

Plant Fragmentation and Mechanical Aquatic Harvesting
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Aquatic vascular plants naturally break into segments distributing identical genetic material to other locations in the water body in a process called *fragmentation*. Mechanical aquatic harvesting is often cited for increasing fragmentation since a portion of the plant is removed from the near shore environment. Natural wind movement and currents increase fragmentation, as does propeller driven boating. If aquatic mechanical harvesting is only done once in a growing season, fragmentation could increase in the later months. Having said that, if aquatic mechanical harvesting is done a second or third time during the growing season, fragments of the host plant will not be able to mature. A couple timely harvests are recommended to prevent the return of invasive aquatic plant infestations. Because of processes like fragmentation, there are few “one and done,” treatments in water management.

For a terrestrial example, most lawns need periodic cutting by a powered mower. In the spring, grass is cut and either bagged or thrust back into the lawn. If you do not bag the turf, some of the cut grass or weeds will be fragmented and distributed over a freshly cut lawn. If the mower is not used in another week or so, some plant fragments can grow into new plants. Obviously, one cutting is not enough and since turf needs several cuttings from spring to fall, regular mowing will keep the grass and weed growth to an acceptable height. In some cases, a lawn may need herbicides and fertilizers to decrease the growth of unwanted plants and increase turf production. Many lawns do not need additives.

In brackish or freshwater, aquatic plant growth is steady but usually much slower than a typical lawn. Aquatic plants grow in three general ways: **1. Root systems** which includes growth through underground stems (rhizomes), above ground stems (stolons) and tubers that serve as dormant buds that can survive for several years until conditions allow growth. **2. Seedbanks** occur in flowering plants. The seeds are hardy and can also lay dormant over the winter until a warmer growing opportunity. Birds consume seeds and can transport the undigested seeds to other bodies of water as they travel. **3. Fragmentation** occurs when plant sections are broken, chopped, pulled and thereby transported by flow to another section of the water body. Fragmentation is a natural reproductive process.

Eurasian Watermilfoil is one of the most common freshwater aquatic invasive plants and one of the most destructive. Eurasian Watermilfoil has disseminated countless

water bodies across North America. In the fall, Eurasian Watermilfoil becomes brittle and sections fragment and easily move to other locations. This fragmentation process occurs without human intervention. Therefore, whether you use aquatic mechanical harvesting or not on Eurasian Watermilfoil, the plant is going to fragment. This is but one example.

Removing aquatic invasive plants will increase fragmentation, however, if timely removal of these plants is conducted, none of the nuisance plants will be able to cause overgrowth. Hand raking in small settings like a backyard pond will also keep growth of unwanted plants to a minimum. In larger bodies of water such as lakes or bays, aquatic mechanical harvesting is the best non-chemical alternative. Removal of plant material by harvesting will also decrease the nutrient levels in an impaired water body to comply with the EPA Clean Water Act Total Maximum Daily Loading (TMDL) regulations.

A chemical application in a lake must be repeated or the algae or aquatic invasives will return. In saltwater, chemical applications are not recommended because the treatment is removed with tidal flushing. Many states are becoming increasingly concerned about the use of chemicals on freshwater systems because of the potential biological disruption in ecosystems. Unlike harvesting, chemical treatments do not remove nutrients from a body of water; they recycle nutrients.

The argument that fragmentation is a deterrent for using aquatic mechanical harvesting lacks the basic understanding that any water management technique *usually must be repeated*. Aquatic mechanical harvesting is used as an ongoing best management practice (BMP) to decrease the growth of invasive aquatic plants and algae.

References:

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