BEST MANAGEMENT PRACTICES FOR

Yellow Flag Iris

in the Metro Vancouver Region

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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

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INVASIVE SPECIES COUNCIL OF METRO VANCOUVER

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4730 Kingsway, Burnaby, British Columbia, V5H 0C6
metrovancouver.org

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Introduction

The impacts of invasive species on ecological, human, and economic health are of concern in the Metro Vancouver region. Successful control of invasive species requires concerted and targeted efforts by many players. This document - **"Best Management Practices for Yellow Flag Iris in the Metro Vancouver Region"** - is one of a series of species-specific guides developed for use by practitioners (e.g., local government staff, crews, project managers, contractors, consultants, developers, stewardship groups, and others who have a role in invasive species management) in the region. Together, these best practices provide a compendium of guidance that has been tested locally by many researchers and operational experts.

Yellow flag iris[1] was introduced to North America from the temperate regions of Eurasia as an ornamental wetland plant in the early 1900s (King County, 2009). Prized for its attractive yellow flowers and dense growth it was planted heavily in ornamental gardens across the continent. Yellow flag iris has also been used in sewage treatment cells and for erosion control due to its tolerance of contaminated soils.

Yellow flag iris has a historical significance as its flowers may be the inspiration for the fleur-de-lis, a symbol that has its origins with Louis VII and the Crusades (Pojar & MacKinnon, 1994). It has now escaped into natural habitats across North America and throughout the Metro Vancouver region due to seed dispersal and rhizome fragmentation. Yellow flag iris will readily colonize freshwater and brackish riparian areas including canals, ditches, marshes, shorelines and wetlands. While yellow flag iris can tolerate saline conditions, evidence suggests its growth is reduced in these areas (Mopper, Weins, & Goranova, 2016).

Academic institutions, government, and non-government organizations continue to study this species in British Columbia. As researchers and practitioners learn more about the biology and control of yellow flag iris, it is anticipated that the recommended best management practices will change over time and this document will be updated. Please check metrovancouver.org regularly to obtain the most recent version of these best management practices.

1 Yellow flag iris (Iris pseudacorus) is also known by the common names yellow iris, pale yellow iris, and yellow flag.

REGULATORY STATUS

Yellow flag iris is classified a noxious weed within all regions of the province under the BC Weed Control Act, Weed Control Regulation, Schedule A, Part II – Regional Weeds. The Act states that "an occupier must control noxious weeds growing or located on land and premises, and on any other property located on land and premises, occupied by that person".

Section 2 (1) (b) (iii) of the Community Charter, Spheres of Concurrent Jurisdiction, states that "municipalities may regulate, prohibit and impose requirements in relation to the control and eradication of alien invasive species", which includes yellow flag iris.

Section 47 (1) of the Forest and Range Practices Act, states that "a person carrying out a forest practice or a range practice must carry out measures that are (a) specified in the applicable operational plan, or (b) authorized by the minister to prevent the introduction or spread of prescribed species of invasive plants". Yellow flag iris is listed in the Invasive Plant Regulation under this Act.

CREDIT: ISCMV

IMPACTS

Yellow flag iris is tolerant of many site conditions, including freshwater, brackish and saline environments (District of Saanich, 2011) and can withstand extended periods of drought. Its seeds can spread downstream of parent plants and new colonies can establish in undisturbed areas. These abilities make yellow flag iris a strong competitor in a wide variety of habitats across North America (King County, 2009).

Once established, yellow flag iris grows and spreads rapidly, displacing native wetland plants to form dense colonies. It readily outcompetes native cattails, sedges, and rushes, reducing habitat for birds, fish, and amphibian species (King County, 2009).

The aggressive growth habit of rhizomes can have many negative impacts to the structure of riparian environments. Dense stands of yellow flag iris compact soils and increase sedimentation by slowing watercourses, further favouring colonization by the species. Wetlands and watercourses can be converted into drier ecosystems, increasing habitat loss. In one often cited case, an annual loss of 25 centimetres in-stream width was observed in Montana due to this process (King County, 2009). This drying process can also impact infrastructure by clogging ditches and canals. Drainage intakes and irrigation pipes can also be clogged by seeds (Stone, 2009).

All parts of the yellow flag iris plant are poisonous to humans. Plant material contains resins that can cause skin irritation and blistering and can sicken livestock if ingested (ISCBC, 2017).

