

WATER WEEDS

Guide to Aquatic Weeds for Benton County



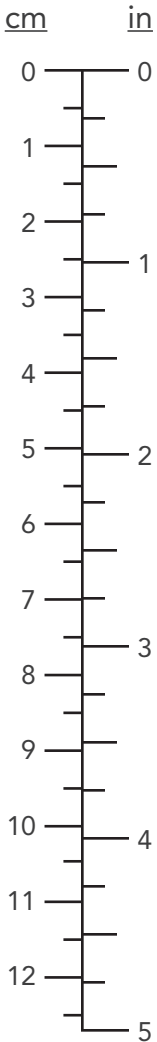
BENTON
SOIL AND WATER



CONSERVATION
DISTRICT



BENTON COUNTY
Cooperative Weed
Management Area



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2. Purple loosestrife (middle right)
3. Eurasian watermilfoil (lower right)
4. Brazilian elodea on boat motor (center)

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127. Underwater Scene



Plants with this symbol have not been found in Benton County yet or are only present in very small populations. If you see them, report to www.oregoninvasiveshotline.org.

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Stop the Transport of Invasive Species:

- **CLEAN** your gear before entering & leaving the recreation site.
- **DRAIN** bilge, ballast, wells & buckets before you leave the area.
- **DRY** equipment before launching watercraft into another body of water.



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* [n] indicates species is native to Oregon.

How to use this guide

This guide describes 18 aquatic noxious weeds to look out for in Benton County. The weeds are grouped by growth form: emergent, floating mat, floating leaves, and submerged. Some of the weeds in this guide are already present in Benton County, but some of them have only been found in a few locations or have not been found here yet. The guide also includes native and non-native aquatic plants that could be confused with the noxious weeds. If you find a plant that looks like one of the noxious weeds in this guide, we suggest you consult the more detailed references listed at the back of this guide or ask an expert for help with identification.

What are aquatic plants?

Plants that grow in water are called aquatic plants. They grow in a variety of forms. Emergent plants are rooted in the soil and grow along shorelines. Floating plants grow in shallow to deep water and either have floating leaves or form floating mats on the surface of the water. Unlike free-floating plants, which are not rooted, floating-leaved plants have roots. Submerged plants grow mostly under water. Many native aquatic plants grow in Oregon, and they are very beneficial to the environment and generally do not cause significant problems. Native aquatic plants provide food and habitat for fish, birds, and other wildlife. They protect shorelines from erosion and often clean excess nutrients and pollution from the water. These native aquatic plants developed in the area naturally and usually are kept in check by natural controls such as herbivores, insects, and competition from other plants.



Native Pond-lily

What are invasive aquatic weeds?

Invasive aquatic weeds are plants that are introduced to a new area without the natural checks and balances of their home waters. They are highly aggressive and can grow out of control, creating dense monocultures and overwhelming lakes and streams. This guide describes some of these invasive aquatic plants that are a concern for Benton County, Oregon. Invasive aquatic plants are called noxious weeds when the Oregon State Noxious Weed Board declares that they have significant negative impact on the state's natural and economic resources.



Hydrilla

Impacts of invasive aquatic weeds

- Loss of native plants
- Disruption of fish and wildlife habitat
- Damage to commercial and sport fishing
- Reduced recreational activities like boating and swimming
- Clogged irrigation and drinking water structures
- Decreased water quality
- Increased mosquito habitat
- Increased rate of sedimentation



Prevention and control tips

Prevent weed infestations

- Clean boats, trailers, boots, and other equipment before moving between water bodies.
- Never put non-native plants or aquarium contents into a natural water body. Follow noxious weed laws and quarantines.
- Choose non-invasive species for gardens.
- Attend a training, become informed, and help find new invaders.
- If you see a new invader, alert the responsible party immediately.

Control weed infestations

- Obtain necessary permits before working in water.
- Use integrated pest management and control weeds safely and appropriately.
- Follow Best Management Practices for aquatic weeds.
- It can help to remove seed heads before they mature.
- Properly dispose of noxious weeds and weed seeds.
- Monitor the area and follow up as needed to keep the weeds out after the first year of control.

Contact Benton SWCD if you are unsure what to do.

Which weeds have to be controlled?

The Benton County and Oregon State noxious weed lists are available online at www.bentonswcd.org/programs/invasive-species. In this guide, the weed classification and any control requirements are provided for each weed described.

State Noxious Weed Law

Oregon's noxious weed law (ORS 569) provides authority to the Oregon Department of Agriculture and to county Weed Control Districts to implement an integrated weed management approach to prevent the introduction and spread of noxious weeds throughout the state, which



includes terrestrial, aquatic or marine plants designated by the State Weed Board. Priority is given to the prevention of new infestations of noxious weeds and then to the control and, where feasible, eradication of noxious weeds in infested areas. The noxious weeds are classified by distribution: A listed weeds are the highest priority statewide because they are highly limited in distribution; B listed weeds may be regionally abundant with limited state-wide distribution and are recommended for intensive control on a case-by-case basis; and T listed weeds are a target list of weeds prioritized for focused prevention and control and are designated on an annual basis.

Permits for aquatic weed control

Since aquatic plants are by definition growing in an easily disturbed, sensitive environment, any work done to remove them is regulated by federal, state, and local agencies. If you are planning to use herbicides, consult with the Oregon Department of Environmental Quality and follow the stipulations outlined in the National Pollutant Discharge Elimination System general permit (2300-A). Ensure that any herbicides used are registered for aquatic use and always read and follow the label carefully. Rules regarding aquatic herbicide use are administered by the Oregon Department of Agriculture. Often, in-water work in waters of the state requires a removal-fill permit administered through the Department of State Lands. Other permits from state and local agencies may be required for work involving bottom barriers, mechanical equipment, or manual control of aquatic weeds. For assistance, contact the Benton SWCD at 541-753-7208 and/or your local city government permitting office. Refer to the State Water-Related Permits Guide for more information on permits that may be required for aquatic weed control activities.

How to survey for aquatic plants

The best time for surveying is during bright daylight when visibility into the water is greatest and when most species are in bloom, typically mid to late summer. Repeat surveying during the growing season to render the survey more complete.

Survey should be conducted of the littoral zone where enough light reaches the bottom for rooted plants to photosynthesize. Survey at multiple depths within the littoral zone. Generally, emergents are found in the shallowest areas, followed by floating leaved plants, and submerged plants in the deepest parts of the zone. If invasive plants are found or suspected, collect specimens using the technique outlined on page 10.



