

INTEGRATED VEGETATION MANAGEMENT TEAM ANNUAL REPORT



Japanese knotweed, a newly discovered prohibited noxious weed in Edmonton

2015

Neighbourhoods Branch, Community Services

This annual report summarizes the programs and achievements of the City of Edmonton's Integrated Vegetation Management Team for the 2015 growing season and provides an outlook of key projects for 2016.

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Integrated Vegetation Management Team

2015 ANNUAL REPORT

BACKGROUND | ONE

In 1995, the City of Edmonton formed the Vegetation Management Team, consisting of seasonal field staff, Leaders and Supervisors based in geographic districts. Since its establishment the team's main responsibility is to manage unwanted vegetation on public parkland and to keep pest populations to acceptable standards. These standards involve internal standards, established by teams of experts, or external standards, directed by legislation (e.g. Alberta Weed Control Act).

The City of Edmonton created and implemented an Integrated Pest Management (IPM) Policy in 2004. IPM is defined as a multi-disciplinary, ecological approach to effectively manage pest problems. The IPM approach is based first on using good cultural practices and, when required, biological, mechanical controls, saving registered and safe pesticide application as a last resort. The City's vegetation management operation is based on these IPM principles, and to better reflect this connection, the Vegetation Management Team changed its name to Integrated Vegetation Management Team (IVMT) in 2013.

Within the City of Edmonton organization the IVMT is part of the Neighbourhoods Branch (formerly Neighbourhood, Parks and Community Recreation) which operates under an ISO 14001 certified Environmental Management System called "ENVISO." The entire branch including the IVMT operates based on the three main ENVISO commitments:

- Prevent Pollution
- Comply with Environmental Laws
- Continually Improve on Environmental Performance

Furthermore, the IVMT works in support of the City's long-term strategy *The Way Ahead* and specifically the environmental strategic and peoples plans *The Way We Green* and the *Way We Live* as well as the City of Edmonton's Leadership Principles.

Since 1995 the IVMT has evolved to work as stewards of Edmonton's green spaces and is proud to serve the public in a professional, competent and efficient manner. It maintains or enhances the ecological habitat value of Edmonton's green spaces to ensure that they are sustainable, safe, healthy and accessible for the enjoyment of Edmontonians. Lastly, the IVMT strives to be a leader in the area of IPM.

This annual report summarizes the programs and achievements of the 2015 growing season and provides an outlook of key projects for 2016.

RESOURCES AND INVENTORY | TWO

In 2015 the IVMT managed pests on 13,000 ha of parkland including turf areas, natural areas, shrub beds, and hard surfaces. Following the retirement of the management representative (Director Liaison) on the IVMT, a new Director Liaison was welcomed by the team in July of 2015. The positions of the Supervisor and Leader were re-named to Team Leader and Crew Leader, respectively, to align the position names with other similar positions throughout the corporation. Furthermore, all districts received and filled a long awaited third operational permanent position, a Pest Control Operator / Labourer II (PCO/LII). Due to the growing inventory and work load required from the IVMT, these four positions are critical for a smooth, efficient and regulatory compliant program delivery. These permanent additions come with a mandatory herbicide applicator license, which is important to more efficiently cover regulatory required supervision of herbicide applicators, especially in case of an absence of the Team Leader or Crew Leader. Summarizing, in 2015, the IVMT consisted of 12 permanent staff and 64 seasonal field staff of which 20 were for the newly created Landscape Services Team (Table 1).

Table 1. IVMT Resources 2015

District	Team Leader	Crew Leader	PCO / LII	Seasonal Field Staff
NE	1	1	1	14 (4)
NW	1	1	1	18(7)
SE	1	1	1	13(3)
SW	1	1	1	19(6)

INTEGRATED VEGETATION MANAGEMENT PROGRAMS | THREE

In alignment with the IPM philosophy, the IVMT runs programs targeting the prevention of weed establishment and programs that focus on the control of weeds. Furthermore, the IVMT also facilitates various programs to address citizens' concerns about pesticide exposure.

On June 23rd City Council passed a motion to implement a restriction of herbicide use on city-owned land, with exemptions. The aim of the restriction is to eliminate non-essential uses of herbicides on city-owned land while recognizing there are circumstances where herbicide use is required. More details can be found on a dedicated web page at www.edmonton.ca/herbicides. This decision and the following re-evaluation of the IVMT's weed control programs, led to several changes in the IVMT's program delivery, including the cancellation of chemical trimming along fencelines. Operating under the herbicide restriction for a few months brought to light some operational questions around the applicability of the herbicide restriction to some programs or parts of programs. Clarification on these questions will have to be continued in 2016.

