



Invasive Plant Management Strategy



ADOPTED JUNE 2014

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EXECUTIVE SUMMARY

The City of Nanaimo is built on a landscape with many natural ecosystems that help define the unique character of the city. Examples are found in our riparian areas, wetlands, coastal Douglas fir forest, coastal bluffs and Garry oak meadows areas.

Many plants we now consider invasive arrived in the region throughout our history and were often deliberately introduced from a variety of countries to be used as groundcover or for their horticultural interest. Other invasive species arrived unintentionally through various means including migrating birds, cargo ships, or bilge water in large ships visiting our waters. Once in a region, and without the natural predators, pests, or pathogens that were present in their native habitats, invasive species have flourished and begun to displace native species, degrade ecosystems, and reduce biodiversity.

Concerns about the growing impact of invasive species throughout the community led to the Advisory Committee on Environmental Sustainability (ACES) requesting Council to allow for the committee to work toward developing an invasive plant management strategy for the City of Nanaimo in 2012. The focus of this strategy is on controlling the spread of invasive plants in the city, and not invasive species in general. The management of other invasive species would be considered in the future on a species by species basis.

Over the course of a year and a half, the strategy was developed in collaboration with City of Nanaimo staff, ACES and the Parks, Recreation and Culture Commission. The process to develop the strategy involved a background research component, followed by two facilitated workshops with City of Nanaimo staff and the general public. An “Invasive Plant Awareness Month” event was also held in the spring to test community support and interest.

The strategy builds on previous work on invasive plant management done through Parks, Recreation and Culture and regionally through the Coastal Invasive Species Committee (CIPC), a regional umbrella organization that includes local government, industry and provincial government departments.

PART 1 INVASIVE PLANT MANAGEMENT STRATEGY

PURPOSE

The purpose of the Invasive Plant Management Strategy is to: (1) guide the City of Nanaimo's management of invasive plants in publicly-owned parks and natural areas; and (2) to help facilitate the management of invasive plants on private lands in the city. The overall goal is to prevent, reduce, control or mitigate the effects of invasive plants on natural ecosystems, human / animal health, and the economy of Nanaimo.

Changing management priorities within parks and increased public interest in the City of Nanaimo's natural spaces has made managing invasive plants within the City of Nanaimo a higher priority. As a result, the City of Nanaimo Invasive Plant Management Strategy (IPMS) was initiated through the collaboration of the Advisory Committee on Environmental Sustainability (ACES) and the Parks, Recreation and Culture Commission (PRCC).

WHAT IS AN INVASIVE PLANT?

Canada's Invasive Species Strategy (Government of Canada 2004) defines alien invasive species as: plants, animal (including fish), fungi and microorganisms introduced to areas outside their natural past or present distribution. Alien species are also referred to as exotics, foreign or non-native. Invasive Species are alien species regarded as harmful and whose introduction or spread threatens the environment, the economy or human health (Government of Canada, 2004). The management of any species introduced to an environment and found to be harmful has become a significant concern locally, regionally, provincially and nationally.

WHY AN INVASIVE PLANT MANAGEMENT STRATEGY?

The City of Nanaimo has a variety of natural ecosystems within its urban landscape. The topography creates a wide range of ecosystems that include riparian areas, wetlands, coastal Douglas fir forest, coastal bluffs and Garry oak meadows areas. These ecosystems contribute to our quality of life and help define what makes our city unique.

Many plants we now consider invasive arrived in the region throughout our history and were often deliberately introduced from a variety of countries to be used as ground cover or for their horticultural interest. Other invasive species arrived unintentionally through various means including migrating birds, freight trains, or bilge water in large ships visiting our waters. Once in a region, and without the natural predators, pests, or pathogens that were present in their native habitats, invasive species have flourished and begun to displace native species, degrade ecosystems and reduce biodiversity.

With their increased spread, invasive plant species are regarded globally as the second major cause of declining biodiversity after the loss of habitat. These invasive species also reduce the recreational and community values of our natural systems, consequently impacting economic and social values over time.

The economic impacts include increases in management costs to control a particular species as well as the subsequent loss of key habitat for key species, such as our local salmon. Recreational value, whether on water or land, can be diminished by harmful or unpleasant plants that reduce or ruin recreational quality. Some invasive plants, such as Giant Hogweed, pose significant health hazards through skin burns and lesions caused from a toxic sap.

EFFECTS OF INVASIVE PLANTS ON OUR PARKS AND NATURAL AREAS

Invasive plants pose five key threats to ecological and recreation values in parks and natural areas in the City of Nanaimo (modified from City of Coquitlam, 2008):

1) Competitive displacement of native plants

Invasive plants monopolize resources such as light, moisture, and soil nutrients that are required by native plants to establish and grow. Where abundant, some invasive species displace native species by depriving them of access to these resources. However, this likely only occurs in sites with very dense growth (either single invasive species or groups of invasive species).

2) Increased park management costs

Invasive plants increase park management costs through either increased resource management planning (e.g. project management, park plans, monitoring, etc.) or the operational cost of maintaining vegetation (e.g. mowing, pruning, weeding).

3) Homogenization of regionally distinct plant communities

Invasive plants reduce plant community distinctiveness and lead to the loss of unique plant communities. Conspicuous invasive plants, such as purple loosestrife and yellow flag iris, reduce the value of parks for some users because of the associated loss of natural biodiversity.

4) Changes to ecosystem functions and dynamics

As invasive plants become more established, they cause ecosystem effects that produce systemic changes to productivity, disturbance, energy transfer, and other ecological processes on which plant communities depend. An example seen in some Nanaimo streams is the dense growth of Himalayan Blackberry which prevents the establishment of riparian trees and native vegetation that would otherwise have grown in its place. Such changes may reduce the capacity of the ecosystem to support native species.

5) Risks to human health

Some invasive plants pose direct risks to human health, particularly in the context of park use or maintenance in the City of Nanaimo. However, examples that pose health concerns include: Giant hogweed (dermatitis from toxic sap), Daphne-laurel (toxic sap) and English holly (toxic berries). In the near future, encroachment to our region of species such as Poison Hemlock (*Conium maculatum*) may become a greater management concern.

SCOPE

The focus of this strategy is on controlling the spread of invasive plants in the city, and not invasive species in general. The management of other invasive species will be considered in the future on a species by species basis.

The strategy builds on previous work on invasive plant management done through Parks, Recreation and Culture and regionally through the Coastal Invasive Species Committee (CIPC). Other partners will be needed to successfully implement this strategy. An initial list of these partners can be found in Appendix 4. The City of Nanaimo IPMS should be reviewed and updated after five years.

Restoring any site can be a struggle when defining appropriate targets for restoration. Pristine ecosystems do not exist and all parts of the city have had some level of impact and disturbance. Invasive plants, such as Himalayan Blackberry, English Ivy and Scotch Broom have established themselves within Nanaimo and it is not expected that complete eradication of these species will occur. These established invasive plant species need to be managed as part of an altered “novel” ecosystem.

The long-term goal for management should be based on ecological objectives that will lead to resilient, functioning ecosystems that can continue to function as our climate changes. These objectives could include a mixed percentage of native species, a diversity metric (total diversity, patch diversity, beta diversity) and abundance of focal species (i.e. rare species, keystone species, etc.)¹. Managing for invasive plant species plays an important role in working toward achieving these longer term ecological objectives within the City of Nanaimo.

VISION

The City of Nanaimo recognizes that healthy ecosystems are needed to support a healthy economy and community. The health of our ecosystems is a community responsibility. New invasive plant outbreaks will be controlled through a comprehensive community approach that works to manage and contain established invasive plants and prevent encroachment of new species. This will be led and supported by City of Nanaimo staff, working in partnership with others.

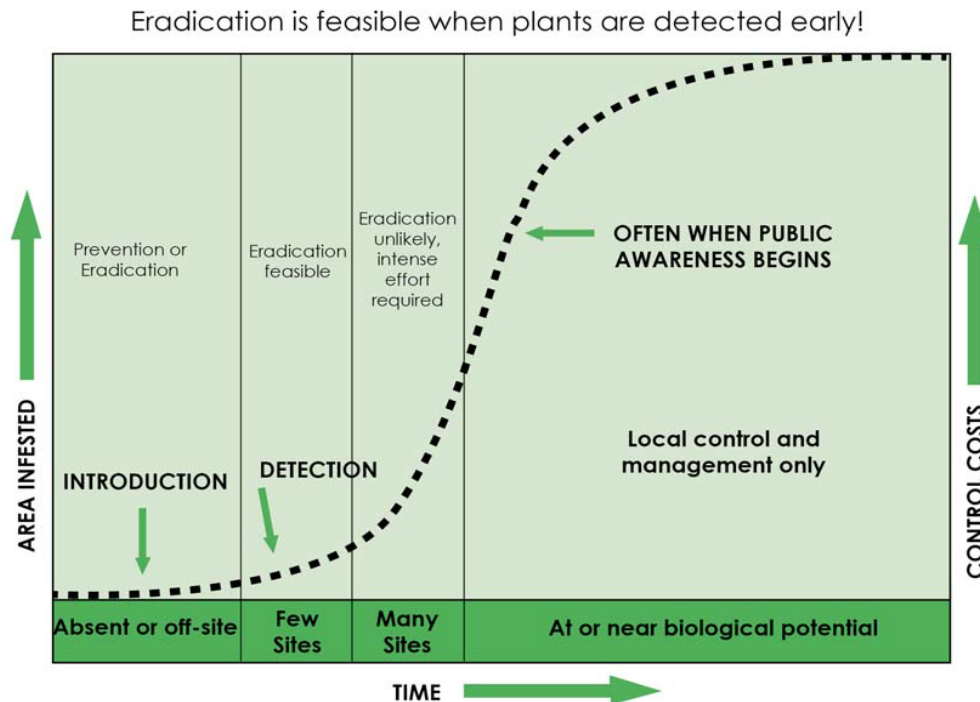
GOAL

To prevent, reduce, control and mitigate the negative effects of invasive plants on the City of Nanaimo’s natural ecosystems, human health and economy.