Purple
Loosestrife

Pointers for plant identification

Familiarity with aquatic plants requires the use of a good field guide. This booklet is a place to start, but it is not comprehensive. You may wish to purchase *Aquatic and Riparian Weeds of the West* by Joseph DiTomaso and Evelyn Healy, or Washington State Department of Ecology's *An Aquatic Plant Identification Manual for Washington's Freshwater Plants*. Online identification keys such as Jepson eFlora (ucjeps.berkeley.edu/eflora/) and Flora of North America (www.efloras.org/) are also very useful. Important traits for identification of aquatic plants, some of which are best viewed using a hand lens, include the following:

- **MONOCOT** (one cotyledon, parallel leaf venation, multiples of 3 petals) or **DICOT** (branching leaf venation, two cotyledons, multiples of four or five petals).
- **LEAVES**: leaf arrangement (alternate, opposite, or whorled), simple or compound leaf, leaf shape, leaf margin and surface characteristics.
- **FLOWERS**: Consider presence/absence of various flower parts, flower color, shape, size, and arrangement of inflorescence.
- **STEMS**: woodiness, surface structures (thorns or bumps), shape, and interior (hollow or solid).
- **ROOTS**: presence/absence of roots, single or multiple roots, fibrous vs. rhizomatous roots, and root color.
- **SMELLS**: some plants emit distinctive odors, which can help with identification. For example, muskgrass, which is actually an alga, emits a strong garlicky odor.
- **HABITAT and ASSOCIATIONS**: aquatic plants are either free-floating, floating-leaved, submerged, or emergent.

How to gather specimens for later identification

If you think you may have found an invasive aquatic plant of limited to no known distribution in Benton County, you could collect a sample, high quality digital photos, and pertinent information to share with a botanist who specializes in aquatic plants.

1. Take high quality digital photographs showing the extent of the infestation and how the plant is growing in the environment.
2. Gather complete specimen including stems, leaves, roots, flowers, and/or fruits. Immediately store in plastic bag or cooler with a little water and keep cool.
3. Photograph key structures used for identification including flower, fruit, leaf characteristics. The structure of submerged plant leaves and stems is best viewed by floating the specimen in a shallow tub or bucket. Always include a ruler or a common object such as a coin to provide scale.
4. Press the specimen later that same day. Especially bulky parts should be split before pressing. Delicate submerged plants are best pressed by floating the specimen on heavy stock paper and slowly lifting the paper and plant out of the water. Plant press blotters may need to be changed daily to avoid rotting, which could occur during the drying process of many aquatic species.
5. Along with the specimen, send this information to the botanist: name and contact information, size of whole plant (estimate), and abundance of species at the site of collection.



Yellow Flag Iris

What to do if an invasive aquatic weed is found

Mark a map or collect a GPS coordinate with the location of the plant and carefully collect a specimen including stems, leaves, and flowers or seed pods. Follow steps listed above in "How to gather specimens for later identification." Contact the Oregon Invasives Hotline at OregonInvasivesHotline.org or 1-866-INVADER to make arrangements for getting the specimen identified or contact BSWCD's Invasives Program for advice. Call us at 541-753-7208 or email office@bentonswcd.org.

SWCD resources for invasive aquatic weed control

Benton SWCD Invasives Program will provide information and advice on aquatic weeds and guide property owners through the complex permit regulations that exist when working in aquatic environments. In addition, because of the challenges involved with controlling aquatic weeds, the Invasives Program will help landowners find out about additional resources and may be able to provide direct assistance in some cases for the highest priority aquatic weeds. Call the program for more information at 541-753-7208 or email us at office@bentonswcd.org.



Other services the SWCD provides to county residents

- Early detection and management of pioneering infestations of high priority noxious weeds.
- Weed surveys and consultations.
- Best Management Practices and fact sheets for noxious weeds in the county.
- Benton County Cooperative Weed Management Area (CWMA) coordination. CWMA members work together on community-based efforts against invasive species that have the potential to cause ecological and economic harm.
- Advice on the appropriate use of weed control methods and tools.
- Training and coordination of volunteers.
- Presentations on weed identification and control.

Delta Arrowhead *Sagittaria platyphylla*



ODA List A INVASIVE PLANT

Identification: Simple stem with up to eight whorls. Leaves are straight, no lobes, and oval to elliptical shaped. Can grow up to five feet high. Flowers have three green sepals and three white to pinkish petals.

Impacts: Forms dense colonies that restrict water flow, increase sedimentation, and can lead to flooding. Displaces natural vegetation.

Habitat & Distribution:

Found in shallow water habitats. Currently present in Oregon at one site near Portland.

Control: Hand pulling can work with small infestations, but plant fragments will form new plants. Herbicide is effective and can be applied by a licensed aquatic herbicide applicator.



Look-Alikes for Delta Arrowhead

Wapato

Sagittaria latifolia

NATIVE PLANT

Identification: Aquatic with emersed, floating, or submersed leaves. Emersed leaves are arrow-shaped with lower lobes roughly as long as upper lobes. Leaf stalks are generally triangular in cross-section. Flowers up to 1.5 inches across and in whorls of three in a tall spike at top of leafless stem.

Habitat and Distribution:

Grows in freshwater ponds, ditches, and marshes. Common in OR, particularly along portions of Willamette and Columbia Rivers.



Water plantains

*Alisma species**A. lanceolatum* NON-NATIVE*A. triviale* NATIVE PLANT

Identification: *Alisma* species have small flowers on branches arranged in cone shaped whorls around a delicate central stalk. The native *A. triviale* has white flowers, whereas as the non-native *A. lanceolatum* has pink flowers.

Habitat and Distribution:

Grows in freshwater ponds, ditches, and marshes of Western Oregon.



Flowering Rush

Butomus umbellatus



ODA List A & T
INVASIVE PLANT

Identification: Perennial plant that can grow as a shoreline emergent to over five feet tall or as a submerged plant in water up to 20 feet deep. Unbranched leaves that are triangular in cross-section arise directly from rhizomes. Emergent flowering plants are topped by an umbel of showy white or pink flowers that emerge in late summer or fall. Flowers consist of three petal-like sepals with no real petals present.

Impacts: Outcompetes cattails, bulrushes, and other native plants. Capable of forming vast monocultures in shallow aquatic areas as well as marshlands. Potential to clog irrigation canals and drainage ditches.

Habitat and Distribution: Found in lake, pond, and slow moving stream habitats up to 20 feet deep. Currently present in the Columbia River as far downstream as the John Day Pool.

Control: Herbicide is effective and can be applied by a licensed aquatic herbicide applicator.



Look-Alikes for Flowering Rush

Bulrushes

Schoenoplectus spp.

NATIVE PLANT

Identification: Bulrushes are perennial and rhizomatous species with round stems and brown flower clusters near the stem tips. Form dense stands that can reach up to ten feet high. Leaves are few and short, found near the base.