Weed Prevention Programs | one

Community Weed Pulls | one

A key component of weed prevention programs in an urban environment is to raise awareness about weeds and especially invasive weeds among citizens and encourage them to participate in weed management on their own private properties. With several ornamental species listed in the Alberta Weed Control Act and few of them already being spread from private yards to Edmonton's Natural Areas, public engagement is important in the management of invasive weeds in Edmonton. The IVMT co-hosted community weed-pull events in Mill Creek and

Kennedale Ravine, where people, besides removing weeds, could learn about the negative effects of invasive weeds with a focus on garlic mustard and Himalayan balsam.

In addition, the IVMT supported external groups such as River Watch when they included weed pulls in their environmental education programs. IVMT provided garbage bags and handled the disposal of the removed weed material.

Weed Monitoring | two

Known locations of smaller infestations of prohibited noxious and noxious weeds listed in the Alberta Weed Control Act are re-visited and weeds are controlled if needed before they get out of hand. Programs include monitoring for great and woolly burdock, purple loosestrife, Himalayan balsam, and garlic mustard.

Selected ravines with current and/or historical weed infestations were surveyed to detect any new infestations as early as possible. For example, Whitemud creek, Mill Creek ravine and Kennedale Ravine were regularly inspected for weeds.

Besides this established monitoring program, the NW and SW district launched a more in depth monitoring program. Key areas in each district were selected to trial two different survey/monitoring tools. NW district used Google maps for reporting weed locations and SW tried the new in-house developed Alberta Weed Spotter app. To have a quick reference guide right in the application and the ability to send photos were pros of the Alberta Weed Spotter application. Unfortunately, the app showed some issues with the accuracy of some reported locations. The hope is to have these resolved over the winter. Otherwise, Google Maps is the way to go. The additional monitoring work also paid off already, as the first common barberry, a prohibited noxious shrub, was found in the river valley. This is the first escaped plant outside the known location at the University of Alberta grounds where this shrub was planted as an ornamental.



Escaped common barberry shrub discovered in Edmonton in 2015

With the implementation of the herbicide restrictions on managed turf, the maintenance of the turf at the City's regular turf sites became the same as the turf maintenance at the 45 council-directed herbicide free sites, therefore, weed monitoring of the turf at these 45 sites was discontinued in 2015.

Weed Control Programs | two

Mechanical Control | one

The mechanical weed control program consists of mowing, mechanical weed trimming, as well as digging out and hand pulling weeds.

Depending on the weed's biology, the legal requirement (noxious weeds only require control and prohibited noxious weeds need to be destroyed), and the infestation size and pattern (one small area 100% covered by the weed vs. a large area with sparse distribution of the weed) the control methods may differ.

In 2015, on 98% of the managed turf area the only weed control method used was mechanical control.



Volunteers pulling Himalayan balsam in Kennedale Ravine, Edmonton

Besides being an educational program, the above mentioned community weed pulls are very much a part of the mechanical control program as well. In 2015 the community support for mechanical weed control was again further increased. Thanks to the help of a summer student within the Sustainability Scholars program, and several newly engaged staff in the NE district, the profile of the Himalayan balsam program in Kennedale Ravine was increased. Two large events with provided lunch and one smaller event saw a total of 60 volunteers come out helping to pull Himalayan balsam out of the Ravine. These events received high profile attention and attracted Councillor Ed Gibbons and Deron Bilous in his former role as Minister for Municipal Affairs to come out and show support for this program.

The dry summer helped to naturally reduce this year's population size compared to 2014. The smaller population, the well participated community weed pulls and integrating mowing of dense weed patches by IVMT staff made it possible to eliminate almost all mature plants in Kennedale Ravine. This led to a great reduction in new seeds going into the soil and will hopefully result in even fewer plants next year.

In efforts to find the most effective control methods, a new technique of weed pulling was trialed. Instead of bagging all the pulled plant material and hauling it to yard bins, the pulled plants were broken in half and thrown onto the creek bank (above the high water level mark) or onto dry areas along the creek. This method saved time and minimized the potential of spreading weeds through transporting. Any concerns that plants may re-root and reach maturity (i.e. set seeds) were not substantiated.