REPRODUCTION AND SPREAD

Yellow flag iris is a perennial plant that reproduces vegetatively (through rhizomes) and sexually (through seeds). Seeds are large (7 millimetres across) and can float due to air pockets underneath a hard outer shell. One study found that 99.1% of seeds were viable, and that seeds are likely the primary driver of dispersal, though other reports indicate low viability (Gaskin, Pokorny, & Mangold, 2016; Morgan, Berent, & Fusaro, 2019). Seeds can easily float for extended periods of time and there is a potential to spread great distances downstream in a watercourse. Reports indicate that seeds will typically germinate only once deposited on a shoreline edge rather than underwater (King County, 2009).

In addition to spreading by seed, yellow flag iris readily spreads by rhizome. Just as with seed dispersal, living rhizomes fragments can be transported downstream after breaking off a plant or during flood conditions. Undisturbed rhizomes will also spread outward to create large clonal colonies along a shoreline. As the rhizome spreads outward, a dense mat is formed.

While yellow flag iris is recognized as a provincially noxious weed and should no longer be sold in BC, it is still sold and freely distributed in many jurisdictions across North America. Yellow flag iris is likely being propagated and shared between individual gardeners. Illegal green waste dumping or improper disposal of rhizomes may also contribute to the spread of this noxious weed.

HABITAT AND DISTRIBUTION

Yellow flag iris can tolerate a wide range of salinities and pH levels and is highly tolerant of anoxic (depleted of dissolved oxygen) conditions (Whatcom County Noxious Weed Control Board, 2020). These plants prefer rich and moist environments including riparian areas of streams, ponds, wetlands, shorelines, and ditches. Yellow flag iris thrives in silty soils but will root in rocky substrates as well. Since rhizomes are tolerant of extended periods of drying, plants can colonize ephemeral (short-lived) wetlands (ISCBC, 2017).

Yellow flag iris is found throughout the Southern Coast and Interior of BC including the Okanagan Valley, North Thompson, Shuswap, Central Cariboo, Similkameen Valley, Christina Lake, Vancouver Island and many isolated sites across BC (ISCBC, 2017).

CLIMATE ADAPTATION

Climate modellers predict that the Metro Vancouver region will experience warmer temperatures; a decrease in snowpack; longer dry spells in summer months; more precipitation in autumn, winter and spring; more intense extreme events; and an extended growing season (Metro Vancouver, 2016). In the past, our region had an average growing season of 252 days. In lower elevations 45 days will be added to the growing season by the 2050s, and 56 days by the 2080s, resulting in nearly a year-round growing season of 357 days on average. In higher elevation ecosystems the growing season length will increase by 50% to 325 days by the 2080s (Metro Vancouver, 2016). These changes will likely stress sensitive ecosystems, increasing their vulnerability to invasive species.

No specific information on how yellow flag iris will adapt to climate change was found in the literature, but it is speculated that this species may benefit from our future climate in several ways:

- **Extended growing season:** Extended growing seasons may limit or eliminate the period of winter dormancy.

- **Warmer temperatures:** Yellow flag iris has been found as far north as 68 degrees in Scandinavia (King County, 2009). There is a potential for the plant to establish in more Northern regions if conditions become more favourable. Warmer temperatures could also reduce or eliminate the period of winter dormancy.
- **Increased precipitation and flooding:** Predictions for the Metro Vancouver region with the potential to expand yellow flag iris occurrences include increased riverine and coastal flooding, warmer and wetter winters, and more frequent and intense rain events (Metro Vancouver, 2016). Since yellow flag iris can spread when transported by water, these potential impacts represent a risk for expansion of current populations.

Identification

Yellow flag iris stalk, leaves and flower
CREDIT: ISCMV

Yellow flag iris stalk, leaves and flower
CREDIT: ISCMV

The following identification information was compiled from the Invasive Species Council of BC (ISCBC, 2017) and Alberta Invasive Species Council (Alberta Invasive Species Council, 2014).

General: Perennial, evergreen herbaceous plant that forms dense cover in wet areas. Leaves may remain green during mild winters (Whatcom County Noxious Weed Control Board, 2020).

Stems: Stems grow to a maximum height of 150 centimetres, though usually not exceeding the height of the leaves; one to several stems per plant.

