

Staff Report

Origin

Staff have been managing two priority infestations of the invasive aquatic plant species Brazilian Elodea at Mariner's Village and Parrot's Feather at Shell Road in the City's drainage network. This report summarizes the City's management activities to date regarding these infestations and provides information on future management initiatives at each location.

This report supports Council's 2014-2018 Term Goal #6 Quality Infrastructure Networks:

Continue diligence towards the development of infrastructure networks that are safe, sustainable, and address that challenges associated with aging systems, population growth, and environmental impact.

6.1 Safe and sustainable infrastructure

Background

Council adopted the Enhanced Pesticide Management Program (EPMP) and the *Pesticide Use Control Bylaw No. 8514* in 2009 with the objective of eliminating the use of traditional pesticides for cosmetic purposes. The EPMP is comprised of five components including corporate reduction, education and community partnerships, senior government regulation, municipal regulation and cost/resource implication, and was a leading initiative in BC when adopted. Staff attribute the program's successful implementation and community acceptance to a strong framework of public consultation and education. Staff developed broad-based education workshops and dedicated communication resources to support the public and strengthen invasive species education and awareness in Richmond. The EPMP has been well-received in the community and feedback from the public has demonstrated a keen awareness of the Bylaw and willingness for voluntary compliance as a result.

The Invasive Species Action Plan was adopted by Council in 2015 pursuant to the EPMP. The Invasive Species Action Plan establishes a strategic, risk-based approach to prioritize immediate threats to civil infrastructure and human health by invasive species. There are currently eight priority invasive species listed in the Invasive Species Action Plan including Brazilian Elodea and Parrot's Feather that pose a risk to civil infrastructure and human health, in some cases. The Invasive Species Action Plan enables Richmond to adapt and respond to these shifts and mitigate threats. The City has been proactively managing the spread of invasive species on City lands and providing support on privately-owned lands. The Invasive Species Action Plan has secured approximately \$625,000 in Capital funding since 2015 and \$225,000 in provincial funding as part of the Province's Early Detection Rapid Response program in 2018. This funding has been used to treat a total of 7 ha of knotweed along civic infrastructure and 1 ha of Brazilian Elodea at Mariner's Village. All treatments involving the use of herbicide for knotweed are conducted in accordance with the provincial *Integrated Pest Management Act* and the City's *Public Health Protection Bylaw No. 6989* for public notification.

Analysis

Brazilian Elodea

Brazilian Elodea (Elodea) is a candidate species for the Province's Early Detection Rapid Response program and is recognized as a priority species under the City's Invasive Species Action Plan. Staff were notified by the Strata of Mariner's Village to the presence of Elodea in the water feature in 2014, which was likely the result of the improper disposal of aquarium contents. The Elodea has since spread throughout the water feature but has remained contained within this area to date.

Mariner's Village is a local condominium development located between 11291 and 11491 7th Avenue that consists of several single-family and multi-family dwellings. A water feature is located adjacent to the development on City property, situated between Mariner's Village and the west dike. The water feature is approximately 500 m long by approximately 25 m wide and forms part of the City's drainage system in the area.

City efforts in 2017 resulted in provincial funding in the sum of \$225,000 being dedicated to support the City with Elodea management efforts over the next three years. A portion of this money was used in February 2018 to dewater the northern portion of the water feature and successfully expose the plant to cold conditions. Staff regularly monitored the effects of the trial during the remainder of 2018 and completed the following initiatives:

1. Hosted a community Open House at the Steveston Community Center (in partnership with the Province) to inform residents of the City's priority invasive species and introduce the use of aquatic herbicides as a tool to manage Elodea;
2. Completed a post-treatment survey of the trial area to monitor the Elodea's response to the winter exposure (results outlined below); and
3. Procured a specialized suction dredge service provider to mechanically remove additional Elodea from the southern portion of the water feature.

Current State

Staff have continued to monitor the results of the winter exposure during 2018 and have noted significant results in the trial area. A pre-trial survey identified the total area of Elodea growth in the northern portion of the water feature to be 460 m². Survey results in 2018 suggest that the infestation has been reduced by approximately 85%. In addition, Staff have noted a healthy resurgence of native vegetation such as rushes and sedges in the trial area as a result of the soil turning efforts that has enhanced the avian habitat available for nesting and foraging.

An invasive species Open House was held at the Steveston Community Center in June 2018 in conjunction with provincial staff. Approximately 25 community members (largely residents of Mariner's Village) were in attendance to participate in a meaningful discussion regarding invasive species and the use of potential aquatic herbicides for persistent species such as Elodea. Participants were receptive to the use aquatic herbicides and appreciative of the City's efforts to date at Mariner's Village. Maintenance activities alone are expected to control the infestation on a seasonal basis but staff anticipate that a combination of mechanical and herbicide treatments may be necessary eradicate the plant.