In addition to the weed pulls of Himalayan balsam in Kennedale Ravine, our established annual program in Mill Creek, targeting garlic mustard, was run again with two pulls in the spring of 2015.

Similar to the weed pulls, supporting groups like RiverWatch, who include mechanical weed removals in their educational programs, helps not only to raise awareness around invasive weeds but also directly contributes to reduced weed infestations in Edmonton and is therefore part of the IVMT's mechanical weed control program.

Herbicide Control | two

Even though herbicide applications became restricted this summer, strategic and responsible herbicide applications are still an important component of the City's integrated pest management approach to effectively manage weeds.

When using herbicides to control weeds, the objective is to provide effective weed control by using only the smallest amount of herbicide required and minimizing off-target effects. Wherever possible, selective herbicides that are formulated to target only specific weeds were used. For some programs non-selective herbicides that target more than one species had to be applied. Independent from the herbicide type, most applications are spot treatments, where herbicides are applied to a single target plant.

All City applicators are trained according to legislation and City of Edmonton guidelines. All products are registered with Health Canada's Pest Management Regulatory Agency and are applied following all legal

requirements and City policies and guidelines. Therefore, all applications are safe for the public, the applicators and the environment.

Pesticide use in most City IPM programs fluctuates yearly according to changes in climatic conditions, pest population cycles and the availability of effective alternative IPM tactics.

Compared to the 964 kg of active ingredient used in 2014, the IVMT reduced the usage to 781 kg in 2015. Most of the reduction can be pinpointed to the discontinuation of chemical trimming along fencelines and around obstacles as a result of the implementation of the herbicide restriction. The usage of glyphosate, the main product used for this program, has decreased by 40% compared to 2014.

In 2015, the total area of managed turf inventory was 4189 ha. Only 2.2% of this turf inventory (92 out of 4189 hectares) had to be treated with herbicide in 2015 (Figure 1).

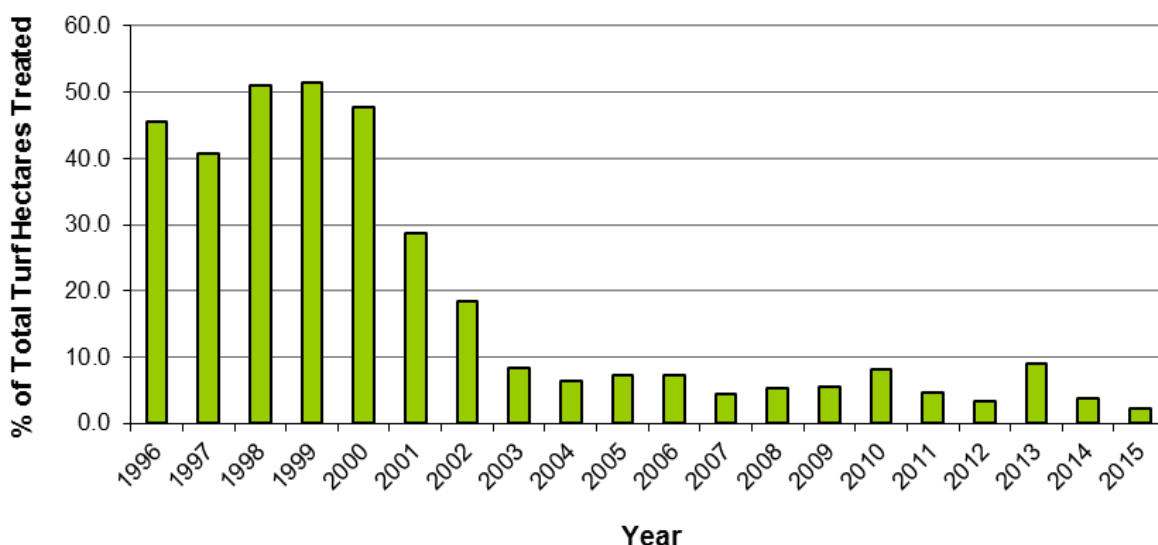


Figure 1. Development of the proportion of turf area treated to total turf area managed. 92 ha out of 4189 ha were treated with herbicides in 2015

In addition to turf areas, herbicides were applied in shrub beds, naturalized areas, tree grates, on hard surfaces and on sport fields.

