

An aerial photograph of Lake Margaret, a dark, irregularly shaped body of water. The lake is surrounded by a dense forest of green trees. Numerous small, light-colored buildings, likely houses or cottages, are scattered along the shoreline, particularly on the left and right sides. Some buildings have small docks or piers extending into the water. The overall scene is a mix of natural greenery and human development.

Lake Margaret

**Aquatic Plants and
Noxious Weeds**

Feb. 26, 2020

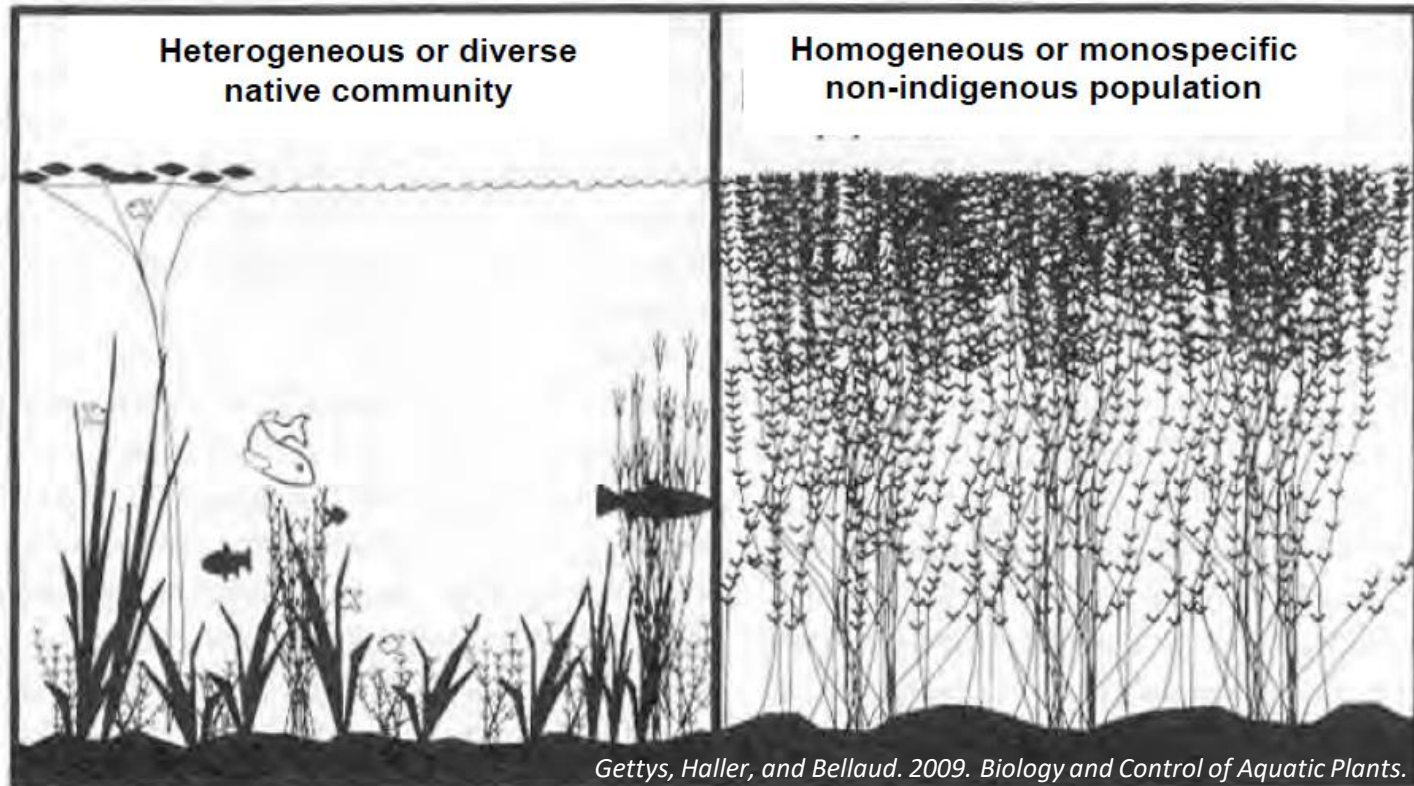
**Ben Peterson
Aquatic Noxious Weed Specialist
King County Noxious Weed Program**