Habitat and Distribution: Very commonly found in periodically wet areas such as marshes, swamps, meadows, and lake and pond shorelines throughout Oregon.



Bur-reed Species

Sparganium spp.

NATIVE PLANT

Identification: Aquatic herb with alternate grass-like leaves, and small flowers that are densely crowded into globose heads in or above the axils of bract-like leaves. Several native species are present in Oregon.

Habitat and Distribution: Commonly found in periodically wet areas such as marshes, swamps, meadows, and lake and pond shorelines.



Japanese Knotweed

Fallopia japonica

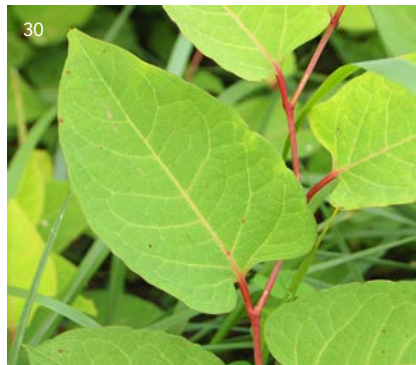
ODA List B
INVASIVE PLANT

Identification: A woody perennial with hollow stems that form a zig-zag pattern. In late summer they form drooping clusters of white flowers from leaf axils. Leaves rounded with flat base. Plants die back in winter. Formerly known as *Polygonum cuspidatum*.

Impacts: Spreads quickly and forms dense thickets that displace native vegetation. Creates bank erosion problems. Lowers quality of riparian habitat for fish and wildlife. Extremely vigorous rhizomes form deep, dense mat. Plants resprout from stem or root fragments creating new infestations downstream.

Habitat and Distribution: Most commonly found in the flood zone along rivers and creeks, it also grows in roadside ditches, railroad rights-of-way, unmanaged lands, wetlands, neglected gardens, and other moist areas.

Control: Cut stems close to ground at least two times per month from April - August, then at least one time per month for the rest of the year for three to five years. Fragments easily resprout so allow to dry out completely or bag, seal, and send to landfill. See King County BMPs for Knotweed.



Look-Alikes for Knotweed

Common Pokeweed

Phytolacca americana

NON-NATIVE PLANT

Identification: Perennial herb with big leaves, a reddish trunk, and reddish stems that can grow six to 12 feet. Leaves are large, smooth, and elliptical, and flowers have 5 white to pink rounded sepals, which form purple to black berries. Blooms from early spring to early summer.

Habitat and Distribution:

Found in open woods, damp thickets, and roadsides. All parts of this plant are toxic to humans, pets, and livestock.



Bamboo species

Poaceae Family, Bambusoideae Subfamily

NON-NATIVE PLANT

Identification: Woody perennial evergreen plants in the grass family, tree-like in appearance. Stems can range in height from a few inches to 130 feet, with diameters from one mm to 30 cm. Stems are jointed with regular nodes.

Habitat and Distribution:

Found in open woods and gardens.



Pickerelweed*Pontederia cordata*ODA Unlisted
INVASIVE PLANT

Identification: Thick, creeping rhizomes that can grow up to three feet tall. Straight leaves that range from egg-shaped to sword-shaped and up to 0.75 inches long. Flowers are violet-blue in color and grow on a spike up to six inches long.

Impacts: Crowds out native species.

Habitat and Distribution:

Found in marshes, slow streams, and ditches in shallow water. Native to eastern North America.

Control: Small infestations can be removed manually by hand cutting and digging to remove roots and rhizomes. Herbicide is effective and can be applied by a licensed aquatic herbicide applicator.



Pickerelweed Look-Alikes

Water Plantains

*Alisma species**A. lanceolatum* NON-NATIVE*A. triviale* NATIVE PLANT

Identification: *Alisma* species have small flowers on branches arranged in cone shaped whorls around a delicate central stalk. The native *A. triviale* has white flowers, whereas as the non-native *A. lanceolatum* has pink flowers.

Habitat and Distribution:

Grows in freshwater ponds, ditches, and marshes of Western Oregon.



Arrow Arum

Peltandra virginica

NON-NATIVE PLANT

Identification: Aquatic perennial that grows from thick cordlike roots and produces clumps of long-stalked, arrowhead shaped, glossy, medium green leaves on two foot stems. Leaves are broadly triangular with parallel to spreading base lobes. They have small greenish-yellow to greenish-white flowers.

Habitat and Distribution:

Grows in freshwater ponds, ditches, and marshes. Only two sightings in Oregon near Astoria back in 1982 and 2005.



Purple Loosestrife

Lythrum salicaria

ODA List B

INVASIVE PLANT

Identification: Tall perennial wetland plant with showy, compact spikes of magenta flowers. Stem is square and leaves are opposite, smooth-edged, and narrow. Blooms mid-July through August.

Impacts: Has up to 2.5 million seeds per plant and also spreads by rhizomes. Outcompetes native plants and provides little habitat for native animals.

Habitat and Distribution: Wetlands, streams, lakeshores, and wet pastures. Occurs sporadically along the Willamette.

Control: Dig or pull plants in soft soil or cut plants at base to prevent seed formation. Herbicide should only be applied by a licensed aquatic herbicide applicator unless the plants are growing away from the water. Always throw this plant in the trash, never in compost or yard waste.



Purple Loosestrife Look-Alikes

Douglas Spirea

Spiraea douglasii

NATIVE PLANT

Identification: Perennial, many-stemmed, fast-growing shrub. It grows three to six feet tall and spreads through rhizomes. The species has oblong to oval leaves that are toothed above the middle. Flowers are purplish-pink clustered in an upright plume.

Habitat and Distribution:

Found in open areas of wet meadows, bogs, streambanks, and lake margins.



Fireweed

Chamerion angustifolium

NATIVE PLANT

Identification: Showy, clumped perennial commonly growing three to five feet. Reddish stems with numerous elongate, alternative leaves. Flowers have four petals. Blooms June through August.

Habitat and Distribution:

Upland plant found in dry clearings, burned woodlands, roadsides, and low wet places.



Spotted Lady's Thumb

*Persicaria maculosa*ODA Unlisted
INVASIVE PLANT

Identification: Spreading summer annual that forms large clumps and can grow up to 3.5 feet high. Alternate leaves that arise from swollen nodes usually have a dark purplish central spot, although this feature should not be relied upon for identification. Flowers are deep pink and grow in spikes and are erect, dense, and oblong. Distinguish from other common *Persicaria* species by lack of gland dotting perianths (sepals and petals), two to 3.5 mm bristles on papery sheaths around stems, and lack of anchor-shaped veins on outer petals.

Impacts: Competes with natural vegetation. Dense stands can slow water flow in canals and streams.

