

Introduction to aquatic plants and weeds



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King County

Department of Natural Resources and Parks
Water and Land Resources Division

Noxious Weeds in Washington

- Legally defined as non-native plants that are highly destructive, competitive with native plants, and difficult to control;
- Classes A, B & C (descending priority) are assigned by current plant abundance, geographical distribution, perceived threat, and eradication potential;
- WA Weed Law (RCW 17.10) requires landowners to control listed species, depending on Class designation.

“Noxious” vs. “Nuisance”

- Nuisance weeds are native plants that are creating problems in particular situations;
- Eradication is not a goal for nuisance plants, they may need control when they greatly impact beneficial uses of lakes;
- When controlling, it is important to designate “conservancy” areas to preserve natural habitat providing refuge and food web support.



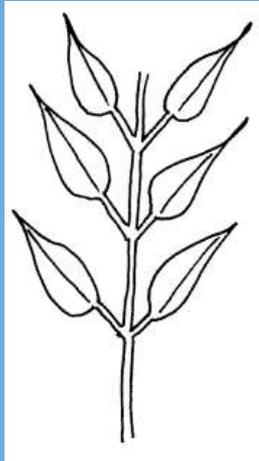
Invasive Aquatic Weeds:

- Degrade habitat quality;
- Reduce recreational opportunities;
- Alter water quality;
- Block or clog intakes and water control structures;
- Reduce biodiversity; affect aquatic food web.

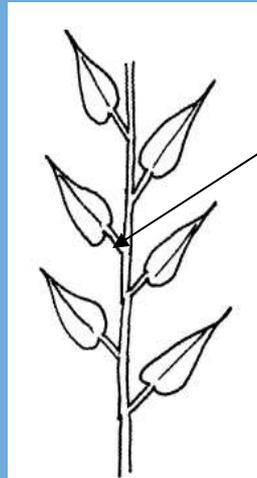


Important plant terms:

leaf arrangements

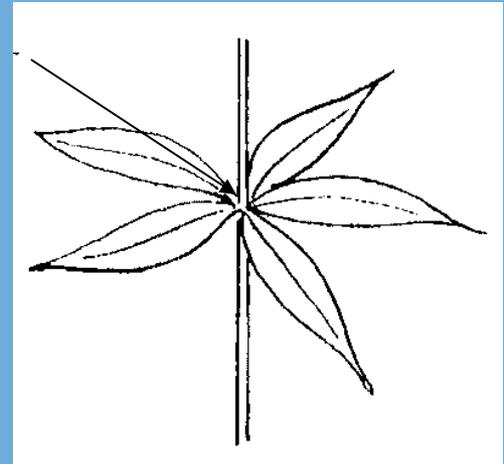


opposite

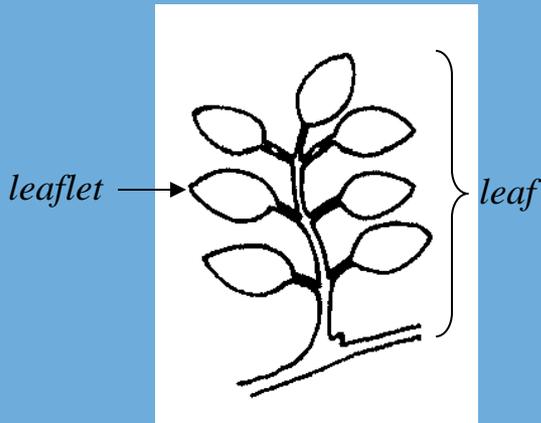


alternate

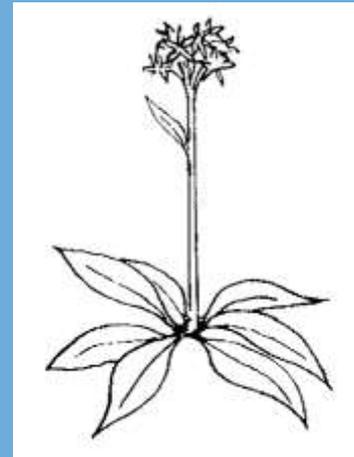
leaf axil



whorled



compound



basal

Some Aquatic Noxious Weeds

- Hydrilla
- Eurasian watermilfoil
- Brazilian elodea
- Fragrant water lilies
- Garden and purple loosestrife
- Yellow flag iris