Aquatic Plant Benefits

- Stabilize shorelines
- Provide habitat
- Reduce nutrients
- Prevent algal blooms
- Produce oxygen



the native plant matrix in lakes: what is healthy



Striking a balance with aquatic plants

- Aquatic weed monoculture
 - Very dense
 - No diversity of habitat/food source
- Healthy native ecosystem
 - Diverse in structure and species
 - Open water and vegetated water
 - Adapted for native animals, fish, insects
- Sandy-bottomed, plant-free, recreational lake
 - Poor habitat value
 - All open water

Lake Margaret submerged aquatic plant list

(from 2012 and 2015 surveys, almost all native)



- Coontail



- Common elodea



- Muskwort &
- Stonewort

- Pondweeds
(slender
pondweed
& others)



Lake Margaret submerged aquatic plant list

(from 2012 and 2015 surveys, almost all native)



- Water-nymph



- Water-starwort



- Western watermilfoil

And one floating leaf plant:

*2012 plant survey couldn't tell which one it was,
at the south end of the lake*

spatterdock
(native,
stiff stem)



fragrant
water lily
(weed,
flexible stem)

Info about *Najas* Spp. (water nymph)

Attributes:

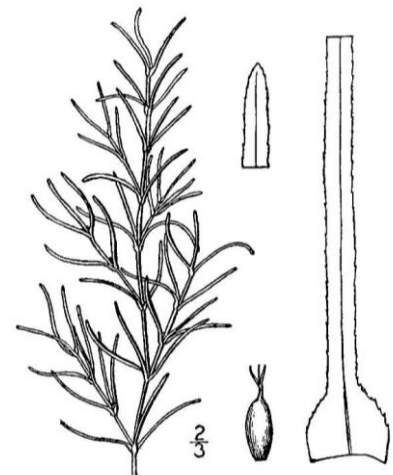
- Native plant
- Likely *N. guadalupensis* (common water nymph).
- Perennial (likely), grow to depths of 13 feet in clear water
- Reproduces vegetatively (by plant fragments and maybe seed)
- Don't know why it's so aggressive/abundant at Lake Margaret
- Has been at the lake since at least 2012
- Also very aggressive/abundant at Lake Kathleen near Renton