Habitat and Distribution:

Grows along edges of ponds, shallow lakes, marshes, and streams, including irrigation ditches, pastures, and orchards. Often follows human disturbance and inhabits moist urban places.

Control: Hand pulling can work with small infestations, but do not place hands close to eyes as it contains a chemical which burns. Herbicide is not recommended as this plant is relatively quick to develop resistance to herbicide.



Spotted Lady's Thumb Look-Alikes

Native Smartweed species

P. amphibia, *P. hydroperoides*, *P. lapathifolia*

NATIVE PLANT

Identification: *P. lapathifolia* (not pictured) can be distinguished from *P. maculosa* by short (less than one mm) bristles on ochrea (stem sheaths) and anchor-shaped veins on sepals and petals. *P. hydroperoides* (image 49) has long (greater than 4 mm) bristles on ochrea. *P. amphibia* (image 50) has long-stalked leaves.

Habitat and Distribution:

Commonly found in moist and wet habitats in western Oregon. Can be semi-aquatic.



Water-Pepper

Persicaria hydropiper

NON-NATIVE PLANT

Identification: This introduced species can be distinguished by the presence of small pits on flower perianths (sepals and petals).

Habitat and Distribution:

Plants occur along shorelines of lakes and ponds and banks of rivers and streams.



Yellow Flag Iris

*Iris pseudacorus*ODA List B
INVASIVE PLANT

Identification: Large, yellow, beardless iris that grows in water, reaching heights of four to seven feet. Bright showy flower, tall leaves in folded, fan-like clusters. Leaves have a raised midrib and pointed tip. Dense rhizomes. Blooms late April through June.

Impacts: Forms impenetrable clumps. Outcompetes native plants and degrades habitat of native animals. Accumulates sediment and fills in waterways.

Habitat and Distribution:

Lakeshores, wetlands, creeks, and canals. Common in the north part of Benton County.

Control: Difficult to control by hand. Often requires repeated use of heavy tools such as pick-axes or hatchets to remove sections of rhizome. Herbicide should only be applied by a licensed aquatic herbicide applicator unless the plants are growing away from the water. Spray or wipe actively growing plants with a systemic herbicide.

Note: In addition to the species listed at right, Yellow Flag Iris may also be confused with Bur-reed species. See page 15 for plant description.



Look-Alikes for Yellow Flag Iris

Cattails

Typha species

Identification: Stout-stemmed perennial growing four to eight feet tall in dense clumps. Broad linear leaf blades with a dense, brown, cylindrical flowering spike. Round leaf bases, no distinct midrib, and more blunt tips than yellow flag iris. Basal leaves stack like a deck of playing cards as opposed to yellow flag iris' fan shaped arrangement.

Habitat and Distribution:
Occur in freshwater wetlands.



NATIVE AND
NON-NATIVE PLANTS

Other Irises

Iris spp.

Identification: Blue flag iris (image 57) has whitish pink to violet flowers and grows 18 to 48 inches tall. Siberian irises (image 58) are another beardless iris, up to four feet tall, with blue, lavender, yellow or white flowers.

Habitat and Distribution:
Blue flag iris, native east of the Cascades, can also be found in standing water. Siberian irises may grow in gardens and along pond edges, but they will not grow in standing water.



NON-NATIVE PLANT

European Waterchestnut
Trapa natans



ODA List A
INVASIVE PLANT

Identification: Annual plant that grows rooted to the substrate with a floating rosette of leaves. Leaves are shaped like a wide, rounded diamond with teeth along the margins. Submerged leaves along stem are feather-like. Seed is a nut-like structure with four curved horns and a tough covering that is green when fresh and brown when dried. Inconspicuous, white, four-petaled flowers. Not easily confused with other aquatic plants.

Impacts: Forms dense surface mats that crowd out native vegetation and reduce oxygen and light levels in the water below. Very little nutritional value for native wildlife.

Habitat and Distribution: Prefers placid, nutrient-rich lakes and rivers with a pH of 6.7 to 8.2. Plants have also been found in freshwater regions of estuaries and exposed mud flats. Has not been found in Oregon.

Control: Complete removal of plants is critical to successful eradication. Seeds may lay dormant for up to 12 years. Manual, mechanical, and chemical techniques are used.



Look-Alikes for European Waterchestnut

European Waterchestnut is not easily confused with other aquatic plants.

Smooth Frogbit
or S. American Spongeplant
Limnobium laevigatum



ODA Unlisted
INVASIVE PLANT

Identification: A floating to rooted stoloniferous perennial. Floating rosettes send runners out into the water, the ends of which form juvenile plants. Juvenile form has thick, spongy, floating ovate to spatulate leaves, usually with rounded tips and on an inflated stalk. Juvenile leaves and sometimes mature leaves have a patch of spongy tissue (aerenchyma) on lower surfaces.

Impacts: Dense stands can impede the flow of water.

Habitat and Distribution: Lakes, ponds, and slow rivers. Has not been found in Benton County. Present in northern California and on Long Beach in Washington State.

Control: Physical removal may work with very small, early populations. Be sure to minimize off-site dispersal. For chemical control recommendations, google "UC Davis' Weed Control in Natural Areas in the Western United States Smooth Frogbit."



Look-Alikes for Smooth Frogbit

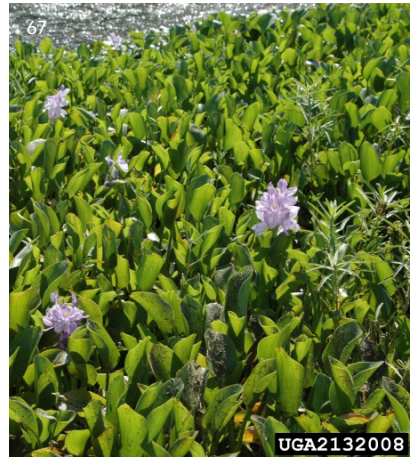
Water Hyacinth

Eichhornia crassipes

NON-NATIVE PLANT

Identification: Free-floating aquatic plant that can grow to three feet high. Leaves are oval to elliptical and thick with wide and waxy, spongy, inflated petioles. Flowers have six petals and a blue-purple color. Forms dense floating mats of vegetation.

Habitat and Distribution: Invades lakes, ponds, rivers, marshes, and other wetland habitats. Often for sale at pond stores. Although Oregon's climate is too cold for water hyacinth to become much of a problem, this plant has been seen on the Tualatin River in a "river garden."



