



Meeting 2016 November 21

COUNCIL REPORT

ENVIRONMENT COMMITTEE

*HIS WORSHIP, THE MAYOR
AND COUNCILLORS*

**SUBJECT: UPDATE ON THE BURNABY INVASIVE SPECIES MANAGEMENT IN
PARKS**

RECOMMENDATIONS:

1. THAT Council receive this report for information.
2. THAT a copy of this report be sent to the Parks, Recreation and Culture Commission for information.

REPORT

The Environment Committee, at its meeting held on 2016 November 08, received and adopted the attached report providing the results of the Invasive Plant Management work plan in Burnaby parks for 2015.

Respectfully submitted,

Councillor A. Kang
Chair

Councillor S. Dhaliwal
Vice Chair

Councillor P. Calendino
Member

Copied to:	City Manager Director Parks, Recr. & Cult. Services
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Meeting 2016 Nov 8

COMMITTEE REPORT

TO: CHAIR AND MEMBERS
ENVIRONMENT COMMITTEE

DATE: 2016 Sept. 28

FROM: DIRECTOR PARKS, RECREATION &
CULTURAL SERVICES

SUBJECT: UPDATE ON THE BURNABY INVASIVE SPECIES MANAGEMENT IN
PARKS

PURPOSE: To provide the Environment Committee the results of the Invasive Plant
Management work plan in Burnaby parks for 2015.

RECOMMENDATION:

1. **THAT** a copy of this report be sent to City Council and the Parks, Recreation and Culture Commission for information.

REPORT

BACKGROUND

Invasive Species Management in Burnaby Parks began in 2009 with an Invasive Plant Survey, and Habitat Management Strategy. The survey focused on the top invasive plant species at that time (Attachment #1), and provided a 'snap shot' on the status of invasive plants in Burnaby parks, along with recommendations for treatment options. Of the 1,786 ha. of Park lands in Burnaby, approximately 1,484 ha. were surveyed, and approximately 284 ha. or 19% of the total area surveyed were impacted by invasive species (Attachment #2).

The Habitat Management Strategy identified and prioritized key invasive plant species and locations to manage, and identified the goal to *control the spread* of invasive species beyond their current areas, with recognition that total *eradication is unlikely* for any one species. Management initiatives included a holistic approach including *manual* removal/maintenance, community and City staff education and raising awareness, community participation programs, and City participation in regional initiatives.

To: Environment Committee
From: Director Parks, Recreation & Cultural Services
Re: Update on the Burnaby Invasive Plant
Management in Parks

2016 November 8..... Page 2

Since 2009, initiatives from the Habitat Management Strategy have been implemented and are ongoing. Each year, initiatives are reviewed and adapted based on feedback and results of the previous years. This adaptive management included the expansion of the invasive plant program to 'species', and capture concerns with invasive wildlife and insects. The adaptive management approach has been an important part of tackling this very large challenge.

ACTION PLAN

Invasive plant removal continues to be a large part of the invasive species program. Removal, monitoring and maintenance of invasive plants occur at two levels – park level and species level. Key parks and species have been identified for treatment for various reasons (Attachment #3).

Park wide removal and control occur at Cameron Park, George McLean Park, Taylor Park, Jim Lorimer Park, and Warner Loat where past Capital work projects included large scale invasive plant removal. The monitoring and maintenance program covers the entirety of these parks, and keeps invasive plants in these parks at low levels. Central Park, Deer Lake Park and Burnaby Mountain Park are larger parks where continued efforts are ongoing. In addition to opportunities to remove invasive plants during capital projects, volunteer work parties and special funding opportunities have provided resources to contribute to the removal and replanting program.

Specific invasive plant species are targeted based on balance between scale of the infestation and cost of removal, and environmental/social impact.