¹ A.S. Thorpe and A.G Stanley. 2011. Determining appropriate goals for restoration of imperiled communities and species. *Journal of Applied Ecology*. Vol. 48. pp 275-279

EARLY DETECTION AND RAPID RESPONSE (EDRR) AS THE STRATEGIC FRAMEWORK

Invasive plant control is most successful, cost-effective, and the least environmentally damaging when invasive plants are found before they establish high-density, persistent populations (Clark 2003²). Control costs can escalate rapidly once new species establish and begin to disperse while the likelihood of local eradication diminishes.



Early Detection Rapid Response (EDRR) offers a proactive approach to managing invasive species that prevents new establishment in the first place. Early detection of newly arrived invasive plants, followed by a well-coordinated rapid response, will increase the likelihood of eradication or containment of new invasions. EDRR has proven to be the most cost-effective means of controlling the expansion of invasive species in North America³. With this in mind, EDRR will be the underlying framework for this strategy.

The following recommendations are intended to help the City of Nanaimo establish a viable EDRR approach that takes into account the City of Nanaimo's financial and staff resource capacity.

² Clark, J. 2003. Invasive plant prevention guidelines. Center for Invasive Plant Management. Bozeman, Montana. 15 p. <http://www.weedcenter.org>.

³ "B.C. EDRR – Early Detection Rapid Response Program – What is Early Detection Rapid Response" last modified January, 2013, <http://www.for.gov.bc.ca/hra/invasive-species/edrr.htm>

STRATEGY RECOMMENDATIONS

1) Establish a Long Term Invasive Plant Management Program

- Use an Early Detection Rapid Response (EDRR) approach for managing the City of Nanaimo's invasive plants and refer to it within the Parks Horticulture Strategy.
- Establish a staff coordination team (Parks and Open Space Planner, Horticultural Supervisor, Environmental Planner, Recreation Coordinator) to coordinate actions and implementation of the strategy.
- Provide dedicated funding for invasive plant management to cover removal, educational costs, staff time and contracted support needs.
- Over time, establish a regional invasive plant management committee. Coordinate with regional stakeholders managing invasive plants (Regional District of Nanaimo Parks, Ministry of Transportation, BC Parks, Coastal Invasive Species Committee, Broom Busters, forest companies etc.) to minimize new introductions or spread of emerging species. Work to limit the commercial sale of known invasive species.
- Adopt Best Management Practices to reduce the introduction and spread of invasive plants by:
 - i. Developing operating procedures for municipal capital works and maintenance projects;
 - ii. Amending the City of Nanaimo Purchasing Policy to include provisions for invasive plant prevention in purchases and ecosystem restoration in contracts and management plans that result to soil and vegetation disturbance.

2) Maintain and Enhance Natural Ecosystems

Protecting and enhancing the city's natural environment is a fundamental goal in the City of Nanaimo's Official Community Plan. Targeting parks with high ecological values and with relatively low levels of invasive plants currently can be a good starting point for management. In addition, promoting the importance of protecting our biodiversity can also help raise public awareness on why invasive plant management is important. Specific actions include:

- Promote our city's biodiversity to the public.
- Target parks with high biodiversity values (i.e. ESAs, watercourse riparian areas) on a yearly basis, the City of Nanaimo's Horticulture Supervisor and the Manager of Parks Operations should identify specific sites within the parks system for invasive removal by staff and volunteer groups.
- Restore sites cleared of invasive plants with native plants or other appropriate non-invasive vegetation and maintain until native plants establish themselves.
 - Contact and build connections with major landholding stakeholders, such as Woodgrove Centre, VIU, ICC and seek opportunities to establish stewardship projects involving invasive plant removal and management.
 - Review current practice and develop cost effective regional biomass transportation and disposal methods for invasive plants that are accessible, effective and environmentally sound, if necessary.

3) Increase Public Education and Awareness about Invasive Plants

The workshops and public online survey showed strong support to develop a public and staff education program around invasive plant management in the city. The program should utilize both traditional media and Social Media, along with professional technical workshops

to build awareness and skills in identifying and managing priority invasive plants. Specific actions include:

- Establish and promote a priority invasive plant watch list for the City of Nanaimo. Priority invasive plant species should be plants that are a human health concern or have high ecological or economic impact, at a site level (See Appendix 2).
- Maintain and expand an invasive plant management website to provide the public with news of volunteer removal activity, removal and disposal advice and an up to date list of priority invasive plants. The website should have a way for the public to ask questions and receive advice (“Ask a Gardener” e-mail, etc.) (www.nanaimo.ca/goto/invasives)
- The City of Nanaimo should use information signs (i.e. “sandwich boards”) in parks to promote and inform the public about invasive plant removal work in progress. The work should also be tracked and promoted on the City of Nanaimo’s website and through social media
- The City of Nanaimo should work with local partners, such as School District 68, to educate students on the impact of priority invasive species on our natural habitat.

4) Build Volunteer and Public Support

The role of volunteers in managing invasive plants is an important component in accomplishing many of the goals in the strategy. Ensuring volunteers are provided with adequate support and recognition for their efforts is considered fundamental for this effort to succeed. Issues around volunteer burnout, effective training, incentives and recognition were raised as areas for improvement. Specific actions include:

- Review the Volunteers in Parks Program (VIP) and look for opportunities to improve support and volunteer opportunities to volunteers working on invasive plant management projects. Provide opportunities for volunteers to collaborate, expand their knowledge, and celebrate successes, large and small.
- Establish an invasive plant drop off event, to help residents safely dispose of invasive plants on their property

5) Identify and Address Information Gaps

Tracking and more clearly identifying progress in management of invasive plants needs to be improved. Providing the public with better information on how treatment and disposal of these plants is done also needs to be improved. Specific actions include:

- Hire a consultant to work with volunteers and City of Nanaimo Parks staff to develop a training protocol on invasive plant inventory and mapping. Inventory three parks and one neighbourhood area for invasive plants and train a team of volunteers and staff to collect the data and input into the provincial Invasive Alien Plant Program (IAPP) database and mapping system.
- Partner with the RDN, Harmac Pacific, DBL Disposal Service and International Composting Corporation (ICC) in developing an invasive plant disposal protocol.
- Review the Property Maintenance Bylaw and make recommendations on the list of invasive plants included in the definition of “Noxious Weed” and how the bylaw can be used to manage noxious invasive plants on private property.
- Develop performance measures for success (inventory / removal / disposal) and report on progress back to Council and the public on a regular basis.

MEASURES OF SUCCESS

1) Establish a Long Term Invasive Plant Management Program

- Early Detection Rapid Response Program in place
- Assignments of internal roles and responsibilities to individual departments
- Inter-departmental annual work plan in place
- Dedicated budget set for invasive plant management
- List of sites prioritized for action
- Priorities reflected in 5-year Parks Operation budget
- Grants or other incentives for invasive species removal and restoration projects received
- Amount of additional funding secured through partners, grants, and corporate sponsorships
- Roles , responsibilities and levels of service communicated to council and the public
- Annual reports to relevant Council and Committees and the public
- Ongoing public education through Parks staff
- Review Property Maintenance Bylaw

2) Maintain and Enhance Natural Ecosystems

- New invasions are responded to quickly and effectively
- Percentage of area restored once invasive species are removed
- Appropriate levels of response identified for invasive plant species
- Regional program in place for disposal and processing of invasive plants
- Research treatment trials in place for all current EDRR plants

3) Increase Public Education and Awareness About Invasive Plants

- Number of participants in educational outreach and training activities
- Best Management Practices are expanded and developed
- Decision matrix developed to prioritize sites for work plan budget support
- New populations of invasive plants are reported by the public
- Educational material provided to public on alternatives to invasive species for gardens

4) Build Volunteer and Public Support

- Number of staff and volunteer hours for invasive species removal and restoration
- Number of participants in City of Nanaimo Volunteers in Parks (VIP) program
- Number of projects and site management plans completed by post-secondary students as course projects
- Regional partnership with nurseries to remove invasive species from inventory
- Number of incentives collected (tipping fees waived, rec passes?) or other incentives for volunteers and residents
- Amount of in-kind support secured through partners

5) Identify Information Gaps

- Percentage area of City of Nanaimo Parks inventoried for invasive species populations
- Response protocols developed for Property Maintenance Bylaw

PART 2 ACTIONS TO DATE



Figure 1 - City of Nanaimo Parks Workers completing Scotch Broom Removal

The City of Nanaimo has been responding to the threat of invasive plants through various operations, polices, bylaws and procedures. These actions include:

PUBLIC LANDS

The City of Nanaimo **Parks, Recreation and Culture Master Plan (2005)**, recommended a naturalization program for park spaces with lower public amenities and higher biological values. Currently the City of Nanaimo has 70% of its park space identified as natural space, which includes environmentally significant areas (ESAs) such as Garry oak Woodlands, Wetlands, Riparian areas, Coastal bluffs and older forest pockets. All of the City of Nanaimo's ESAs represent unique natural features of Nanaimo and are home to a wide variety of plants and animals that include some rare and endangered species.