Hydrilla

(Hydrilla verticillata)

Class A Weed : eradication required by law

- Only one infestation found to-date in Washington State – Pipe and Lucerne Lakes.
- First identified in 1994, treatment started in 1995 and 2007 was when the last plant was found in the lake; now considered eradicated.
- Native plants are beginning to return to Pipe and Lucerne after years of extensive chemical treatment. This is good for fish and other aquatic animals!

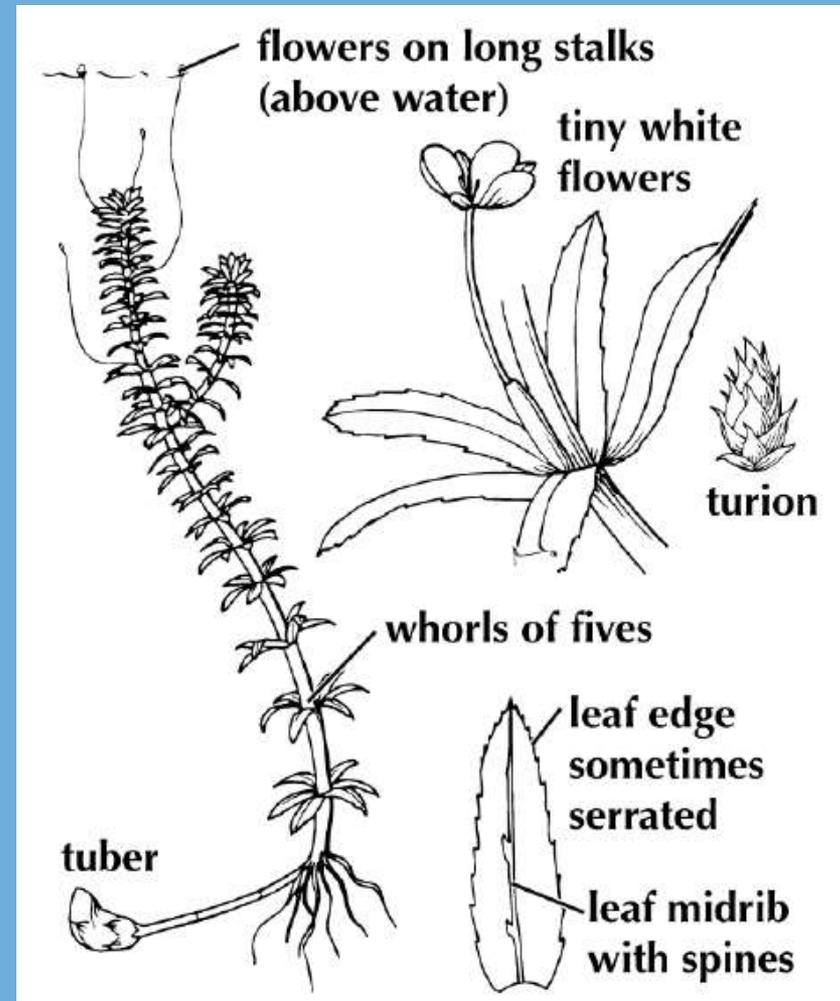


Hydrilla

(*Hydrilla verticillata*)

Key characteristics:

- Bright green leaves about 1-5mm wide and 6-20mm long;
- Leaves grow in whorls of 5 along the stem;
- Leaves have toothed edges
- WA has the monoecious variety with sprawling growth that freely branches from the bottom;
- Peanut sized tubers on the roots that hold energy.



Brazilian elodea (*Egeria densa*)

Class B: Control and containment required by Law

- Brazilian elodea is native to South America;
- Found in lakes, ponds, pools, ditches, and quiet streams;
- Forms very dense stands that can cover hundreds of acres and crowd out other plants;
- Currently in lakes Fenwick, Dolloff, Sammamish, the Sammamish River and Lake Washington.



