



City of Richmond

Report to Committee

To: Public Works and Transportation Committee **Date:** September 22, 2017
From: John Irving, P.Eng. MPA **File:** 10-6125-04-01/2017-Vol 01
Director, Engineering
Re: **Richmond's Commitment to Pesticide Use Reduction and Invasive Species Management**

Staff Recommendation

That the staff report titled "Richmond's Commitment to Pesticide Use Reduction and Invasive Species Management" dated September 22, 2017, from the Director, Engineering, be received for information.

John Irving, P.Eng. MPA
Director, Engineering
(604-276-4140)

Att. 1

REPORT CONCURRENCE		
ROUTED TO:	CONCURRENCE	CONCURRENCE OF GENERAL MANAGER
Parks Services Sewerage & Drainage	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	
REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	INITIALS: 	APPROVED BY CAO

Staff Report

Origin

In 2009, Council adopted the Enhanced Pesticide Management Program (EPMP) and the *Pesticide Use Control Bylaw No. 8514* with the objective of reducing the use of traditional pesticides for cosmetic purposes. Target areas include Corporate Reductions, Education and Community Partnerships, and Senior Government and Municipal regulation.

In 2015, Council adopted the *Invasive Species Action Plan* (ISAP) under the EPMP, which set out a strategic, risk-based approach to prioritize the management of invasive species that pose an immediate threat to civil infrastructure and human health.

Both programs support Council's 2014-2018 Term Goal #4 Leadership in Sustainability:

Continue advancement of the City's sustainability framework and initiatives to improve the short and long term livability of our City, and that maintain Richmond's position as a leader in sustainable programs, practices and innovations.

4.2 Innovative projects and initiatives to advance sustainability; and

6.1 Safe and sustainable infrastructure.

Background

Enhanced Pesticide Management Program

When adopted, the EPMP was a leading initiative in BC recognized for the implementation of the *Pesticide Use Control Bylaw No. 8514* (Bylaw), the broad-based education programming, and the provision of technical support and training for the public, the landscaping industry and City staff.

To date, 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. Since its adoption, minimal amendments have been required to align the program with the provincial *Integrated Pest Management Act*. In addition, there have been an insignificant number of suspected pesticide infractions, which is a result of the City's strong community outreach and education programs.

Invasive Species Action Plan

Invasive species are organisms (plants, animals, fungus or bacterium) that are not native to the lower mainland. Since there are no local predators or diseases to control them, these species can have severe effects on the environment, health and economy because they can spread rapidly by out-competing native species. There are currently over two-dozen invasive species in Richmond including several high-risk species such as giant hogweed, parrot's feather and knotweed that pose a risk to civil infrastructure and human health, in some cases. As Richmond experiences climate change and associated ecological shifts that influence the proliferation of invasive

species, the Invasive Species Action Plan enables Richmond to adapt and respond to these shifts, as well as to evolving senior and local government priorities.

To mitigate these threats, the City has been proactively managing the spread of invasive species on City lands and providing support on privately-owned lands. The plan recommends 11 overreaching management strategies, further supported by a number of action items assigned as either short-term (1 – 2 years), medium-term (3 – 5 years), or long-term (5 years plus) priorities.

Since 2015, the ISAP has secured \$625,000 through Engineering's Capital Projects - Drainage Improvement section for the removal of parrot's feather and treatment of knotweed species located on or near City infrastructure. Outcomes related to these programs are summarized below.

This report showcases Richmond's commitment to pesticide use reduction under the EPMP and invasive species management. This report summarizes key achievements of both programs since the adoption of the ISAP in 2016, including a detailed version of initiatives in Attachment 1. The summary document in Attachment 1 will be posted online for the public, publicized through the City's social media channels and highlighted at community outreach events.