Some parks have management plans that provide site specific recommendations for the park. For example, the **Neck Point Park Master Plan** provides short, medium and long term direction on the management of the park. Highly disturbed areas are included within an invasive species management plan.

The **Parks Horticultural Strategy** provides direction for City of Nanaimo horticulture staff and prioritizes park sites that will receive higher levels of horticultural maintenance. One of the strategy's goals is to reduce invasive plant species in Nanaimo and to foster relationships with volunteer groups to help meet this goal.

The City of Nanaimo's **Volunteer in Parks (VIP) program** is a public participation program designed to bring the ideas and efforts of volunteers together with Parks, Recreation and Culture in order to "create, develop and improve" our parks and open spaces. The program includes volunteer teams that work as park wardens, gatekeepers, naturalists, and invasive plant removal teams within the parks system.

Sites for invasive plant removal are recommended by parks operations staff, such as the Horticultural Supervisor and the Parks and Open Space Planner but have also been suggested by volunteers themselves. City of Nanaimo staff provides introductory training in invasive removal and provide volunteers with equipment and support in cleaning up and removing pulled invasive plants. In some cases, restoration planting follows the removal of invasive plants to minimize soil erosion and to promote the reestablishment of native plants.

PROJECTS AND PROGRAMS (2004 – 2013)

The City of Nanaimo has taken advantage of opportunities for funding and resources over the years in order to try and begin to address invasive plant infestations within the parks system. Some of the projects that have been completed over the last nine years include the following:

- **HRDC Partnership (2004)**
November 2004 to February 2006, invasive plants were removed from 60,000 square meters of parkland and replanted the area with native vegetation. In addition, English Ivy was also removed from 1,000 trees.
 - **Bowen Park Ivy Removal Project (2005 and 2006):**
 - Volunteers and parks staff put in 420 hours to clear 700 trees of English Ivy. Holly and Daphne were also removed.
 - 2006, continuation of the 2005 work with an additional 500 person hours put into clearing 10,000 square meters of Ivy covering the forest floor, Daphne and Holly. 680 trees were also cleared of English Ivy.
 - **Jack Point Park (2005):**
 - 5000 square meters of forest floor cleared of English Ivy
 - 2500 square meters of forest floor cleared of Daphne
 - 1000 square meters of forest floor cleared of Scotch Broom
 - 55 trees cleared of English Ivy
 - Areas removed of Ivy replanted with native vegetation.
- **Katimavik Partnership (2006)**
- **Staff Weed Removal (2012)**
 - Colliery Dam Park invasive species removal class
 - Westwood Lake Park Staff Ivy Pull

- **Volunteer Weed Removal (2012)**

- Serauxmen Fields
- Barsby Park
- Stephenson Point area
- Nanaimo Ice Centre grounds
- Giggleswick Crossing

- **Invasive Plant Awareness Month (2013)**

A one month public awareness program was launched to raise awareness about invasive plants and their impacts to local parks and natural areas. Parks staff coordinated with volunteer groups to arrange for volunteer invasive plant removal at four park sites and two commercial properties. Several volunteer groups also independently organized their own neighbourhood invasive plant removal days, with some staff technical support.

- Piper's Lagoon Park
- Beban Park
- Laguna Park
- Woodgrove Centre grounds
- Serauxmen Fields
- Nanaimo North Town Centre grounds
- Bowen Park
- Seabold Park
- Stephenson Point (Planta Park)
- Oceanview Park

- **Co-Management Committees**

The City of Nanaimo has a number of partnership agreements with land managers for private lands within the city. The following have invasive plant management strategies:

- Buttertubs Marsh Management Plan
- Morrell Wildlife Sanctuary Management Plan
- Newcastle Island Management Agreement
- Nanaimo Estuary Management Plan



Figure 2 - Volunteer Team at Woodgrove Centre

PRIVATE LANDS

The **Official Community Plan (OCP)** contains requirements restricting the use of invasive non-native vegetation in landscaping within Development Permit Area 1 (Watercourses) and Development Permit Area 2 (Environmentally Sensitive Areas). As part of the development permit process, the City of Nanaimo may require additional measures which include removal of non-native invasive plants from watercourses setbacks and environmentally sensitive areas as part of any mitigation plan where a watercourse variance is being approved. Restrictions on planting known invasive plants are also set as part of the development permit.

The City of Nanaimo can regulate weeds that intrude into adjoining properties through the **Property Maintenance Bylaw 1990 (No. 3704)**. When a complaint is lodged and supported by Council, the Bylaw requires an owner or occupier of real property to clear the property of brush, trees, noxious weeds that become or remain “unsightly growth.”

The definition used in the bylaw for noxious weeds is currently not defined in the bylaw. Currently, Parks staffs are consulted when deciding whether a plant is considered noxious or not (these include Himalayan Blackberry, Scotch Broom, Canada thistle, Common Bindweed, and Giant Hogweed). If a complainant is directly impacted by the noxious weeds, the City of

Nanaimo requires the property owner to remove the plants up to 30 feet from the adjoining property line.

Outside of the current compost and solid waste pick-up service, the City of Nanaimo does not have a program directed at the collection of yard and garden waste (grass clippings, branches, pruning materials, invasive plants and other organic yard waste). The bylaw directs the public to use private sector yard waste collection services that provide on-demand and/or weekly residential yard waste collection. In May 2013, a one month **Invasive Plant Awareness Month** was organized through Parks, Recreation and Culture. **"Drop Zones"** were setup for residents who remove four types of invasive plants from their property. The drop zones had set times and dates when they were available and local media were used to promote the program and advertise the location for the Drop Zones. Other than volunteer groups, only 20 residents used the drop zones and delivered invasive plants to the bins.



Figure 3 - Woodgrove Centre "Drop Zone"

PART 3 PROCESS TO DEVELOP A STRATEGY

The IPMS began with direction from ACES to complete an Invasive Plant Management Strategy, in collaboration with Parks staff and the Parks, Recreation and Culture Commission. After initial background research completed by staff in the spring of 2012, consultation began with two facilitated workshops for staff and with the public. Results and input on the workshops were presented to the public during River's Day and on the City of Nanaimo's website. A draft was completed in the spring of 2013 and a final review began over the summer.

PHASE	STRATEGY	TIME PERIOD
1	Commencement of Process Research and review background information and documents	2012-APR
2	Input Session #1 Advisory Committee and Environmental Sustainability (ACES)	2012-MAY-09
3	Input Session #2 Parks, Recreation and Culture Commission (PRC)	2012-JUN
4	Complete initial research and review relevant background information / documents	2012-JUN/JUL
5	City of Nanaimo Staff Engagement Workshop (Facilitated)	2012-JUL
6	City of Nanaimo Public Engagement Workshop (Facilitated)	2012-JUL
7	Report back to ACES and PRCC with preliminary report, staff and public engagement review including draft vision	2012-SEP-12
8	Community Survey made available through website	2012-AUG-15 to 2012-OCT-01
9	Draft Invasive Plant Management Strategy for 2013 – 2018 and Vision for 2030	2012-OCT
10	Staff and Public Open Houses	2012-DEC
11	Prepare Draft Final Report and Staff / ACES / PRCC Review	2013-FEB to 2014-APRIL
12	Final Report to be submitted to Council	SPRING 2014

PART 4 STAFF AND PUBLIC CONSULTATION

STAFF WORKSHOP

A staff workshop was held 2012-JUL-12, and was attended by 16 staff from the Parks, Recreation and Culture Department, and Bylaw Services Department. The purpose of this workshop was to seek insight into the challenges of managing invasive plants on public and private land in the City of Nanaimo, as well as input into what an Invasive Plant Management Strategy should look like for Nanaimo. Discussion was supported by presentations from Environmental Planner Rob Lawrance and from Ernie Sellentin of the Coastal Invasive Plant Committee. See Appendix 3 for all comments and input received.

