



Working Together to Promote  
Invasive Species Prevention

# **OPERATIONAL FRAMEWORK 2019**

Updated April 2019

## ACKNOWLEDGEMENTS

The original Operational Framework and associated priority lists were prepared by Juliet Craig, Silverwing Ecological Consulting in 2014 through a collaborative process with input from land managers and other key partners throughout the region (Appendix A). Original maps were developed by Touchstone GIS Services. This framework is a living document that is updated annually by the Central Kootenay Invasive Species Society (CKISS). We gratefully acknowledge the financial support of the Province of British through the Ministry of Forests, Lands, Natural Resource Operations and Rural Development (MFLNRORD). This document and the associated Invasive Plant Priority List were updated in 2019 by in person meeting participants and electronic feedback from the following individuals:

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## Table of Contents

1. Introduction .....	4
1.1 Purpose of this Framework .....	4
1.2 Impacts of Invasive Plants .....	4
1.3 Collaborative Approach to Invasive Plant Management.....	5
1.4 Role of the Central Kootenay Invasive Species Society .....	6
2.0 Invasive Plant Management Areas .....	6
2.1 Lower Arrow/ Pend D’Oreille IPMA .....	8
2.2 Creston IPMA .....	8
2.3 Nelson IPMA .....	8
2.4 Kaslo North IPMA .....	9
2.5 Nakusp IPMA .....	9
2.6 Slocan Valley IPMA .....	9
3.0 Priorities for Invasive Species Management .....	10
3.1 Criteria for Prioritizing Invasive Species and Management Activities .....	10
3.2 Priority Species .....	12
3.3 Planning, Prevention and Best Management Practices .....	13
3.4 Early Detection, Rapid Response Protocol.....	13
3.5 Inventory Recommendations .....	15
3.6 Treatment Recommendations .....	16
3.7 Disposal Recommendations.....	17
3.8 Efficacy Monitoring Recommendations .....	17
3.9 Data Management Recommendations.....	17
3.10 Outreach Recommendations .....	18
4. Evaluating Success.....	18
Appendix A: List of Contributors to Original IPMA Documents .....	19
Appendix B: Proposed Provincial Prohibited Noxious Weeds .....	20
Appendix C: Crown Land Top 25 Invasive Plant Species .....	22
Appendix D: Useful Resources .....	23
Appendix E: Treatment Considerations .....	25



## List of Figures

Figure 1: Map of the Invasive Plant Management Areas of the Central Kootenay Invasive Species Society .....	7
Figure 2: Diagram showing management strategies most useful during each phase of the invasion process .....	11

## List of Tables

Table 1: Definitions of priority invasive plant categories used in the Central and Kootenay Boundary region. ....	12
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# 1. INTRODUCTION

## 1.1 PURPOSE OF THIS FRAMEWORK

Effectively managing invasive plant species is a critical component of maintaining ecosystems, community and economic health in the Central Kootenay and Kootenay Boundary regions. Since *invasive species know no boundaries*, a cooperative and collaborative approach is essential to ensure that invasive plant management activities are not hindered by geographic, jurisdictional and political boundaries. Land managers<sup>1</sup> adopting a cooperative approach can more efficiently utilize limited funds and personnel, and can collaboratively achieve mutual objectives.

This summary framework provides direction to resource managers on invasive plant species of highest management priority for control, inventory, and monitoring within the six Invasive Plant Management Areas (IPMAs). It was developed during a series of open, collaborative meetings held across the Central Kootenay and Kootenay Boundary regions through which land managers provided guidance and input (Appendix A). The scope of this framework is terrestrial and riparian invasive plant species that have the potential to impact the ecological, economic or social well-being of the region. This framework reflects local priorities for invasive plant management for 2018.

The purposes of this framework are to:

- 1) Enhance existing efforts and create new opportunities for protecting natural resources and ecosystems from invasive plants; and,
- 2) Ensure that invasive plant management activities are coordinated and cost-effective.

## 1.2 IMPACTS OF INVASIVE PLANTS


The spread of invasive alien species is now recognized as one of the greatest threats to the ecological and economic well-being of the planet. In BC, it is estimated that 25% of endangered species, 31% of threatened species, and 16% of species of special concern are negatively impacted by invasive alien species<sup>2</sup>. A recent economic impact analysis by the Invasive Species Council of BC estimated that the combined impact of only six invasive plant species in BC in 2008 was \$65 million and this number is expected to increase to \$139 million by 2020<sup>3</sup>. Without efforts to contain their spread, invasive plants will generally increase their distribution exponentially, making the task of eventual control financially insurmountable. With models of climate change predicting greater success of invasive species, managing these species now will help better protect resource values in the future.

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<sup>1</sup> The term “Land Manager” is used to describe anyone who has jurisdiction over the management of a piece of land, whether it be government, utility companies, non-profit societies, or private landowners with large acreage.

<sup>2</sup> [http://www.forrex.org/sites/default/files/forrex\\_series/fs20.pdf](http://www.forrex.org/sites/default/files/forrex_series/fs20.pdf)

<sup>3</sup> [http://bcinvasives.ca/documents/Report12\\_Econ\\_Impacts.pdf](http://bcinvasives.ca/documents/Report12_Econ_Impacts.pdf)



Invasive plants impact recreational activities by damaging habitat, impacting fish and wildlife, obstructing trails and reducing aesthetics. Some invasive plant species cause allergic reactions. Property values can become depressed with severe invasive plant infestations and some species can cause infrastructure damage. Invasive plants affect rights-of-way and transportation corridors when their rapid establishment and growth (up to 30 cm per day for some species) decrease access to equipment and structures, reduce sightlines for drivers and animals, and increase the risk of accidents and collisions. Some species such as invasive Knotweeds can cause infrastructure damage to roads, buildings, and pipes. Some species may impact fish habitat and water quality by increasing erosion.