Analysis

Highlights of EPMP initiatives in 2016/17 include:

- The delivery of 49 Natural Lawn Care, Organic Garden and Fruit Tree Maintenance workshops reaching 733 residents, attendance at 11 community events, and distribution of approximately 3,000 brochures informing citizens of the Pesticide Use Control Bylaw education program;
- Responding to community interest and involving topics that include small-space gardening, resilient landscapes and growing herbs;
- Hosting workshops related to Environmental Sustainability's goals and accomplishments including bee identification, conservation and lifecycle workshops (in recognition of the Ecological Network strategy) and the Bridgeport Industrial Park – Pollinator Pasture;
- Ongoing partnership with local pesticide retailers. All the retail businesses visited by staff have agreed to display City brochures for the Pesticide Use Control Bylaw No. 8514. Retailers continue to make changes regarding to in-store pesticide availability. Due to the recent changes to the provincial *Integrated Pest Management Act*, pesticides are required to be under restrictive access to customers and more staff interaction with customers regarding the appropriate use of the pesticide is required. As a result, staff note a shift in pesticide availability and an increase in awareness in the sale of traditional pesticides;
- Amendments to the Water Use Restriction Bylaw No. 7784 to support nematode treatment for European chafer beetle; and
- A chafer beetle demonstration at Garden City park that showcases 3 popular seed mixes that are more resistant or resilient to European chafer beetle damage than common lawns.

Highlights of ISAP in 2016/17 include:

- The treatment of 261 knotweed plants equal to 2.5 hectares;
- A partnership with the province to suction dredge a water body on the West Dyke equal to 432m² and producing 84 bags of Brazilian elodea to be disposed of;
- Coordinating mechanical mowing trials along the West Dyke, which targeted approximately 3200m² of wild chervil;
- The installation of shading frames in the Hamilton community to assess the effectiveness of the method to control parrot's feather, removing parrot's feather from an area equal to 1250 m² and installing geotextiles in the Hamilton watercourses to reduce density and ultimately eradicate;
- Lead a webinar series with the Invasive Species Council of British Columbia, highlighting Richmond's efforts to date in parrot's feather management;
- For 'Invasive Species Action Month', set up a static display with weekly themes and engagement of 555 people through the City's social media pages;
- Distributing over 1800 native plants to community members at the Public Works Open House;
- Coordinating site tours of aquatic invasive species infestations across the city for members of the Invasive Species Council of Metro Vancouver and facilitated sample collection of European fire ants by a Simon Fraser University master student for lab rearing experiments;
- The City was highlighted in six Richmond News articles, one Vancouver Sun article and a CBC television interview, generally focusing on growing concerns in the region regarding invasive species, specifically European chafer beetle and parrot's feather; and
- Established or strengthened working relationships with various organizations provincially and regionally including:
 - Invasive Species Soil Working Group
 - Metro Vancouver Regional Invasive Species Task Force
 - Canadian Food Inspections Agency
 - Invasive Species Council of British Columbia
 - Invasive Species Council of Metro Vancouver

Financial Impact

None at this time. Additional funds received through annual capital budget requests further augment the capacity for staff to manage and deliver invasive species initiatives. Any additional funding needs (capital and/or operating) will be brought forward for Council consideration.

Conclusion

Since the inception of Richmond's Enhanced Pesticide Management Program, the City has actively demonstrated leadership in the reduction of traditional pesticide use and the management of invasive species. While the establishment and spread of invasive species will continue to be an ongoing challenge, the Invasive Species Action Plan provides proactive strategies to decrease the ecological impact and economic cost associated with the long-term management of invasive species.



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CP:th

Att. 1: Richmond's Commitment to Pesticide Use Reduction and Invasive Species Management
Update - 2017

City of Richmond

Richmond's Commitment to Pesticide Reduction & Invasive Species Management

EPMP & ISAP

2017 Update

CAUTION

NOTICE OF PESTICIDE USE

Treatment Area:

Date and Start Time of
Pesticide Application:

Alt Date:

Pest(s) to be Controlled:

KNOTWEED

Pesticide Active Ingredient(s):

Glyphosate Disopropylamine

Pesticide Registration Number (PCP):

Registration #29994

Precautions to Minimize Exposure to Pesticides:
DO NOT ENTER THE TREATED AREA



Pesticide User License: Wade McLeod
Name & Licence Number: 186450
Telephone Number: 604-317-8903

For emergency medical information contact B.C. Drug and Poison Information Centre 1-800-567-8911 or 604-682-5050

Knotweed Treatment Area

Knotweed is currently being treated in this area. Please refrain from entering the contained area or otherwise disturbing the knotweed. Once this area is accessible again, the herbicide will no longer be active on the surface.

Knotweed is a perennially listed noxious weed and has become a priority species in Richmond due to its The

Chemical treatment is a temporary solution to the species' exceptional regenerative capability enough to establish into a new plant.