Water Velvet

Azolla pinnata

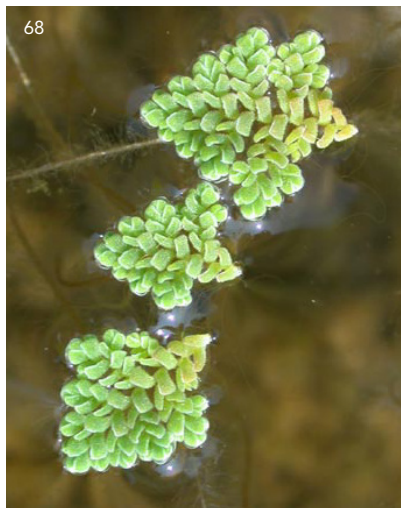
ODA Unlisted
INVASIVE PLANT

Identification: Small fern with triangular frond that measures up to one inch in length and floats on the water. Frond is made up of many rounded or angular overlapping leaves each 0.1 inches long. They are green, blue-green, or dark red in color and have a velvety appearance due to tiny hairs. They do not produce a flower.

Impacts: Spreads quickly and can cover open areas of water. Forms dense mats that impede water flow and navigation, clog irrigation pumps, and reduce dissolved oxygen levels.

Habitat and Distribution: Found in tropical lakes, ponds, slow moving rivers, and streams. Low risk of spread to non-tropical areas.

Control: Small infestations can be removed using rakes, but species can double every four to five days so it must be done often. Herbicide is effective and can be applied by a licensed aquatic herbicide applicator.



Look-Alikes for Water Velvet

Mexican Water Fern

Azolla microphylla

NATIVE PLANT

Identification: Small fern with triangular frond. Plant is green, blue-green, or red in color. Typically forms monotypic mats that float on the surface of lakes and ponds.

Habitat and Distribution: Found in lakes, slow moving rivers, and streams. Also found in ponds.



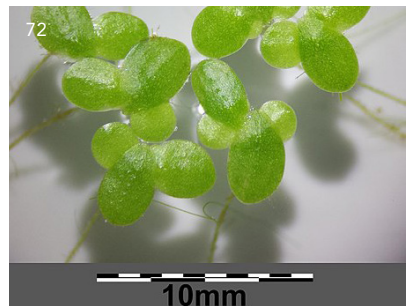
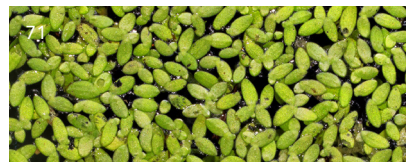
Duckweed

Lemna minor and other species

NATIVE PLANT

Identification: *Lemna* species are the smallest known flowering plants. These floating aquatic plants consist of single oval or oval obovate thallus with a slightly succulent texture and smooth margins, not more than 6.35 mm long. It is a medium green with a single sticky rootlet.

Habitat and Distribution: Six *Lemna* species are found in Oregon's lakes, ponds, slow moving rivers, and streams. *L. minor* is the most common.



Yellow Floating Heart
Nymphoides peltata



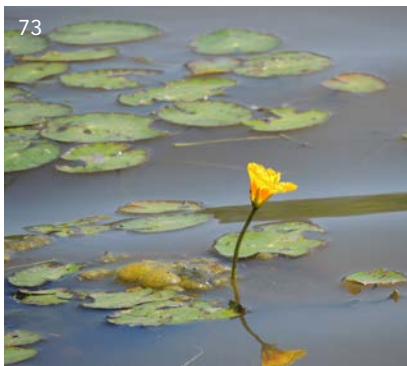
ODA List A
INVASIVE PLANT

Identification: Floating leaf, bottom-rooted perennial with several leaves per stem. The small (three to ten cm) floating leaves are nearly round to heart-shaped with wavy leaf margins and purplish undersides. One to five flowers per stalk are held above the water surface. Flowers are bright yellow with five distinctly fringed petals. Blooms June through August.

Impacts: Forms dense mats on the water surface that impede recreation, create ideal mosquito breeding areas, and can alter water quality by decreasing dissolved oxygen.

Habitat and Distribution: Wetlands, lakes, ponds, slow-moving water up to 12 feet deep, also can grow in wet mud. Recently found in backwaters and ponds in the Willamette Valley.

Control: Hand pulling can work with small infestations, but plant fragments will form new plants. Herbicide is effective and can be applied by a licensed aquatic herbicide applicator.



Look-Alikes for Yellow Floating Heart

Yellow Pondlily

Nuphar lutea

NATIVE PLANT

Identification: Floating-leaf rooted plant with ball-shaped yellow flowers and large, heart-shaped leaves on stems arising directly from large rhizomes. Leaves often stand out above water as the water levels recede.

Habitat and Distribution: Common in lakes and ponds throughout Oregon.



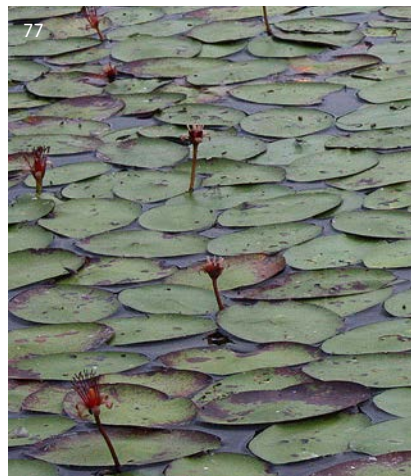
Watershield

Brasenia schreberi

NATIVE PLANT

Identification: Small oval floating leaves, with the stem attached at the center of leaf unlike other floating leaf rooted species. Lower leaf surfaces and stems are covered in a distinctive slippery gelatinous slime. Small purple flowers bloom from May to September.

Habitat and Distribution: Common throughout Oregon in ponds, lakes, and slow-moving rivers and streams.



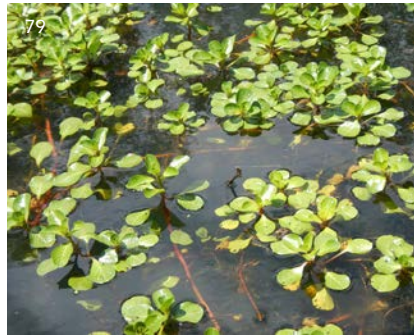
Primrose-willow,
Floating & Uruguayan
Ludwigia peploides, *L. hexapetala*

ODA List B & T
INVASIVE PLANT

Identification: Low-growing rooted perennial that forms mats in water up to ten feet deep and in wet soil. Showy, yellow five-petalled flowers in leaf axils, smooth-margined alternate leaves, prostrate stems float on water. Blooms late July to August.



Impacts: Clogs waterways, impedes recreation, and can degrade water quality. Ecological pest that outcompetes native plants.



Habitat and Distribution: Freshwater wetlands, drainage ditches, and ponds. Large infestations in side channels of the Willamette River.



Control: Hand pull or rake up small infestations, being sure to get as many roots as possible (roots will resprout). Herbicide can only be applied by a licensed aquatic herbicide applicator.