- Butterfly bush and Pickerelweed were identified in the 2009 invasive plant survey as existing in sufficiently low numbers to be eradicated in Burnaby Parks, and have been targeted for removal in all parks. Removal and control of both species have been successful with a majority of the sites showing no evidence of re-growth for multiple years.
- Purple Loosestrife is specifically targeted along the shores of Deer Lake. Eradication is likely impossible however, regular treatment prevent the plant from taking over the entire shoreline of the lake. The total number of hours required to maintain the site and the plant mass removed each year has continued to decline.
- English ivy is widespread throughout parks. All hazardous English ivy infestations growing into the tree canopy have been treated. Removal and control efforts are in less hazardous/safety related areas, when the opportunity allows (Attachment #4)

To: Environment Committee
From: Director Parks, Recreation & Cultural Services
Re: Update on the Burnaby Invasive Plant
Management in Parks

2016 November 8..... Page 3

- Scotch broom sites in parks (36 parks) were treated by manual removal in 2014. In 2015 all these sites were revisited and new growth was removed. Monitoring and maintenance of these sites will be rigorous for the next 4 years to capture new growth from the seed bank or sprouting from old root stumps.
- English holly removal continued at Central Park in conjunction with the Trail of Hope development and then across the park.
- Knotweed species is the only invasive plant species where herbicide treatment is used. The herbicide program began in 2010 with manual removal of 12 sites in 6 Parks. In 2011 12 sites were added totaling 23 sites. Following the city's Integrated Pest Management Program, where manual treatment was not effective and in the lack of biological control, permission for an herbicide treatment trial in 3 parks was pursued and approved in 2012. The trial was established at Taylor Park, Burnaby Mountain and Fraser Foreshore Park and measured the effectiveness of herbicide in comparison to manual pulling. In 2013, all knotweed manual pull sites from previous years were treated with herbicides.

The knotweed treatments began with stem injection and expanded to include foliar spray of stems too small to be injected. The trials have shown that manual treatment was not effective in controlling knotweed and actually caused the plant to spread its growth laterally. Stem injection of the large stems were effective in killing portions of plants, but the small untreated stems continued to thrive. With the combination of stem injection of large stems and foliar spray of smaller stems, where 100% of any one infestation is treated, the results of herbicide treatment have improved greatly. Sites monitored in July and October 2015 found efficacy was extremely high (95 to 100%) (Attachment #5).

In 2016 all sites will be monitored for re-growth and retreated as necessary, and an expansion of foliar spray treatment will target infestations of smaller stems, in a timely manner. New sites will be added to the treatment based on budget and on a priority system based on importance of sightlines or public safety reasons and frequency of maintenance. Locations that are maintained more often, and therefore, more likely to spread knotweed, will be placed higher on the priority list over areas that are flail mowed or are only maintained once a year.

To: Environment Committee
 From: Director Parks, Recreation & Cultural Services
 Re: Update on the Burnaby Invasive Plant
 Management in Parks

2016 November 8 Page 4

EDUCATION AND PARTICIPATION

Public and staff awareness and education are key to controlling the spread of invasive species. Programming in 2015 included responding to calls and emails from residents and communicating one-on-one, updating information on the city website along with articles in the local papers, and public invasive plant workshops. Volunteer activities were also offered to the public, and there were support and recognition for the work of volunteer community groups including: Byrne Creek Streamkeepers, the Eagle Creek Streamkeepers, the Stoney Creek Streamkeepers, Evergreen Foundation, TELUS, Delta Hotels and the Lower Mainland Green Team.

LOCAL REPRESENTATION IN REGIONAL COMMITTEE

Burnaby Parks continues to be a representative on the Board of Directors for the Invasive Species Council of Metro Vancouver since the fall 2009. This opportunity allows Burnaby Parks to be connected with other municipalities on invasive species issues, and regional treatment and education efforts, while staying abreast to the newest updates, and places Burnaby in the forefront of action with addressing invasive species locally.

SUMMARY

Stemming from a 2009 baseline survey of invasive plants in parks and green spaces and the resulting strategy and management plan, invasive plants are targeted for removal and control throughout various Burnaby parks. Species dependant, treatment involves manual pulling and digging of roots or treatment of herbicides through stem injection and foliar spray. Through adaptive management, all invasive plants in treatment areas are showing reduced growth and spread, and in some cases, there has been no regrowth for over 2 years. Along with on the ground treatment, public awareness and education programs, and participation in regional efforts are integral parts of the Invasive Species Management in Parks. All current activities will continue in 2016.