Staff expressed support toward developing a strategy, noting that the City of Nanaimo would benefit from better coordination between departments and community stakeholders. Mapping and inventory of invasive plants was specifically identified as an area that could be improved. Staff training and education on appropriate removal and disposal techniques were also identified, as well as a need for a dedicated budget for invasive plant management. It was noted that the removal of invasive plants at Neck Point Park set a good example for management on public land, and that the many volunteers played an important and helpful role in helping to report infestations and keep invasive plants in check.

Some key challenges for invasive plant management on **public** land identified by staff include:

- Effective mapping and inventorying of invasive plant infestations within the park system
- Constant change and rapid colonization of invasive plants on some sites
- Prioritization of plant species to target and landscape management practice
- Training and information on best management practices

For invasive plant management on **private** land, staff identified a need for:

- Stronger bylaws to prohibit the sale and planting of invasive plants
- Clearer bylaw definitions of “invasive” plants
- Greater public awareness of invasive plants

Staff identified that the **Strategy should**:

- Provide direction on how information on invasive management and disposal methods is provided to staff
- Identify methods and training on mapping and inventorying of invasive plants within our parks
- Recommend measuring and reporting out on progress
- Have a dedicated budget and resources (staff, tools, etc.) to run a sustainable program

PUBLIC WORKSHOP

A public workshop was held 2012-JUL-19, and was attended by 40 individuals. The purpose of this workshop was to give members of the public an opportunity to learn more about invasive plants and discuss management issues, as well as input into what an Invasive Plant Management Strategy should look like for Nanaimo. Presentations from Environmental Planner Rob Lawrance and Ernie Sellentin of the Coastal Invasive Plant Committee provided background information. See Appendix 3 for all comments and input received.

Participants provided input through plenary and small group discussions, and several participants also filled out feedback forms. Overall, participants supported the development of a strategy, and noted that the City of Nanaimo could play an important role in educating the public about invasive plants, enforcing bylaws on private land, keeping parks free of invasive plants, and engaging volunteers to help with removal.

Some of the most important issues for the Invasive Plant Strategy to address were:

- Providing a clear message that the City of Nanaimo supports invasive plant removal
- Setting priorities (places, species and funding)
- Providing convenient options for disposal for the public
- Inventory, measuring progress, and reporting back to the public
- Review the Volunteer In Parks program, focussing on volunteer retention and support

Suggestions for helping residents better manage invasive plants on **private** land included:

- Providing species-specific information on identification, removal, timing and disposal methods
- Reducing the establishment of invasive plants on private land by working with other local governments to restrict the sale of invasive plants in nurseries
- Updating city bylaws to provide clarity on what invasive or noxious plants are and enforcing bylaws
- Providing a convenient way for residents to report invasive plant locations. Training and support for volunteers willing to conduct mapping and inventory in City Parks
- Making disposal free, easy and convenient

SUMMARY OF STAFF & PUBLIC WORKSHOPS

Key issues that were identified for the Strategy to address include:

- Enhancing public education and awareness on invasive plants
- Improving mapping and inventory of invasive plants and allowing it to be available to the public to view.
- Identifying priority places/species for removal efforts
- Working with the Invasive Species Council of BC and the Coastal Invasive Species Committee to discourage sales of invasive plants at nurseries and florists. Providing information on native plants and other non-invasive options
- Develop recommendations to strengthen the Property Maintenance Bylaw to better support invasive plant management and present to Council

- Include invasive plant removal in staff work plans and budgets
- Clarify the procedures and best practices for disposal and removed invasive plant materials and make this information public.



Figure 4 - Volunteer team removing Laminum (Aegopodium podagraria)

PART 5 APPENDICES

APPENDIX 1 DRAFT FIVE YEAR PLAN:
 INVASIVE PLANT MANAGEMENT

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APPENDIX 1 DRAFT FIVE YEAR PLAN: INVASIVE PLANT MANAGEMENT

#	Tasks	Type/Nature of Action	Lead	Partners	Estimated Costs		Start (Yr.)
					Capital (one-time \$)	Operating (annual \$)	
Establish a Long Term Invasive Plant Management Program							
1	Adopt the Invasive Plant Management Strategy	Policy	PRE		-	-	1
2	Establish coordination team	Coordination	PRE		-	Staff time	1-5
3	Work toward developing a regional invasive plant management contact group <ul style="list-style-type: none"> • Coordinate with neighbouring local governments and organizations on sharing resources 		PRE	RDN Parks, Ministry of Transportation, BC Parks, Coastal Invasive Species Committee, Broom Busters, Forest companies etc	-	Staff time	4
Maintain and Enhance Natural Ecosystems							
5	Target the following Parks and trails for invasive plant management: <ul style="list-style-type: none"> • Piper's Lagoon Park (Broom / Blackberry / Periwinkle / Daphne) • Neck Point Park (Broom / Blackberry / Periwinkle / Daphne) • Beban Park (Knotweed) • Serauxmen Park • Bowen Park (Ivy removal from trees) 		PRE		-	\$11,000	2

	<ul style="list-style-type: none"> • Seabold Park • Planta Park (Ivy) • Linley Trail / Rutherford Park (Broom / Blackberry / Tansy Ragwort) • Dewar Road (Broom) • Woodstream Park (Himalayan Balsam) • E&N Trail (Knotweed / Hogweed) • Jack Point Park (Ivy / Broom) • Cat Stream and Howard Park • Linley Ponds (Broom) • Aspen Park (Pond Site) 						
6	Maintain restored sites newly acquired through development. Work toward developing stewardship programs with neighbourhoods using VIP and Park Warden Programs		City of Nanaimo	Development Community Neighbourhood Association	–	unknown (incentives)	5
Increase Public Education and Awareness about Invasive Plants							
7	Establish and promote a priority invasive plant watch list. Review and revise the list annually	Planning, Parks	City of Nanaimo	Coastal Invasive Species Committee		–	1 – 2 Completed
8	Maintain and expand an invasive plant management website for public and staff use	Outreach	Planning / PRE		–	Staff time	1 Completed
9	Coordinate with Urban Forestry Coordinator to promote public awareness about tree care and invasive plant management (Newspaper “wraps” or other methods to promote awareness)		PRE / Planning / Subdivision		\$2,000	Staff time, \$2,000	3
10	Review and update the <i>Guidelines for Working in within Environmentally Sensitive Areas</i>		PRE / Public Works			Staff time	2-3

11	Host annual training sessions for Parks and Public Works staff on Natural Areas Management priorities		PRC / Planning			Existing staff time	underway
12	Develop a set of brochures / sandwich boards for use during VIP invasive removal days for park users to see and to promote the VIP program.	Outreach	City of Nanaimo	School District; VIU	-	Existing staff time + partners time	1 – 5
13	As opportunities arise, work with local partners to educate students on the impact of priority invasive species on our natural habitat	Outreach and incentive	City of Nanaimo		-	Existing staff time	2 - 3
Build Volunteer and Public Support							
14	Develop a invasive plant Volunteers in Parks Program	Outreach			Existing staff time	\$4,000	1 – 2 Underway
15	Develop a grant program similar to the Public Works garbage removal program to incent community groups to remove invasive plants					\$5,000	4
16	Establish an invasive plant drop off event.	Outreach			-	\$2,000	1 Underway
Identify and Address Information Gaps							
17	Hire a consultant to work with volunteers and City of Nanaimo Parks staff to develop a training protocol and manual on invasive plant inventory and mapping	Outreach			\$2,100	\$3,000	1-2
18	Develop an invasive plant disposal protocol	Outreach	PRC / Public Works		Existing staff time		2-3
19	Review the Property Maintenance Bylaw and make recommendations	Bylaw	Planning / Bylaw		Existing staff time		2-5

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APPENDIX 2 PRIORITY INVASIVE PLANTS OF NANAIMO

The following table lists plants that are considered invasive in parks and natural areas in the City of Nanaimo. They are in order of priority, as determined by the Coastal Invasive Plant Committee.