Look-Alikes for Primrose-willow

Water Purslane

Ludwigia palustris

NATIVE PLANT

Identification: Emergent shoreline plant with inconspicuous green flowers and opposite leaves. Lacks the bright yellow flowers of the invasive *Ludwigia* species.

Habitat and Distribution: Found in freshwater wetlands, drainage ditches, and ponds.



Nodding Beggartick

Bidens cernua

NATIVE PLANT

Identification: Annual herb with numerous yellow sunflower-like heads. Leaves with serrated edges unlike *Ludwigia* species. Grows to one to three feet tall.

Habitat and Distribution: Common throughout marshes, swamps, and wet ground in the Willamette Valley.



Parrotfeather
Myriophyllum aquaticum

ODA List B
INVASIVE PLANT

Identification: Spikes of feathery leaves emerging up to a foot above the water. Looks like miniature pine trees or horsetails growing on the water's surface. *Myriophyllum* species can be distinguished from other aquatic plants by the finely divided featherlike leaves. Parrotfeather can be distinguished from other milfoil species by the presence of bright green waxy emergent leaves. Emerges in late May and persists into October.

Impacts: Clogs irrigation canals and slow-flowing streams and rivers, filling entire water column. Harms native plants, recreation, and wildlife habitat.

Habitat and Distribution: Common in shallow water in freshwater waterbodies and streams in western Oregon. Still sold as a water garden plant on the internet but illegal to buy or sell it in Oregon.

Control: Very difficult to eradicate. Pull or rake, being very careful to remove all fragments from the water. Manual control requires persistence over many years. Herbicide can only be applied by a licensed aquatic herbicide applicator.



Look-Alikes for Parrotfeather

Common Mare's-tail

Hippuris vulgaris

NATIVE PLANT

Identification: Robust, dense emergent dark green leaves in whorls of six to 12 growing on hollow branchless stems. Submerged leaves are pale green, soft and larger. Distinguished from parrotsfeather by the lack of finely divided feather-like leaves.

Habitat and Distribution: Shallow areas of lakes, ponds, swamps, ditches, and bogs throughout Oregon.



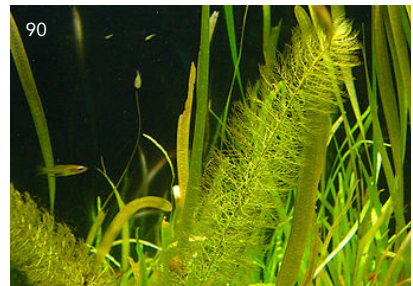
Other Milfoil Species

Myriophyllum species

NON-NATIVE AND
NATIVE PLANTS

Identification: *Myriophyllum* species, including *M. spicatum* (image 89), *M. hippuroides* (image 90), and many others, are aquatic plants with stems lined with whorls of fleshy green leaves divided into many narrow lobes. Milfoils generally do not form emergent mats like parrotsfeather.

Habitat and Distribution: Common in aquatic habitats such as ponds and streams in Oregon.



Eurasian Watermilfoil
Myriophyllum spicatum



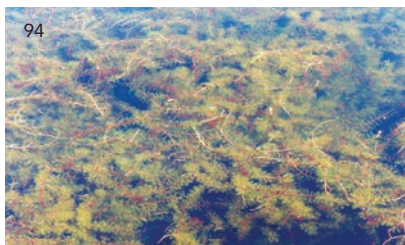
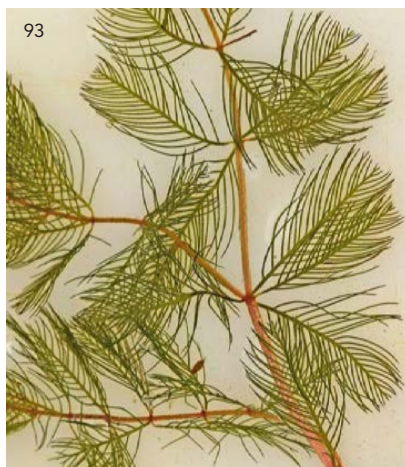
ODA List B
INVASIVE PLANT

Identification: Feathery underwater leaves in whorls of four on long reddish or green stems, and small emergent spikes of tiny flowers. Can top out and form mats on the surface. Leaf “feathers” have more than 14 leaflet pairs and leaves collapse against stem when plant is removed from water. Blooms in summer.

Impacts: Spreads rapidly by fragmentation, clogs waterways, impedes recreation, outcompetes native species, reduces fish habitat, can alter water quality.

Habitat and Distribution: Lakes, ponds, slow-moving rivers up to 20 feet deep.

Control: Clean fragments from boats, motors, and trailers to prevent spread. Hand pull small infestations, taking care to remove all plant fragments from the water. Dense, whole-lake infestations can be mowed with a mechanical harvester to maintain open water (not recommended for partially infested water bodies since this plant rapidly spreads by fragmentation). Herbicide can be applied by a licensed aquatic herbicide applicator.



Look-Alikes for Eurasian Watermilfoil

Coontail

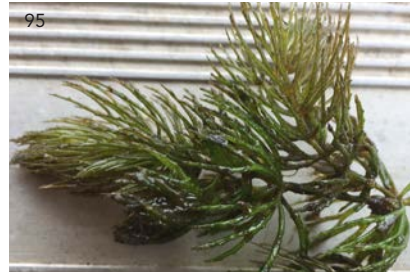
Ceratophyllum demersum

NATIVE PLANT

Identification: Submersed, rootless, feathery fan shaped leaves arranged in dense, stiff, bushy whorls of five to 12. Each rough-feeling leaf subdivided into many narrow segments with teeth on midribs. Inconspicuous flowers at base of leaves. Unlike *M. spicatum*, coontail maintains bushy shape out of the water.

Habitat and Distribution:

Comon in Oregon in nutrient-rich ponds, lakes, ditches and slow-moving waterways.



Other Milfoil Species

*Myriophyllum species*NON-NATIVE AND
NATIVE PLANTS

Identification: Feathery, limp, deeply divided, submersed leaves arranged in whorls. See Jepson e-Flora's *Myriophyllum* identification key.

Habitat and Distribution: The most common submersed native *Myriophyllum* species in western Oregon include *M. sibiricum*, *M. hippuroides*, and *M. verticillatum*. Non-native *M. heterophyllum* is difficult to distinguish from *M. hippuroides*. These species are found in both deep, fast-moving and shallow, slow-moving water.