Dave Ellenwood
 DIRECTOR PARKS, RECREATION & CULTURAL SERVICES

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Attachments

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Attachment #1

Table 1. Top 13 Invasive Plant Species targeted after the initial survey

Common Name	Species Name
Butterfly bush	<i>Buddleia davidii</i>
Cherry-laurel (English laurel)	<i>Prunus laurocerasus</i>
Clematis	<i>Clematis vitalba</i>
English holly	<i>Ilex aquifolium</i>
English ivy	<i>Hedera helix and Hedera hibernica</i>
Giant hogweed	<i>Heracleum mantegazzianum</i>
Goutweed (Bishop's weed)	<i>Aegopodium podgaria</i>
Hedge bindweed (common morning glory)	<i>Convolvulus sepium</i>
Hops (common)	<i>Humulus lupulus</i>
Himalayan blackberry	<i>Rubus discolor and Rubus laciniatus</i>
Knotweed species	<i>Fallopia spp. and hybrids (syn. Polygonum spp.)</i>
Lamium (yellow lamium/yellow archangel)	<i>Lamium galeobdolon</i>
Periwinkle	<i>Vinca minor</i>
Pickeral weed	<i>Pontederia cordata</i>
Policeman's helmet (Himalayan balsam)	<i>Impatiens glandulifera</i>
Purple loosestrife	<i>Lythrum salicaria</i>
Reed canary grass	<i>Phalaris arundinacea</i>
Scotch broom	<i>Cytisus scoparius</i>
Small flowered touch-me-not	<i>Impatiens parviflora</i>
Spurge laurel (daphne-laurel)	<i>Daphne laureola</i>
Yellow flag iris	<i>Iris pseudacorus</i>

Attachment #2**Table 2. Total area of infestation by invasive species in the City of Burnaby, 2009**

Common Name	Area
Himalayan blackberry	99.78 ha
English ivy	32.50 ha
Reed canary grass	12.23 ha
Policeman's helmet	11.51 ha
Knotweed species	6.71 ha
Lamium	6.25 ha
English holly	4.59 ha
Small flowered touch-me-not	3.26 ha
Cherry-laurel	2.15 ha
Common hops	2.12 ha
Scotch broom	2.00 ha
Periwinkle	1.37 ha
Purple loosestrife	0.78 ha
Hedge bindweed	0.60 ha
Clematis species	0.27 ha
Yellow flag iris	0.14 ha
Goutweed	0.11 ha
Spurge laurel	0.07 ha
Butterfly bush	45 m ²
Pickerel weed	35 m ²
Giant hogweed	<1 m ² *

Table 3. Summary of work complete in 2015

Treatment Program	Project	Start Year	Total Crew Hours	Total Volume (m ³)	Number of Treatment Units	Number of Parks
Knotweed Maintenance	Mow barrier installation	2010	29	-	69	20
	Charles Rummel Emergency	2015	96	6	2	1
Park sweep	Cameron Park & George McLean	2010	101	6	N/A	2
	Central Park west zone	2014	20	4	N/A	1
Species sweeps	Butterfly bush	2010	19	6	38	3
	Pickereelweed	2009	15	0.5	17	2
	Purple loosestrife	2010	63	4.5	N/A	1
	Scotch broom	2010	36	5	N/A	2
	Aquatic plants: Burnaby Lake	2012	83	5	1	1
	Blackberry: Harrier Nest Site	2014	45	12	1	1
	English ivy	2011	175	600 trees	N/A	2
Restoration	Taylor Park	2010	53	2	1	1
	Jim Lorimer	2014	42	2.5	1	1
	Warner Loat	2013	59	6.25	1	1
TOTAL			836	59.75	-	-

Attachment #4**Table 4. Parks with priority Ivy infestations**

Common Name
Boundary Creek Ravine
Kaymar Creek Ravine
Stride Avenue Ravine
Burnaby 200 Conservation Area
Warner Loat
Boundary Creek Ravine
Eagle Creek Ravine
Lubbocks Wood
Macey
Braemar/Bunckingham/Malvern
Burnaby Lake
Cottonwood
Barnet Marine
Capitol Hill
Montrose

Attachment #5**Table 5. Knotweed Treatment Summary**

Treatment Event	Date	Number of sites treated or monitored	Number of sites with 100% mortality (cumulative)	Number of site with stems too small to inject ^A
1	Sep 13-19, 2012	17	N/A	5
2	Aug 1-15, 2013	64	5	27
3	Sep 24-27, 2013	64	6	30
4	Jul 2-28, 2014	102	7	N/A ^B
5	Oct 27-31, 2014	111	36	N/A ^B
6	Jun 29-Jul 13, 2015	178	41	N/A ^B
7	Sep 28-Oct 23, 2015	181	41	N/A ^B

^A Stems on these sites were treated if injectable size.

^B In 2015 if stems were too small to inject they were treated by foliar application