Herbicides had to be used to control weeds in various areas of the City’s green space inventory:

- **Turf** – spot spraying of selective herbicide to control broadleaf weeds on developed turf
Turf herbicides used: 2,4-D, Estaprop Plus®, Trillion®, Vanquish®, Escort®
- **Shrub Beds** – spot spraying of selective and non-selective herbicide to control weeds in ornamental shrub beds
Shrub bed herbicides used: Casoron®, Roundup®, Trillion®
- **Naturalized and Natural Areas** – spot spraying of selective herbicide to control noxious and prohibited noxious weeds on naturalized and natural area parkland

Naturalization/Natural area herbicides used: 2,4-D, Estaprop Plus®, Milestone®, Trillion®, Vanquish®, Escort®, Lontrel 360®

- **Fencelines and around obstacles** (only until implementation of herbicide restriction) – spraying of 15 cm (~6 inch) strip along fence lines and obstacles with a non-selective herbicide to control grass and weed growth, reducing gas emissions and higher labour costs associated with hand trimming equipment
Chemical trimming herbicides used: Casoron®, Roundup®, Ecoclear®, Hyvar®, Arsenal®, Garlon RTU®
- **Tree grates** - spot spraying of non-selective herbicide to control weeds in tree grates
Herbicides used: Casoron®, Ecoclear®, Roundup®

Pesticide Exemption Programs | three

The IVMT facilitates Pesticide Exemption Programs to address the concerns of citizens opposed to the use of pesticides. At the end of 2015 there were a total of 123 registered sites, comprising the *Medical Alert Pesticide Program (MAPP)*, *Herbicide Exemption Request Program (HERP)* and the *Herbicide Petition program* (Figure 2).

- The *Medical Alert Pesticide Program (MAPP)* offers citizens with medical sensitivities the option of restriction of all pesticide applications within 30 meters of their residential property and/or notification of any pesticide application within 100 meters of their residential property. There are currently 61 MAPP registrants.
- The *Herbicide Exemption Request Program (HERP)* offers citizens the options of discontinuing chemical trimming along fence lines and obstacles that border on public parkland and/or the discontinuing of broadleaf weed control within five meters of registrants’ properties that border on public parkland. There are currently 40 HERP registrants.
- The *Herbicide Petition Program* offers citizens the option of eliminating herbicide use on specific neighbouring parkland when 66% of residents living adjacent to or bordering a public park declare their wish for the discontinuance of herbicide treatment on it. There are currently 22 Petitioned Sites.

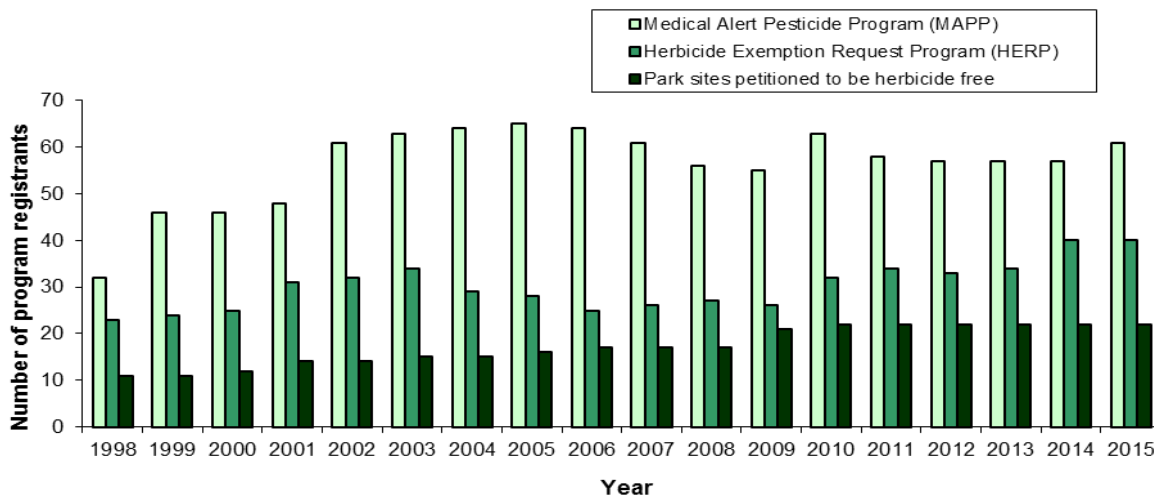


Figure 2. Development of the number of registrants for the pesticide exemption programs.