Brazilian elodea (*Egeria densa*)

Key characteristics:

- Submersed, freshwater perennial;
- can root in water up to 20' deep;
- Bushy plant with dense whorls of bright green leaves (2cm long), arranged usually in 4 leaves per whorl (often 3 at the base);
- Leaves sparse toward bottom of plant, bunched together toward top;
- Branching stem fragments.



Brazilian elodea vs. our native American waterweed *Elodea canadensis*

Brazilian
elodea
has 4
leaflets



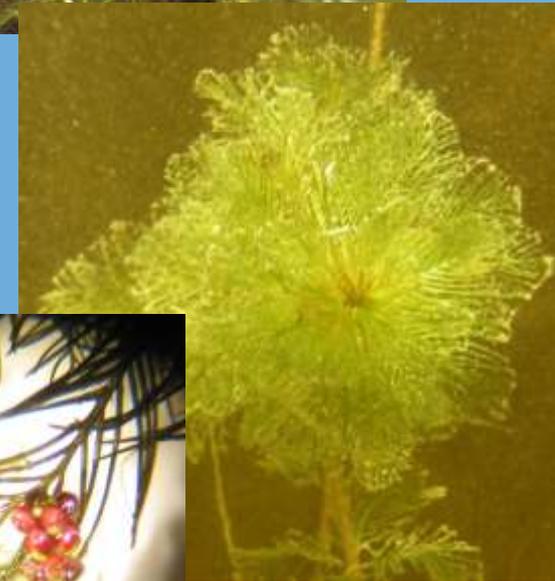
Native has
3 leaflets



Eurasian watermilfoil (*Myriophyllum spicatum*)

Class B Weed: control strongly encouraged

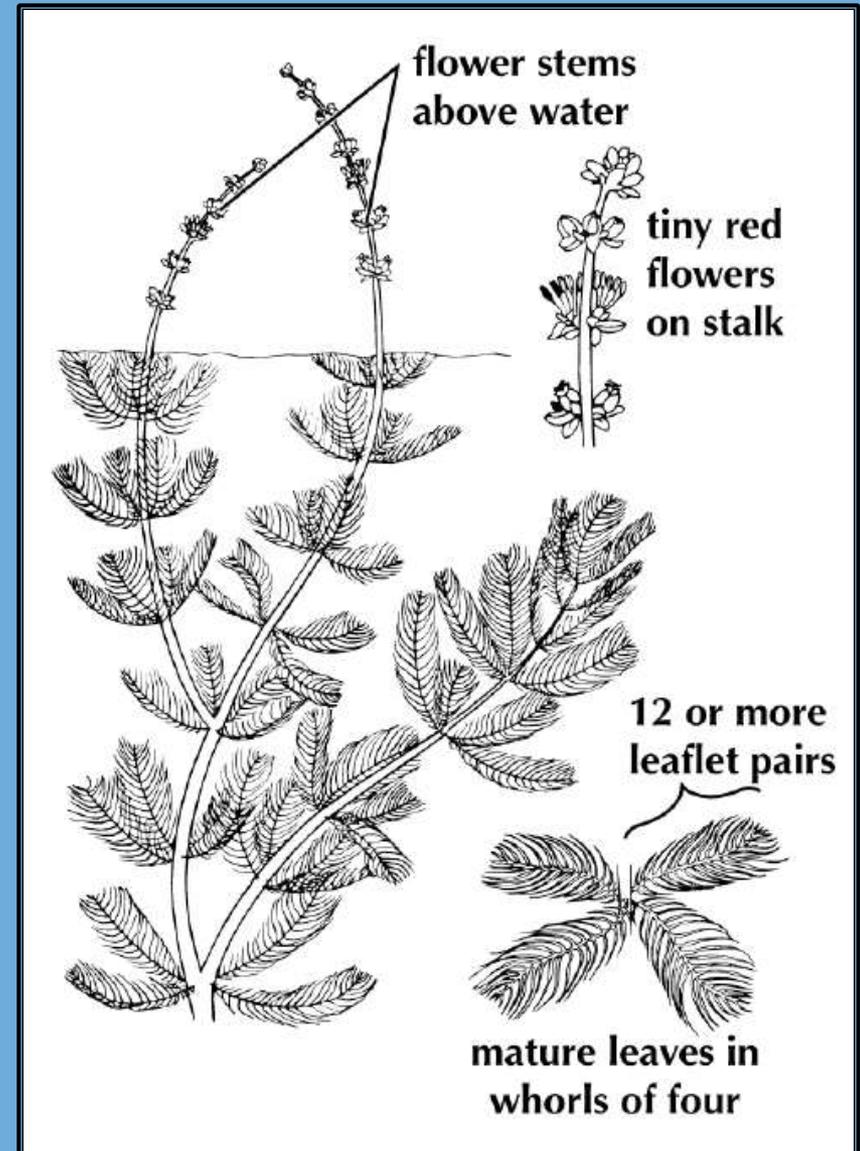
- Native to Eurasia, first introduced to North America through the aquarium industry; there are native species of milfoil in the PNW.
- First identified as problem here in the 1970s in Lake Washington;
- Forms dense mats of vegetation just below the water's surface;
- Propagates by fragments that can float around and establish colonies in new areas.