Brazilian Waterweed (Elodea)

*Egeria densa*ODA List B
INVASIVE PLANT

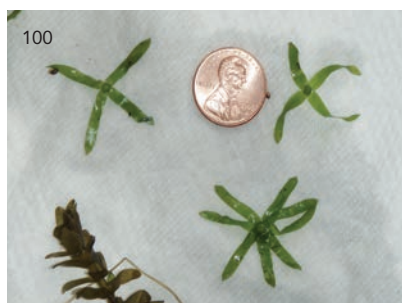
Identification: Long-stemmed submerged perennial with non-toothed leaves (to the naked eye) in whorls of four (up to six) and small, white, three-petalled emergent flowers. Can top out and form mats on the surface. Blooms in summer.

Impacts: Spreads rapidly by fragmentation, clogs waterways, impedes recreation, outcompetes native species, reduces fish habitat, alters water quality.

Habitat and Distribution:

Lakes, ponds, slow-moving water up to 30 feet deep. Commonly found in side channels and on the banks of the Willamette River.

Control: Clean fragments from boats, motors, and trailers to prevent spread. Small areas can be cleared by hand-pulling, taking care to remove all plant fragments from the water. Contact a licensed aquatic herbicide applicator for assistance with herbicide use.



Look-Alikes for Brazilian Waterweed (Elodea)

American & Nuttall's Waterweed

Elodea canadensis and *E. nuttallii*

NATIVE PLANT

Identification: Leaves are bright green, translucent, and oblong. Whorls are usually of three (can be two or four) leaves. Flowers have three small white petals and it flowers May to October. *E. nuttallii* (image 104) generally has narrower leaves than *E. canadensis* (image 103).



Habitat and Distribution: Common throughout Oregon in ponds, canals, and slow flowing rivers.



Hydrilla

Hydrilla verticillata

NON-NATIVE PLANT

Identification: Long-stemmed, submerged, perennial with visibly toothed leaves in whorls of five. One or more teeth are present on the underside of leaf midribs. Flowers inconspicuous. Grows from small tubers in the sediment. See page 42 for more information.



Habitat and Distribution:

Grows in lakes, ponds, ditches, slow-moving water up to 30 feet deep.



Hydrilla*Hydrilla verticillata*ODA List A
INVASIVE PLANT

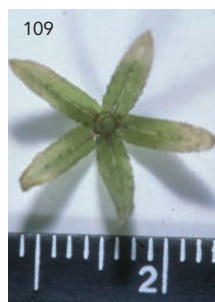
Identification: Long-stemmed, submerged, perennial with visibly toothed leaves in whorls of five. Flowers inconspicuous. Grows from small tubers in the sediment.

Impacts: One of the top ten federally listed noxious weeds. Spreads rapidly by fragmentation, clogs waterways, impedes recreation, outcompetes native species, reduces fish habitat, alters water quality. Extremely aggressive and persistent.

Habitat and Distribution:

Lakes, ponds, ditches, slow-moving water up to 30 feet deep. Not known to occur in Benton County or anywhere in Oregon.

Control: If you find this plant, contact the Oregon Invasives Hotline immediately. This plant is very difficult and expensive to eradicate.



Look-Alikes for Hydrilla

American and Nutall's Waterweed

Elodea canadensis and *E. nuttalli*

NATIVE PLANT

Identification: Leaves are bright green, translucent, and oblong. Whorls are usually of three (can be two or four) leaves. Flowers have three small white petals and it flowers May to October. *E. nuttallii* (image 112) generally has narrower leaves than *E. canadensis* (image 111).



Habitat and Distribution: Common throughout Oregon in ponds, canals, and slow flowing rivers.

Brazilian Waterweed (Elodea)

Egeria densa

NON-NATIVE PLANT

Identification: Long-stemmed perennial with very finely toothed leaves (visible with a hand lens) in whorls of four (up to six) and small, white, three-petalled floating flowers. Unlike Hydrilla, there are no teeth present on the underside of midrib. For more information, see page 40.

**Habitat and Distribution:**

Grows in shallow ponds, canals, and margins of slow flowing rivers.

Curlyleaf Pondweed

Potamogeton crispus

ODA Unlisted
INVASIVE PLANT

Identification: Perennial submerged plant with oblong leaves with curled edges. Leaves resemble skinny green lasagna noodles. Forms very dense modified buds called turions along the stems, which can break off and form new plants.

Impacts: Can form dense mats of vegetation that inhibit the growth of native aquatics and impede boating and other water recreation. When the plants die off and go dormant in the summer, the decaying plant matter can make the water extremely eutrophic.

Habitat and Distribution: Widespread in ponds, lakes, streams, rivers, reservoirs, irrigation ditches, and marshes.

Control: Clean fragments from boats, motors, and trailers to prevent spread. Can be partially controlled with mechanical and chemical methods. Reduce spread by cutting plants at sediment level early in growing season. Contact a licensed aquatic herbicide applicator for assistance with herbicide use.



Look-Alikes for Curlyleaf Pondweed

Richardson's Pondweed

Potamogeton richardsonii

NATIVE PLANT

Identification: Perennial herb that grows a narrow, mostly unbranched stem from a mat of rhizomes in substrate. Can reach three feet tall. Leaves are crinkly like curlyleaf pondweed, but tips taper to a point rather than the blunt tips with small points of curly pondweed.

Habitat and Distribution: Common throughout Oregon in water bodies such as ponds, lakes, ditches, and streams.



White-stem Pondweed

Potamogeton praelongus

NATIVE PLANT

Identification: Perennial herb that grows a light green to white zig-zag stem. Can reach nine feet tall. Lanceolate to oval, alternate leaves, eight to 30 cm long by one to three cm wide that clasp the stem. Leaf tips fold towards each other. Spreads by seeds and rhizomes. Spikes of small flowers at tip of stems.

Habitat and Distribution: Usually found in colder lakes in deep water.



Starry Stonewort

*Nitellopsis obtusa*ODA Unlisted
INVASIVE PLANT

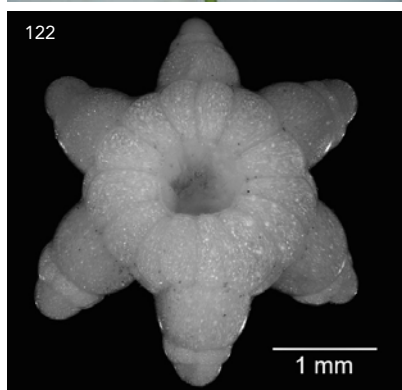
Identification: Macro-algae species with four to six long branches growing in whorls around each stem. Branchlets typically extend in acute angles away from stem nodes. Tips of branchlets may have irregularly-lengthed forks or divisions. It can grow more than seven feet tall in water more than 30 feet deep. Forms dense mats of vegetation. Distinguished from muskgrass and chara by the presence of white star-shaped bulbils at the base of the plant

Impacts: Outcompetes native species and forms dense mats of vegetation that can impact native fish spawning and phytoplankton. Clogs waterways.