Under the herbicide restriction, the herbicide treatments are still allowed in certain situations (e.g. the treatment of weeds regulated under the Alberta Weed Control Act). Therefore, it was decided to keep these programs in place for now. A more in depth evaluation of the programs with respect to the herbicide exemption will be done in 2016.

Landscape Services Team | three

This season the IVMT was tasked to run a new additional program, the Landscape Services Team, in each district that would provide maintenance tasks beyond vegetation management on charge-out sites and high-profile sites, such as Hawrelak Park. Each district had between 3 and 7 staff performing tasks such as mowing, trimming, pruning, mulching, sanitation and flower bed maintenance which served the dual purpose of offering higher integrated service packages at select sites while in turn allowing for the streamlining of operational focuses by the Horticulture and Turf teams on their regular maintenance inventories.

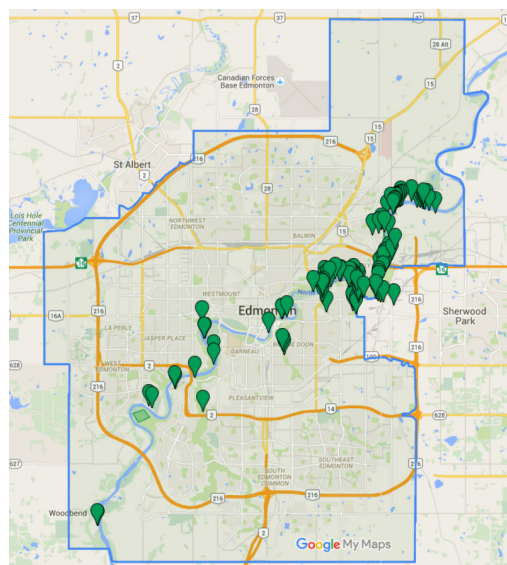
ADDITIONAL ACCOMPLISHMENTS OF 2015 | FOUR

Japanese Knotweed Control | one

In summer 2015 the first cases of the prohibited noxious weed Japanese knotweed were found in Edmonton. Three populations on five properties were reported. It can cause structural damage and quickly spread and is one of the most concerning weed species in Canada and even Europe. Due to the significance of this weed and the current challenges to control it, the City of Edmonton including the IVMT started working together with the first affected homeowners to find the most appropriate control method for the Edmonton populations. Site visits, consultations and first mechanical removals were undertaken in 2015 and will be continued in 2016. Injecting a herbicide directly into the weed’s hollow stems is considered the most effective and safest approach. Although allowed in the USA, no herbicide is registered for this type of application in Canada. The City of Edmonton, together with Alberta Environment and Health Canada, are trying to get a product registered for this safe and effective control method for this dangerous weed.

Helicopter Survey of Common Buckthorn | two

In a shared effort between the Environmental Services Lab and the IVMT, first attempts were made to survey the River Valley for the prohibited noxious weed known as common buckthorn which varies in size from a shrub to a small tree. Unused helicopter hours from the mosquito control program were used in the fall to have a crew of three (2 IVMT, 1 Lab) fly over Edmonton’s River Valley to look for common buckthorn, which keeps its green leaves longer than most other trees. The results showed common buckthorn has spread throughout the River valley, with a higher density in the NE of the City and that most plants are growing close to the river. Further complementing ground surveys have been carried out and data are currently being analyzed.



Common buckthorn locations based on aerial survey

Authorized Assistant Training | three

21 staff received their authorized applicator assistant training in 2015, which aims to increase staff competency and professionalism, but also fulfills a legal requirement with regards to staff field supervision.

Biocontrol evaluation | four

Following initial introduction in 2014, successful establishment and reproduction of a stem gall weevil (*Rhinusa pilosa*) on yellow toadflax was observed.

OUTLOOK FOR 2016 | FIVE

- Streamlining program delivery under the herbicide restriction including the possible integration of tasks with the work of other functional teams (i.e. Hort, Turf, and Sports Fields)
- Supporting the development of communication material regarding the herbicide restriction
- Supporting role in the developing of a revised IPM policy
- Supporting a study on the management of weeds that are potentially causing trip hazards in sidewalk cracks
- Continued focus on Himalayan balsam control for Kennedale Ravine
- Exploring options for increased use of biocontrol for noxious weed management
- Increased focus on monitoring for regulated weeds
- The wet blade technology will be used in the 2016 season
- Reviewing the landscaping standard and supporting the development of criteria for issuing final acceptance certificates (FAC) to developers