Treatment Process

Treatment involves the application of a herbicide to the knotweed. The herbicide is applied to the knotweed and will kill the knotweed. The knotweed will not regrow.



Richmond City Council adopted the Enhanced Pesticide Management Program (EPMP) and the *Pesticide Use Control Bylaw No. 8514* in 2009 with the objective of reducing the use of traditional pesticides based on a level of risk and benefit.

Subsequently, the *Invasive Species Action Plan (ISAP)* was adopted in 2015 under the EPMP, which has allowed for a strategic, risk-based approach to prioritize the management of invasive species that pose an immediate threat to civil infrastructure and human health. As Richmond experiences climate change and associated ecological shifts that influence the proliferation of invasive species, the ISAP enables Richmond to adapt and respond to these shifts, as well as to evolving senior and local government priorities.

Richmond's EPMP and ISAP include detailed strategies and actions organized around the following four pillars to achieve City initiatives:

- **Leadership & Innovation**
- **Partnership**
- **Public Outreach & Engagement**
- **Invasive Species Treatment**

This document summarizes achievements to date in implementing the EPMP and ISAP and notes forecasted future actions.



Three alternative lawn solutions resistant to the European chafer beetle on display at Garden City Park. (Left to right: Micro clover & tall fescue, Fleur de Lawn, Pollinator blend)

LEADERSHIP & INNOVATION

INITIATIVES

1. **Implement research control trials for aquatic invasive species such as parrot's feather and Brazilian elodea**
2. **Proactive treatment strategies of priority invasive species for major capital projects**
3. **Develop an enhanced notification process for the treatment of invasive species**

KEY ACHIEVEMENTS

Aquatic invasive species management: Richmond is a leader in BC managing Parrot's feather due to its ongoing control trials and development of best management practices. Recent initiatives include:

- Invasive Species Council of British Columbia webinar on the City's efforts on parrot's feather management; a total of 26 participants from Canada and USA participated in the webinar
- Invasive Species Council of Metro Vancouver – Annual General Meeting site tour led by Richmond on aquatic invasive species and management efforts including trials

Local News Coverage: Richmond's work was highlighted in local newspapers due to growing concerns in the region regarding invasive species—specifically parrot's feather and European chafer beetle. The coverage enabled greater outreach and empowerment of the community to recognize invasive species, understand their harmful impact on Richmond's ecosystem and adopt best management practices for control.

Research: Presented on the ISAP's priority invasive species and the City's Integrated Pest Management strategies followed by site visits to active trials for 10 master students under SFU's Pest Management Program. One master student's study focused on effective baits of European fire ants and worked collaboratively with the City on known sites for lab rearing experiments.

Bylaw Amendment: The Water Use Restriction Bylaw No. 7784 was amended to allow for a more flexible timeframe for applying nematodes, a biological control to manage European chafer beetles.

Enhanced Notification Process: The City recognized public concerns related to the use of herbicides in the community and identified an opportunity to augment existing communication protocols to include advanced notification of treatment in their neighbourhoods. Information signs are installed at the treatment site to keep residents informed of the City's knotweed treatment program.

Alternative lawn demonstrations: The City encourages bio-diverse lawns such as a pollinator blend, a Fleur de Lawn mix, or a micro clover/tall fescue mix as these blends are more resilient or resistant to European chafer beetle infestations than traditional grasses. These popular blends are on demonstration at City Hall and Garden City Park encouraging residents to proactive alternatives.





Parrot's feather poses a risk to the City's drainage infrastructure requiring continual maintenance.

FUTURE ACTIONS

Support research by academic institutions: Facilitate research on the ecology and control of invasive species by providing access to city sites and assistance to University groups. This will include, when possible, the sharing of research results, test projects, and other technical experiences.

Invasive Species Bylaw: Bring forward an invasive species bylaw for council consideration for the control or treatment of high priority species such as giant hogweed and knotweed on private property.

Parrot's feather maintenance best management practices: Due to the limited research associated with the management of parrot's feather in inland watercourses, staff has been analyzing best management practices. Key best management practices include: proper containment, mechanical removal strategies and proper disposal sites. A formal document will be created and incorporated into general maintenance and mechanical removal strategies when working in and around parrot's feather infestations.

