King County Lake
Weed Watchers
(Aquatic Plant ID and surveying)
2020 Program
Primary Purpose of Weed Watchers

Early Detection → Rapid Response
plant categories

NATIVE → generally beneficial
INTRODUCED → usually not harmful
NOXIOUS → always potentially destructive

Regulated
• Eradication or control is required
• Includes all Class A and many Class B weeds

Non-regulated
• Control recommended (but not required)
• Mostly Class C and some Class B weeds

Weed Watchers is concerned primarily regulated weeds (because they aren’t yet wide spread)
Checklist  (handbook page 2)

What you should have for a lake survey

• Weed rake
• Clipboard (pencil, sharpie marker)
• Marker buoy
• Plant ID aids:
  • An Aquatic Plant Identification Manual (published by WA Dept. of Ecology)
  • Laminated submerged and floating weed flow-charts
  • quick ID manual
• survey forms on Rite-in-the-Rain paper
• \Lake maps/photos
• (optional) Ziplock bags for collecting plant samples
Aquatic invasive species

- Plant seeds and fragments
- Didymo ("rock snot")
- New Zealand mud snails
- Quagga and zebra mussels
- Chytrid fungus
- Whirling disease
Aquatic invasive species

- Plant seeds and fragments
- Didymo ("rock snot")
- New Zealand mud snails
- Chytrid fungus
- Quagga and zebra mussels
- Whirling disease

[Images of each species]
New Zealand mud snails

- Female clones quickly reproduce
- Up to 500,000 snails/m²
- Outcompete native mollusks & insects
- Linked to declining trout populations in western US
- LIKELY TO SPREAD

Confirmed at the mouth of Thornton Creek In north Lake Washington in 2013, now also in Kelsey Cr. Bellevue
Aquatic invasive species vectors

- motors
- boats
- trailers
- Boots & clothing
Lake Weed Watchers: Field Surveys
When to survey

• Survey twice each season if possible
  – Late June/early July and Late August/early September

• Survey the entire lake
  – You never know where the weeds might be hiding

• Ideal survey conditions are smooth water and even overcast
  – Bright sun can produce glare
  – Heavy wind and rain can reduce visibility
Survey method

When the **bottom slopes steeply** away from the bank, you can probably see most plants from a survey path that is mostly straight.

When the **bottom is shallow** a long way from shore, use a zig-zag survey path to bring you within viewing range of most plants.
Survey suggestions

- Look especially in places where weeds are likely to settle out and take root:
- Around boat launch
- At other public access areas
- Coves, inlets, quiet waters
- At edges of floating mats of vegetation
- Around outlet
- Areas with extensive vegetation
- Shallow areas
- Downwind end of lake

* If your lake has dark water (tea-colored) or you can’t see the bottom, throw your rake in the areas most likely to have plants.
## Lake Weed Watcher Survey Form

**Please return completed form to:** Joe Neumann, King County Noxious Weed Control Program, 201 S Jackson, Suite 600, Seattle, WA 98104-4724

Or, scan and email to joseph.neumann@kingcounty.gov http://www.kingcounty.gov/environment/animals-and-plants/noxious-weeds/weed-watchers/lake-weed-watchers.aspx

*Required fields

**Survey Notes:**

### HIGH PRIORITY WEEDS: IF ANY OF THE FOLLOWING SPECIES ARE FOUND ON THE LAKE, ENTER INFORMATION IN THE TABLE BELOW (use back if more space needed)