Common water-nymph



Photo –
Robert H. Mohlenbrock



Britton, N.L., and A. Brown

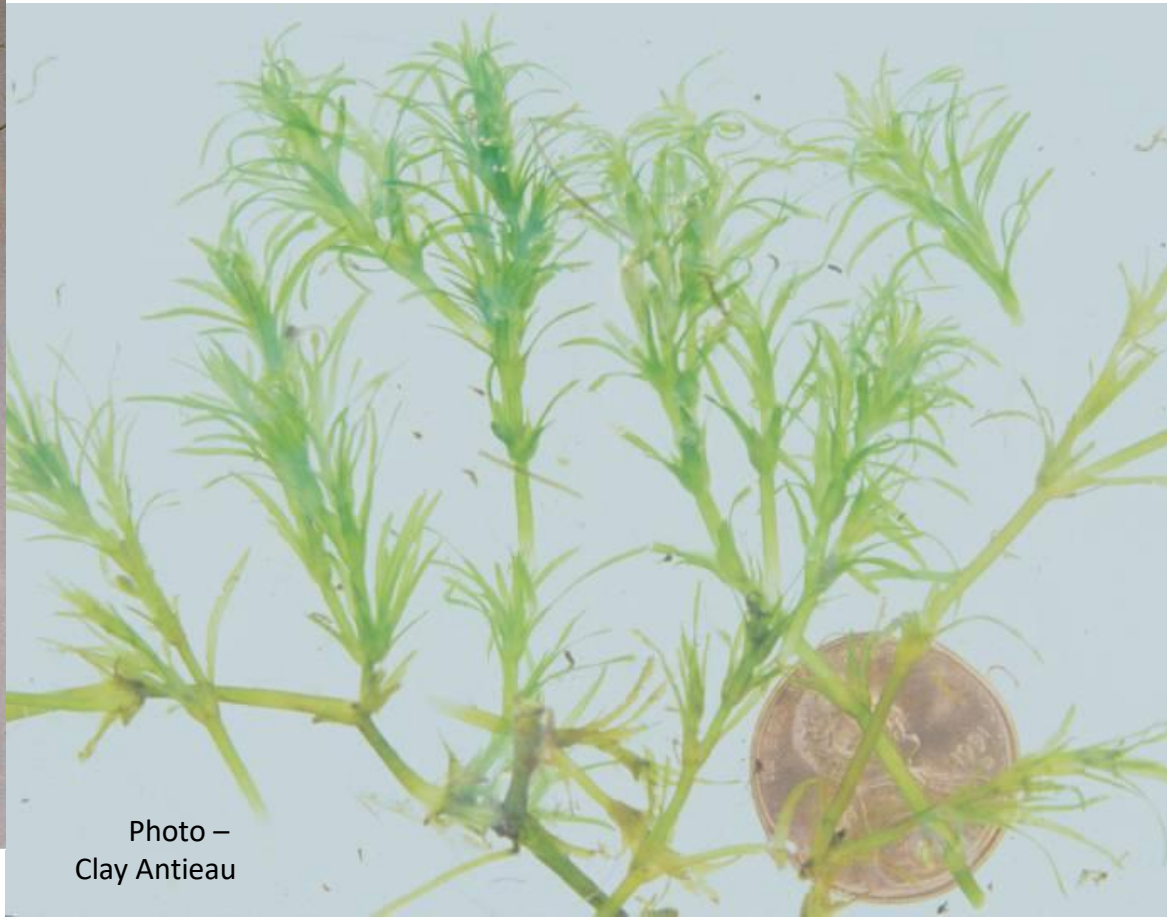


Photo –
Clay Antieau

Potential water-nymph mitigation strategies

(Small Scale- page 1)

- Weed Mats/bottom screen/benthic barrier
 - Covers lake bottom in a small areal
 - Prevent all plant growth, temporary
 - ~\$1000 for 300 sq ft. (+ ~ \$1,100 admin and transportation) if done by a contractor
- Weed Roller
 - Like an underwater rolling pin with a motor
 - Attaches to the corner of a dock, non-selective
 - Up to 24' radius, Cost ~ \$5,000 + installation
- Hand Raking or cutting (Weed Razor)
 - Toss a Y-shaped weed cutter into the water and drag back to cut plants
 - Costs~ \$100-\$150, non-selective
 - Labor intensive, plant fragments float away



Potential water-nymph mitigation strategies

(Small Scale – page 2)

- Hand pulling by homeowner
 - Using a snorkel or wading
 - Put pulled plants into a mesh bag
 - Free but labor intensive, selective
- Diver Assisted Suction Dredging (DASH)
 - Hired SCUBA divers use a suction tube to quickly and effectively remove rooted aquatic plants
 - Plants are deposited in a bag on a boat
 - Less sediment disturbance, quicker, selective
 - Costs ~ \$5,000/day



Screen grab photo: Eco D.A.S.H. Services

Potential water-nymph mitigation strategies (Large Scale)

- Harvesting machine

- Cuts up to 7' deep, roots still live
- Up to 1-2 acres/day
- Non-selective
- Dispose of plants on shore
- Costs ~ \$4,100/acre



- Herbicide

- Diquat contact herbicide, roots still live
- Pumped into the water from a boat
- Quickly kills vegetative parts of plants
- 1 to 3-day potable water use restrictions
- Costs ~ \$2,000+/acre
- Other options but have more potable water use restrictions



Yellow Flag Iris (*Iris pseudacorus*)

Class C Noxious Weed – Control recommended

Yellowflag iris -1. identification

- Large yellow iris – blooms April – June
- Prominent midrib in leaf
- Grows to 1.5 meters tall
- Broad, flat, pointed leaves folded at base
- Found on lakes, streams, wetlands
- (cattails are rounded at base, no midrib)



Native cattail
(for comparison)