PARTNERSHIPS

INITIATIVES

1. Continue industry collaboration to stay informed on the latest scientific research and best management practices.
2. Develop new partnerships with other jurisdictions across North America to fill gaps in local knowledge.

KEY ACHIEVEMENTS

Early Detection, Rapid Response: Worked with the province to develop and maintain standards for Early Detection & Rapid Response (EDRR), a “proactive approach to managing new invasive species to BC that prevents establishment and subsequent impacts through targeted species risk assessment, verification, containment and eradication”. Recent initiatives include:

- **Brazilian elodea pilot project:** Worked alongside the province to remove 84 bags of plant material from an area of 432m² within the Steveston Slough. Assessment and monitoring of the efficacy of these treatments will guide best management practices for future removal projects.
- **Invasive species soil working group:** The movement of infested soil is one of the leading causes of invasive species spread regionally and provincially. The Invasive Species Soil Working Group includes provincial, regional and local government representatives. The City has been a participant since its inception in 2016 to initiate solutions related to the movement of soil and invasive species. The working group presented a high level summary of the working group at the UBCM in 2016.
- **Provincial Grant:** The province provides financial assistance annually for invasive species management for City initiatives associated with outreach and education, trials and EDRR. The City has used this grant to promote Invasive Species Action Month, Public Works Open House and parrot’s feather trials.



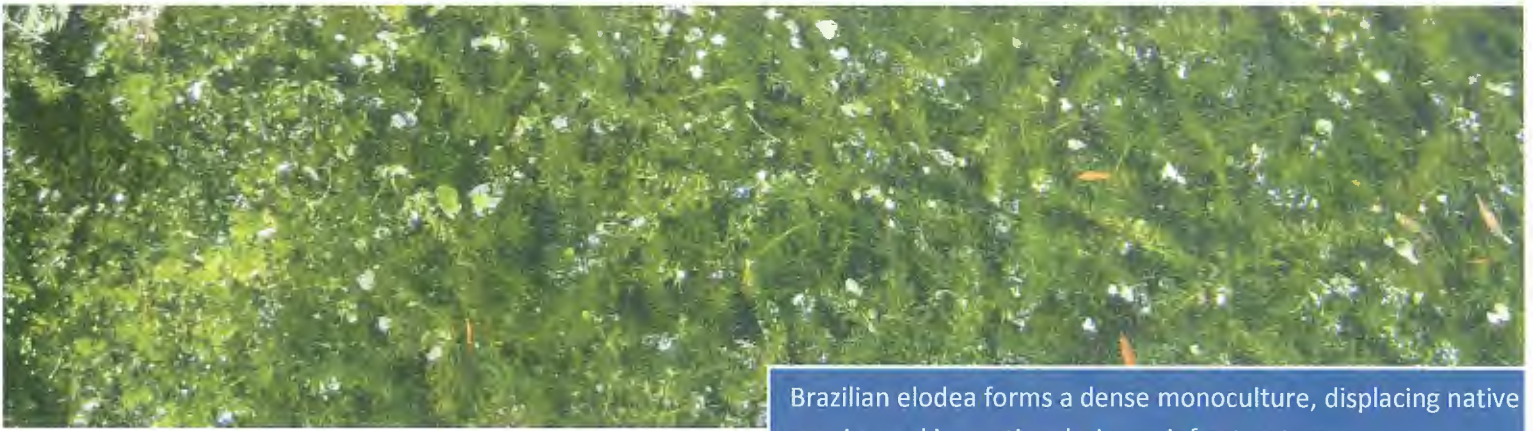
Partnership with the Province of BC on Brazilian Elodea removal



Brazilian Elodea in Steveston Slough, West Dyke



84 Bags of Brazilian Elodea removed



Brazilian elodea forms a dense monoculture, displacing native species and impacting drainage infrastructure.

Interdepartmental partnerships: Worked closely with other departments to coordinate efforts for removal and mitigation of spread on City property and to maintain compliance on private property. Some recent examples include:

- **City Parks:** Ensure fast response times for removal of high priority species (e.g. giant hogweed and knotweed species) that pose a risk to public health and safety in City Parks.
- **Capital projects:** Capital projects to consider best management practices for priority species. Planning initiatives have highlighted priority areas of knotweed infestation with a focus on civil infrastructure including the dike and pump stations that will reduce cost and prepare crews more appropriately.
- **Metro Vancouver Regional Invasive Species Task Force:** To collaborate with local government, Electoral Area A, First Nations and senior government departments to collectively implement priority initiatives and to advise the Regional Planning Advisory Committee on progress. Noteworthy achievements include:
 - Compile and maintain a list of disposal sites
 - Research emergent practices on selected invasive species
 - Investigate options for control near water bodies
 - Investigate soil management options

Canadian Food Inspection Agency (CFIA): The City makes available to CFIA live wood samples and the installation of traps at various sites in search of a variety of invasive insects that are a threat to the region.

