

Parrotfeather

Myriophyllum aquaticum
Family: Haloragaceae

Class B Noxious Weed
Control Required

Legal Status in King County: Parrotfeather is a Class B Noxious Weed (non-native species harmful to environmental and economic resources that landowners may be required to control based on distribution in the county and local priorities) according to Washington State Noxious Weed Law, RCW 17.10. In accordance with state law, the King County Noxious Weed Control Board requires property owners to control parrotfeather on private and public lands throughout the county (control means to prevent all seed production and to prevent the dispersal of all propagative parts capable of forming new plants). In addition, state quarantine laws prohibit transporting, buying, selling, or distributing plants, plant parts or seeds of parrotfeather.



BACKGROUND INFORMATION

Impacts and History

- Parrotfeather is native to the Amazon basin in South America and was first noted in the United States in 1890 in the Washington DC area. The first record in Washington State is from 1944.
- This pond plant was probably introduced through the water garden trade. It remains on the market in the United States, although it is on the quarantine list in Washington State and selling or planting it is illegal.
- Parrotfeather can alter the physical and chemical characteristics of lakes, ponds, streams, ditches and other freshwater bodies.



- It can severely impact recreation by eliminating swimming opportunities, fouling boat motors, impeding the passage of watercraft and snagging fishing lines.
- It shades out submersed plants and algae, thereby altering the aquatic food web.
- Stagnant mats create mosquito breeding areas, increase the water temperature underneath by absorbing sunlight, and prevent wind mixing, resulting in extensive areas of low oxygen during the summer.
- Parrotfeather infests drainage and agricultural ditches and shallow streams, impeding the flow of water and sometimes causing flooding.

Description

- Perennial, rhizomatous plant grows rooted in shallow water or occasionally free floating in nutrient rich water.
- Has both submerged and emergent feathery leaves. Submerged leaves are similar to Eurasian watermilfoil (*Myriophyllum spicatum*).
- Emergent leaves are stiff, bright green and in whorls of 4-6. Emergent stems are distinctive, growing up to a foot out of the water and are often described as looking like small fir trees.
- Flowers are white and inconspicuous, growing in the axils of emergent leaves.



Habitat

- Parrotfeather grows in still and slow-moving shallow water, and when attached to the bank can extend several yards out over open water.
- In nutrient rich lakes, it has been known to grow as a floating mat over deeper water.
- It is well adapted to water level fluctuations and can survive on wet banks adjacent to water.

Reproduction and Spread

- Spread is by plant fragments or through intentional planting. There are only female plants in North America, so no seeds are produced.

Local Distribution

- In King County parrotfeather is known in a few private ponds.
- In Washington State, parrotfeather is in streams along the coast and in agricultural ditches in the Longview/Kelso area.

CONTROL INFORMATION

Integrated Pest Management

- The preferred approach for weed control is Integrated Pest Management (IPM). IPM involves selecting from a range of possible control methods to match the management requirements of each specific site. The goal is to maximize effective control and to minimize negative environmental, economic and social impacts.
- Use a multifaceted and adaptive approach. Select control methods that reflect the level of infestation; the available time, funding, and labor of the participants; the land use goals; and the values of the community and landowners. Management will require dedication over a number of years, and should allow for flexibility in method as appropriate.

Planning Considerations

- Permits are required for all weed control work in natural water bodies. At minimum, possession of the pamphlet [Aquatic Plants and Fish](#) is required. This pamphlet is published by the Washington State Department of Fish and Wildlife (available free of charge online at http://wdfw.wa.gov/licensing/aquatic_plant_removal/ or by calling (360) 902-2534) and acts as a Hydraulic Project Approval (HPA) permit. This “pamphlet HPA” is all you will need for most manual or light mechanical control methods. More extensive control, including some bottom barrier placement and all herbicide use, will require additional permits. **Permit requirements can change from year to year. Contact the King County Noxious Weed Control Program for more information on current permitting requirements.**
- Get positive identification. Parrotfeather is only known in King County from a few small private ponds where it was intentionally planted. Although parrotfeather is quarantined in the State of Washington, it is still available for sale on the internet, and it is possible that uninformed property owners could still plant it.
- Survey area for weeds, set priorities and select best control method(s) for the site conditions and regulatory compliance issues (refer to the **King County Noxious Weed Regulatory Guidelines**).
- Parrotfeather spreads by fragmentation, so care must be taken when using manual or mechanical control methods to contain and remove all plant fragments. Otherwise, the infestation will spread.
- Properly dispose of all parts of the plant (see **Disposal Methods** section below).