Detrimental impacts on the agricultural, range and forest industries include harbouring insects and diseases of crops, reducing crop quality and market opportunities, and decreasing farm income and grazing opportunities. In forestry, invasive plants compete with seedlings for light, nutrients, and water, reducing forest yield. Some invasive plant species are extremely flammable and can disrupt natural fire cycles, causing an increased fuel bed load and frequency of fire.

Economic activities in the CKISS region include agriculture such as vegetable crops, dairy, hay, cereal, grain and oil crops, livestock, orchards and vineyards, which are an integral part of local food security. Other economic and social interests include tourism, forestry operations and recreational activities, which are reliant on healthy and resilient ecosystems.

It is recognized that some invasive plant species have beneficial properties such as medicinal or horticultural values. Where possible, responsible harvesting and use of these plants can be promoted, ensuring that the species is not spread during these activities.

### **1.3 COLLABORATIVE APPROACH TO INVASIVE PLANT MANAGEMENT**


This framework is a summary of six IPMA frameworks that were developed through a collaborative effort by many stakeholders (Appendix A). A draft of each IPMA document was prepared by the Central Kootenay Invasive Species Society (CKISS) and presented to stakeholders at regional meetings held in each IPMA including:

- Trail (Lower Arrow/Pend D'Oreille IPMA) – February 28, 2012
- Creston (Creston IPMA) – June 27, 2012
- Nelson (Nelson IPMA) – June 25, 2013
- Nakusp (Nakusp IPMA) – July 16, 2013
- Winlaw (Slocan Valley IPMA) – October 17, 2013
- Kaslo (Kaslo North IPMA) – March 4, 2014

At each meeting, land managers and other key stakeholders reviewed the priority species, provided input on containment lines, and identified gaps in inventory, treatments, monitoring and outreach. The priority plant list was reviewed and updated at the annual Land Managers meeting in April 2018.

This plan provides the framework for agencies to develop work plans for their own land that are consistent with the goals and objectives of other agencies. Each agency is





responsible for prevention, containment, and/or control within their jurisdiction and in accordance with their mandates, legal obligations and procedures described in their Pest Management Plans, Range Use Plans, or Forest Stewardship Plans.

## **1.4 ROLE OF THE CENTRAL KOOTENAY INVASIVE SPECIES SOCIETY**

This framework was developed by the CKISS. The CKISS (formerly called the Central Kootenay Invasive Plant Committee) is a non-profit society that was formed in 2005 by concerned local citizens, land managers and government and non-government agencies who share a common concern about the increase of non-native invasive plants in the region. The CKISS is not a landowner and has no authority or obligation to control invasive plant species. Rather, the role of CKISS is to facilitate delivery of invasive plant management activities in the region (Regional District of Central Kootenay (RDCK) and Regional District of Kootenay Boundary (RDKB) Areas A and B) by coordinating land managers and land occupiers, supporting a comprehensive inventory of invasive plants in the region, and promoting best management practices. Land management agencies may provide funding to CKISS to act on their behalf in delivering on-the-ground activities (planning, inventory, treatments or monitoring) on their jurisdiction.

This Framework supports the goals outlined in CKISS's 2014 to 2019 strategic plan<sup>4</sup>:

- 1.3.1 Implement a collaborative and coordinated program;
- 1.3.2 Educate, engage and inspire residents and partners to participate in invasive species management;
- 1.3.3 Prevent the introduction, establishment and spread of aquatic and terrestrial invasive species;
- 1.3.4 Reduce the impact of existing invasive species populations on biodiversity, natural resource values, and the economy; and.
- 1.3.5 Build capacity to ensure program sustainability.

## **2.0 INVASIVE PLANT MANAGEMENT AREAS**

The CKISS region has been divided into six IPMA's (Figure 1). The region contains many jurisdictions including utility corridors, forest tenures, parks and protected areas, and private lands. The area borders the East Kootenay Invasive Species Council (EKISC) to the east, Boundary Invasive Species Society (BISS) to the west, Columbia Shuswap Invasive Species Society (CISIS) to the north, and the U.S. states of Washington and Idaho to the south.

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<sup>4</sup> [http://ckiss.ca/wp-content/uploads/2015/04/CKISS\\_Strategic\\_Plan\\_FNL\\_28Feb141.pdf](http://ckiss.ca/wp-content/uploads/2015/04/CKISS_Strategic_Plan_FNL_28Feb141.pdf)