PREVENT – “Weed Alert” List Species not known to occur in Nanaimo region, but likely to establish if introduced. Eradicate if found.	
Common Crupina	<i>Crupina vulgaris</i>
Common Reed	<i>Phragmites australis</i>
Giant Reed	<i>Arundo donax</i>
Kudzu	<i>Pueraria montana</i>
Poison Hemlock	<i>Conium maculatum</i>
Russian Knapweed	<i>Acroptilon repens</i>
Salt-meadow Cordgrass	<i>Spartina alterniflora</i>
Yellow Starthistle	<i>Centaurea solstitialis</i>

ERADICATE Species known to occur in limited distribution and low density in Nanaimo region. Eradicate if found.	
Bur Chervil	<i>Anthriscus caucalis</i>
Dense-flowered Cordgrass	<i>Spartina densiflora</i>
English Cordgrass	<i>Spartina anglica</i>
Garlic Mustard	<i>Alliaria petiolata</i>
Giant Hogweed	<i>Heracleum mantegazzianum</i>
Giant Mannagrass	<i>Glyceria maxima</i>
Gorse	<i>Ulex europaeus</i>
Jimsonweed /Devil’s Apple	<i>Datura stramonium</i>
Milk Thistle	<i>Silybum marianum</i>
Orange Hawkweed	<i>Hieracium aurantiacum</i>
Saltwater Cordgrass	<i>Spartina patens</i>
Wild Chervil	<i>Anthriscus sylvestris</i>

CONTAIN Established infestations found in Nanaimo region. Contain existing infestations and prevent spread to un-infested areas	
Bohemian Knotweed	<i>Fallopia x bohemica</i>
Butterfly bush	<i>Buddleja davidii</i>
Carpet Burweed	<i>Soliva sessilis</i>
Daphne / Spurge-Laurel	<i>Daphne laureola</i>
Diffuse Knapweed	<i>Centaurea diffusa</i>
Eurasian Water-milfoil	<i>Myriophyllum spicatum</i>
Garden /Yellow Loosestrife	<i>Lysimachia vulgaris</i>
Giant Knotweed	<i>Fallopia sachalinensis</i>
Himalayan Knotweed	<i>Polygonum polystachum</i>

Japanese Knotweed	<i>Fallopia japonica</i>
Lamium	<i>Aegopodium podagraria</i>
Morning Glory	<i>Convolvulus arvensis</i>
Policeman's Helmet / Himalayan Balsam	<i>Impatiens glandulifera</i>
Yellow Flag Iris	<i>Iris pseudacorus</i>

CONTROL	
Established infestations are widespread in the Nanaimo region. Focus control in high value conservation areas. Use bio-control (if available) on a landscape scale.	
Burdock Species	<i>Arctium lappa, A. minus</i>
Canada Thistle	<i>Cirsium arvense</i>
Common Tansy	<i>Tanacetum vulgare</i>
Dalmatian Toadflax	<i>Linaria dalmatica</i>
English Hawthorn	<i>Crataegus monogyna</i>
English Holly	<i>Ilex aquifolium</i>
English Ivy	<i>Hedera helix</i>
Hairy Cat's Ear	<i>Hypochaeris radicata</i>
Himalayan Blackberry	<i>Rubus armeniacus (discolor)</i>
Orchardgrass	<i>Dactylis glomerata</i>
Periwinkle Species	<i>Vinca major, V. minor</i>
Purple Loosestrife	<i>Lythrum salicaria</i>
Scotch Broom	<i>Cytisus scoparius</i>
Spotted Knapweed	<i>Centaurea maculosa</i>
St. John's Wort	<i>Hypericum perforatum</i>
Tansy Ragwort	<i>Senecio jacobaea</i>

APPENDIX 3 STAFF AND PUBLIC CONSULTATION

STAFF WORKSHOP (2012-JUL-12)

Facilitated by Judith Cullington of Judith Cullington & Associates.

Attendance

- City of Nanaimo Staff including Parks Operations, Recreation Coordinator and the Environmental Planner
- Coastal Invasive Plant Committee

Summary of Notes

“What’s working well?”

On public lands:

- Making a good start
- We are identifying and tackling knotweed
- Good outreach to volunteers
- Neck Point as good example of management
- Have an IPM strategy, looking at best practices

On private lands:

- Public education program, public interested in learning
- Neighbours reporting Invasive to bylaw officers (bylaw is working)

“What are the challenges on public land?”

- | | |
|---|--|
| <ul style="list-style-type: none"> • Need mapping and inventory • Need to prioritize – do early detection/rapid response • Knowledge of best practices • Better awareness of best practices • Need for education and training • Workforce | <ul style="list-style-type: none"> • Shortage of manpower (no dedicated staff time); no resources for volunteer coordination and management • Lack of dedicated budget • Safety for workers • Could use prison crews or volunteers for roadside cleanup (if it can be done safely) • Need incentives for volunteers |
|---|--|

“What are the challenges on private land?”

Regulatory:

- Lack of bylaw to prohibit planting/having Invasive
- Agricultural definition of noxious weeds does not include all invasive plants; note there are also forest lists and species that can be regulated under the Community Charter
- Nurseries still selling invasive plants (e.g., ivy)

New developments:

- Development land may be cleared and left vacant for a long period of time; inevitable incursion by invasive plants
- “Park” land in new subdivisions may be small unusable lots (covered in invasive plants), then it becomes a problem for staff

Disposal:

- Lack of knowledge of different disposal

Education and awareness:

- Public doesn't recognize invasive plants
- Garden refuse dumping (not seen as a problem)
- Lack of knowledge on most effective removal techniques (plus safety issues e.g., with Daphne and hogweed)
- Removal may conflict with other priorities – e.g., don't want removal during bird nesting season

techniques for different species (when is composting not appropriate?). Need for good information.

- Noted that other communities offer free disposal – e.g., could public use the bins for sending broom etc. To Harmac?

“What would make the plan useful to you?”

- Information
- Best practices, effective techniques (species specific); practical and simple approaches
- Best times of year for removal
- Appropriate disposal techniques (by species)
- Put up temporary signage in parks beside infestations (“this is an invasive species”...)
- Mapping and inventory
- Mapping of invasive plants
- Identification of priority areas
- Tool for measuring progress
- Plan with priorities
- Strategic, science-based approach
- Identify priority areas
- Suggestions of Neck Point Park, Jack Point Park, Colliery Dam Park, Bowen Park, Westwood Lake Park, Pipers Lagoon Park
- Priority plants within those parks
- Dedicated manpower during priority removal season
- Volunteer engagement
 - Tools to make available to them
- Incentives for volunteers
- Easy disposal
- More volunteer retention
- Homeowner engagement
- Information to all homeowners, especially adjacent to parks – focus on species information pertinent to their neighbourhood
- Provide good information on the website (easy to find)
- Provide information on all problem species, with tips on how to remove and dispose, what new species to be on the lookout for
- Use social media
- Systematic approach (e.g., working from outside in)
- Recognize need for long term persistence
- Identification of required skill sets
- Measuring progress
- Monitor and report out on progress
- Resources
- A dedicated budget
- A full time volunteer coordinator
- Tools (that work effectively, e.g., excavator)

Disposal

- Provide free disposal for homeowners and volunteers
- Harmac, species “a”, “b”, “c” should be in bin for hot composting, species “d”, “e”, “f” can be pulled and left in place)

Support

- Buy-in from Council, committees and senior management

“What roles should staff play in invasive plant management?”

- Development of strategy
- Prioritizing hotspots
- Link to Strategic Plan, part of natural areas management
- Scientific approach (proactive)
- Seek council support, with budget
- Include information on costs of inaction, how much is already being spent (in various budgets)
- Initial site clearing
- Follow up clearing could be done by volunteers
- Management of invasive plants where safety a concern (e.g. on roadsides, Giant Hogweed)
- Pick up of pulled invasive plants
- Supervision of contractors (CIPC, prison crews)
- Supervision of volunteers (needs to be in job descriptions)
- Education for homeowners
- Identification of species
- Call-in number to someone who can direct individuals to the right place (website or staff person)
- Bylaw enforcement
 - Working with developers to avoid premature land clearing

PUBLIC WORKSHOP (2012-JUL-12)

Attendance

28 members of the public attended the July workshop.

Summary of Notes

“What are the most important issues for the City of Nanaimo’s Invasive Plant Management Strategy to address?”

Messaging:

- City of Nanaimo should provide a clear message that it supports invasive plants removal
- Identify priority areas for removal (e.g., parks and ecological areas)
- Identify priority species for removal
- Protecting and promoting biodiversity
- Make it ‘cool’ to go with native plants

Inventory:

- Maintain information on locations of infestations
- Measure and report out on results
- Preventing the establishment of invasive plants
- Prohibit/regulate the sale of invasive plants through plant centres and grocery stores
- Strengthen bylaws, especially for private properties and empty lots/absentee landlords

Education and awareness:

- Public awareness of invasive plants and their negative impacts
- A ‘help line’ for identification, treatment and disposal methods, reporting of infestations

Disposal:

- Make it easy, accessible, convenient, free

Invasive plant management:

- Hire a volunteer coordinator
- Volunteer recruitment, retention and training
- Support to volunteers, e.g., tools, incentives, assistance with disposal

“What’s your vision for invasive plant management in Nanaimo?”

Inform and Educate:

- Goal to eradicate and remove invasive plants
- Inform citizens of the urgency
- It is out of control and we need to educate the public
- Inform and educate, it can be done!
- Make it “cool and wise” to go with native plants
- Centralised information system: identification, treatment, reasons
- Easy to access information on the website

Protect:

- Protect parks as recreational access free of invasive plants and use them as models of the natural habitat that exists in Nanaimo
- Enforced bylaws (but don’t ask us to rat out our neighbours)
- Prohibit sales of invasive plants at stores and plant centre
- Organized volunteers – hundreds of us!