<table>
<thead>
<tr>
<th>Weed Name</th>
<th>Weed Code</th>
<th>Weed Name</th>
<th>Weed Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazilian Elodea (Egeria densa)</td>
<td>EGEDEN</td>
<td>Parrotfeather (Myriophyllum aquaticum)</td>
<td>MYRAQU</td>
</tr>
<tr>
<td>Common Reed (Phragmites australis)</td>
<td>PHRAUS</td>
<td>Purple Loosestrife (Lythrum salicaria)</td>
<td>LYTSAI</td>
</tr>
<tr>
<td>Fanwort (Carpobrotus edulis)</td>
<td>CARBRA</td>
<td>Reed Sweetgrass (Glyceria maxima)</td>
<td>GLYMAX</td>
</tr>
<tr>
<td>Floating Primrose-willow (Ludwiga peploides)</td>
<td>LUPDEP</td>
<td>Variable-leaf Milfoil (Myriophyllum heterophyllum)</td>
<td>MYRHET</td>
</tr>
<tr>
<td>Flowering rush (Butomus umbellatus)</td>
<td>BUTUMB</td>
<td>Water Hyacinth (Eichhornia crassipes)</td>
<td>EICRCA</td>
</tr>
<tr>
<td>Garden Loosestrife (Lysimachia vulgaris)</td>
<td>LYSVUL</td>
<td>Water Primrose (Ludwiga hexapetala)</td>
<td>LUDHEX</td>
</tr>
<tr>
<td>Hairy Willowherb (Epilobium hirsutum)</td>
<td>EPIHHR</td>
<td>Yellow Floating-heart (Nymphoides peltata)</td>
<td>NYMPHEL</td>
</tr>
<tr>
<td>Hyacinth (Hyacinth verticillata)</td>
<td>HYDVER</td>
<td>Unknown species (describe in survey notes)</td>
<td>UNKNOWN</td>
</tr>
<tr>
<td>Narrow-leaved Cattail (Typha angustifolia)</td>
<td>TYPANG</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table:

<table>
<thead>
<tr>
<th>Plant Name/Weed Code</th>
<th>Lake Section</th>
<th>Infested Area</th>
<th>Growth Stage</th>
<th>Location Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>see list above</td>
<td>From map if available</td>
<td>square feet</td>
<td>vegetative, pre-flower, bud, flowering, seed set, dying back</td>
<td>Distance from shore, landmarks, compass directions, and any other information that would help someone locate the population</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Marker Buoy? (yes/no)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Did you take a photo of the plant? (yes/no)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Did you collect a plant sample? (yes/no)</td>
</tr>
<tr>
<td>Plant Name/Weed Code</td>
<td>Lake Section</td>
<td>Latitude; Longitude</td>
<td>Infested Area</td>
<td>Growth Stage</td>
</tr>
<tr>
<td>---------------------</td>
<td>--------------</td>
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</tr>
<tr>
<td>see list above</td>
<td>From map if available</td>
<td>dec. dec. (e.g. 47.579827, -121.502207)</td>
<td>square feet</td>
<td>vegetative, pre-flower, bud, flowering, seed set, dying back</td>
</tr>
</tbody>
</table>

**OPTIONAL:** List any Low Priority WEEDS and NATIVE PLANTS identified in lake survey
Plant identification

Find the BAD Plants!

Find the BAD Plants!
Important plant terms:
leaf arrangements

opposite
alternate
whorled

leaflet
leaf
compound
basal

leaf axil
TIP: There are NO submerged class A or B noxious weeds with ALTERNATE LEAVES

Noxious? = NOT noxious
Submerged

Leaves divided

Leaves feather-like
  - More than 14 leaflets per leaf, leaves collapse against stem when removed from water
  - Eurasian water milfoil

Leaves not feather-like
  - Fewer than 14 leaflets per leaf, plant holds its shape when removed from water
  - Native milfoils

Leaves in whorls around stem
  - Leaves paired and opposite
    - Leaves in a whorl all the way around the stem
      - Coontail or aquatic plant-like algae (Chara or Nitella sp.)