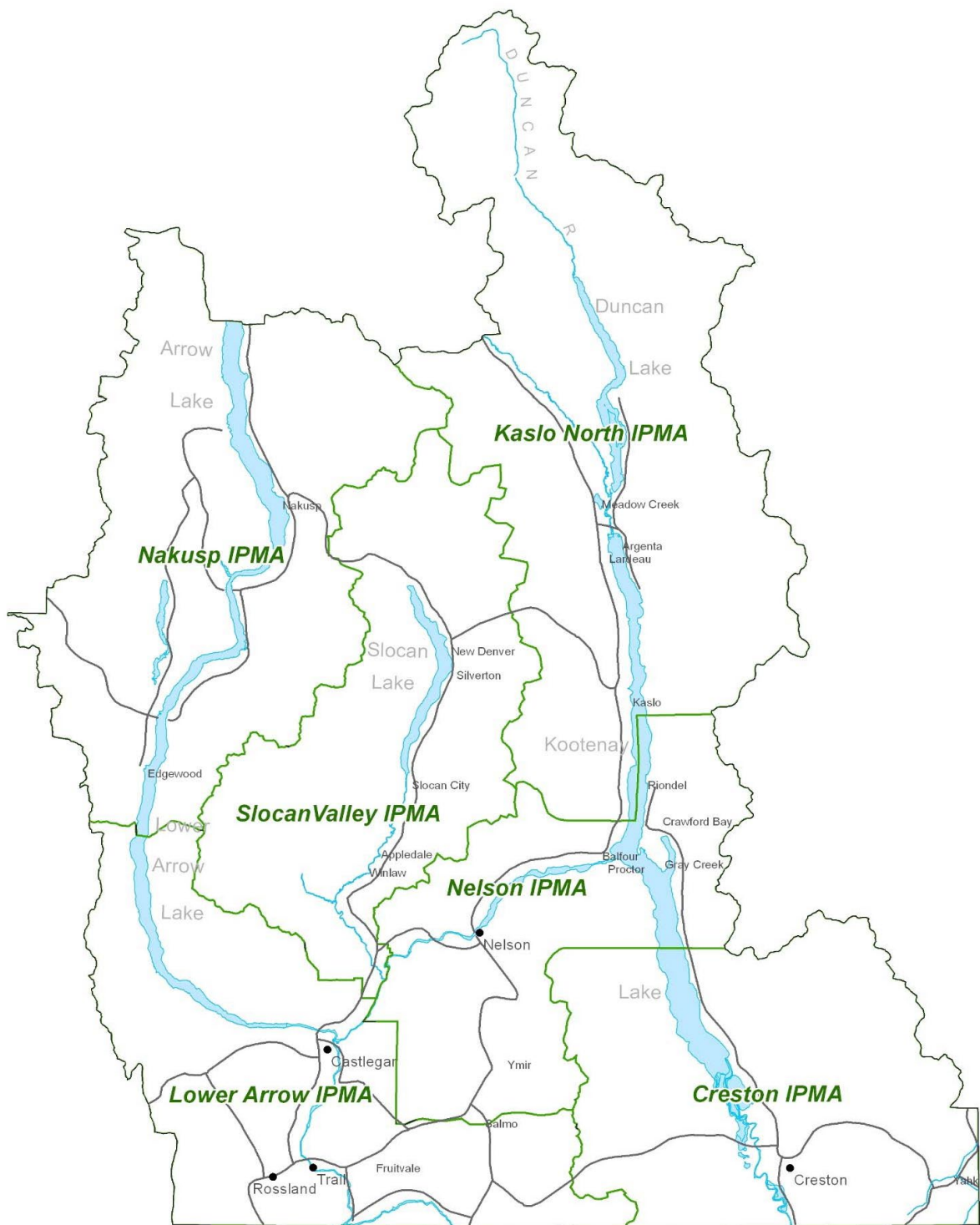


Figure 1: Map of the Invasive Plant Management Areas of the Central Kootenay Invasive Species Society





## 2.1 LOWER ARROW/ PEND D’OREILLE IPMA


The Lower Arrow-Pend D’Oreille IPMA extends from north of Deer Park on the Lower Arrow Lake; south to the US border; west to Rossland and the Paulson bridge; and east to the Salmo-Creston summit. The area contains numerous jurisdictions and partners including two regional districts, six municipalities, and numerous utility corridors, forest tenures, conservation properties, parks and protected areas, and private lands. This is the driest IPMA encompassing the following biogeoclimatic zones: ESSFdc1, ESSFdcp, ESSFdcw, ESSFdm, ESSFdmw, ESSFwc1, ESSFwc4, ESSFwc5, ESSFwc6, ESSFwcp, ESSFwcw, ESSFwm, ESSFwmw, ICHdw1, ICHmw2, ICHmw4, ICHxw, IDFun, IMAun. The region has significant and diverse ecological values including ungulate winter range and species at risk. Economic activities include agriculture, forestry, hydro-electric power generation, and recreational activities. The City of Rossland, in collaboration with CKISS, carried out an extensive Knotweed inventory in 2014. Since that time the City has introduced a Knotweed Bylaw. This IPMA has had many active invasive plant management programs including the *RDKB Area A Noxious Weed Bylaw* program, the FWCP program in the Pend D’Oreille and Lower Arrow, and activities by BC Parks, Columbia Power, BC Hydro, FortisBC Inc., Teck Metals Ltd., Ministry of Forests, Lands, Natural Resource Operations and Rural Development (MFLNRORD), and Ministry of Transportation and Infrastructure (MOTI). As the IPMA borders Washington, new invaders from the United States may enter through this IPMA.