Leaves: Green and sword shaped with parallel veins. Leaves are erect, usually up to 90 centimetres in length and 3 centimetres wide. Leaves have a raised midrib, and narrow to a point. Usually about 10 leaves occur per individual clump.

Flowers: Flowers are bright yellow between 7 and 10 centimetres across with three sepals and 3 smaller erect petals. Flowers appear sequentially on the stems with 4-12 flowers per inflorescence. Flowers usually emerge May-June.

Fruits: Dry 4-7 centimetres long capsules (resembling small green bananas) have many brown seeds. Seeds are arranged in 3 rows within the capsule. Seeds have a hard shell and can float. Little is known about seed bank persistence.

Roots: Thick rhizomes form dense mats of roots. Rhizomes can withstand several months of drying.

The following photos show yellow flag iris plant parts.

Leaves

Flower

CREDIT: ISCMV

Seed pods with seeds

CREDIT: ISCMV

SIMILAR SPECIES

NATIVE SPECIES

Common cattail (Typha latifolia) is native to BC (E-Flora BC, 2019) and resembles yellow flag iris when not in bloom. Cattail has distinctive cigar shaped flower/seed heads, a rounded stalk at the base (iris has a flat stem base) and is generally much larger with leaves 1.5 to 3 metres tall (as opposed to under 1.5 metres for iris).

NON-NATIVE SPECIES

Yellow flag iris can be indistinguishable from many other ornamental irises when not in bloom. Ornamental rhizomatous irises have a very similar appearance to yellow flag iris. Many plants in this genus have a similar growing habit (dense growth in wet sites). The most evident trait distinguishing yellow flag from other irises is its bright yellow flower. For example, Western blue flag (Rocky Mountain iris; Iris missouriensis) can only be differentiated from yellow flag iris by its purple/blue flowers. It can also look quite similar to a number of popular garden varieties of iris.

Common cattails

CREDIT: DENDROICA CERULEA VIA FLICKR

Western Blue Flag Iris

CREDIT: BLUERIDGEKITTIES VIA FLICKR

Tracking

The provincial government maintains the Invasive Alien Plant Program (IAPP) application (BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development 2017), which houses information pertaining to invasive plant surveys, treatments, and monitoring. Many agencies, including local governments, have their own internal invasive species inventory and mapping protocols that are used by staff, contractors, and (in some cases) the public. For example, the City of North Vancouver has its own system called AlienMap. Agencies in British Columbia that do not enter data into IAPP are encouraged to check it regularly because it contains public reports and data from other agencies. It is important to consider as much data as possible when making management decisions. The Map Display module of IAPP is publicly accessible.