Eurasian watermilfoil

Key characteristics:

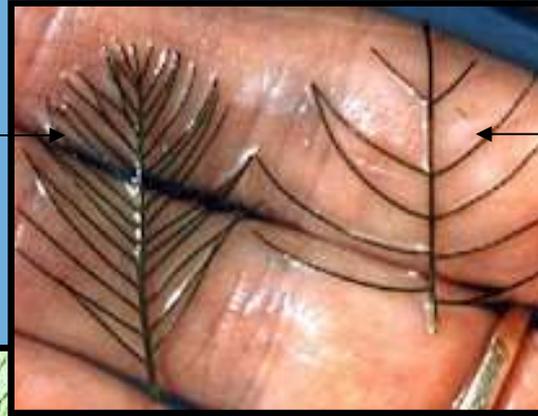
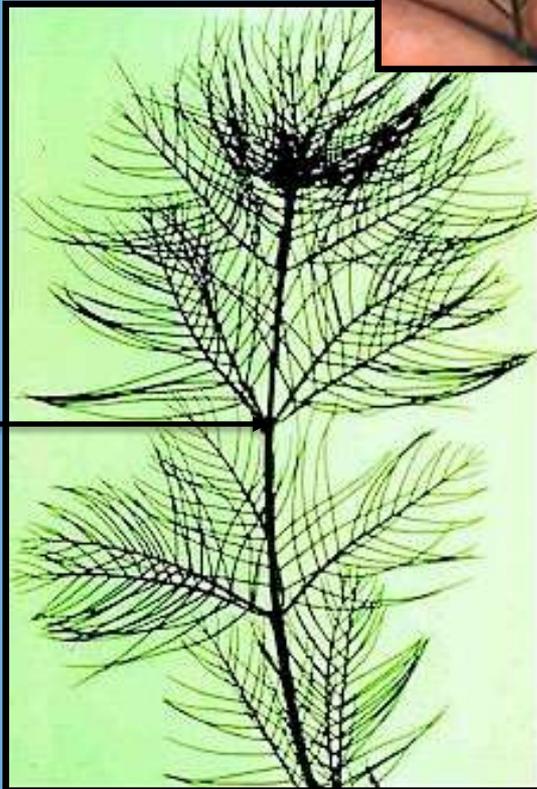
- 14 or more leaflet pairs per leaf;
- leaves whorled around stem;
- usually reddish stem, often branched;
- leaves collapse against stem when pulled from water;
- Inconspicuous flower spike held above water.



Eurasian watermilfoil – *Myriophyllum spicatum* vs. the native northern watermilfoil *Myriophyllum sibiricum*

Eurasian watermilfoil has 14 or more leaflet pairs

Collapses out of water



The native has fewer than 14 leaflet pairs



Holds shape out of water

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.