## 2.2 CRESTON IPMA

The Creston IPMA extends north to Boswell on Kootenay lake; west to the Salmo-Creston summit; south to the US border; and east to Yahk. The area contains the traditional territory and reserve of the Ktunaxa Nation (Lower Kootenay Band), Town of Creston, Creston Valley Wildlife Management Area and utility corridors, forest tenures, conservation properties, parks and protected areas, and private lands. The area encompasses the following biogeoclimatic zones. ESSFdm, ESSFdmp, ESSFdmw, ESSFwc4, ESSFwc5, ESSFwc6, ESSFwcp, ESSFwcw, ESSFwm, ESSFwmp, ESSFwmw, ICHdm, ICHdw1, ICHmw2, ICHmw4, ICHxw, IMAun. This IPMA has strong agricultural values including vegetable crops, dairy, hay, livestock, and orchards, and historically had an active herbicide treatment program coordinated by the Creston Valley Beef Growers Association (CVBGA). The Creston area is particularly vulnerable to the introduction of invasive plants through linear corridors and disturbances that include utility corridors, forestry roads, transportation roads, and water ways from virtually every direction. The area borders EKISC to the east and Idaho to the south, so it may be a corridor for new invaders to both the CKISS region and BC. The CKISS works closely with the EKISC to address high priority invaders along our borders.

## 2.3 NELSON IPMA

The Nelson IPMA extends east to Boswell; west to the Slocan Valley junction; south to Salmo; and north to Riondel. The area contains the City of Nelson as well as utility corridors, forest tenures, parks and protected areas, and private lands. The area encompasses the following biogeoclimatic zones: ESSFdm, ESSFdmw, ESSFwc1, ESSFwc4,



ESSFwc5, ESSFwc6, ESSFwcp, ESSFwcw, ESSFwm, ESSFwmp, ESSFwmw, ICHdm, ICHdw1, ICHmw2, ICHmw4, ICHwk1, IMAun. Economic and social interests include agriculture, tourism, forestry operations and recreational activities. The City of Nelson, in collaboration with CKISS, carried out an extensive Knotweed inventory in 2013.

## 2.4 KASLO NORTH IPMA

The Kaslo North IPMA follows the boundaries of RDCK Electoral Area D. The area contains the Village of Kaslo as well as utility corridors, forest tenures, parks and protected areas, and private lands. The area borders the EKISC to the east and the CSISS to the north. This area encompasses the following biogeoclimatic zones: ESSFdkp, ESSFdkw, ESSFvcp, ESSFwc1, ESSFwc4, ESSFwcp, ESSFwcw, ESSFwm, ESSFwmp, ESSFwmw, ICHdw1, ICHmw2, ICHwk1, IMAun. In 2009 and 2010, the area was extensively inventoried and many mechanical treatments were conducted through the Job Opportunities Program (JOP). There have also been inventories and treatments through the Nature Trust and the Nature Conservancy of Canada. There is some controversy over herbicide use in this IPMA.

## 2.5 NAKUSP IPMA


The Nakusp IPMA extends from Octopus Creek (south of Fauquier) in the south; the North Okanagan Regional District to the west; the Columbia Shuswap Regional District to the north; and Nakusp to the east. The area contains the Village of Nakusp as well as utility corridors, forest tenures, conservation properties, parks and protected areas, and private lands. The area encompasses the following biogeoclimatic zones: ESSFdkp, ESSFdkw, ESSFvcp, ESSFwc1, ESSFwc4, ESSFwcp, ESSFwcw, ESSFwm, ESSFwmp, ESSFwmw, ICHdw1, ICHmw2, ICHwk1, IMAun. The Nakusp area is vulnerable to the introduction of invasive plants through linear corridors and disturbances that include utility corridors, forestry roads, transportation roads, and water ways from virtually every direction. This IPMA borders the Columbia Shuswap to the north and the Okanagan to the west, making this IPMA a potential corridor for new invaders. Historically, the Edgewood/ Fauquier area was coordinated by the Inonoaklin Livestock Association who received funding from the MOTI as well as an Agriculture grant to provide treatments on their jurisdictions; the ILA has now disbanded. An invasive plant strategy and field guide were prepared for this region to address invasive plant reporting and inventory requirements as part of Pope & Talbot's Stewardship Plan<sup>5</sup>. Inventory and treatments were carried out in the Village of Nakusp in 2009 as part of the Job Opportunities Program.

## 2.6 SLOCAN VALLEY IPMA

The Slocan Valley IPMA extends north to Summit Lake, south to the Playmor junction, and is contained by the mountains on the east and west. The area contains the Villages of New Denver and Silverton as well as utility corridors, forest tenures, parks and protected areas, and private lands. The area encompasses the following biogeoclimatic zones: ESSFwc1, ESSFwc4, ESSFwcp, ESSFwcw, ICHdw1, ICHmw2, ICHwk1, IMAun. Economic and social interests include agriculture, tourism, forestry operations and recreational activities. The

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<sup>5</sup> [https://www.for.gov.bc.ca/hfd/library/FIA/2006/LBIP\\_4506021.pdf](https://www.for.gov.bc.ca/hfd/library/FIA/2006/LBIP_4506021.pdf)



Slocan Integral Forestry Cooperative (SIFCo) conducted an invasive plant inventory in 2008<sup>6</sup> and extensive control work through the Job Opportunities Program in 2009. There is controversy around herbicide use in the Slocan Valley and opportunities to engage residents in developing collaborative and cooperative alternative treatment strategies.

