

Flowering Rush (*Butomus umbellatus*)

Designation: Proposed Provincial Noxious Weed; Regional Category 1



Figure 1: a) Root Rhizomes and Bulbils, b) Site Infestation, c) Flower, d) Submersed plant specimen (see more in Identification section). Photo credit: T. Woolf.

Overview: Flowering rush is an erect perennial aquatic macrophyte that can grow as an emergent plant along shorelines and wetlands or as a submerged plant in lakes and rivers.

This species was likely brought to eastern North America from temperate Eurasia as a garden ornamental in the late 1800's. In western North America, flowering rush was first recorded along the banks of the Snake River near Idaho Falls in 1949. Since then it has reached the Clark Fork delta at the head of Lake Pend D'Orielle in Idaho and is moving north into Washington and

towards BC via the Pend D'Oreille river. This infestation is expected to continue to spread downstream and infest much of the main stem of the Columbia River system in the USA.¹

Habitat: Flowering rush grows along lake shores, slow moving waters, irrigation ditches, canals and in wetlands. It typically grows in shallow waters but can survive in water as deep as 6.1 meters.

Reproduction: Flowering rush can reproduce in four forms: seeds, vegetative bulbils (little bulb-like sprouts) formed on the rhizomes, vegetative bulbils formed on the inflorescence (flowers), and rhizome (root) fragments.

Dispersal: Wind and water (i.e., seeds and root fragments). Possibly seed and plant fragment dispersal from waterfowl and wildlife. Humans can move plants around through water gardening, improper disposal of garden waste, consumption (roots are edible), improper mechanical control (i.e., raking), and water-based recreation.²

Regional Distribution: Not known to occur in the Kootenay region, if found please report immediately. Present across the border, in Idaho, Montana and Washington.

Provincial Distribution: Present in two locations in BC: Hatzic Lake (Mission) and West Creek (Langley).³

Identification^{4,5}

Flowers: An inflorescence of 20-50 deep pink to white flowers form on a slender stalk in an umbrella-like cluster (umbel). Flowers are 2-3 cm in diameter, with six petals per flower, with nine stamens per flower. Typically blooms from June to August.

Flowering stalk (stem): Round in cross section and grows up to 150cm.

Leaves: Along the shore, green erect leaves are twisted spirally at tips, are up to 1.8 meter long and are triangular in cross section. Under water, the leaves are triangular in cross section, but are limp and floating and are up to 3 meters in length. Leaves originate from the base of the plant.

¹ <http://msuextension.org/publications/AgandNaturalResources/EB0201.pdf>

² Plants For A Future, 2010. *Butomus umbellatus*.

³ <http://linnet.geog.ubc.ca/Atlas/Atlas.aspx?sciname=Butomus%20umbellatus>

⁴ Jacobs, J., J. Mangold, H. Parkinson, V. Dupuis, and P. Rice. 2011. Ecology and Management of Flowering Rush (*Butomus umbellatus* L.). United States Department of Agriculture, Natural Resources Conservation Service, Bozeman, Montana. 9 pages.

⁵ NatureServe. 2011. NatureServe Explorer Comprehensive Report Species – *Butomus umbellatus*. Accessed online March 2012: <http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Butomus+umbellatus>

Fruits: Many seeded and dry. Seeds are small, 1mm long, brownish in colour and ridged. If the flowering type, plant can have up to 200 seeds per plant.⁶

Similar Native Species

Great Bulrush (*Scirpus lacustris*)

Small-flowered Bulrush (*Scripus micorcarpus*)

Bristly sedge (*Carex comosa*)

Sweet flag (*Acorus americanus*)

Impacts⁷

Ecological: Flowering rush is described as aggressive and appears to be able to spread and displace native shoreline vegetation such as bulrushes, willows and cattails because of its thick root system. Flowering rush can adversely impact native fish species by forming dense stands in waters previously vegetated or sparsely vegetated by aquatic plants. However, flowering rush has been shown to provide favourable habitat for invasive fish species such as, small and large mouth bass, yellow perch, and northern pike.⁸

The ecological and environmental impacts of flowering rush on native flora and fauna are still not entirely known. Muskrats have been observed using the roots and stems of flowering rush to build their houses but this activity may also lead to further spread from root fragments.

Water bodies, such as reservoirs and those controlled by dams, have variable water levels and are at greater risk for infestation by flowering rush. Increased sediment load and warmer sediment temperatures also increase the incidence of flowering rush regrowth in these water bodies. This is of concern in the Kootenays where many rivers are dam controlled and significant fluctuations in water temperature and drawdown occur.

Social: In areas of abundance where flowering rush is submerged, its dense vegetation can interfere with boating and other recreational activities. Shallow lakes could become seriously infested and rendered unfishable.

Economic: Evidence of economic damage is now emerging in the western United States. Unlined irrigation canals are becoming clogged as well as drainage ditches.

⁶ http://www.weedcenter.org/research/docs/Flowering_Rush_Fall_2009.pdf

⁷ Jacobs, J., J. Mangold, H. Parkinson, V. Dupuis, and P. Rice. 2011. Ecology and Management of Flowering Rush (*Butomus umbellatus* L.). United States Department of Agriculture, Natural Resources Conservation Service, Bozeman, Montana. 9 pages.

⁸ <http://www.weedcenter.org/research/docs/Flowering%20Rush%20white%20paper.pdf>

Maintenance of these structures is expensive. Public and private boat access is now being impeded at some locations in Idaho.⁹

Integrated Pest Management (IPM)^{10,11}

IPM is a decision making process that begins with the identification and inventory of invasive plant populations, assessment of the risks that they pose, and development of well-informed management options from monitoring to site treatment.