Leaves alternate on stem
  - No bladders
  - Leaves paired and opposite
    - Fanwort

Leaves simple
  - Leaf margins visibly toothed, leaves in whorls of five
    - Hydrilla

Leaves alternate on stem
  - Leaf margins smooth
  - Leaves more evenly distributed on stem
  - Leaves clasp stem, tend to bunch at stem ends
    - Water-nymph

Leaves in whorls of three
  - Leaves mostly in whorls of three
    - American waterweed

Leaves in whorls of four (up to six)
  - Leaves in whorls of four (up to six)
    - Brazilian elodea

Leaves not rigid, have mid-vein(s)
  - Leaves elliptical to thread-like, sometimes have floating leaves
    - Native pondweeds

Leaves thin, leaf margins wavy
  - Curly-leaf pondweed

Gray boxes = invasive plant
White boxes = native plant
TIP: If you don’t recognize it but it doesn’t match any noxious weed, you don’t need to key it out

= NOT noxious
Submerged Noxious Weeds and a few native look-alikes

<table>
<thead>
<tr>
<th>Latin name</th>
<th>Common name</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Cabomba caroliniana</em></td>
<td>fanwort – Class B</td>
</tr>
<tr>
<td><em>Ceratophyllum demersum</em></td>
<td>coontail – native</td>
</tr>
<tr>
<td>Plant-like algae</td>
<td><em>Chara &amp; Nitella</em> species – native</td>
</tr>
<tr>
<td><em>Egeria densa</em></td>
<td>Brazilian elodea – Class B</td>
</tr>
<tr>
<td><em>Elodea canadensis</em></td>
<td>American waterweed – native</td>
</tr>
<tr>
<td><em>Najas flexilis</em></td>
<td>Slender water-nymph – native</td>
</tr>
<tr>
<td><em>Potamogeton spp.</em></td>
<td>Native pondweeds</td>
</tr>
<tr>
<td><em>Myriophyllum spp.</em></td>
<td>Native watermilfoils</td>
</tr>
<tr>
<td><em>Myriophyllum heterophyllum</em></td>
<td>Variable watermilfoil – Class A</td>
</tr>
<tr>
<td><em>Myriophyllum spicatum</em></td>
<td>Eurasian watermilfoil – Class B non-designate</td>
</tr>
<tr>
<td><em>Utricularia vulgaris</em></td>
<td>Common bladderwort – native</td>
</tr>
</tbody>
</table>
Cabomba caroliniana

Fanwort – Class B weed

Currently not in King County

Key characteristics:
• submerged leaves opposite, fan-shaped, on a long leaf stalk
• small white flowers borne above the water
• plant can look cylindrical underwater
Fanwort with uncommon Native look–alikes

**Fanwort**

- Water marigold
  - *Megalodonta beckii*
  - No leaf stalk

- Water buttercup
  - *Ranunculus aquatilis*
  - Leaves alternate
Ceratophyllum demersum
Coontail – Native

Key characteristics:
• leaves narrow, forked and whorled on the stem
• inconspicuous flowers
• plant is stiff and holds its shape out of water
Video:

Coontail (native) (25 seconds)
**Chara spp. and Nitella spp.**

Plant-like algae – Native

**Key characteristics:**

- algae has no leaves
- leaf-like branchlets form whorls around stem; undivided in *Chara* spp., evenly forked in *Nitella* spp.
- *Chara* spp. have strong, garlic-like odor, especially when crushed
- can be up to 2m long or as short as a few centimeters
Video:
Chara/
muskgrass
(native)
(30 seconds)
Video:

Nitella/brittlewort (native) (21 seconds)
Egeria densa
Brazilian elodea – Class B weed

Key characteristics:
• smooth leaf edges
• leaves in whorls of 4 (up to 6)
• relatively showy flower
• grows in up to 20 feet of water
Video:

Eurasian watermilfoil (Class B weed) (40 seconds)
**Egeria densa**
**Brazilian elodea**

- Portage Bay
- Lake Washington
- Lake Sammamish
- Sammamish River
- Lake Fenwick
- Lake Dolloff
Elodea canadensis
American waterweed – Native