### 3.0 PRIORITIES FOR INVASIVE SPECIES MANAGEMENT

The CKISS promotes partnerships, behaviours, policies, tools and operations that prevent the introduction and spread of invasive species and facilitate collaborative management. These include collaboratively prioritizing species, following prevention and best management practices, ensuring Early Detection, Rapid Response (EDRR) of new invaders, conducting inventories to acquire enough information to make sound management decisions, coordinating treatment activities, monitoring for efficacy, and ensuring that data is easily available.

We recognize that a species-specific approach is limited in that it does not necessarily consider the entire ecosystem as a whole. Often invasive plant management is an element of restoration where other factors are considered (such as prescribed burning, re-vegetation, better land management practices, wildlife habitat, rare plants, etc.). In such cases, potentially all invasive plant species pose a threat and may be targeted for treatment, regardless of their priority. Land managers are encouraged to consider their own land management objectives when prioritizing invasive plant activities, and to consider this regional prioritization a tool to facilitate a coordinated approach.

#### 3.1 CRITERIA FOR PRIORITIZING INVASIVE SPECIES AND MANAGEMENT ACTIVITIES

Given limited resources for invasive plant management, it is necessary to prioritize activities to achieve the “biggest bang for the buck”. The management strategy for a specific species is based on a number of factors including the phase of invasion (Figure 2)<sup>7</sup>. Before a species arrives, the **prevention phase** includes activities such as distributing a list of species of concern, preventing intentional plantings or nursery sales, cleaning vehicles, equipment and machinery of seeds and plant parts, and implementing other best management practices. During the **introduction phase**, the species has a very limited distribution. EDRR efforts are likely to eradicate the species before their population expands. As the population expands during the **colonization phase**, eradication is no longer likely and efforts are focused on containing and controlling the expanding population before it becomes naturalized. Once the population reaches the **naturalization phase**, plants are often too widespread or costly to control and restoration activities are focused on small, high-priority sites.

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<sup>6</sup> <http://sifco.ca/integral-forestry/invasive-plants/>

<sup>7</sup> [Protecting Victoria from pest animals and weeds | Pests, diseases and weeds | Agriculture | Agriculture Victoria](#)

## GENERALISED INVASION CURVE SHOWING ACTIONS APPROPRIATE TO EACH STAGE

Version 1.0: 30 APR 2009

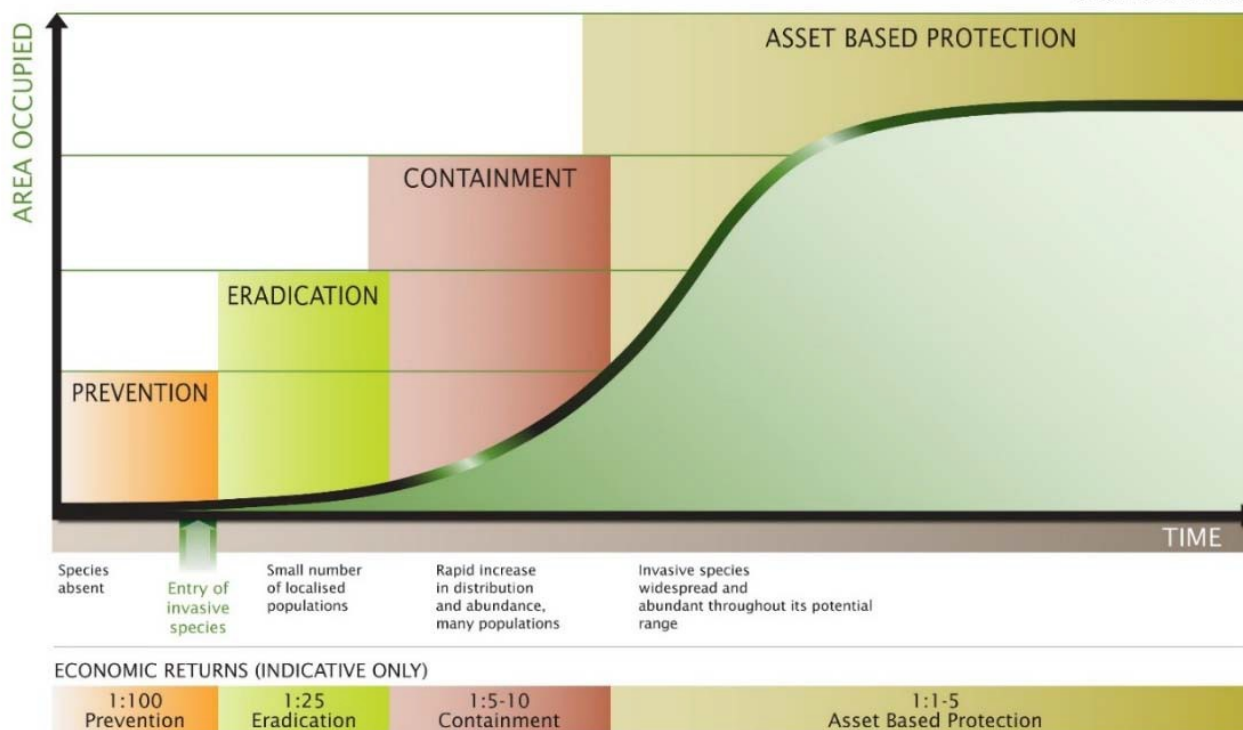


Figure 2: Diagram showing management strategies most useful during each phase of the invasion process.