Fragrant water lily (*Nymphaea odorata*)

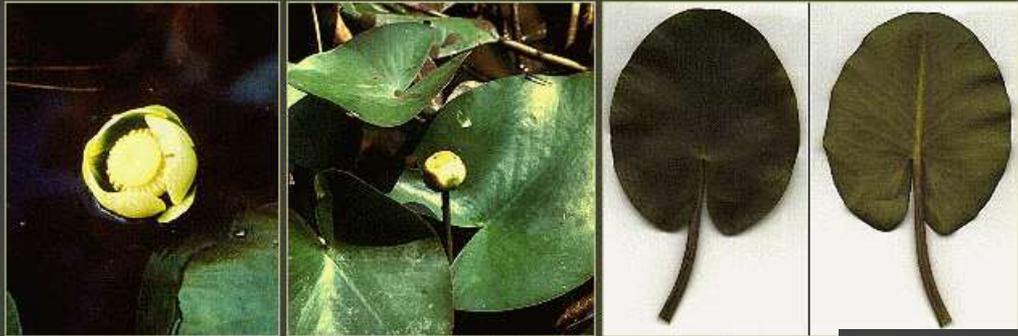
Class C Weed: widespread; control strongly encouraged

Key characteristics:

- floating perennial;
- flowers white to pink on separate flexible stalks;
- thick fleshy rhizomes;
- round leaves;
- a planted rhizome can cover 15ft diameter area with lily pads in just a few years;
- “Hitchhiker” plants can come along with a planted rhizome and add more invasive species to the lake.



Native look-alike “Water lilies”



Brasenia schreberi-
Water-shield



Nuphar polysepalum-
Yellow water lily, spatterdock

Rarely as invasive and
offers good fish habitat!



Garden loosestrife (*Lysimachia vulgaris*)

Class B: Control and containment required by Law

Description: 3-5 ft perennial, invades wetlands and stream banks, shorelines.



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

Purple loosestrife (*Lythrum salicaria*)

Class B: Control and containment required by Law

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
- Blooms July – September, spreads by seeds, runners and plant fragments.



Yellow Flag Iris (*Iris pseudacorus*)

Class C: Control and containment highly encouraged

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
- Mid-rib in leaves
- Blooms in May – June; reproduces by seeds and by rhizome offsets forming tight clumps;



Gray boxes =
invasive plant

White boxes =
native plant

Submerged

Leaves divided

Leaves simple

Leaves feather-like

Leaves not feather-like

Leaves alternate on stem

Leaves in whorls around stem

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

Fewer than 14 leaflets per leaf, plant holds its shape when removed from water
Native milfoils

Leaves have bladders
Bladderwort

No bladders

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

Leaves paired and opposite
Fanwort

Leaf margins smooth

Leaf margins visibly toothed, leaves in whorls of five
Hydrilla

Leaves more evenly distributed on stem

Leaves clasp stem, tend to bunch at stem ends
Water-nymph

Leaves not rigid, have mid-vein(s)

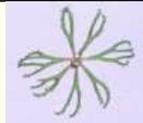
Leaves scaly, rather rigid and overlapping along entire length of stem
Water moss

Leaves elliptical to thread-like, sometimes have floating leaves
Native pondweeds

Leaves thin, leaf margins wavy
Curly-leaf pondweed

Leaves mostly in whorls of three
American waterweed

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



Gray boxes =
invasive plant

White boxes =
native plant

Floating

Rooted to bottom

Free floating

Some leaves on stalks above water (emergent)

No emergent leaves

Leaves tiny
**Duckweeds, watermeals,
water-fern, Riccia**

Leaves bulbous at
base
Water hyacinth

Leaves feather-like and
in whorls around stem
Parrotfeather



Leaves alternate on stem,
flowers yellow, showy
Floating primrose-willow



No submerged leaves

Submerged leaves
present along stem,
usually different from
floating leaves
**Pondweeds,
Water star-worts**



Stem attached in
center of leaf,
lower leaf
surfaces and
buds covered in
slime
Water shield



Stem attached in
slit at leaf edge



Leaf small (<10cm), leaf edge
wavy, yellow flowers with ruffly
petals borne in groups of 2-5 per
stalk
Yellow floating-heart

