailer tire treads before moving out of an infested area. If possible, hose them off before moving into another area. Do not collect any for backyard ponds or use in commercial or household aquariums.

Mechanical Control: Hydrilla spreads so easily through fragmentation that mechanical methods are usually ineffective. In fact, mechanical controls will likely increase its spread.

Cultural Control: Hydrilla in swimming areas and around docks can be controlled by covering the sediment under water with opaque fabric, thus preventing its ability to take root, or if rooted, blocking its access to light. It also may be possible to lower the water level and dry the area up, killing a new infestation before it spreads.

Biological Control: A fish, grass carp, is considered the most successful biological control agent for hydrilla and has been used in Florida. Only certified sterile fish are allowed to be released in the waters of Nevada, and then only by permit.

Chemical Control: Herbicides can be used to kill the plant, but they do not have any affect on hydrilla seeds, tubers, and turions. In order to control regrowth, applications of herbicides must be repeated, often several times per season.

Fluridone®, endothall, and copper compounds can be used for chemical control of hydrilla. Flurodine®, a systemic herbicide, has been effective in Florida and several other states. Despite the fact that it is very expensive, non-selective, and results are not immediate, flurodine is most preferred. Endothall is a fast-acting contact herbicide that is employed when immediate control of vegetation is desired. Copper compounds are often combined with endothall applications, but can be used separately.

References

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