Based on this concept, the following principles have guided CKISS's prioritization of species:

- **Principle 1:** Prevention and early intervention provide the most cost-effective means of invasive plant management.
- **Principle 2:** Eradication of widely established invasive plants on a regional-scale is not a reasonable expectation.
- **Principle 3:** Prevention of spread of some invasive plant species is possible through a coordinated effort and the establishment of containment lines.
- **Principle 4:** Invasive plant treatments are most effective when they occur in the context of long-term management which includes post-treatment restoration or remediation activities.
- **Principle 5:** Coordinated planning and implementation with key stakeholders provides the greatest likelihood of long-term success.

Each invasive plant species has been prioritized for treatment in this IPMA based on the following factors:

- Risks from not managing the species;
- Current and potential distribution in the IPMA;
- Effectiveness of available treatment strategies;



- Effectiveness and availability of biocontrol agents;
- Local priorities and input (from IPMA meetings).

### 3.2 PRIORITY SPECIES

The species priority list is based on our best knowledge of these species and their impacts in the Central and Kootenay Boundary. Consideration is also given to regional lists in adjacent jurisdictions, MFNLORD Proposed Prohibited Noxious Weeds list (Appendix B) and the MFNLORD Top 25 Crown Land priorities (Appendix C). The current priority species lists by IPMA can be found on the CKISS website at [www.ckiss.ca](http://www.ckiss.ca).

**Table 1: Definitions of priority invasive plant categories used in the Central and Kootenay Boundary region.**

<b>1a. Provincial EDRR</b>	Those species which are considered provincial EDRR species by the Provincial government as designated by “Prohibited” under the updated Weed Control Act regulations. CKISS reports occurrences to MFNLORD; MFNLORD will initiate treatment. For a list of current species, see: <a href="https://www2.gov.bc.ca/assets/gov/environment/plants-animals-and-ecosystems/invasive-species/terrestrial-plants-delete/proposed_prohibited_noxious_weeds_apr2016.pdf">https://www2.gov.bc.ca/assets/gov/environment/plants-animals-and-ecosystems/invasive-species/terrestrial-plants-delete/proposed_prohibited_noxious_weeds_apr2016.pdf</a>
<b>1b. Regional EDRR</b>	These species may not occur in the IPMA or have less than 10 known sites across the IPMA in IAPP. The goal for these species is immediate eradication if they are detected. EDRR reporting and action protocols for these species are outlined in Section 3.4. These sites are extremely high priority for treatment.
<b>2. Eradicate/Annual Control</b>	These species are known in the IPMA but with very limited distribution. Some of these species may have been present for a relatively long period so monitoring for spread is the management objective. Other species are relatively new to the IPMA so eradication is the objective.
<b>3. Containment</b>	These species are abundant (with no expectation of eradication) in certain portions of IPMA but have limited distribution in other portions. Management efforts are delineated by containment lines which may be based on geographic (i.e. a specific region) or jurisdictional boundaries (e.g. private property only). Some of these species have biocontrol (BC) agents available which may be useful within the containment line.
<b>4a. Established: no Biocontrol or Site Specific Approach</b>	These are widespread species that are beyond landscape-level control and/or have relatively low impact. Land managers may choose to treat these species at high priority sites (e.g. wildlife habitat, corridors of spread, adjacent to agricultural land, restoration sites, etc.) based on specific land management objectives. These species have no biocontrol agents available.
<b>4b. Established: Biocontrol or Site Specific Approach</b>	These are widespread species that are beyond landscape-level control and/or have relatively low impact. Land managers may choose to treat these species at high priority sites (e.g. wildlife habitat, corridors of spread, adjacent to agricultural land, restoration sites, etc.) based on specific land management objectives. These species have biological control agents available.



#### 5. Insufficient Information

These species are considered invasive in BC but insufficient information is available regarding their distribution, impacts, potential for spread and/or feasibility of control within the CKISS region. Education, targeted inventories, and possibly risk assessments are recommended.

### 3.3 PLANNING, PREVENTION AND BEST MANAGEMENT PRACTICES

Preventing the introduction and spread of invasive species can be achieved through best management practices such as minimizing soil disturbance, avoiding use of invasive plants in horticulture, cleaning equipment and machinery, and re-vegetating disturbed soil. It is beyond the scope of this framework to outline all best management practices (BMPs). Please see Appendix D for “Useful Resources” for more information.

There are a number of factors to consider when planning invasive plant treatment programs. They include the biology of the plant species, site-level considerations, proximity to species at risk and their habitats, proximity to water and wells, proximity to primary biocontrol release sites, awareness of sensitive species and locations, and goals of treatment. See Appendix E for more factors to consider in developing an invasive plant treatment strategy.

### 3.4 EARLY DETECTION, RAPID RESPONSE PROTOCOL

EDRR refers to the processes undertaken to find and eradicate a new incursion or infestation of an invasive species in the early stages of establishment when the new invasive species remains relatively easy to control. Species categorized as EDRR species are not in the CKISS region (Appendix B) or are in the region but not a particular IPMA (Regional EDRR: see CKISS website). Detection of these species should be reported to CKISS within 48 hours. CKISS and other agencies promote the “Report- A-Weed” app<sup>8</sup> for online invasive plant reporting. EDRR steps include:

1. Spotter **reports** the sighting to CKISS within 48 hours, please provide GPS coordinates and photos of the species. CKISS immediately reports sightings of provincial EDRR species to the Provincial Invasive Plant Specialist.
2. CKISS representative will visit the site to **confirm** the identification of the species. If the species cannot be identified, photos and potentially a voucher (as per Royal BC Museum standards and protocols) will be submitted to the Provincial EDRR specialist for confirmation. Information will also be shared with the Provincial Invasive Plant Specialist. The affected land owner will be informed of this process immediately.
3. Once the species has been positively identified, information will be **shared** with the land owner, the spotter, and the Provincial IP Specialist.
4. If the species is new to BC, the Provincial Invasive Plant Specialist will **trigger the Provincial EDRR Response Plan**<sup>9</sup>. CKISS will remain coordinated with the response action.