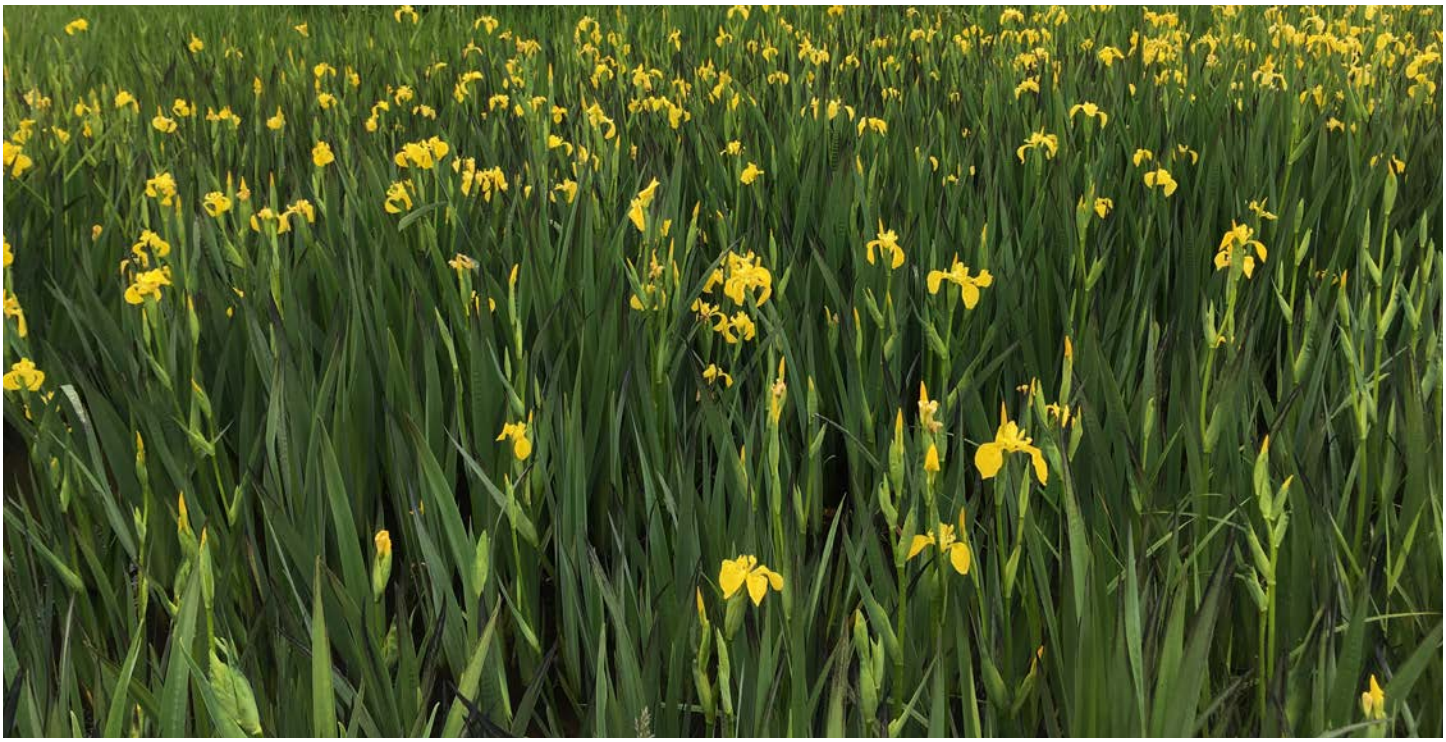
When carrying out a yellow flag iris inventory it is useful to record the following information as it will later inform treatment plans:

- Size and density of infestation;
- The suspected source of infestation (e.g., green waste dumping, spread from an adjacent private garden, etc.);
- Proximity to non-target vegetation;
- Location (GPS);
- Environmental conditions (aquatic, upland etc.); and
- Accessibility notes and safety factors.

Reporting

Since yellow flag iris is common throughout the Metro Vancouver region and does not pose an imminent health or safety risk, there is generally little urgency in reporting individual occurrences. However, as mentioned above, tracking occurrences can improve monitoring and control strategies across the region.

CREDIT: EVAN BORNHOLTZ VIA FLICKR



CREDIT: ISCMV

Prevention and Control Strategies

Effective invasive plant management may include a variety of control techniques ranging from prevention, chemical, manual, mechanical, biological and/or cultural methods. Each method is described below in order of effectiveness.

Yellow flag iris can be controlled through manual/mechanical techniques. The techniques used and the number of years required are dependent on the size and complexity of infestation, and site characteristics. Chemical treatment can be effective; however, there are currently no aquatic herbicides approved for use in Canada, limiting the current usefulness of this treatment method.

Follow-up monitoring and treatment will be required for several years regardless of the treatment technique.

STRATEGY COLOUR LEGEND

GREEN: RECOMMENDED

ORANGE: CAUTION

RED: NOT RECOMMENDED OR NOT AVAILABLE

PREVENTION: IMPERATIVE

Prevention is the most economical and effective way to reduce the spread of yellow flag iris over the long term.

When working in or adjacent to yellow flag iris, it is best to inspect and remove plants, plant parts, and seeds from personal gear, clothing, pets, vehicles, and equipment and ensure soil, gravel, and other fill materials are not contaminated with yellow flag iris before leaving an infested area. Plants, plant parts, and seeds should be tarped or bagged before transport to an appropriate disposal site (see Disposal section).

Regional native or non-invasive plants should be used in place of yellow iris when designing gardens. The Invasive Species Council of BC's 'Grow Me Instead' Program or Metro Vancouver's Grow Green website provide recommendations for non-invasive, drought-tolerant plants, and garden design ideas. All materials (e.g., topsoil, gravel, mulch, compost) should be weed-free. Healthy green spaces are more resistant to invasion by invasive plants, so it is also important to maintain or establish healthy plant communities.

