

Aquatic Plants in Washington Lakes

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Ecological Balance

Aquatic plants are an important component of lakes because they provide food and habitat for invertebrates, fish, and wildlife. They can also prevent shoreline erosion, filter pollutants from adjacent shoreline activities, and add to the beauty of a lake. Aquatic plants are an integral part of a lake's nutrient cycle and necessary to a lake's well being, but they can also grow out of control and disrupt nature's delicate balance and impair recreational uses of a lake. Aquatic plants obtain their nutrients from lake sediment and water, such that nutrient enrichment of a lake can cause nuisance levels of aquatic plants. However, highly enriched lakes with excessive algae growth may lack underwater plants because aquatic plants also need light to grow. The amount of aquatic plants in a lake also depends on water depth, sediment type, and the specific type of plants present or introduced to the lake. Thus, the lake ecosystem is a delicate balance between the different types of aquatic plants, the amount of nutrients and algae growth, and various other factors that are not well understood. The balance between aquatic plant and algae dominance in a shallow lake is easily disrupted by watershed development, lake management activities, and introductions of invasive plant and fish species.

Plant Types

Aquatic plants are classified into three types of growth: 1) shoreline plants that grow along the shoreline above the water surface (i.e., emergents such as cattails and bulrushes), 2) floating-leaved plants that are either rooted in the sediment (e.g., water lilies) or free-floating (e.g., duckweed), and 3) submersed plants that grow entirely underwater with the exception of flowers and fruits (e.g., milfoil and pondweeds). Each of these groups includes species that are either native or nonnative. Native species evolved with other Northwest plants and animals, and generally have natural population controls that keep their growth in check. Nonnative species are noxious weeds that have been introduced since European settlement and typically spread aggressively in a lake because they lack natural control mechanisms.

Noxious plants are often inadvertently introduced to a lake from the release of plant seeds or fragments attached to a boat trailer. Lake residents may unknowingly purchase a noxious weed from a garden or aquarium supply, or transplant a noxious weed from an infested lake. The explosive growth of a noxious weed following its introduction typically results in the loss of fish habitat, entanglement of boaters and swimmers, and degraded water quality from reduced oxygen levels and increased

nutrient supply. Noxious weeds (see table) are regulated by the Washington State Noxious Weed Control Board.

Noxious Aquatic Weeds in Washington

Shoreline Plants

Garden Loosestrife (*Lysimachia vulgaris*)
Giant Hogweed (*Heracleum mantegazzianum*)
Hairy Willow-Herb (*Epilobium hirsutum*)
Indigobush (*Amorpha fruticosa*)
Japanese Knotweed (*Polygonum cuspidatum*)
Purple Loosestrife (*Lythrum salicaria*)
Reed Canarygrass (*Phalaris arundinacea*)
Saltcedar (*Tamarix ramosissima*)

Floating – Leaved Plants

Fragrant Water Lily (*Nymphaea odorata*)
Water Hyacinth (*Eichhornia crassipes*)
Yellow Floating Heart (*Nymphoides peltata*)

Submersed Plants

Brazilian Elodea (*Egeria densa*)
Eurasian Watermilfoil (*Myriophyllum spicatum*)
Fanwort (*Cabomba caroliniana*)
Hydrilla (*Hydrilla verticillata*)
Parrotfeather (*Myriophyllum aquaticum*)
Swollen Bladderwort (*Utricularia inflata*)
Water Primrose (*Ludwigia hexapetala*)

Monitoring

A diverse healthy native plant community is more resistant to invasion by opportunistic noxious weeds. Plant community changes should be monitored by collecting and identifying aquatic plants each year to detect noxious weed invasions early, when control or elimination of the weed is both less complicated and less costly. Aquatic plant monitoring also provides a historic record of which native plants grow in the lake and where excessive amounts of native plants may interfere with beneficial uses of the lake. Collecting and preserving plants is not difficult, but proper identification of the plant can be tricky and is essential for proper management of noxious weeds.

Planning

The Washington State Department of Ecology (Ecology) has developed a step-by-step guidance manual for developing an Integrated Aquatic Vegetation Management Plan (IAVMP). The goals of such plans are to develop affordable and effective solutions that respect the beneficial uses and balance of life in the lake and the watershed. The process involves two phases: a problem/site description and a control strategies description. The lake community and interested parties within its watershed work together to obtain information about a lake, recommend specific methods of control, identify permit requirements and analyze project costs. Ecology's Freshwater Noxious Emergent Integrated Pest Management Plan provides information for the management of noxious shoreline plants.

Funding

Aquatic Weeds Management Fund grants are available from Ecology for projects that address prevention and/or control of freshwater, invasive, and nonnative aquatic plants. The types of activities funded include planning, education, monitoring, implementation, pilot/demonstration projects, surveillance, and mapping projects. Cities, counties, state agencies, tribes, and special purpose districts (not including lake management districts) are eligible to receive grants. Lakes groups and other private organizations must work in conjunction with their local governments to receive funding for projects. An IAVMP is required to obtain a grant to control a well-established noxious weed population, but grants are available for the development of an IAVMP.

Management Techniques

Numerous techniques are available that can be used alone or in combination for the physical, biological, or chemical control of nuisance aquatic plant growth. Management techniques include:

- Manual methods (hand-pulling and raking)
- Bottom barriers (screen, woven synthetic, and burlap)
- Mechanical cutters (hand-operated and boat-mounted cutters without fragment collection)
- Harvesting (cut plants conveyed onto a barge)
- Sediment agitation (Weed Roller and rotovation)
- Diver dredging (diver-operated suction dredge)
- Water level drawdown
- Biological control (grass carp and weevils)
- Aquatic herbicides (glyphosate, fluridone, 2,4-D, endothall, diquat, triclopyr, and imazapyr).

One or more of the following permits may be required for aquatic plant management: shoreline permit exemption from the local jurisdiction (county), Hydraulic Project Approval from the Washington State Department of Fish and Wildlife (for all methods except biological and chemical), and NPDES permit from Ecology (for herbicide applications).

Reference

This fact sheet is based primarily on information provided by Ecology's aquatic plant Web site: www.ecy.wa.gov/programs/wq/links/plants/index.html. For additional information, visit this Web site or contact Kathy Hamel by e-mail at kham461@ecy.wa.gov.