<sup>8</sup> <http://reportaweedbc.ca/>

<sup>9</sup> [https://www.for.gov.bc.ca/hra/Plants/publications/EDRR\\_Plan\\_Final\\_Draft\\_Nov2012.pdf](https://www.for.gov.bc.ca/hra/Plants/publications/EDRR_Plan_Final_Draft_Nov2012.pdf)

5. If the species is considered EDRR for the IPMA but not for BC, **CKISS will contact the land owner** to further inventory the area to determine the full extent of the species, and to develop a strategy for eradication. If possible, all **root and seed material will be bagged immediately** until **further treatments** can be conducted.
6. CKISS representative will **issue an Alert** on the species for the IPMA through the CKISS network.
7. CKISS will enter the site into the provincial Invasive Alien Plant Program (**IAPP**) during the calendar year.

#### **Regional Early Detection, Rapid Response Species**

Report to the CKISS representative within 48 hours at:

[operations@ckiss.ca](mailto:operations@ckiss.ca)

**1-844-352-1160**

#### **Provincial Early Detection, Rapid Response Species**

Report to Report-A-Weed app or

[www.reportinvasives.com](http://www.reportinvasives.com)



### 3.5 INVENTORY RECOMMENDATIONS

Inventories and surveys<sup>10</sup> provide fundamental information for assessing and prioritizing invasive plant management efforts. Information from inventories can be used to answer a number of questions including the full extent of a target species, whether treatments have been effective, and how quickly a species is spreading. CKISS promotes the use of standardized inventory methodology and data forms that are based on the provincial IAPP<sup>11</sup> standards.

Further or continued inventory is required for some species to determine their full extent and to develop better management approaches. Priorities for inventory include all species on:

1. All species on Proposed Provincial Prohibited EDRR;
2. All species on Regional EDRR;
3. All species under ERADICATION/ANNUAL CONTROL (including CONTAINMENT species outside containment lines); and
4. All species with Watchlist.

Records of areas where inventories were conducted but no invasive plants were found are important for planning. Train local government staff to identify and report invasive plants and dump sites.

Geographic inventory priorities include:

- Edgewood area
- Yahk area
- Border with the US (particularly where yellow star thistle is in adjacent states)

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<sup>10</sup> In this plan, inventory and survey are used interchangeably. Technically, “...an inventory is a cataloguing of all invasive plants of concern within a management area, whereas a survey is an individual observation or a sampling of a representative portion of a larger landscape” such as a road survey. (BC Ministry of Forests and Range 2010)

<sup>11</sup> [https://www.for.gov.bc.ca/hra/plants/IAPP\\_Reference\\_Guide/IAPP\\_Reference\\_Guide\\_Part\\_I.pdf](https://www.for.gov.bc.ca/hra/plants/IAPP_Reference_Guide/IAPP_Reference_Guide_Part_I.pdf)



### 3.6 TREATMENT RECOMMENDATIONS

Treatment priority is based on the category of the invasive species (Table 1).

**Treatment Priority 1:** High risk species that are on the Regional EDRR or in ERADICATION/ANNUAL CONTROL and have high potential to spread.

- Invasive plants that have not been previously detected or are found in small, isolated spots within the IPMA will receive first priority.
- Attempts will be made to eradicate new infestations and to determine their source.
- Where possible, control measures will be implemented to prevent re-infestation.
- *These plant species/sites should be treated every year. There are few known sites. New occurrences of these species should be reported to CKISS immediately.*

**Treatment Priority 2:** High risk CONTAINMENT species outside containment lines.

- Containment lines serve to prevent established populations of invasive plants from spreading into new areas.
- Isolated populations of invasive plants outside the containment lines will be treated as a higher priority than established populations within the containment lines (see CKISS website).

**Treatment Priority 3:** Moderate risk species (CONTAINMENT species within containment lines) or ESTABLISHED species on or near sites of high value or with high potential to spread.

- Sites will be considered based on land use value including topographical features, livestock use, ecological and wildlife habitat values, spread vectors (e.g. waterways, utility corridors, road, trails), and adjacent areas at risk.
- *Infestations along trails receiving high seasonal use, habitats for species at risk, and areas near hay production are examples of locations that may be a high priority for treatment.*

There are many factors to consider before, during and after treatments. See Appendix E for treatment considerations.



### 3.7 DISPOSAL RECOMMENDATIONS

Currently, there are few opportunities for responsible and effective disposal of invasive plant material after mechanical treatment. The current practice is to double bag and seal the material and take it to the landfill or transfer station under a secure load. Both the RDKB and RDCK (clear and double bagged only) accept bagged invasive plant material for free (no tipping fee) although they require a day's notice for large loads so that they can be buried in a designated location. When possible, bags should be marked "Invasive-do not compost". A long-term strategy involves developing composting facilities that can effectively kill reproductive plant parts as well as education on "no dumping".

