Some methods for controlling aquatic nuisance plants

It's finally March! The weather is slowly beginning to improve and many of you are making plans for the warm weather to come. During this transition in seasons, there are also plans being made for treatment and control of hydrilla on the lake. A number of agencies and entities meet annually to discuss control methods for Lake Gaston and management techniques that would be most effective for such a large, piedmont reservoir.

Many of you might be familiar with herbicide treatments and grass carp being used to control hydrilla on the lake, but why aren't there other methods being used? There are several methods available to control aquatic nuisance plants in various types of water bodies, but only a few are suited for our local reservoirs, including Lake Gaston. Below, we will discuss some of the methods of control that are available but not currently applicable in our reservoirs and why:

Reservoir Drawdowns

The intent of a lake drawdown is to expose vegetation to the elements, killing large acreages of plants along the shoreline by exposing it to open air, drying and/ or freezing conditions. This method is also often inexpensive to implement. Drawdowns can not only remove exposed plants, but other areas often see stunted plant growth making them more vulnerable to follow up herbicide treatments. Drawdowns often require lowering of the reservoir pool significantly for more than 6-8 weeks however. Unfortunately, in our areas, the peak growing season and thus timing of a drawdown would need to occur during mid-summer. This often coincides with peak recreation and tourism seasons (Imagine a July 4th mud hole!). Drawdowns can also have adverse impacts on hydropower operations, cause a loss of native aquatic vegetation, result in a loss of fisheries habitat critical to spawning and rearing of young fish, and increase shoreline erosion. While drawdowns have been successful in controlling other invasive species like Brazilian Elodea in Lake Gaston, it can sometimes lead to the spread of some invasive species like hydrilla.

Insects as Control Agents

Insects that feed on a host plant and reduce its ability to grow have had the potential to be used as a biological control agent in our local reservoirs. These insects complete their entire life cycle on the plant, introducing generation to generation to a "buffet" of plant material. Many weevils (Bagous spp.) and leaf-mining flies (Hydrellia pakistanae and Hydrellia balciunasi) have been effective on hydrilla in particular, especially in warmer climates. However, due to the nature of monecious hydrilla to die back every winter, the insects are not able to over winter and complete their life cycle and have yet to show effects in our area.

Mechanical Harvesters

Imagine a combine harvester pulling crops from our fields. Much like these combines, mechanical harvesters use powered machines to cut or pull aquatic vegetation, temporarily clearing infested areas. These machines are often used in small ponds and shallow water bodies. Unfortunately, the machines are often unable to remove plants at depths beyond its reach so water beyond 5 feet deep is often not affected. Even in areas where harvesting is successful, plants often reestablish from their roots remaining in the sediment. In the case of hydrilla, mechanical harvesters can often exacerbate the problem, creating plant fragments that can float away and infest in other, not infested parts of the lake. To operate these machines is often very expensive as well.

Benthic Barriers

Benthic barriers are bottom barriers used for control of small areas of "pioneer" populations of invasive plants through inhibition of sunlight. Barriers are anchored in place and spread over small beds of invasive plants to "smother" them. This technique is often very effective in controlling small populations of invasive plants, especially around boat docks and ramps. While effective, they are often extremely expensive, hard to construct and require routine cleaning to remove silt from the top. This is often a major problem especially when attempting to control hydrilla. Hydrilla needs very little sediment in which to grow. If silt builds up on top of benthic barriers, hydrilla can simply begin growing on top of the original barrier. Barriers can also impact native species of vegetation as well as fish and other benthic organisms beneficial to the lake. Most states in which benthic barriers are allowed require permits for use.

Other methods of control include the use of hand rakes for small swimming areas, shading with the use of dyes, or the use of weed rollers. These methods, like those described above, are ineffective for large reservoir systems like Lake Gaston. For more information on control methods or if you have general inquiries about aquatic plant management on Lake Gaston, please feel free to email me at bmhartis@ncsu.edu or call (919)-515-5648. Also, visit www.lakegastonguide.com/environment.asp or www.kerrlakeguide.com/lake-environment for more information on Lake Environment.