If yellow flag iris is already present in a garden, it is critical to prevent the plant from expanding and invading adjacent wetlands and watercourses.

MANUAL/MECHANICAL: RECOMMENDED

Manual/mechanical control is currently the only available option for the control of yellow flag iris populations in BC. When determining the appropriate control method for a site, it is important to consider the long-term impacts of repeated, intensive foot traffic that is often inherent with manual control methods (Crosby, 2018). The method of installation and size of the site should be considered when deciding which manual control option will create the least possible disturbance. The following manual/mechanical methods can be used to control yellow flag iris (Tarasoff & Steichert, 2015).

- **Hand removal:** The plant can be hand pulled, although removal of large infestations (>1 m2) can be time consuming and poses risk for recolonization or spread. Complete removal of the rhizome system is necessary since any rhizome parts left behind can propagate new aerial stems. Hand removal is an effective option if the site size is manageable and where other control options may cause a greater disturbance to the site. Additionally, any parts of the rhizome system that are dislodged in removal can be transported within the watercourse and create new infestations. Other issues that may hinder hand removal efforts include accidental dispersal by dislodging seeds that float away, water turbidity, transportation of removed plants off site for disposal, and accidental removal of any dormant native tubers, bulbs and seeds in the soil bank. Follow-up monitoring and maintenance are essential if hand removal is the chosen control option.
- **Benthic Barriers / Matting:** Non woven PVC matting can be used to effectively control terrestrial and aquatic populations by creating a barrier that traps toxic acetaldehyde gas in the plant's rhizomes. Acetaldehyde gas is a by-product of anaerobic transpiration and thus the more the plant is in an anaerobic condition the faster the treatment effect will occur (Tarasoff, et al., 2016). All aboveground material should be cut to the ground prior to cover placement. The cutting of aboveground growth can help prevent air bubbles from forming under matting and accelerate the death of the root systems. Mats should extend 20 centimetres past the last cut stem to ensure non-vegetative rhizomes are captured in the treatment. Treatment locations should be flagged prior to cutting to ensure everything is covered during mat placement.

Matting material should be of sufficient durability (18-ounce PVC vinyl) to prevent the sharp tips of emerging yellow flag iris leaves from penetrating the fabric. Regular woven fabrics are not sufficient but aquatic-safe pond liners, and 18 oz. polyvinyl chloride (PVC) mats have been used successfully. For aquatic populations, consideration should be given to what material is used in order to ensure it does not leach toxic substances into sensitive water bodies. Some materials may not be safe for use in sensitive aquatic areas (e.g. re-purposed conveyer belts that could be contaminated). Matting material should be secured at the edges of the treatment area using a 'tuck in' method. This involves slipping the edges of the mat into the soil using a shovel or spade. Long 25 centimetres spikes and heavy objects (rocks, bricks) should be used to secure the matting and prevent movement off-site (Tarasoff C. , 2019). It is imperative that there are no gaps or 'open edges' of the matting.

The use of matting as a control method is often successful if left in place for a single growing season (early spring to winter) but may take up to a full year for larger infestations. There appears to be a strong relationship between time spent under anaerobic respiration conditions and rate of treatment effect. The more saturated the soils the faster the treatment effect. Very saturated sites may be successfully treated in as little as four months while terrestrial populations often take significantly longer. Sites with uneven or rocky ground may complicate the installation of benthic barrier mats and necessitate the incorporation of other control methods (i.e. hand removal).

Monitoring is recommended during treatment to ensure that the cover remains in place and that no new plants have emerged at the edges of the matting. A treated area must be completely disconnected from any untreated area by completely severing the rhizome connection between the rhizome under the matting and those outside of the matting. Use a flat headed shovel to slice through the rhizome mat about 20 centimetres deep. If there is any connection between areas treated and those untreated then the rhizomes under the mat can off-gas using the untreated plants (Tarasoff C. , 2020).

- **Cutting:** Consistently submerged plants (at least 5 centimetres underwater year-round) can be effectively controlled by cutting them at the base of the plant (Simon, 2008). Anaerobic transpiration produces acetaldehyde, a toxic gas usually released through plant stomata. When the parts of plant that are above the surface of the water are removed, the gases have no mechanism for release and will destroy the cell membranes of the root system. If water levels at the site can be controlled, this can aid in accessing the plants for control while water levels are low (Tarasoff & Steichert, 2015). Plants will still need to remain submerged beneath at least 5 centimetres after cutting for a full year for successful treatment.