Key characteristics:
• leaves linear, whorled in 3s (sometimes 2-4) on the stem
• leaves sparse toward bottom of plant, more bunched together toward top
• branching stem fragments
Video:
American waterweed (native)
(25 seconds)
Brazilian elodea vs. our native American waterweed *Elodea canadensis*

Brazilian elodea has 4 leaflets

Native has 3 leaflets
Najas flexilis
Slender water-nymph – Native

Key characteristics:
• branched stem, up to 2m long, fragments easily
• slender pointed leaves <3cm long cluster near top of stem
• leaf base clasps stem and is much broader than leaf blade
• flowers inconspicuous
Video:
Slender water-nymph (native) (20 seconds)
Potamogeton spp.
Submerged pondweeds – Native

Key characteristics:
• many species
• leaves **alternate**, grass-like to oval, always have at least one mid-vein
• stems branched, flexible, up to 3m long
• small flowers/seedheads on spikes held above water
Video:

Big-leaf pondweed (native) (24 seconds)
Video:
Fern-leaf pondweed (native) (24 seconds)
Potamogeton crispus
Curly leaf pondweed – Class C non-regulated

Key characteristics:
• **Wavy leaf edges**
• leaves **alternate**, on no leaf stalk
• Leaves translucent – olive green to reddish brown
• Leaves 4-10 cm long x 5-10 mm wide
• Known to grow earlier in the season (starting in April)
Video:

Curly-leaf pondweed
(Class C weed)
(20 seconds)
Myriophyllum species: The trouble with milfoils

# of leaflets variable and overlapping

Stem color and thickness variable

Flowering stalks helpful, but not always diagnostic

DNA analysis sometimes necessary

Got a new milfoil population? Send us a sample!
Myriophyllum heterophyllum
Variable watermilfoil – Class A

Key characteristics:
• Submerged leaves:
  • 5-18 leaflet pairs
  • limp leaves in whorls of 4-6
  • densely packed, bottlebrush appearance
• Emergent leaves (bracts):
  • Toothed, entire, stiff, less toothy higher on stem
  • ½-1 inch long
• Stem green to red, robust
variable watermilfoil *Myriophyllum heterophyllum* vs.
western watermilfoil *Myriophyllum hippurroides* (native)

**Bottom line: if it has emergent leaves, send it in!!!**

- Both have leaves on emergent flower stalks
- Both are rare or unknown in King County
- May require DNA analysis to tell apart
Myriophyllum spicatum
Eurasian watermilfoil – Class B non-designate

**Key characteristics:**
- 14 or more leaflet pairs
- Leaves whorled
- Usually red stem, branched
- Leaves collapse against stem when pulled from water
- Flower spike held above water
Video:

Eurasian watermilfoil (Class B weed)
(28 seconds)
Eurasian watermilfoil – *Myriophyllum spicatum* vs. the native northern watermilfoil *Myriophyllum sibiricum*

- Eurasian water Milfoil has 14 or more leaflet pairs.
- The native has fewer than 14 leaflet pairs.
- Collapses out of water.
- Holds shape out of water.
**Utricularia vulgaris**
Common bladderwort – Native

**Key characteristics:**
- branched leaves
- conspicuous bulbous bladders green when young and turn black further down the stem
- carnivorous plant
- small yellow snapdragon-like flower is held above the water
- plant often prostrate on lake bottom
Video:

Bladderwort (native) (18 seconds)
### Floating and mat-forming species you should be familiar with