Staff coordinated a mechanical removal program for the southern portion of the water feature in August 2018. Specialized suction dredge equipment was mobilized to treat an area of approximately 5,500 m². Crews completed a 16-day program that removed 850 bags of Elodea biomass (Attachment 1). Comments received by the City from the Mariner's Village residents during the program were all very positive.

Public Consultation

Staff committed to maintaining strong and effective communication with the residents of Mariner's Village as supported in the Invasive Species Action Plan. Staff hosted residents of Mariner's Village multiple times to collect their feedback on potential management strategies and have maintained an open dialogue their representatives as management efforts to treat the Elodea evolve. Mariner's Village residents have demonstrated a keen interest in assisting the City by actively engaging staff with helpful information and positive feedback since establishing regular communication in 2017.

Staff anticipate organizing an additional meeting with Mariner's Village residents to discuss dewatering the entire water feature in the winter of 2018/2019. Staff will collect feedback and make any necessary modifications to the proposed dewatering plan currently underway. Efforts will also be made to update communication resources such as the invasive species website to include information relating to the City's winter trial and management results.

Next Steps

Staff are proposing to drain the entire water feature (north and south of the foot bridge) this winter to stress the Elodea a second time and will use the existing weir to facilitate dewatering in the winter of 2018/2019 following consultation. All costs will be funded through the provincial grant funding.

Staff will be working with the Province in 2019 to initiate the Pesticide Use Permit (including a stakeholder consultation period) and secure this management option to treat the Elodea should the winter trials and mechanical removal efforts continue to yield re-growth.

Parrot's Feather

Parrot's Feather is a persistent aquatic plant similar to Elodea that has the ability to displace native aquatic vegetation and impede drainage in the City's open watercourse network. Parrot's feather was first detected at Garry Point Park in 2007 and is now established in most neighborhoods containing open drainage infrastructure. Management efforts are particularly challenging for this species because it has the ability to rapidly spread by plant fragments. Management options are currently limited to general maintenance practices including mechanical removal, which can inadvertently contribute to its spread by fragmenting and dispersing plant roots and stems. The potential use of aquatic herbicide as a management tool is also limited because there are currently no licenced products available in Canada to effectively target the species.

Staff continue to promote community stewardship initiatives such as the ‘Don’t Let it Loose’, ‘Choose Non-invasive’ and ‘Clean, Dry, Drain’ programs intended to educate residents and local businesses of the potential adverse effects of invasive species (Attachment 2). The City has also been conducting a series of management trials in various Richmond neighborhoods since 2013 to better understand plant physiology and reduce drainage maintenance costs. Trials have focused on studying the plants reaction to varying shading techniques and developing innovative restoration procedures that utilize geotextile fabric and clean river sand to discourage regrowth (Attachment 3). Results have been encouraging in smaller open drainages but staff have encountered some issues applying these methods to the City’s larger canals such as the Shell Road Canal.

Shell Road Canal is one of the City’s major open drainages that conveys water towards the Horseshoe Slough through a 450 ha catchment area. The canal has an average width of 6 m, is approximately 2.5 km long and makes up a portion of the Shell Road Recreational Trail. Parrot’s Feather is present throughout the canal but has been observed by staff to be most dense between Athabasca Drive and Williams Road. The City is currently reliant on mechanical removal as a primary management tool for the canal and have been coordinating maintenance programs on a three-year cycle (included in 2018), or on an as needed basis to protect infrastructure.

Current State

The same section dredge equipment was also deployed to the Shell Road Canal following Mariner’s Village to remove Parrot’s Feather biomass (Attachment 4). The equipment was mobilized to the area of the canal between Athabasca Drive and Anahim Drive, however, unfavorable substrate conditions and low water levels limited the crew’s progress. A total of 165 bags of Parrot’s Feather were still harvested from the canal with the section dredge equipment.

Results of the maintenance work will be monitored during the next growing in spring 2019.

Public Consultation

Staff continues to work with industry experts such as the Invasive Species Council of BC and the Provincial Government to identify advances in Parrot’s Feather management. Data collected from our field trials are shared with regional partners to strengthen relationships and promote invasive species management in the Lower Mainland. Staff updates communication resources to inform local residents of the challenges and outcomes of our industry-leading initiatives and maintain a 24-hour call line that residents can access to report invasive species sightings or to speak with a city representative.