Invasive Species Council of British Columbia/ Metro Vancouver: The Invasive Species Councils of BC and MV provide assistance in research, confirmation of invasive species, educational materials and public engagement.



FUTURE ACTIONS

Interdepartmental Invasive Species Team: To meet quarterly with key invasive species representatives from various departments including Parks, Drainage, Roads, Community Bylaws and Water. This team would enable greater awareness of invasive species management into daily maintenance and construction activities. As well as greater communications and support from the Environmental Coordinator, when required.

Incorporate soil infested with invasive species into development permits and service agreements: Work with the City's Soil Bylaw Officer regarding the spread of invasive species via soil movement through permits and service agreements.

Early Detection, Rapid Response: An ongoing commitment to continue monitoring for the introduction of provincially listed EDRR species and to work in partnership with the province on effective management strategies.



2017 Public Works Open House: Over 1800 native plants handed out to residents.

PUBLIC OUTREACH & ENGAGEMENT

INITIATIVES

1. Encourage public awareness around Richmond's invasive species and pesticide use
2. Encourage the public to choose native plant species to support pollinators
3. Support Richmond residents with free educational events and workshops

KEY ACHIEVEMENTS

Environmental Workshops & Events: Delivered 49 free workshops engaging 733 Richmond residents since 2016. Topics ranged from Natural Lawn Care and Organic Gardening, to Bee Identification and Fruit Tree Management. Staff has also attended 11 community events to raise awareness and generate knowledgeable conversations around invasive species and pesticide use in the community.

Support to Community & City Departments: Dedicated emails and phone lines for both pesticides and invasive species, encourage the public to contact staff with any inquiries. Approximately 3,000 brochures distributed in the community during 2016/17 in partnership with Community Bylaws. Support is also provided to all City departments for invasive species management.

Ongoing partnership with local pesticide retailers: Recent amendments to the provincial *Integrated Pest Management Act*, require pesticides to be under restrictive access to customers. Staff met with retailers that sell pesticides and now have Pesticide Use Control brochures on display. Staff have seen a continual increase in awareness regarding the sale of traditional pesticides, as a result of continued exposure to the Pesticide Use Control Bylaw, pesticide restrictions and in-store pesticide availability.



REaDY Summit

733

residents engaged
in environmental
workshops since
2016



2017 Raptor Festival



Seasonal Kitchen
Workshop

Invasive Species Action Month: In May 2016/17, the City participated in Invasive Species Action Month to raise awareness and knowledge on the many invasive plants and animals that have been detected in Richmond. Weekly themed displays were featured in the Galleria, alongside suitable alternative plants to help encourage residents to plant native species that will support local pollinators and combat the destructive spread of invasive species.

FUTURE ACTIONS

Bath Slough Restoration: As one of the few remaining watercourses in Richmond and a key part of the City's Ecological Network, the City is looking forward to upcoming projects in restoring the riparian area of the Bath Slough adjacent to the Bridgeport Industrial Park – Pollinator Pasture. The slough provides ecosystem services such as wildlife habitat and storage and conveyance of rain water. This restoration project will include the removal of various invasive species and the planting of native trees and shrubs. Ongoing monitoring of the site is necessary to ensure native plants thrive in this important ecological corridor.

Workshops for school aged kids: Creation of Environmental Sustainability workshops for school aged kids in Richmond. Introduction of topics such as natural gardening and invasive species in a fun interactive manner to get conversations around these important topics started at an early age. This will also serve as another mechanism to engage and communicate with Richmond residents through their children.

Refresh Outreach Program: The City is looking to reinvigorate the already successful Environmental Sustainability Workshop Program to bring new branding, topics and workshop instructors. This will draw new people to the program, while maintaining the current attendees.

Residents forage for edible wilds at Terra Nova Rural Park, learning to prepare meals with locally sourced produce.