Prevention and Early Detection:

- Select a non-invasive alternative, such as western blue iris (*Iris missouriensis*) instead of flowering rush for your restoration project or water garden. Additional options can be found by downloading the Invasive Species Council of BC's *2011 Grow Me Instead booklet* from: www.bcinvasives.ca/resources/outreach-materials.
- Avoid accidentally introducing non-native plants to surrounding water bodies by installing water gardens a safe distance away. Ensure water gardens are not allowed to overflow to wetlands, streams or rivers.
- Properly dispose of garden and yard waste by double bagging and disposing of it at your local landfill.
- Prevent plants from spreading from existing populations by washing vehicles, boots and animals that have been in infested areas.
- Report plants infestations found in remote locations to 1-888-WEEDSBC or 250.352.1160.

Mechanical Control: There is currently no known effective control method for flowering rush. Hand digging, before seed set, to remove all root fragments may be feasible for very small infestations, if water levels are low. Repeated digging will be required. Caution must be exercised to ensure that no pieces of root and/or rhizome pieces remain in the soil or are broken off.

Chemical Control: Visit the Integrated Pest Management Program website at www.env.gov.bc.ca/epd/ipmp/ prior to completing any chemical treatments.

Biological Control: No biological control agents are currently available.

⁹ <http://msuextension.org/publications/AgandNaturalResources/EB0201.pdf>

¹⁰ http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_96483_01

¹¹ Invasive Species Council of BC (ISCBC), 2012, www.bcinvasives.ca

Restoration Substitutes

- Northern blue flag (*Iris versicolor*)
- Hardstem bulrush (*Schoenoplectus acutus*)
- Giant bur-reed (*Sparganium eurycarpum*)
- Sweet flag (*Acorus americanus*)
- Arrowhead (*Sagittaria latifolia*)
- Western Blue Iris (*Iris missouriensis*)
- Lake shore sedge (*Carex lenticularis*)

Legislation and Regulations

There is a growing network of partnerships and collaborations among all levels of government, industry, regional invasive plant committees, and concerned individuals to address unwanted aquatic invasive plants.¹² In addition, there is numerous legislation and regulations that pertain to aquatic invasive plants.

Federal: The *Fisheries Act*¹³ specifies that it is an offence to harmfully alter, disrupt, or destroy fish habitat, including streamside vegetation. It is also an offence to move or introduce aquatic organisms (including plants) to new habitats. The purpose of the *Fisheries Act* is to conserve and protect Canada's fisheries resources, including fish habitat. It applies to all Canadian fisheries waters, including ditches, channelized streams, creeks, rivers, marshes, lakes, estuaries, coastal waters and marine offshore areas. It also applies to seasonally wetted fish habitat such as shorelines, stream banks, floodplains and intermittent tributaries and privately owned land. It is an offence to damage fish habitat or put harmful substances such as pesticides into water frequented by fish, including includes pesticide drift. Fisheries and Oceans Canada (DFO) and Environment Canada administer this legislation.

The *Migratory Birds Convention Act*¹⁴ prohibits the deposit of any substance harmful to migratory birds to any area frequented by migratory birds. This includes pesticides deposited on water and land. The Canadian Wildlife Service of Environment Canada administers this legislation.

Provincial: In BC, invasive plant management on all lands (Crown and non-Crown) is regulated by the BC *Weed Control Act*¹⁵, and the management of specific Crown lands is regulated by the

¹² Invasive Species Council of BC (ISCBC), 2012

¹³ <http://laws.justice.gc.ca/en/F-14/>

¹⁴ <http://laws-lois.justice.gc.ca/eng/acts/M-7.01/>

¹⁵ <http://www.agf.gov.bc.ca/cropprot/noxious.htm>

*Forest and Range Practices Act*¹⁶, the *Community Charter*¹⁷, and the *Integrated Pest Management Act*¹⁸.

In addition, in BC the ownership of water is vested in the Crown as stated in the *Water Act*¹⁹, the primary provincial statute regulating water resources.

Section 9 of the *Water Act* requires that a person may only make “changes in and about a stream” under an Approval; in accordance with Part 7 of the Water Regulation, including Notification where required; or under a Water Licence or Order. Notifications are typically used for works that do not involve any diversion of water, may be completed within a short period of time and will have minimal impact on the environment or third parties. Notifications are the responsibility of the Environmental Stewardship Division of the Ministry of Forests, Lands and Natural Resource Operations. Contact Front Counter BC for more information at www.frontcounterbc.gov.bc.ca/contact/.

Useful Links

- Alberta Invasive Plant Council: www.invasiveplants.ab.ca
- Central Kootenay Invasive Plant Committee: www.ckipc.ca
- E-Flora BC, Electronic Atlas of the Plants of BC: www.eflora.bc.ca
- Invasive Species Council of BC: www.bcinvasives.ca
- Ministry of Forests and Range Invasive Alien Plant Program: www.for.gov.bc.ca/hra/plants/index.htm
- Ministry of Agriculture: www.agf.gov.bc.ca/cropprot/weedguid/weedguid.htm
- Montana State University, Extension: <http://msuextension.org/publications/AgandNaturalResources/EB0201.pdf>
- Society for Ecological Restoration BC Chapter: <http://serbc.ca/>
- Tipi Mountain Native Plants: www.tipimountain.com
- Weeds BC: www.weedsbc.ca

¹⁶ <http://www.for.gov.bc.ca/code/legislation.htm>

¹⁷ http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/03026_00

¹⁸ http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_03058_01

¹⁹ http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_96483_01