<table>
<thead>
<tr>
<th>Latin name</th>
<th>Common name</th>
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<tbody>
<tr>
<td><em>Brasenia schreberi</em></td>
<td>Watershield - native</td>
</tr>
<tr>
<td><em>Marsilea mutica</em></td>
<td><strong>Water fern</strong> - introduced</td>
</tr>
<tr>
<td><em>Nuphar lutea</em></td>
<td>Spatterdock or yellow pond-lily - native</td>
</tr>
<tr>
<td><em>Nymphaea odorata</em></td>
<td>fragrant waterlily – Class C non-designate</td>
</tr>
<tr>
<td><em>Nymphoides peltata</em></td>
<td>Yellow floating heart – Class B</td>
</tr>
<tr>
<td>Potamogeton species</td>
<td>native pondweeds</td>
</tr>
<tr>
<td><em>Myriophyllum aquaticum</em></td>
<td>Parrotfeather – Class B</td>
</tr>
<tr>
<td><em>Ludwigia peploides</em></td>
<td>Floating primrose-willow – Class A</td>
</tr>
<tr>
<td><em>Ludwigia palustris</em></td>
<td>Water purslane - native</td>
</tr>
</tbody>
</table>
**Brasenia schreberi**
Watershield – Native

**Key characteristics:**
- Entire, oval leaves about 4” long with stem attached to center
- Inconspicuous purplish flowers
- Stem, buds and lower leaf surface covered with slippery gelatinous substance
Video:
Watershield (native) (30 seconds)
Hydrocotyle ranunculoides
Water Pennywort – Native

**Key characteristics:**
- Dark green, deeply lobed leaves
- Rising above the water surface
- Can form dense mats of leaves on the edge of lakes, remains green in winter
- Reproduces by seeds and stems
- Native plant: rare in many locations, overly abundant in others
- Looks similar to water clover, buttercup
**Marselia mutica**
water clover/peperwort – introduced

**Key characteristics:**
- Floating perennial fern
- Four lobed, two-tone leaves
- Popular water garden plant
- Found at Echo Lake in Snohomish County in 2010
Nuphar lutea
spatterdock, yellow pond lily – Native

Key characteristics:
• very large heart-shaped leaves
• ball-shaped yellow flowers
• stems rigid enough to hold leaves out of water when water level drops

Fragrant water lily (noxious weed)
**Nymphaea odorata**
Fragrant waterlily – Class C non-designate

**Key characteristics:**
- floating perennial
- flowers white to pink on separate flexible stalks
- thick fleshy rhizomes
- round leaves
Video:

Small fragrant water lily (Class C weed) vs. spatterdock (native) (28 seconds)
Video:

Mature fragrant water lily (Class C weed) vs. spatterdock (native) (18 seconds)
Nymphoides peltata
Yellow Floating Heart – Class B

Key characteristics:
• floating perennial
• small yellow flowers with distinctive fringes
• 2 to 5 flowers per stalk
• heart-shaped or round leaves, wavy margins, often purplish underneath
*Nymphoides peltata*

Yellow floating heart

In 2 private ponds on Maury Island
Myriophyllum aquaticum
Parrotfeather – Class B

Key characteristics:
• emergent up to 1 ft. above water
• leaves in whorls around stem
• leaves feathery like milfoil
• dense mat of brownish rhizomes
Video:

Parrotfeather
(Class B weed)
(25 seconds)
Myriophyllum aquaticum
Parrotfeather

*In 5 private ponds:*
- Vashon
- Bellevue
- Renton
- South of Lake Morton
Ludwigia peploides
Floating Primrose–willow – Class A

Key characteristics:
• prostrate or floating stems
• leaves alternate
• bright yellow 5-petalled flowers in leaf axils
• Grows in up to 10 feet of water, can be up to 2 ½ feet tall
Ludwigia peploides

- Taylor Creek restoration site
- Just three other places in Washington state
**Ludwigia palustris**  
water purselane – Native

*Key characteristics:*

- leaves **opposite**, smooth edged, elliptical, on long stalks
- flowers inconspicuous, greenish, in leaf axils
- stem prostrate to erect or floating, fleshy
- can form floating mats
Video:

Native Ludwigia (water purslane) vs. Class A weed Ludwigia (floating primrose-willow)

