Summary of Information on Hydrilla – Compiled by Tamara Ambler, RWSA 1/8/09
NOTE: Much more detailed information regarding the characteristics, impacts, and management of hydrilla can be found in the documents cited at the end of this summary

General Information

In Virginia, hydrilla is increasing and is found in freshwater systems from the Potomac River to Lake Gaston. Across the country, substantial funds and research have been dedicated to managing hydrilla populations in water bodies.

Impact of hydrilla on water intakes, hydropower, boating, and swimming are definitively negative. Impact of hydrilla on fisheries and waterfowl can be positive and negative. Impacts on water quality can be negative.

There have been at least two hydrilla introductions into the United States because at least two different forms occur that reproduce differently. Hydrilla can reproduce in four different ways- fragmentation, tubers, turions, and seed. Fragmentation occurs because the plant breaks apart very easily and small pieces of stem, no more than one inch long, can produce entire new plants. Turions are structures on the stems which break off and can drift for long distances before sinking to start a new plant. Tubers at the base of the plant in the sediment can each produce a new plant, and a single tuber can lead to the production of several hundred others in the course of one growing season. The tubers can survive for four to seven years in the sediment before sprouting, even if no water is present for much of that time. The long survival time of the tubers creates the major challenges in eradicating the plant. Seeds play a very small role in the spread of hydrilla.

Hydrilla is adapted to low light levels for photosynthesis, which allows it to outcompete native vegetation. It can colonize at deeper levels (up to 30 feet), then take up the entire water column and once reaching the surface branches out and forms a dense mat of vegetation at the surface which then intercepts sunlight to the exclusion of other submersed plants.

Impacts on Water Quality and Habitat

While the existence of submerged aquatic vegetation (SAV) can be a positive benefit in providing habitat and increasing water clarity, hydrillaôs incredible efficiency at reproduction can easily cause infestation of the water system. By outcompeting other native plants, the resulting monoculture does not provide the needed diversity in a healthy ecosystem. Hydrilla infestations can increase the daily swings of oxygen and pH. At night, plants use oxygen and give off carbon dioxide (opposite during the day). Beneath a heavy stand of hydrilla oxygen levels can fall to such low levels at night that fish health/survivability is threatened. In addition, decaying dead vegetation matter will use large amounts of oxygen.

Hydrilla can provide good habitat for fish and shellfish, and SAV is often cited as a benefit by fishermen. Bass and other fish that are ambush type predators attack from cover, so the plants can provide improved habitat. Studies show, however, that hydrilla starts becoming less beneficial when it encompasses more than 30 to 40% of the area. Smaller sizes of sport fish, as well as declining numbers of sport fish, have been associated with heavy infestations of hydrilla.

Studies have concluded that hydrilla can improve open water habitat for waterfowl, which feed on it. The major negative impact to waterfowl is its association with Avian Vacoular Myelinopathy (AVM) which is a neurological disease produced by epiphytic cyanobacteria associated with hydrilla that is ingested by waterfowl. It is fatal to the waterfowl and predators that eat the waterfowl (bald eagles notably).

Because hydrilla infestations can slow the movement of water, it results in stagnation in backwater areas and canals, and appears to be an important habitat for a number of mosquito species.

Prevention and Management

Because of the impact of this weed, control efforts have been heavily researched and widely applied. Current management methods for hydrilla include mechanical removal, herbicide applications, and biological control using introduced natural predators. Hydrilla is fragmented easily and damaged plants that are not removed by mechanical control methods can act as a source of reestablishment. Biological control organisms include sterile triploid grass carp, which have been successful in smaller water bodies where total removal of vegetation is desired, but this method may be less preferable in larger water bodies where aquatic vegetation is desirable for sport fish and waterfowl habitat and where recapture and management of fish is more difficult. Species of weevils, leaf-mining flies, moth, snail, and fungi have also been researched to control hydrilla.

Regarding the spread of hydrilla from the South Fork Rivanna Reservoir to the Ragged Mountain Reservoir by direct transfer of water, pretreatment of water that involves screening to prevent turions from moving in the water would be a major prevention step (this pretreatment is already a part of the Community Water Supply Plan). Other steps can be taken to prevent human caused transfers from boating and other recreational equipment. However, one avenue that cannot be prevented is movement by waterfowl. Waterfowl movement can be a primary avenue for aquatic vegetation transfer from one water body to another (personal communication from John Kauffman, Fisheries Biologist, Virginia Department of Game and Inland Fisheries dated January 7, 2009).

Regarding the impacts of dredging where hydrilla is currently established on the South Fork Rivanna Reservoir, mechanical disturbance of the plant can result in fragmentation of the hydrilla stems and dispersal of turions which can yield increased plant growth and plant spread.

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