Wild chervil spreads by both seed and plant fragments. Each plant can produce upwards of 10,000 seeds.

INVASIVE SPECIES TREATMENT

INITIATIVES

1. Knotweed control on priority sites with herbicide
2. Mechanical mowing trials for wild chervil
3. Mechanical control of parrot's feather

KEY ACHIEVEMENTS

The City continues to proactively manage the spread of priority invasive species and noxious weeds that pose a risk to public health and safety and City infrastructure. Recent projects in 2016/2017 include:

Ongoing Japanese knotweed treatment: Knotweed species pose a significant risk to City infrastructure as their extensive root system increases erosion potential and can grow through concrete and asphalt. Since 2016, the City has treated 261 sites of knotweed totaling 2.5 hectares. Priority areas include risks to civil infrastructure including infestations along the dike and near pump stations.

Parrot's feather shading trials: Installation of shading frames in Hamilton community saw significant reduction of parrot's feather biomass. Positive results have guided the installation of 1,247m² geotextile in Smith Crescent's drainage ditches.

Wild chervil mowing trials: The City has initiated experimental mowing trials along 3,200m² the West Dike trails in an effort to control of wild chervil along the banks. It is essential to mow at a specific time when the plant flower and just gone to seed. During this period the plant has the least amount of energy left in its roots system.

261
knotweed sites
treated totaling
2.5_{ha}



Nematode application at City Hall Plaza



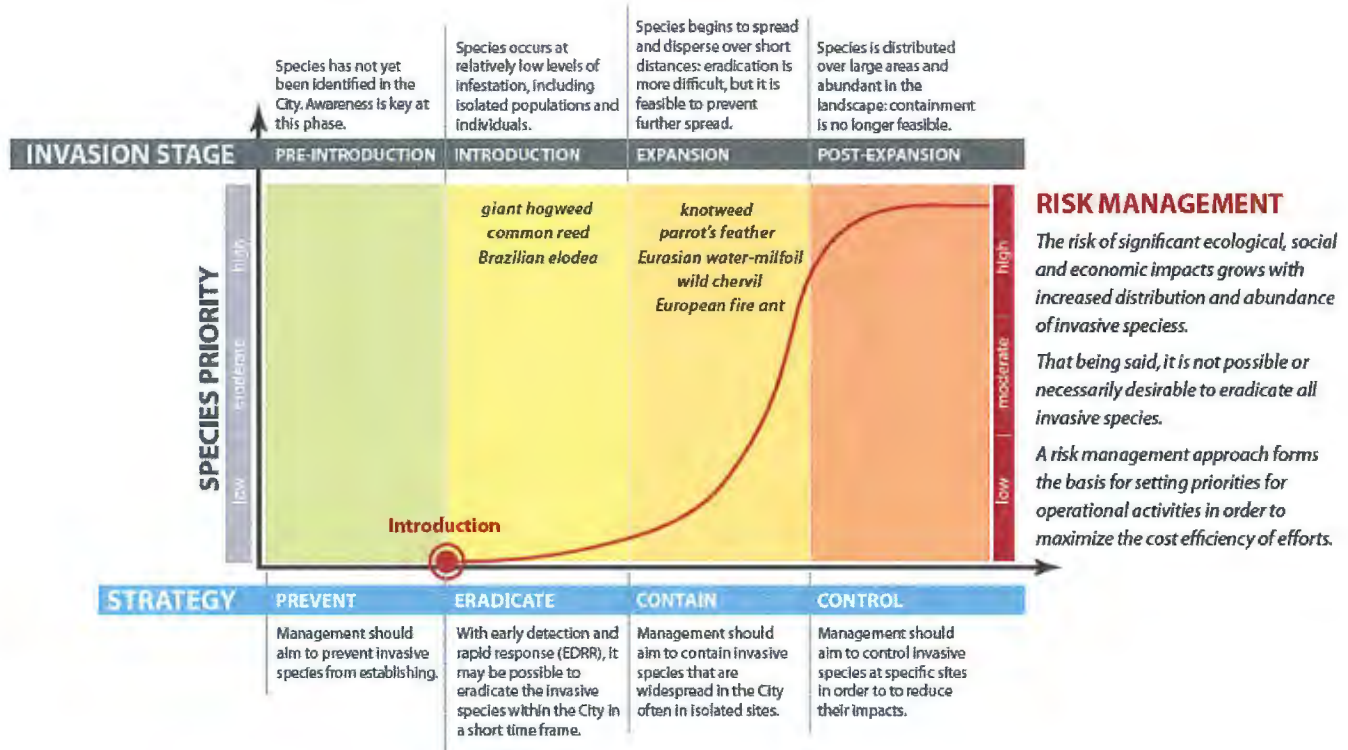
Wild chervil mowing trials along West Dyke