  Because underground root systems can often be connected in large patches, it is important to use matting simultaneously for any terrestrial plants adjacent to cut submerged plants. This matting prevents the terrestrial portion from allowing off-gassing from submerged cut stems (Tarasoff C. , 2019).

APPLYING MANUAL/MECHANICAL CONTROL METHODS IN RIPARIAN AREAS

Yellow flag iris often grows in large contiguous patches along the edge of water courses. Consider the impact of control techniques and the resulting bare soil on aquatic environments. Coordinate removals during periods that minimize the risk to fish species; outside of the fish window. Adhere to provincial and federal riparian regulations. Consult with a qualified environmental professional when working around water bodies. A notification may be required for control of aquatic populations under the Water Sustainability Act.

Deer Lake, Burnaby yellow flag iris treatment: cut iris in preparation for cover

CREDIT: DIAMOND HEAD CONSULTING

Deer Lake, Burnaby yellow flag iris treatment: installed cover

CREDIT: DIAMOND HEAD CONSULTING

CHEMICAL: NOT AVAILABLE

When alternative methods to prevent or control invasive plants are unsuccessful, professionals often turn to herbicides. Chemical treatments using aquatic-safe herbicides (glyphosate or imazapyr based) are used to control yellow flag iris in the United States, however these products are not approved for use in Canada.

CULTURAL: NOT AVAILABLE

There are no documented cultural control methods for yellow flag iris.

BIOLOGICAL: NOT AVAILABLE

There are currently no biocontrol options available in British Columbia for yellow flag iris.

CONTROL SUMMARY

The following table provides a summary and comparison of control methods for yellow flag iris (adapted from (Tarasoff & Steichert, 2015)).

CONTROL STRATEGY	TECHNIQUES	APPLICABLE SITE TYPE	PROS	CONS
Manual	**Hand removal**	Small sites (<1 metres^2), diffuse patches, environmentally sensitive areas	Selective, low risk to environment, low cost	Chance of spreading infestation, difficulties with transport and disposal of excavated plants and soil
Manual	**Benthic Barrier / Matting**	Terrestrial or aquatic sites	High efficacy, low risk to environment if appropriate material used	High cost for cover material
Manual	**Cutting**	Aquatic sites with at least 5 centimetres of water depth year-round	High efficacy, low risk to environment	Can be challenging to implement in some water bodies, access constraints, still need to treat any terrestrial portions of the population
Chemical	**Chemical treatments using aquatic-safe herbicides are not approved for use in Canada**			
Cultural	**No documented cultural controls are known**			
Biological	**No biological control agents are currently available in British Columbia**			

Disposal

Yellow flag iris should not be composted at home or at municipal works yards as the temperature may not be high enough to kill rhizomes and seeds. Further, yellow flag iris rhizomes can survive extended periods of desiccation, and regenerate if returned to moist conditions following composting. Burning is not recommended as rhizomes can survive extreme temperatures (ISCBC, 2017).

All manually removed plant parts should be collected in thick plastic bags or in tarps for off-site disposal to prevent re-growth. Plants should be transported to transfer stations or landfill sites in a tarped vehicle to prevent spread in transit. In the Metro Vancouver region, several facilities accept yellow flag iris plants and/or infested soil. Please consult this disposal facility list for current details. Note that there are limits to how much soil can be included in biomass for disposal.

PLEASE CONTACT ALL FACILITIES BEFOREHAND TO CONFIRM THEY CAN PROPERLY HANDLE THE MATERIAL.

CLEANING AND DISINFECTION[2]

Before leaving a site, all visible plant parts and soil from vehicles, equipment, and gear should be removed and rinsed if possible. When back at a works yard or wash station, vehicles should be cleaned and disinfected using the following steps:

- Wash with 180 °F water at 6 gpm, 2000 psi*, with a contact time of ≥ 10 seconds on all surfaces to remove dirt and organic matter such as vegetation parts or seeds. Pay special attention to undercarriages, chassis, wheel-wells, radiators, grills, tracks, buckets, chip-boxes, blades, and flail-mowing chains.
- Use compressed air to remove vegetation from grills and radiators.
- Sweep/vacuum interior of vehicles paying special attention to floor mats, pedals, and seats.
- Steam clean poor access areas (e.g., inside trailer tubes) – 200 psi @ 300 °F.
- Fully rinse detergent residue from equipment prior to leaving facility.