“How can the City of Nanaimo help volunteers to better manage invasive plants on public land?”

- Set priorities
- Provide information on important plants, badly infested places
- City of Nanaimo should provide a clear message that it supports invasive plants removal “We want to get rid of broom / gorse / knotweed / hogweed...”
- Promote public awareness of invasive plants
- Educate that these are not just ‘pretty weeds’, create awareness of economic and health impacts
- Better understanding of how invasive plants impact YOU (each of us individually); e.g., impacts on property values
- Make it everyone’s responsibility to help manage invasive plants
- Outreach methods:
 - Through community gardens
 - Notice with water bills
 - Notices at nurseries
 - Local media (TV news, newspaper regular features)
 - Schools, recreation centres
 - Social media, YouTube
 - Simple single entry website (easy to navigate)
- Water bills – different information for different seasons
- A brochure like snow removal regulations would be great
- Put up signage to identify infestations of invasive plants in parks and public spaces, especially where removal work is in process
- Posters “Wanted Dead or Alive” posted in parks
- Talk to groups – e.g., newcomers clubs
- Keep it science-based not emotional
- Promote benefits or removal, success stories
- Provide stories of ‘before and after’,
 - Train the trainer courses
 - Reporting back with species/locations
 - Know which species create health hazards
 - Know locations with prevalence
 - Support coordinated volunteer removal
 - Hire a volunteer coordinator
 - Single contact person at the City of Nanaimo
 - Have coordinators in each area of town
 - Get the union on board, they don’t always like to have work done by volunteers
 - Resolve liability issues
 - Get info from Saanich volunteer groups re their protocol
 - Identify invasive plants that can be managed by untrained people
 - Have a map that shows where volunteers are needed (and who to contact)
 - Work with existing volunteer groups
 - Work with neighbourhood associations
 - Keep a local focus (by neighbourhood)
 - Have work parties in parks
 - Provide handouts for volunteers to give to interested passers-by “Nanaimo supports...”, with city logo (as done in Courtenay)
 - Help with enabling signage, chipping
 - Provide signs where removal is taking place, showing city endorsement
- Advertise in neighbourhoods ahead of planned removal events, encourage more volunteers to join in (City of Nanaimo to facilitate allowing signage)
- Make the jurisdictional issues easier (coordinate with other agencies) – one place to call for information
- Engage businesses – e.g., sponsorship by Harmac (and they get the broom)
- What about goats?

- celebrate success
- Share information about successes (e.g., “Qualicum Beach is broom-free”)
- Engage volunteers in mapping and inventory
- Provide a City of Nanaimo website with interactive mapping so that people can add their observations and pictures of infestations
- Add photos to City of Nanaimo website
- Volunteer coordinator – get people out with maps
- Work with homeless people as a workforce
- Engage kids
 - School groups in parks close to home
 - Have an annual event at each elementary school/high school where education and collection takes place – have a competition between schools with rewards. Start with something simple like broom or ivy.
- Provide incentives to volunteers
- Provide a stipend to charity groups (scouts, church groups) to support volunteers
- Provide incentives for schools (e.g., fundraisers for sports teams, credits for PE classes)
- Where volunteers are working, put up signage “if you would like to help please call...”
- Support informal volunteer removal efforts
 - People like to work near where they live, can see results. Enable them to cut anytime!
 - Encourage individual volunteer groups
 - Encourage walk fit groups to report on invasive plants locations, help to pull a few plants each time they are out
 - Encourage citizen to fill a bag while walking
 - Reach out to those already doing activities in parks, have some of the classes focused on invasive plants removal
 - Create a blog where people can share what they are doing, people can find out what’s happening locally
- Avoiding volunteer burnout
 - Make it fun – have BBQs
 - Provide juice/cookies/hot dogs to volunteers
 - Celebrate!
 - Send out thank you's after, recognise their contribution, looking forward to seeing you next year, what you do matters
 - THANK volunteers and cooperative homeowners
 - Have volunteer specialists for different species to avoid burnout
- Challenge others to removal competitions
- Recruit new volunteers
- Actively recruit volunteers to eliminate invasive plants
- Letter for kids to take home from school
- Advertise that there are multiple jobs for each site (e.g., broom cutting, hauling), will be need for multiple visits

“How can the City of Nanaimo help volunteers and homeowners to better manage invasive plants on private land?”

As above, plus:

Prevent establishment of invasive plants

- Ban sales, motivate sellers to grow/sell
- Be able to email city for information
- Weekly feature on a specific plant,

- only “proudly non-invasive” stuff
- “Be wise” with marginal invasive plants (e.g., Buddleia)
- Regulate sale of invasive plants
- Grocery stores also sell plants and hanging baskets containing invasive plants
- Bylaws to ban sale of invasive plants by florists, nurseries
- Nurseries should sign “invasive-free plants sold here”

Promote use of native species

- Provide information on where to buy native species
- Have a garden tour of native plant gardens
- City of Nanaimo to create a showcase native plant garden
- Create incentives to plant native plants
- Promote vegetable gardens

Bylaws

- Address absentee landlords whose properties become overrun with invasive plants
- Better control of absentee landlords/empty lots
- Make city support clear, bylaw should have teeth
- City should enforce bylaw, not require you to rat out your neighbour
- Enforcement of bylaw, if they do not comply after 3 warnings, add the cleanup costs to their property taxes
- Offer tax incentives rather than penalties to keep large tracts of private land free of invasive plants
- Provide information on species, treatment and disposal methods

how/when to destroy

- Education about exceptions to the herbicide bylaw (hard to find on website)
 - Filtering of information by well-informed and well-trained group
 - Simple, easy to follow directions (how to...) target groups who have technology, mark with surveyors tape, for each location and eradication team
- Provide easily accessible information for homeowners
 - Easily available information
 - Promote awareness of the problem
 - Promote benefits, success stories
 - Have a help line and reporting line
 - Provide samples and detailed background information and educational material
- Provide a staff person who can come to your house and identify your invasive plants
- Provide information on treatment methods
- Let people know the right time for removal
- Provide information on the cosmetic pesticide bylaw (when it can be waived), make it easy to find on website

Disposal

- People don't want to pay for disposal, they just toss over the fence
- City should provide special free bins
- Disposal should be free and convenient
- Provide free, convenient dumpsters e.g., at malls to dispose of invasive plant
- Think about people without cars and mobility
- City should provide pick up of broom piles
- Have a number to call for pick up of invasive plants
- Have a service as part of garbage pick up
- Have a specific day for garden waste pick up
- Provide free dumping before a certain date
- Single phone number for volunteers to call (don't discourage them by making them

- Provide advice for recognizing, handling and disposal of invasive plants
- Management
 - Enable volunteers to work on private lands
 - Address liability issues
 - Make it the landowner's responsibility to remove, but let them know where they can get removal at minimal expense (e.g., through volunteers)
- Need an organization that will help homeowners deal with invasive plants that have taken over.
- Use agent orange, this is war!
- Provide good information on proper disposal techniques (e.g., not in compost, not dumped and why)
- Provide signage for gardens "my garden is invasive plant free. Ask me."
- Create a competition between neighbourhoods to be 'invasive-free'; winning neighbourhood to receive a prize or funding.
- Disposal information could be added to garbage collection schedule, tax notices, water bills
- Have something similar to annual Christmas tree drop-off and putting pumpkins on Jingle Pot

ONLINE SURVEY COMMENTS (AUGUST – SEPTEMBER 2012)

Question 16: If yes, what elements do you feel are necessary to have a successful volunteer program?

- good leadership and tools
- Education and leadership
- Good leadership. Short bursts of activity. Well organized. High visibility for the effort. Ample thanks.
- A full-time position for removing invasive plants that is also responsible for shadowing any individual in the public interested in helping. This would include education in removal techniques and education on the successful identification and propagation of native plants in their niche.
- snacks
- Need to encourage residents to adopt a park in their area.
- awareness that the program exists. Recruitment. organization. leadership. incentives.
- Something yummy to eat/drink at each session and effective advertisements.
- by-laws in place so that when you remove the invasive species it will not be allowed back
- -motivated and educated parks staff to help facilitate projects that will be successful and not a waste of time. Appropriate scientific monitoring and documentation of projects and keeping volunteers up-to-date with information through social media. Documenting the quantifiable successes of projects is vital to encourage further volunteer efforts in the long term.
- Information on how to sign up, where, when.... no idea at present...just have a friend that did it. not well known
- Motivated volunteers with enough free time to be able to be involved, especially young people who are strong & still have lots of stamina.
- advance advertisement of event ability to "drop in" rather than commit to a time/length supplies provided, with option to bring your own
- training, leadership, planning, identified areas
- Education - getting the word out there so people know there's a VIP program, getting consistent volunteers to help out, making sure everyone's trained well, and regularly going out to control invasive plants.
- proper equipment etc
- I would have to be convinced that the City is approaching the control of invasive plants in a rational, scientific manner. The decision to "Ban all Pesticides" is an example of an irrational thought process and must be reviewed with balanced, intelligent input.
- more info
- unknown
- Training sessions to help identify plants and scheduled "removal" times.....i.e. get them before they have a chance to propagate
- ongoing participation and a well-informed plan and a strong leader
- flexible schedule
- training and public awareness at home shows and info booths at nurseries
- A small budget to work with for tools etc.
- Public awareness
- My concern is mainly with the milfoil spreading in our lakes, which has not been addressed at all despite our efforts. Volunteers are ready to take this problem.
- Have someone knowledgeable from the City Parks area to head this up & recruit volunteers.
- Enough people and support from community association.
- Organize "invasive clean-up days" at certain times of year. This would encourage more people to come out. Extra tools could be available. Some people don't want to make a long-term

commitment so a one day work party would work for them.