Native cattail =
rounded at
base, crescent
moon in cross-
section

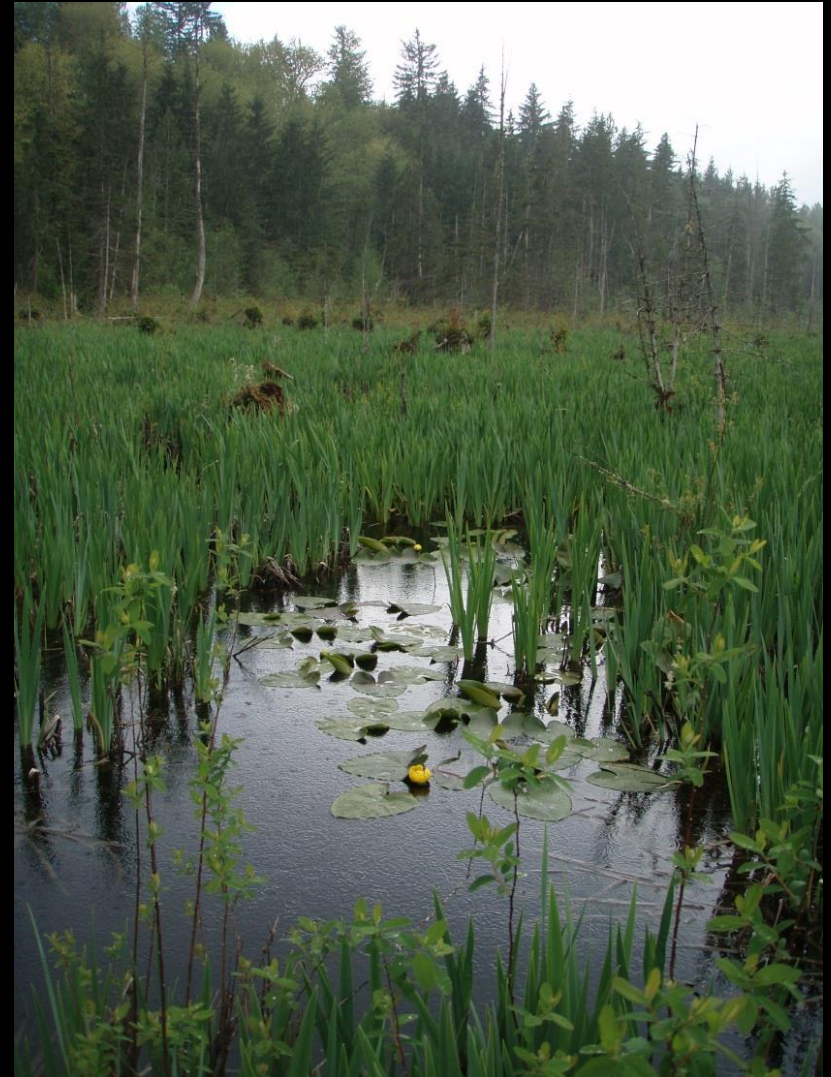
green seed pods
with flat seeds
like corn kernels
that float



Seed
pod and
seeds

Yellowflag iris impacts

- Outcompete native plants and animals for habitat
- Forms impenetrable mats, accumulates sediment
- Can reduce stream width
- Native to Europe and north Africa





Control of Yellow Flag Iris

- Deadhead (cut off) flowers to prevent seed production
- Digging out the entire rhizome mass can control small isolated patches, but even small rhizome fragments can re-sprout
 - May promote germination of seeds, monitor area
- Mowing or cutting – repeat every year for several years to weaken plants
- Sap can cause an allergic reaction so wear gloves

Even small plants have large roots





Control of Yellow Flag Iris

Yellowflag iris -3. control

- Chemical Control Options –apply late spring/early summer or fall
 - Foliar application of glyphosate (5 to 8% solution) plus an aquatic surfactant
 - 3% imazapyr plus an aquatic surfactant
 - Apply a 25% solution with a dripless wick/wiper (*follow label*)
 - Apply concentrated glyphosate to freshly cut leaf and stem surfaces (*follow label*)



3% imazapyr 8 weeks after treatment

Yellow Flag Iris- IPM strategies

- Persistence pays off
- Remove seed heads first
- For small areas: careful digging
- Large area:
 - Herbicide for several years (it has a big root system)
 - Long term monitoring and hand digging