(68 seconds)
A few emergent (shoreline) weeds to look out for

<table>
<thead>
<tr>
<th>Latin name</th>
<th>Common name</th>
</tr>
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<tbody>
<tr>
<td><em>Epilobium hirsutum</em></td>
<td>hairy willowherb – Class C (regulated)</td>
</tr>
<tr>
<td><em>Glyceria elata</em></td>
<td>Reed sweetgrass – Class A</td>
</tr>
<tr>
<td><em>Iris pseudacorus</em></td>
<td>yellow-flag iris – Class C (non-regulated)</td>
</tr>
<tr>
<td><em>Lysimachia vulgaris</em></td>
<td>garden loosestrife – Class B</td>
</tr>
<tr>
<td><em>Lythrum salicaria</em></td>
<td>purple loosestrife – Class B</td>
</tr>
<tr>
<td><em>Phragmites australis</em></td>
<td>Common reed – Class B</td>
</tr>
<tr>
<td><em>Phalaris arundinacea</em></td>
<td>Reed canarygrass – Class C (non-regulated)</td>
</tr>
<tr>
<td><em>Typha angustifolia</em></td>
<td>narrow-leaved cattail – Class C (non-regulated)</td>
</tr>
</tbody>
</table>

**Bold font** = regulated weeds
Epilobium hirsutum
Hairy willowherb – Class C designate

Key characteristics:
- semi-aquatic perennial rhizomatous herb to 6 feet tall
- leaves mostly opposite, toothed, lanceolate
- co-exists with purple loosestrife
- wind-dispersed seeds like fireweed
- flowers July and August
- manual control difficult due to rhizomes
Native look–alike specie

- Fireweed (*Chamaenerion angustifolium*) is tall and has showy flowers like hairy willowherb, but is an upland plant and usually will not be found in wet soils.
- Several low growing, variable native *Epilobium* species may be found in wet areas, but they will have small, relatively inconspicuous flowers.
**Glyceria maxima**
Reed sweetgrass – class A

**Key characteristics:**
- Emergent perennial grass, sometimes variegated
- Up to 2.5 m (>8 ft.) tall in up to 2 m (6 ft.) of water
- Leaves stiff and smooth
- Ligule bracket shaped
- Flowers in summer, inflorescence open and branched
Glyceria maxima
reed sweetgrass

- Lake Marcel
- Lake Desire
- Private pond - Renton
WSDA credit code word:

Oceanspray

Photo credit: Matt Below
Lythrum salicaria
Purple loosestrife – Class B

Key characteristics:
• perennial rhizomatous emergent with showy magenta flower spikes
• Branched stems are square, can root at nodes
• leaves opposite, lanceolate
• up to 2.5 million tiny seeds/plant
Look-alikes:
Purple Loosestrife vs. Spiraea, Fireweed, & Watson’s Willowherb

Noxious weed    Native plant    Native plant    Native plant

Purple Loosestrife    Douglas Spiraea (hardhack)    Fireweed    Watson’s Willowherb

Class B Noxious Weed
Video:

Purple Loosestrife (Class B weed) vs. Watson’s willowherb (native)
(38 seconds)
Lythrum salicaria
purple loosestrife

Wide distribution
Lysimachia vulgaris
Garden Loosestrife – Class B

Key characteristics:
• perennial emergent with rhizomes up to 15 feet long
• showy yellow flowers clustered at top of plant
• leaves opposite or whorled (3-6)
• leaves sometimes have small orange or black glands
• stems round, occasionally fasciated (flattened)
• flowers July and August
what garden loosestrife isn’t:

**purple loosestrife** (*Lythrum salicaria*),
- a different Order and Family
- Square stem
- Purple/magenta flowers

**yellow loosestrife** (*Lysimachia punctata*), Same Genus
- Start-shaped flowers occur all along the stem only (never in a terminal cluster like *L. vulgaris*) *(Introduced)*
**Lysimachia vulgaris**
garden loosestrife

