

**TO:** CHAIR AND MEMBERS  
ENVIRONMENT COMMITTEE

**DATE:** 2016 Sept. 28

**FROM:** DIRECTOR PARKS, RECREATION &  
CULTURAL SERVICES

**FILE** 02410-20

**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.

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**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.

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)

- 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*  
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## **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.



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### Attachments

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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</i> and <i>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</i> and <i>Rubus laciniatus</i>             |
| Knotweed species                        | <i>Fallopia</i> spp. and hybrids (syn. <i>Polygonum</i> spp.) |
| Lamium (yellow lamium/yellow archangel) | <i>Lamium galeobdolon</i>                                     |
| Periwinkle                              | <i>Vinca minor</i>  |
| Pickering 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>                                       |

**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 <sup>2</sup>   |
| Pickrel weed                | 35 m <sup>2</sup> * |
| Giant hogweed               | <1 m <sup>2</sup> * |

**Table 3. Summary of work complete in 2015**

| Treatment Program    | Project                       | Start Year | Total Crew Hours | Total Volume (m <sup>3</sup> ) | 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               |
|                      | Pickeralweed                  | 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               |
| <b>TOTAL</b>         |                               |            | <b>836</b>       | <b>59.75</b>                   | <b>-</b>                  | <b>-</b>        |

**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                      |

**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 <sup>A</sup> |
|-----------------|---------------------|--------------------------------------|--|--|
| 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 <sup>B</sup>   |
| 5               | Oct 27-31, 2014     | 111                                  | 36   | N/A <sup>B</sup>   |
| 6               | Jun 29-Jul 13, 2015 | 178                                  | 41   | N/A <sup>B</sup>   |
| 7               | Sep 28-Oct 23, 2015 | 181                                  | 41   | N/A <sup>B</sup>   |

<sup>A</sup> Stems on these sites were treated if injectable size.

<sup>B</sup> In 2015 if stems were too small to inject they were treated by foliar application