- we all can not physically work at Broom removal, for example, but we could help some other way - inventories????
- Good communication between the City-Dept of Highways and Volunteer especially
- regarding areas that can be cut and disposal of waste.
- proper tools for volunteers and an inspiring volunteer coordinator
- Adequate information must be provided along with safeguards depending on species if necessary.
- Allow for children. Short, convenient and variety of times.
- Incentives, possible partnership to give either retail discount for volunteers or some city sponsored rebate for homeowners who participate. Not much but shows acknowledgement of community spirit.
- Education, leadership, convenience
- Advertise! I did not know about this volunteer program.
- Competent leadership. Instruction.
- A local area and a time when I am available.
- Provide tools, snacks, and some sort of appreciation Education so that volunteers appreciate the importance of what they are doing, and will do it on their own at other sites.
- more public information regarding this project.
- official support, overall coordination, activity organization, and sanction of specific activities by City of Nanaimo - identification to be worn by volunteers (vests, generic ID cards) during plant control activities - provision of tools and other accessories (bags, baling material) required to carry out work - removal of generated bio-waste by City staff and equipment (trucks, trailers)
- Free coffee
- equipment
- People are willing to support the maintenance of public lands as long as they feel land owners are made

responsible for their land and the government-owned, non-public land is being maintained

- Advertise
- Enough media information that a large group comes out. Incentives like points toward something that a neighbourhood could use for a sign, indigenous plants, a celebration photo..... Tools provided and enthusiastic knowledgeable leadership. Neighbourhood competitions. Options for turning out if you cannot make the whole event.
- A leader and the tools. Publicize the date 3-4 weeks in advance.
- Trade coupons for parks and recreation activities free refreshments Write-up in paper/facebook?
- information and coordination
- Better relationships with the city and staff that know what the city is actually doing. and how best to dispose of all these invasive plants ... this is CRITICAL!
- Good equipment to do the job, effective strategies so you don't end up doing the same thing year after year. Evidence that there is a comprehensive plan. Good communication.
- To focus on the major invasive species and let mother nature do the rest
- Public awareness, develop a sense of community responsibility/pride, provide an educational and "fun" component to encourage participants to join
- A *lot* of publicity looking for volunteers.
- public awareness and city (parks) involvement
- Publicise it a lot. Make it fun to encourage younger people. Provide water to drink.
- tools for proper removal and good information from leader

Question 17: If no, what would help to encourage you to volunteer?

- If the city and regional district cleared the broom from their property and took action on complaints received about private property then we would be glad to help.
 - I look after my own neighbourhood, watering cleaning up, pruning, fertilizing, etc.
 - My volunteer priorities lay elsewhere.
 - I would love to, but am physically unable to. My kids have been involved.
 - I have volunteered for invasive plant removal in the past. Have not done any lately because other things matter more. A green, growing environment is important - I'm not sure it's that important for it to be "native".
 - Awareness perhaps. Never knew it existed. I seem broom everywhere
 - if you would consider doing something about milfoil instead of pretending a problem does not exist
 - I have 1/3 acre to garden and don't have the time to do removal. My husband and I are at Colliery Park 5 days a week picking garbage. I don't have the time to do more as I still work.
 - I am physically unable to volunteer.
 - Rather than fight the inevitable changes that are occurring to our planet do that which makes a beneficial use of these changes. If you were to work with that intent than I might consider becoming a volunteer.
 - nothing -- waste of time
- time, too long as I have a bad back. Also, I am a RDN resident.
 - Increased awareness of control - as a Horticulturist I find the city is removing some plants that actually contribute to wildlife and the environment and in its place are growing plants such as horsetail, not very attractive. Also the city needs to address invasive plant problems by first preventing these plants from being sold in nurseries to homeowners. That's the first step.
 - money
 - Better health
 - Leadership
 - Free coffee and no self-proclaimed experts
 - More awareness about the event. Something in my direct neighbourhood.
 - communication and inclusion and recognition, feed them lol
 - provide education, transportation and meals
- The assurance that the work would not be too arduous nor the length of

Question 21: Any final thoughts?

- A concern of an animal owner is the harm that the neighbouring overgrown neighbouring hedge will have on our pets (poisonous leaves)
- Neighbouring invasive laurel hedge, which is not being maintained, is preventing us from putting up a proper fence. This fence is needed to protect a puppy from leaving the yard and possibly getting hurt.
- Enquiries to city councillor, by-law enforcement agent and planning department clerk were either not responsive or stated that said by-law are quote on quote "civil matters" and do not pertain to adjoining property owners. Very difficult to control existing 15 foot high with 11 foot overhang and roughly 4-5 inch diameter main stems, running along the length of the property. Dispute escalated to a near police involvement. However regular maintenance is provided for a professional couple, also sharing this hedge.
- Please look at the property on the corner of Holden Corso and Lofthouse, BROOM and over 100 piles of stumps and slash that we have endured for over two years.
- Yes, if the City is going to make more and more bylaws they MUST enforce them after reading of the property maintenance bylaw I called the bylaws dept. They claimed that there was no such bylaw. Seems silly to have a questionnaire that refers to that bylaw when the department claims no knowledge of it.
- Great concept, however, without action, there is no results. Not sure how you can motivate the general populous, but this is a very worthy cause.
- Tough problem but the answer has to be tapping into the public. Most are blissfully unaware of this issue. How to educate, and then encourage the general public to help. Highly visible, shocking signage may be a start. Seniors and students might be the untapped resource. Integration with school curricula might be another start. Rally the individual home owner or business person.
- I myself have volunteered over 100 hours this year towards scotch broom removal. I have seen young arbutus and Garry oak trees that had been suffocated by the broom revive and fill their dead branches with leaves upon removal of the noxious plant. I think that restoring the ecology of the region would do wonders for developing eco-tourism, as this region was compared to the 'Garden of Eden' upon the arrival of the first Europeans (before we collectively released livestock on their camas fields destroying their economic resources). Restoring the ecology through invasive plant removal and native plant reintroduction would demonstrate to the first nation's people that our society is willing to participate in the resurrection of their economic culture. Establishment of a native plant food industry is possible through restoration of unused lands, and this would also create a viable seed bank. This job would be best given to an enthusiastic individual of high energy and passion for the environment, as this is not a job that will get done quickly, noticeably, and under budget by taking coffee breaks. -Michael Rubin
michael_rubin_gog@hotmail.com
- We have contacted the city numerous times to have English ivy brought under control in beach Estates Park, but so far have not received a reply over the years. Our contact number is (250) 756-4294, or mdschiller@hotmail.com
- I think that the strategies for removing invasive species need to be reconsidered. Many invasive plants are pioneer species, thriving on sunny, recently disturbed lands (i.e. sides of roads, clear cuts, etc.). As long as these locations are available, they will

continue to thrive; in fact, removing them works to maintain disturbance in the location. I don't have the solution, but I don't believe that the current "broom-bashing" approach is a solution...rather it is a band aid to an ongoing problem.

- I love blackberries and note that myself and others look forward to the harvesting season each year.
- Invaders must be banned from being sold at nurseries. Invaders like broom and blackberries often settle on 'disturbed' land. Prevent that by actively reseeding disturbed land with native species. Make early restoration compulsory.
- I worked hard at broom busting this past year. It is a difficult and very physically demanding task. You remove the broom from a park and see a neighboring yard is growing it and it makes you think why bother when the city won't insist private properties remove the stuff.
- Invasive plants are a blight on Nanaimo... given our recent work on the new strategic plan. and its focus on the natural environment and its beauty
- I think that a lot of people are not aware that small acts can go along way towards controlling some invasive plant species.
- There is a lot of noise about "invasive" vs "native" plants, but one has to assume that all plants were once "invasive". I have to wonder if efforts to keep out invasive species are just another misguided effort by humans to stop nature from taking its natural course. Yes, we may have created conditions to allow invasive species to flourish, but does that necessarily mean they are "bad" now that they're here?
- please make sure landlords who live out of town are informed of your policies! the place that I rent here in harewood is

covered n Daphne and he refuses to remove it.