* Appropriate self-serve and mobile hot power-wash companies in the Metro Vancouver area include: Omega Power Washing, Eco Klean Truck Wash, RG Truck Wash, Ravens Mobile Pressure Washing, Hydrotech Powerwashing, Platinum Pressure Washing Inc, and Alblaster Pressure Washing. Wash stations should be monitored regularly for yellow flag iris growth.

2 Adapted from Metro Vancouver 2017 Water Services Equipment Cleaning Procedures and Inspection Protocols.

Follow-up Monitoring

Whatever control method is used, follow-up monitoring and maintenance treatments are components of an integrated management plan or approach.

Manual treatments are often not successful in eliminating yellow flag iris populations. It is likely that some plants will be missed during the initial treatment and that re-sprouting will occur from fragments of plants left behind. Monitoring is also required for matting or cutting methods to ensure that no new regrowth occurs at the edges of the treated area. Plants at the margins of a treatment site can act as a "snorkel" for submerged or covered plants and allow transpiration to continue, keeping treated populations alive (Tarasoff, et al., 2016).

Monitoring recommendations vary depending on the control method(s) and site characteristics. If manual removal is used, monitoring and maintenance may be required for several years to prevent re-establishment. For benthic barriers and the cutting of submerged vegetation, monitoring is essential during treatment to ensure that covers remain in place and that no new plants have emerged at the margins of the treatment site. Follow up monitoring after removal of the matting is recommended in the following year to ensure that no plants were missed during treatment.

Restoration

Restoration is recommended to create competition, control yellow flag iris regrowth, replace lost habitat, and potentially reduce erosion. Since yellow flag iris infestations can be dense, there is often limited native vegetation remaining and therefore planting may be necessary. In some cases, however, suppressed native species may re-emerge following control of flag iris populations. Monitoring a year following removal to determine if native vegetation re-emerges can inform restoration requirements. Site conditions should dictate the need for active restoration.

Examples of common competitive native species prescribed for sites within Metro Vancouver are summarized in the table below.

WET SITES	MOIST SITES
SHRUBS	
Salmonberry	Salmonberry
Hardhack	Willow
Willow	Red osier dogwood
Red osier dogwood	Red elderberry
Pacific ninebark	Vine maple
Sword fern	Indian plum
Deer fern	*Sword fern*
TREES	
Western red cedar	Western red cedar
Red alder	Red alder
Sitka spruce	

Replacement species should be chosen based on the ecology of the site by a qualified environmental professional. Local biologists, environmental professionals, agronomists, agrologists, native and domestic forage specialists, seed companies, and plant nurseries are all good sources for localized recommendations for regional native species. Several science-based resources are available to guide restoration efforts, such as the South Coast Conservation Program's Diversity by Design restoration planning toolkit.

Plants listed in the Similar Species section would also be suitable restoration species for yellow flag iris.

Yellow flag iris sites are often found in areas with existing, or potential, wildlife populations that can damage restoration plantings (deer, beaver, muskrat, vole, etc.). Therefore, any revegetation plan must consider impacts from wildlife and utilize appropriate mitigation measures to protect the restoration and existing native plantings (tree wrapping, exclusion caging/fencing, vole guards, etc.).

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Additional Resources

For more information please refer to the following resources.

- BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development, Invasive Alien Plant Program (IAPP). www.gov.bc.ca/invasive-species
- E-Flora BC, an Electronic Atlas of the Plants of BC www.eflora.bc.ca/
- Grow Green Guide. www.growgreenguide.ca
- Grow Me Instead. https://bcinvasives.ca/resources/programs/plant-wise/
- Invasive Species Council of British Columbia, yellow flag iris Factsheet: https://bcinvasives.ca/documents/Yellow_Flag_Iris_TIPS_2017_WEB.pdf
- Pesticides and Pest Management. Province of British Columbia https://www2.gov.bc.ca/gov/content/environment/pesticides-pest-management

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To submit edits or additions to this report, contact Laurie Bates-Frymel, Senior Regional Planner at laurie.bates-frymel@metrovancouver.org.


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