- Lake Sammamish
- Sammamish River
- Lake Burien
- Lake Alice
- Snoqualmie River
- Rutherford Slough
- Lake Washington
- Other scattered spots
Video:

Purple Loosestrife (Class B weed) vs. Garden Loosestrife (Class B weed)
(29 seconds)
Phragmites australis
Common Reed – Class B

Key characteristics:
• 12+ foot tall rhizometous grass
• hollow woody stems
• wide stiff leaves
• large feathery flower head purplish when young, brown in seed
• Thick woody rhizomes grow 6 feet deep
Phragmites australis
common reed

- Main infestation on lower Duwamish River at 1st Ave S.
- Smaller infestations scattered on shorelines and in ditches
Iris pseudacorus – Yellow Flag Iris
Class C non-designate

**Key characteristics:**
- perennial monocot to 1.5 meters tall
- thick rhizomes form solid mats
- showy yellow flowers
- green seed pods with flat seeds like corn kernels that float
Cattails

Typha latifolia: common cattail – native
Typha angustifolia: narrow-leaf cattail – noxious weed

Key characteristics:
- leaves narrow and up to 1.5 meters long
- stems round, pithy and up to 3 meters tall
- *T. latifolia*: male and female flowers adjacent on stem (no gap)
- *T. angustifolia*: male and female flowers separated by 1-4cm on stem
Video:

Yellow Flag Iris (Class C weed) vs. Common Cattail (native) (45 seconds)
**Quiz Time!**

What kind of plant is this? *Milfoil*

How many leaves per whorl does Brazilian elodea have? *Usually FOUR*

Which of these is a noxious weed? *coontail, bladderwort, Fanwort*
Aquatic weed control methods

Manual and Mechanical
Requires HPA permit, or at least “pocket HPA permit”

• Raking

• Hand pulling, digging

• Diver hand pulling/suction removal

• Cutting

• Harvesting

• Rotovation
Aquatic weed control methods

Chemical – Aquatic herbicides

• Regulated by: WA Dept. of Ecology and Washington State Department of Agriculture
  • Must have pesticide applicators license and permit
  • WA Ecology has a list of approved herbicides surfactants

• Foliar Spray (backpack sprayer, large tank)

• In-water treatment (liquid and granular)

Knotweed injection?
Aquatic weed control methods

**Cultural**

*May require Washington Dept. of Fish and Wildlife HPA permit or local permits*

- **weed mats**
  - A barrier on the lake bottom that prevents weeds from growing

- **Mulch**
  - Wood chips and/or cardboard
  - Used to prevent re-growth of plants from root or seed

- **Shading**
  - Planting of larger plants such as willow to “shade out” emergent weeds

- **water draw-down**
  - Lowering the water level to prevent littoral zone weeds from growing
Aquatic weed control methods

• **Biological** – purple loosestrife insects, milfoil weevil, grass carp
  
  • Biocontrols are regulated by:
    • WDFW (for grass carp releases)
    • Washington State University Extension (for insect releases)
  
  • All biocontrol agents are non-native
  
  • Grass carp eat all plants and are only suitable in situations where that is the desired outcome and there is no outlet

• **biocontrol insects** (insects that are host-specific to the weed in the weed’s native habitat)

  • Most common is *Galerucella* spp. beetles for purple loosestrife control
  • Reduce weed levels, but rarely eradicate a plant,
  • often require specific site conditions such as a dense patch of plants
Resources and Contact Info

- King County Noxious Weed Program:
  - [www.kingcounty.gov/weeds](http://www.kingcounty.gov/weeds)
    - Follow links to: Weed Watchers

- Contact:
  - Ben Peterson, 206-477-4724, ben.peterson@kingcounty.gov

- Mailing Address:
  King County Noxious Weed Control Program
  201 S. Jackson St., Suite 600
  Seattle WA 98104
THANK YOU FOR VOLUNTEERING!