- I am very frustrated with what I am seeing in Nanaimo with invasive plants. Personally, I live in an apartment building over run with Ivy. It is starting to choke out the trees on the property. I have also seen other invasive species as well. The property manager (strata) is negligent in doing anything about this. Also across from where I live in Bowen Park, ivy is crawling across the wooded floor bed and choking trees. This gets worse every year. Nobody does anything about it. The sides of the highways have been filled with Broom for years upon years. Causing us allergy and asthma suffers to just deal with it. I have not heard any "Plan" from the city or seen any real mayor efforts.
- How about a reduction in taxes for those who help out?
- Do something about the Milfoil in our lakes.
- I was surprised how many I don't know - I think the key is educating the garden shops, stop them from selling broom and Daphne and get them to stop people from buying and planting it.
- Informing residents of invasive species is a good move by the city. Many people are not aware of the situation.
- most invasive species do less harm than we (European alien species) do and I'm afraid if we get rid of all so called invasive plants we would be left with firs and salal; no garden flowers or vegetables allowed, remember!
- I have attended walk about in the park to learn about the invasive species, good information given
- Thanks for asking us to do this. I think we need to address the problem of absentee landlords who do not clear their properties by either fining them or offering an incentive by way of a tax break on condition that Enforcement

officers are satisfied with their (land owner's) efforts to comply

- I think it's sad and somewhat scary that these plants seem to be taking over, especially Daphne and Broom.
- I am concerned about the Knapweed growing on the E&N trail across from the Nanaimo Golf Course. It has consumed huge tracts of grassland in the interior.
- educate the employees at city hall so that they are aware of the initiatives. I have lodged a complaint but was blown off by the employee at the bylaw office.
- This problem is so out of control it will take great effort to regain any balance at all. I would suggest business sponsors and a system somewhat like the USA highway volunteer clean up with credits. Also start in schools. As well, do some education and monitoring of plant nurseries.
- Please address the milfoil with the invasive plant strategy. It is growing out of control and there does not seem to be any attention given to the problem. Cathers Lake is becoming a swamp and it is affecting the local eco system, including the wildlife.
- Irish moss has gone unnoticed yet it is found in almost all sidewalk and paving crevices in the city. I have observed city staff trying to remove it by power washing. This is completely ineffective because the roots and seeds remain and the plant will immediately return.
- My family and I have worked with Broombusters for a number of years. We really enjoy taking an hour or two when we can to cut broom. It would be great to know what areas we can work on as well as what besides broom can be removed. We don't want to clean out one to make room for another invasive plant.
- I'm glad you are doing this survey. I care deeply about my surroundings, and the

abundance of invasive plants in Nanaimo is truly depressing, perhaps only matched by the amount of litter in our city. Jewels such as Bowen park are getting over run by ivy. Every vacant spot in town, and the sides of every walkway, is infested with blackberry. Third Street Park is a disgrace, just hawthorn, broom and locust where we could have a precious wetland. We live in such a beautiful place, but it is getting eroded by invasive plants. I have to fight all year long to keep invasive plants out of my yard, as my neighbours do not care and allow ivy, Japanese knotweed, Daphne and blackberries to run rampant in their lots. I realize that your funding is limited, but I do think this is a worthwhile effort and that more volunteer hours could probably be raised with the right encouragement and education. I thank you in advance for any progress you make on this issue. A stronger effort to restore some sensitive areas such as Neck Point and Harewood Plains would be wonderful.

- Educating the public to look for and take care of their properties. If I clean up mine but the neighbour leaves the giant hogweed then what. It becomes very discouraging!
- It may help owners working to eliminate these species on private land to have the ability to have a twice a year city pickup of removed plant material. This would be a great help in controlling the private land growth and still places the burden of the removal work on the landowner while acknowledging that work by taking away the waste generated.
- Again I would emphasize having worked in the nursery business for many years that we need to stop garden centres from selling plants such as ivy, broom, Japanese knotweed, and all Daphne spurge. Newcastle Island is full of Daphne spurge and holly through

wildlife. The first step should be prevention.

- Thanks for looking into this. I learned a few things from this survey.
- I wonder if there could be a millfoil eradication included in this program.
- Let's get going!
- The park next to our house is covered in scotch broom. The city needs to make some effort to clean this up before threatening me with a bylaw infraction if their broom invades my property and I'm unable to control it.
- Thanks for raising this issue and bringing the volunteer program to my attention.
- As an Environmental consultant with over 20 years experience the only solution I see to the rapid spread of existing and newly introduced invasive plants is whole scale eradication and strict regulation and monitoring
- It will be difficult to get volunteers unless land owners and governments are fulfilling their responsibilities
- Thank you for asking for feedback!
- I think that a lot of this could start with talking to the kids. The kids will talk to their parents. This worked with recycling in the 90's. Well, it kind of worked. people are still littering. It must be some weird prank.
- Disposal management was neglected in this survey -- that is a huge part of effective management! People need to dispose of the invasive plants properly or they make their way back in compose etc.
- Thanks for taking this seriously - I worry about this issue quite a lot.
- My main issue is that the City is trying to force the private properties to conform, while the City is non conforming
- Thank you for undertaking this effort!
- it is time that the city enforces the bylaw, I didn't know there was one until today and I have lived here for 25 years.
- Some people will never accept that invasive plants are a problem - I've read lots of comments on the Daily News comments board and others to that effect. Lack of scientific literacy is an issue here, so education in schools might help. People in Nanaimo are used to just ignoring all the bylaws, if they even know about them. You need a two-sided approach: education and incentives for those who are open to it, and enforcement for those who are not.
- good idea to deal with invasive plants but in the end, decisions should be made regardless of how the public responds to this survey. i.e., don't be afraid to do what needs to be done even if the public don't see this as a big issue.
- One could have the same intention for people from England, Scotland, China, Japan etc. - keep those dam' furriners out!
- the longer its left the worse it gets. there is not enough cooperation between city and volunteer's prime example is removal of broom after broom busters cut this year. I was a volunteer

APPENDIX 4 ROLES AND PARTNERSHIPS

PARTICIPANTS AND PARTNERS IN INVASIVE PLANT MANAGEMENT IN THE CITY OF NANAIMO

PARTICIPANT / PARTNER	ROLE
City of Nanaimo	Overall responsibility for managing invasive plants in publically owned parks and natural areas; facilitation of invasive plant management on private lands through education and outreach; initiating regulation (if appropriate) of invasive plants; funding internal and external invasive plant management projects; monitoring or collation of monitoring and mapping; developing policies and strategic plan; integrating invasive plant management into policies and initiatives including the Official Community Plan and the Parks Recreation and Culture Master Plan (2005).
City of Nanaimo Parks, Recreation and Culture (Horticultural Supervisor)	Coordination of invasive plant management on public lands; review of internal and external projects; effectiveness monitoring; internal and external communication and outreach activities including staff training. Implementation of best management practice for plant and soil use or movement and plant and soil disposal
City of Nanaimo Parks Recreation and Culture (Recreation Coordinator)	Planning and implementation of volunteer control projects; formal and informal monitoring of project effectiveness; support for VIP projects;
City of Nanaimo Planning Department (Parks and Open Space Planner)	Review of development applications to avoid or restrict the use of invasive plants; inspects all new parks to ensure invasive plants have been removed; Ensures that Park management plan strategies (i.e. Neck Point Park) are implemented. Work with VIP groups to promote invasive species removal; maintains list of high priority management sites on public land.
Coastal Invasive Plant Committee	Regional coordination of invasive plant management on Vancouver Island through education, outreach, and contracting services for removal (Hotspot) crews. Emphasis on collaborative management and capacity building.

Government Ministries (MOT, MOE, BC Parks)	Management of invasive plants on some public lands; support of invasive plant management through enabling legislation, financial resources, education, direction on best management practices to protect environmental values; regulation on noxious weeds
Nurseries and Plant Suppliers	Voluntary or regulated control of the availability and sale of invasive plants; education of buyer; provision of suitable alternatives; management of soil and plant waste.
Snuneymuxw First Nation	Management of invasive plants on Snuneymuxw First Nations land; participation in partnerships with the City and others
Developers	Management of invasive plants on Greenfield and redevelopment sites; removal of existing infestations during development activities, including infestations in newly designated parks; ensuring best management practices (soil, plant selection) for invasive plant management are followed by professionals; proper disposal of waste material
Utility Companies (BC Hydro, FortisBC etc.)	Management of invasive plants on utility corridors and control of dispersal vectors to prevent movement of invasive plants into parks and natural areas
Park Neighbours	Respecting park boundaries and no dumping signs; preventing the movement of invasive plants from private land to parks and natural areas; supporting or assisting in invasive plant management projects in parks
General Public	Supporting and participating in invasive plant management projects in the City; effectively managing invasive plants on their property