Parrot's Feather Shading Trials

July 21, 2016

June 28, 2017



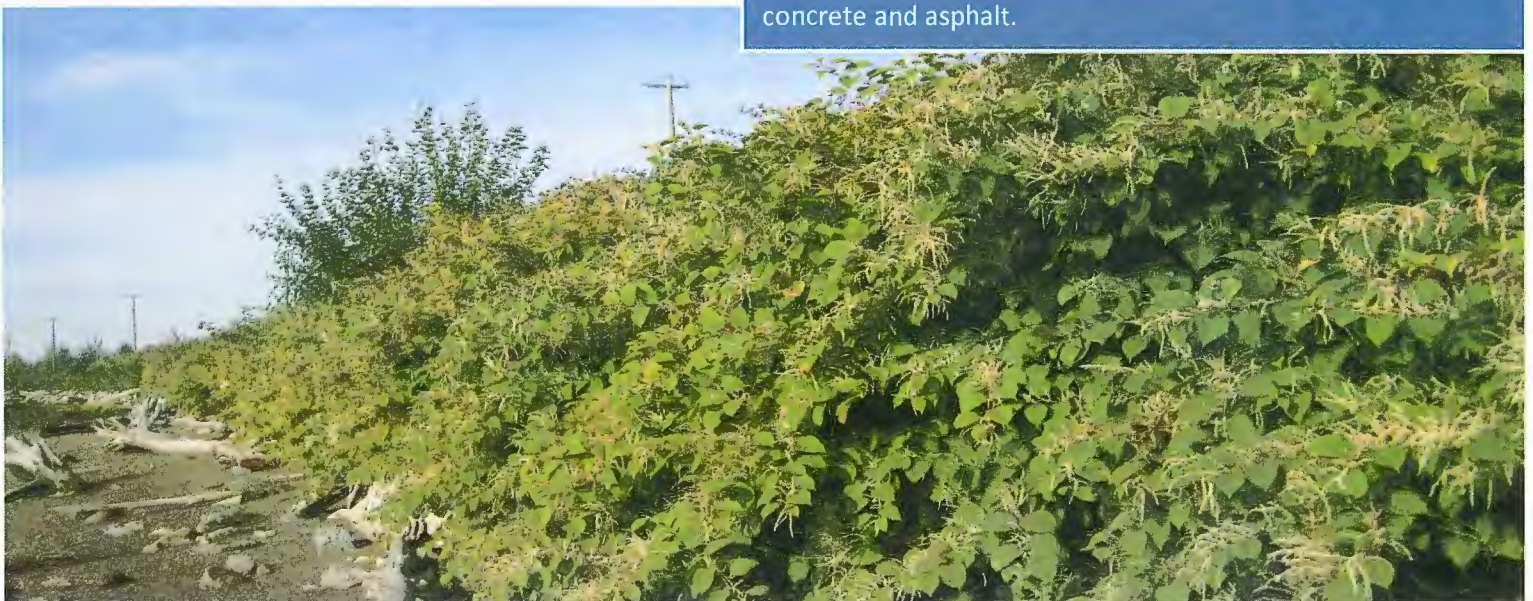


FUTURE ACTIONS

Treatment of noxious weeds in exclusion zones: The City will explore opportunities (e.g. pesticide use permits) for treating below provincially legislated pesticide free zones to increase the efficacy of eradication of infrastructure damaging infestations found along water bodies.

Adopting modern mobile mapping solutions: The City will evaluate the cost and time saving benefits of adopting mobile technologies such as iPads and GIS applications for determining and monitoring the abundance and distribution of invasive species across the city. This will allow staff to identify problem locations for introduction and track change over time more effectively.

Knotweed species pose a significant risk to City infrastructure growing extensive root systems with the ability to grow through concrete and asphalt.





City of Richmond

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