In addition, all maintenance activities and trial events for managing Parrot’s Feather are supported through informative signage that aligns with the public education and awareness objectives listed in the Invasive Species Action Plan.

Next Steps

Staff will continue to coordinate general maintenance activities at the Shell Road Canal and will be carrying out a winter trial to excavate and expose the substrate in 2018/2019. Results will be monitored throughout 2019.

Financial Impact

None.

Conclusion

The City of Richmond continues to be a leader among local municipalities in the Lower Mainland regarding invasive species management. Field trials to manage the Elodea infestation at Mariner's Village have been encouraging to date, however, staff will pursue a pesticide use permit in 2019 as a longer-term strategy for the water feature. Staff will continue to monitor the Parrot's Feather infestation within the City's open drainage network and perform mechanical removal programs until more effective management tools become available.



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- Att. 1: Suction dredge program in the southern portion of the Mariner's Village water feature
- Att. 2: Invasive species stewardship initiatives
- Att. 3: Parrot's Feather geotextile trials at the Hamilton Neighborhood
- Att. 4: Section dredge equipment at the Shell Road Canal

Attachment 1. Suction dredge program in the southern portion of the Mariner's Village water feature

Before (August 20, 2018)

After (September 7, 2018)





Invasive Species Action Month

Don't Let it Loose

June 2015

FACT SHEET

Invasive species are moving across BC and Canada at a rapid pace:

- In Canada, invasive species include at least 27% of all vascular plants, 181 insects, 24 birds, 26 mammals, 2 reptiles, 4 amphibians, several fungi and molluscs, and 55 freshwater fish.
- The cost of invasive species to Canada is between \$16.6 billion and \$34.5 billion per year. Invasive species cause increased maintenance costs to public parks and private property, devaluing real estate.
- Just six invasive plants caused an estimated combined damage of at least \$65 million in 2008. With further spread, impacts will more than double to \$139 million by 2020.
- Some of the most serious invasive species were originally sold as pets or plants for water gardens and aquariums.



Releasing pets into the wild is both inhumane and dangerous:

- British Columbia is home to several introduced invasive pet species; pet owners release these species thinking it is a humane way to get rid of the animal.
- Although most released exotic pets will die from starvation or be killed by a predator or a car, however several species have the ability to thrive and reproduce in their new environment. Along with impacts on the environment, releasing invasive species has many economic and social impacts.
- Releasing an exotic pet into an unsuitable habitat is considered animal cruelty and charges can be laid (BC SPCA).
- Charges for neglecting a pet, including releasing it into the wild, can include a fine up to \$10,000 and/or up to 18 months in prison (BC SPCA).
- The following exotic pet and plant species are commonly released into the wild, and have had serious impacts on BC's native ecosystems and natural flora and fauna:
 - Red Eared Slider Turtles
 - European Rabbit
 - Goldfish
 - Eurasian Watermilfoil
 - Parrot Feather
 - American Bullfrog
 - Brazilian Elodea
 - Koi Carp
- Plants and animals should never be released into the wild: For information on actions to take visit www.bcinvases.ca and www.bcinvasesmonth.com
- Any sightings of these or other invasive species should be reported to the local invasive species committee. (<http://bcinvases.ca/about/partners/>).



TD Friends of the
Environment
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Invasive Species Council
of British Columbia

Clean Drain Dry Program

SUMMARY REPORT 2015



Eurasian Watermilfoil
Photo: C. Evans, bugwood.org



Largemouth Bass
Photo: E. Engbretson, bugwood.org



Yellow Flag Iris
Photo: J. Craig



Northern Pike
Photo: Spinstia



Purple Loosestrife
Photo: J. West



American Bullfrog
Photo: R. North, bugwood.org

FOR MORE INFORMATION, CONTACT ISCBC:

www.bcinvases.ca | info@bcinvases.ca | 1-888-933-3722 | #100 - 197 North 2nd Ave., Willams Lake, BC V2G 1Z5 | ISCBC Charity Registration #856131578RR0001

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TOGETHER • PREVENT • RESTORE

BE  PLANTWISE

grow me
instead 



 AVOID USE
(Invasive)

Butterfly Bush
(*Buddleja davidii*)

Lewis's Mock Orange
(*Philadelphus lewisii*)

This **Grow Me Instead Brochure** profiles BC's most unwanted horticultural plants, along with their **recommended alternatives**.

A Guide for British Columbia 2013

Attachment 3. Parrot's Feather geotextile trial at the Hamilton Neighborhood



Attachment 4. Section dredge equipment at the Shell Road Canal