Yellowflag iris -3. control





Reed canarygrass

Phalaris arundinacea

Class C
Noxious
Weed

reed canarygrass

Identification Tips

- Large, coarse perennial wetland grass that grows 3 to 9 feet tall
- Hairless stems with gradually tapering leaf blades
- Leaves are flat and have a rough texture on both sides and are at a 45-degree angle to stem
- Flower heads are found in narrow clusters on the stems high above the leaves
- Leaves are bright green (compared with the bluishgreen leaves of phragmites)
- Grows mostly in wet places or along creeks and lakes

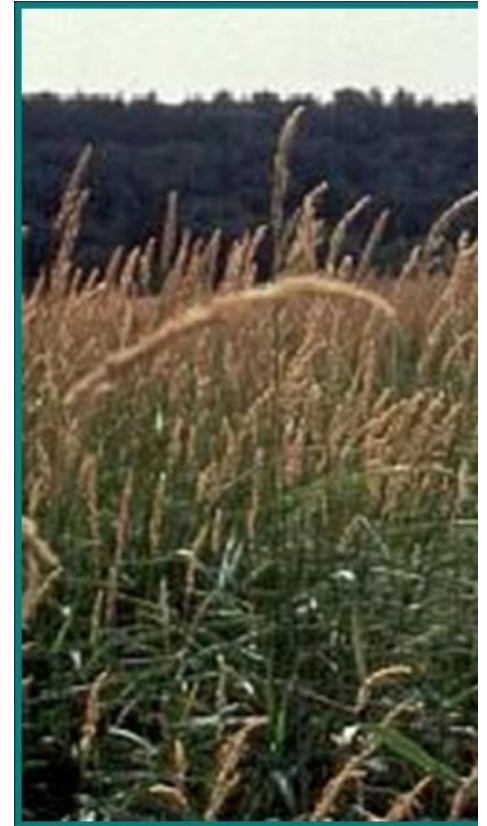
Biology

- Spreads by seeds and vegetatively by rhizomes that produce a thick mat of stems
- Vegetative growth peaks in mid-June and declines in mid-August; goes dormant in the winter with visible dead stalks



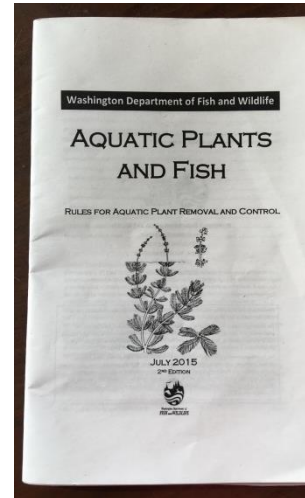
Reed canarygrass – Control

- An aquatic formulation of glyphosate (Aquamaster, Aquaneat , et. al.) or imazapyr (Habitat or Polaris) will be most effective
- in the summer or early fall.
- Mowing first and allowing the reed canarygrass to grow back to a few feet tall can increase the effectiveness of herbicide spraying.
- Established populations will usually require at least 2 to 3 years of follow-up treatment and several herbicide applications may be necessary to inhibit seed bank recolonization.
- Ultimately, the most effective way to reduce reed canarygrass in an area is dense shade, such as willow stake planting.



Permits: Manual Control

- Regulated by WA Dept. of Fish and Wildlife's Hydraulic Project Approval (HPA) permit
- Aquatic Plants and Fish booklet (a special HPA permit for limited weed/native plant control)
- An "Individual HPA" would be needed for larger area and work outside July 16 – September 30 work window.
 - Applying for an Individual HPA takes a bit of effort and time
- Google search for: **WDFW Aquatic Plants and Fish**
- Differing rules for Noxious Weeds and native plants
- Use for:
 - Milfoil and water lily pulling
 - Native aquatic plant clearing (with restrictions)
 - Iris digging in standing water
- Can work with contractors or consultants to get the permit



Questions?

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An aerial photograph of a large, dark lake surrounded by a dense forest of green trees. Numerous small, light-colored houses are scattered along the shoreline, particularly on the left and right sides. The water in the lake is dark and reflects the surrounding greenery. The year '2017' is overlaid in the center of the image in a large, bold, yellow font.

2017