Habitat and Distribution:

Bottom of ponds and lakes, and is tolerant of both salt and freshwater. Not present in Oregon.

Control: Clean fragments from boats, motors, and trailers to prevent spread. Hand pull small infestations, taking care to remove all plant fragments from the water. Herbicide can be applied by a licensed aquatic herbicide applicator.



Look-Alikes for Starry Stonewort

Muskgrass

Chara species

NATIVE PLANT

Identification: This multicellular macro-alga grows several feet long with stemlike branches and unforked branchlets in whorls of six to 16 around the stem. Grows entirely below the water surface. Gritty, bristly feel and emits a strong musky, garlicky odor when crushed. Dark, ball-like sporangia appear seed-like along branchlets.

Habitat and Distribution:

Common at bottom of ponds and lakes, and is tolerant of both brackish and freshwater.



Brittlewort

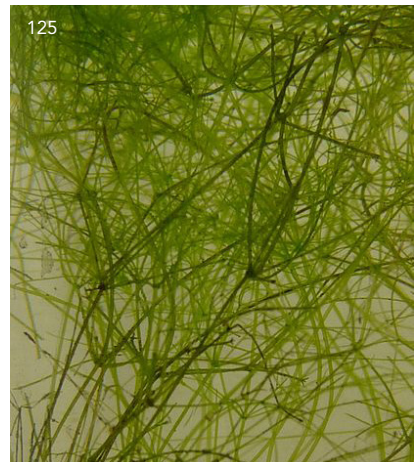
Nitella species

NON-NATIVE PLANT

Identification: Similar to Chara species, a macro-alga with no true leaves or stems. Six to eight evenly forked branches and branchlets growing in whorls at regular intervals along the "stem." Smooth and sometimes slimy to the touch. Has hollow, stem-like structures that pop when crushed. Lacks roots and flowers.

Habitat and Distribution:

Common at bottom of ponds and streams.



Resources for additional information

- Winterton, S.L., Scher, J.L., Burnett, J., and Redford, A.J. 2018. Aquarium and Pond Plants of the World, Ed. 3. USDA APHIS Identification Technology Program (ITP) and CA Department of Food and Agriculture. Sacramento, CA. [4/17/20] idtools.org/id/appw/
- Benton Soil & Water Conservation District Invasive Plants Database bentonswcd.org/programs/invasive-species/weed-profiles/
- King County Noxious Weed Control Program kingcounty.gov/weeds
- On The Lookout for Aquatic Invaders: Identification Guide by Oregon Sea Grant. seagrant.oregonstate.edu/sgpubs/H14001-on-the-lookout
- Oregon Department of Agriculture Noxious Weed Control Program oregon.gov/ODA/PLANT/WEEDS/Pages/index.aspx
- Oregon Flora Project oregonflora.org
- Oregon Invasive Species Council oregoninvasivespeciescouncil.org
- Washington State Department of Ecology, Aquatic Plants, Algae and Lakes wdfw.wa.gov/species-habitats/invasive
- Center for Aquatic and Invasive Plants, University of Florida plants.ifas.ufl.edu
- An Aquatic Plant Identification Manual for Washington's Freshwater Plants, Washington State Department of Ecology fortress.wa.gov/ecy/gisresources/lakes/AquaticPlantGuide/index.html
- A Field Guide to the Common Wetland Plants of Western WA and Northwestern OR, Sarah Spear Cooke, Editor, Seattle Audubon Society, 1997.
- Aquatic and Riparian Weeds of the West, Joseph M. DiTomaso and Evelyn A. Healy, University of California Agriculture and Natural Resources, 2003, Publication 3421.
- Wetland Plants of Oregon and Washington, 2nd Ed., B. Jennifer Guard, Lone Pine, 2010.
- Pondweeds, Bur-reeds and their Relatives of British Columbia, revised, Subsequent Ed., T. Christopher Bradshaw, Royal BC Museum, 2017.
- Sleith, R.S., A.J. Havens, R.A. Stewart & K.G. Karol. 2015. Distribution of *Nitellopsis obtusa* in New York, USA. *Brittonia* 67: 166-172. DOI:10.1007/s12228-015-9372-6 (In this guide, photo of *Nitellopsis obtusa* bulbil, p. 46.)

The Quarantine List

Wetland and aquatic plants whose sales are prohibited in the State of Oregon and are state-listed noxious weeds.

Scientific Name	Common Name
<i>Butomus umbellatus</i>	Rush, Flowering
<i>Conium maculatum</i>	Hemlock, Poison
<i>Cyperus rotundus</i> , <i>C. esculentus</i>	Nutsedges
<i>Egeria densa</i>	Waterweed, Brazilian (Elodea)
<i>Hydrilla verticillata</i>	Hydrilla
<i>Hydrocharis morsus-ranae</i>	Frogbit, Common
<i>Iris pseudacorus</i>	Iris, Yellow Flag
<i>Limnobiium laevigatum</i>	Spongeplant, S. American
<i>Ludwigia peploides</i> , <i>L. hexapetala</i>	Water Primrose
<i>Lythrum salicaria</i>	Loosestrife, Purple
<i>Myriophyllum aquaticum</i>	Parrotfeather
<i>Myriophyllum heterophyllum</i>	Milfoil, Variable-leaf
<i>Myriophyllum spicatum</i>	Watermilfoil, Eurasian
<i>Nymphoides peltata</i>	Heart, Yellow Floating
<i>Phragmites australis</i>	Reed, Common
<i>Polygonum and Fallopia spp.</i>	Knotweeds
<i>Sagittaria platyphylla</i>	Arrowhead, Delta
<i>Spartina spp.</i>	Cordgrass
<i>Trapa natans</i>	Waterchestnut, European

Current quarantine list and more information and photos can be found at Oregon State Weed Board, www.oregon.gov/ODA/PLANT/WEEDS/pages/oswb_index.aspx

To see the complete Benton County CWMA weed list, visit www.bentonswcd.org/programs/invasive-species/weed-profiles/

Contact Benton SWCD with questions and concerns: office@BentonSWCD.org or 541-753-7208.

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Typha latifolia - 25

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Sleith, Robin	122	Smith College, see ref. p. 49	smith.edu
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Winterton, Shaun	23, 63, 65	Aquarium and Pond Plants of the World, Edition 3 USDA APHIS PPQ	bugwood
Zell, H.	90	CC BY-SA 3.0	wikimedia

Field Notes



Plants with this symbol have not been found in Benton County yet or are only present in very small populations. If you see them, report to www.oregoninvasiveshotline.org.

ADDITIONAL INFORMATION

Field Notes

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