Early Detection and Prevention

- Look for new plants. Get a positive plant identification from an authority such as King County Noxious Weed Control Program staff.
- Look for plants in ponds, along lake shorelines and in stagnant or slow-moving water in wetlands and streams. Since these plants are often spread as fragments attached to boat motors and trailers, check especially around boat launches. Also check at the downwind end of the waterbody, and anywhere else where fragments could congregate or settle out of the water column.

- The best time to begin surveys is late spring when plants are visible, and surveys can continue into early fall when the plants senesce.
- Pull or dig small patches, taking extreme care to remove all plants and fragments.
- Clean all plant material off of boats, motors and trailers, and check bilge water for plant fragments any time you have been in an infested water body (or a potentially infested water body).
- **Never dispose of unwanted aquarium plants or animals in a natural water body.**
- Parrotfeather is still sold in some areas as an aquarium and water garden plant, however it is illegal to buy, sell, transport or distribute parrotfeather in Washington State. Make sure you know what you are getting when you purchase pond plants online.

Manual Control

- Small infestations may be effectively removed using manual methods or hand tools.
- An HPA pamphlet permit is required for all manual control activities in natural waterbodies.
- Hand pulling and the use of hand mechanical tools are allowable in all critical areas.
- Persistent hand pulling can be successful for a very small area, but is impractical for large infestations. Be sure to contain and remove all plants and plant fragments from the water. Pulling is easier in soft or mucky soils where roots can be easily pulled. It may not be possible to get all the roots in rocky soils or where parrotfeather grows among other dense vegetation.
- Weed rakes and weed cutters can assist in maintaining open water in a discrete area, such as around a dock, but will not eliminate the plants. Be sure to contain and remove all plants and plant fragments from the water.
- All manual control sites should be monitored for several years for signs of plants growing from roots, rhizomes or other plant fragments.
- Parrotfeather should be placed in yard waste bins or composted well away from water. Do not leave any plant parts or fragments in the water or near the water's edge.

Mechanical Control

- A pamphlet HPA at minimum is required for mechanical control. Other permits may also be required.
- Cutting and harvesting using boat-mounted cutters or in-lake harvesting barges is effective at maintaining open water in water bodies with 100% of the available habitat infested. It must be done on a regular basis to maintain control. However, these methods will quickly spread parrotfeather by creating numerous fragments, so mechanical cutting and harvesting are not recommended for small or partial infestations. Neither method will eradicate an infestation.
- Rotovation (underwater rototilling) is not recommended since it causes severe fragmentation of the plants. Rotovation also results in significant short term turbidity and loss of water clarity and quality.

Cultural

- Drawdown has been ineffective in California because parrotfeather's robust rhizomes can survive a long time in the soil.
- Bottom barriers may work to shade out or smother very small infestations if complete coverage can be achieved. Watch the edges for shoots coming up from rhizomes. Keep bottom barrier in place for a minimum of twelve months.

Chemical Control

- Herbicides may be the most reasonable option for eradication of large parrotfeather infestations. Professional licensed contractors are available for hire to perform this task.
- **Precautions:**
 - Herbicides should only be applied at the rates and for the site conditions and/or land usage specified on the label of the product being used. **Follow all label directions.**
 - For herbicide use in critical areas and their buffers, certain restrictions apply depending on the site and jurisdiction. In unincorporated King County, refer to the **King County Noxious Weed Regulatory Guidelines** for a summary of current restrictions and regulatory compliance issues. Elsewhere, check with the local jurisdiction. Permits are almost always required when applying herbicides to water in Washington State.
 - Herbicides can only be applied to aquatic systems in Washington State by a licensed pesticide applicator with an aquatic endorsement. A Washington State pesticide license with an aquatic endorsement is also required for the purchase of aquatic herbicides. **NEVER apply non-aquatic herbicide formulations to water since many include ingredients toxic to aquatic organisms.**
 - For your personal safety, at a minimum wear gloves, long sleeves, long pants, closed toe shoes, and appropriate eye protection. Follow label directions for any additional personal protection equipment needed.
- Parrotfeather has a waxy cuticle on the stem and leaves, so a wetting agent must be added to the herbicide to penetrate the cuticle and deliver the herbicide to the plant.
- Heavily sprayed plants may collapse into the water, washing off herbicide before it has a chance to translocate through the entire plant.
- Multiple years of treatment may be required to eradicate parrotfeather. For several years following treatment, monitor areas for new plants. Remove any new growth using one of the manual control methods above.