One flower per
stalk



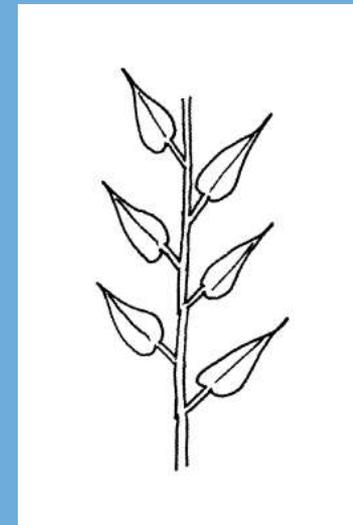
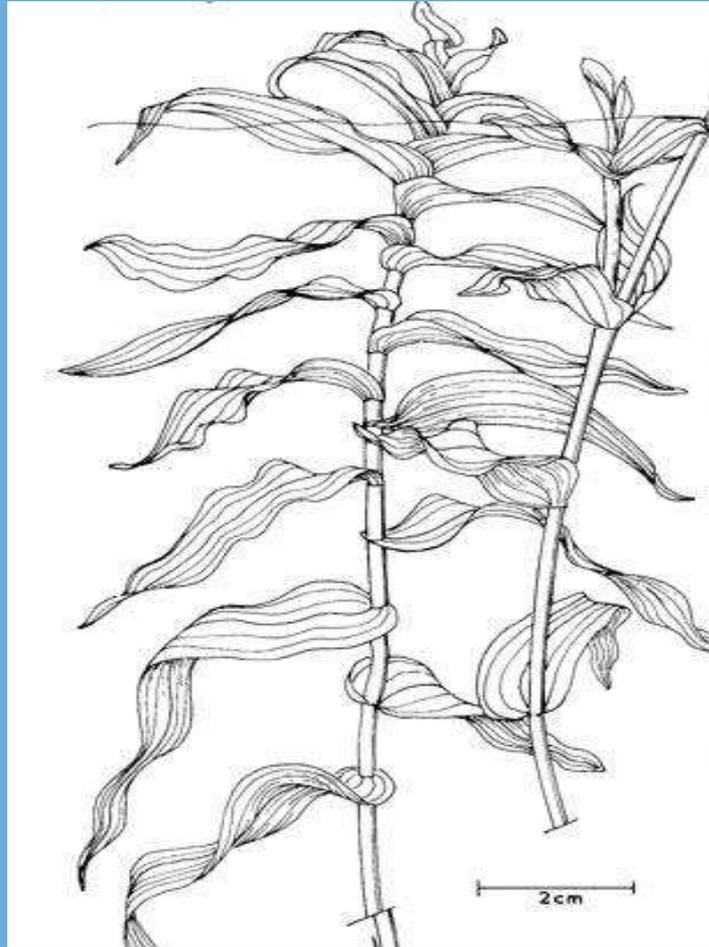
Leaf edge smooth, flowers
white to pink and borne
singly on separate stalks
Fragrant water-lily

Leaf generally
large and heart-
shaped, flower a
yellow ball
**Spatterdock or
Yellow pondlily**





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



alternate

Some commonly found native plants in King County Lakes



Big-leaf
pondweed



Fern-leaf
pondweed



Flat-stem
pondweed



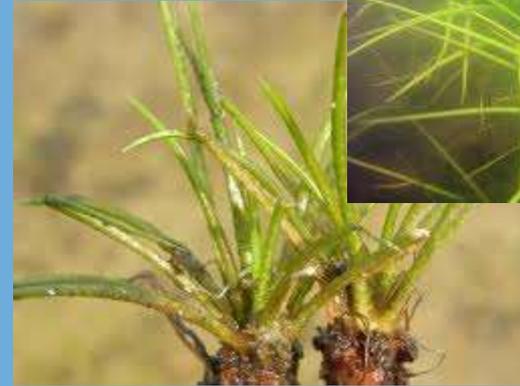
Floating-leafed
pondweed



Some commonly found native plants in King County Lakes -2



Chara
(and Nitella)



Quillwort



Common
bladderwort



Slender
water-nymph





For more information on Aquatic Noxious Weeds and control strategies, please contact King County Noxious Weeds Program (206) 477- 9333 or the Lake Stewardship Program at (206)477-4605