Specific Herbicide Information

- The King County Noxious Weed Control Program has had some success using the broadleaf-selective herbicide triclopyr (e.g. Renovate™ or Garlon 3A™) with a penetrating surfactant/wetting agent such as Competitor™. Spray twice per growing season, once early and once late.
- Other approved aquatic herbicides have been reported as doing a fair job of controlling parrotfeather. For emergent vegetation, spray with glyphosate when the water levels are low to maximize the area of the plant that is above water. Imazapyr and 2,4 D may also

be effective. Note that the use of 2,4 D is restricted in salmon-bearing waters. A wetting agent (surfactant) must be added to all of these, and multiple applications are necessary to achieve control.

- The contact herbicides diquat and endothal will control submerged vegetation but will not kill the roots.
- Always read and follow the label on any herbicide to determine the best application rates for your situation.

The mention of a specific product brand name in this document is not, and should not be construed as an endorsement or as a recommendation for the use of that product. Chemical control options may differ for private, commercial and government agency users. **For questions about herbicide use, contact the King County Noxious Weed Control Program at 206-296-0290.**

Biological Control

- In King County there are no infestations of parrotfeather large enough to warrant the use of biocontrols. However, there may be a few options available in the future if needed.
- There are no biocontrol agents for parrotfeather currently allowed in the United States. However, several insects and a fungus show promise and may be available in the future. Two members of the flea beetle genus *Lysathia* are known to feed on parrotfeather, and a weevil in its native range (*Listronotus marginicollis*) feeds only on parrotfeather. The fungus, an isolate of *Pythium carolinianum*, was found to reduce the vigor of parrotfeather in California.
- Triploid grass carp are **not** recommended as a control for parrotfeather. They have been tried as a control for milfoil species, but milfoils including parrotfeather are not palatable to them, and they will generally eat everything else in the waterbody first. Grass carp are not allowed in water bodies where the inlet and outlet cannot be screened.

SUMMARY OF BEST MANAGEMENT PRACTICES

- At all times at minimum a pamphlet HPA permit is required to do any activity that disturbs a lake bottom, wetland or streambed. For more extensive work, more specific permits will be required. **Contact the King County Noxious Weed Control Program for more information on current permitting requirements.**
- Hand pulling is recommended for small populations, with extreme care taken not to let fragments spread.
- Where a population has filled every possible inch of habitat, cutting or harvesting when done consistently can maintain open water and diminish the adverse affects of these species.
- Bottom barriers can maintain small areas of open water around boat launches, swimming areas or docks, as long as care is taken to keep them free of debris and fragments.
- To eradicate large areas of parrotfeather , herbicides are the most feasible option.
- **Do not apply any herbicide to water without the proper licenses and permits.** It may be best to hire a licensed and experienced contractor for an herbicide application in water.

Control in small isolated or constructed ponds

- Permits may be required.
- Manual control can work if the infestation is caught early and all fragments are removed.
- Bottom barriers may work to smother very small infestations if complete coverage can be achieved.
- Follow recommendations above for chemical control.

Control in small lakes

- Permits will be required for all control work.
- Community involvement will be essential for successful control efforts.
- For small pioneering infestations, manual control or bottom barriers may be effective. Monitor the lake for fragments and additional infestation sites. Maintain bottom barriers for at least twelve months.
- For large infestations, chemical control may be the most effective. Mechanical control may be used to manage infestations in cases where parrotfeather covers all available habitat, but will not eradicate the weeds.

Control in flowing water (rivers, streams, ditches)

- Permits will be required for all control work.
- The most effective control will start with the furthest upstream infestation and move downward. If there are weeds left upstream, any cleared site will likely be re-infested.
- If possible, contain the area being controlled with a boom to catch fragments before they float downstream.
- Manual control may be the most practical. Bottom barriers need to be securely anchored.
- Chemical control in flowing water is difficult. Consult an expert before considering this option.

Disposal Methods

- Parrotfeather can be placed in yard waste bins, composted, or left on land to dry out and/or decompose where it will not move into a waterway .
- Never dispose of parrotfeather into waterways, wetlands, or other wet sites where it might grow and spread.

References

http://www.hear.org/pier/species/myriophyllum_aquaticum.htm

<http://www.ecy.wa.gov/programs/wq/plants/weeds/aqua003.html>

http://www.ceh.ac.uk/sci_programmes/documents/ParrotsFeather.pdf