### 3.8 EFFICACY MONITORING RECOMMENDATIONS

The effectiveness of treatment depends on many factors including time of year, type of treatment, climate conditions, geographic location, and number of passes. Monitoring treatment efficacy contributes to a better understanding of which treatments are most effective in the Central and Kootenay Boundary and allows for adaptive management within and between seasons. In IAPP, there are standardized forms for monitoring chemical, mechanical and biocontrol treatment efficacy. Entering this data into IAPP allows land managers to easily share this information and assists with long term planning and management.

- Monitor 10% of all sites post-treatment
- Enter monitoring information into IAPP

### 3.9 DATA MANAGEMENT RECOMMENDATIONS

Sharing invasive plant inventory, treatment and monitoring data facilitates a collaborative and long- term approach to management. Entry of this information into the IAPP database allows land managers to determine which species are on or near their jurisdiction, what activities have occurred, and the efficacy of completed treatments. Where possible, all data will be entered into the IAPP database. Where this is not feasible, agencies are strongly encouraged to enter the following minimum critical data, **in order of priority**:

- Immediately report and then enter Regional EDRR species;
- Enter ERADICATION species and CONTAINMENT species *outside* containment lines;
- Enter WATCHLIST species; then
- Enter CONTAINMENT species *inside* containment lines and ESTABLISHED species.

Provincial government, in partnership with regional invasive species organizations, can provide courses on IAPP data entry. Land managers can also provide CKISS with funds to enter data on their behalf.





### 3.10 OUTREACH RECOMMENDATIONS

Public outreach is a critical component of preventing the introduction and spread of invasive species and promoting best management practices. For example, outreach activities can prevent invasive horticultural species from being planted, provide the tools for a farmer to develop an invasive plant management plan for his agricultural land, or promote EDRR by a naturalist group. CKISS is actively involved in outreach and has developed an Outreach Plan to guide activities. For more information on current outreach activities, contact CKISS Education Program Coordinator, Laurie Frankcom, at [lfrankcom@ckiss.ca](mailto:lfrankcom@ckiss.ca).

## 4. EVALUATING SUCCESS

Tracking progress is a key element of the success of this framework and of invasive plant management activities in general. Recommendations for monitoring progress include:

1. Assess species priorities annually and update the CKISS Invasive Plant Priority List.
2. Measure success of eradication and containment efforts annually.
3. Assess level of outreach activities and their success annually.
4. Review inventory requirements and gaps every five years.
5. Summarize data management activities and requirements annually.
6. Measure the degree of engagement of land managers annually and identify gaps.
7. Solicit input annually from all stakeholders to update priorities and coordinate.



## APPENDIX A: LIST OF CONTRIBUTORS TO ORIGINAL IPMA DOCUMENTS

Funding for the development of the original IPMA documents was provided by the province of British Columbia, BC Hydro, Columbia Power and FortisBC Inc. CKISS is extremely grateful to the following representatives of key organizations who participated in the development of the original draft of this framework during IPMA meetings held from 2012 to 2014:

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- Val Miller, MFLNRORD

## APPENDIX B: PROPOSED PROVINCIAL PROHIBITED NOXIOUS WEEDS



### B.C. Proposed Prohibited Noxious Weeds

The following invasive plant species are not present in BC or are present but extremely limited in extent, and pose a significant threat to BC's environment, economy and/or human health. These species have been identified as a result of an extensive review that considered their regulation and status in BC and bordering jurisdictions, presence elsewhere in similar environments to those that occur in BC, and listing under federal regulations. These invasive plant species are proposed BC Prohibited Noxious Weeds and candidates for the B.C. Early Detection Rapid Response (EDRR) Program.

Common Name	Scientific Name	Type
African-rue	<i>Peganum harmala</i> L.	Terrestrial
Black Henbane	<i>Hyoscyamus niger</i> L.	Terrestrial
Brazilian Elodea/ Waterweed	<i>Egeria densa</i> Planch.	Aquatic - submerged, rooted
Camel Thorn	<i>Alhagi maurorum</i> Medik.	Terrestrial
Common Crupina	<i>Crupina vulgaris</i> Cass.	Terrestrial
Common Reed, European	<i>Phragmites australis</i> (Cav.) Trin. ex Steud. <i>subsp. australis</i>	Semi aquatic - emergent
Cordgrass, Dense-flower	<i>Spartina densiflora</i> Brongn.	Semi-aquatic - tidal
Cordgrass, Salt Meadow	<i>Spartina patens</i> (Aiton) Muhl.	Semi-aquatic - tidal
Cordgrass, Smooth	<i>Spartina alterniflora</i> Loisel.	Semi-aquatic - tidal
Cordgrass, Common	<i>Spartina anglica</i> C.E. Hubbard	Semi-aquatic - tidal
Dyer's Woad	<i>Isatis tinctoria</i> L.	Terrestrial
Eggleaf Spurge	<i>Euphorbia oblongata</i> Griseb.	Terrestrial
False-brome, Slender	<i>Brachypodium sylvaticum</i> (Huds.) P. Beauv.	Terrestrial
Foxtail, Slender/Meadow	<i>Alopecurus myosuroides</i> Huds.	Terrestrial
Goatsrue	<i>Galega officinalis</i> L.	Terrestrial
Halogeton/Saltover	<i>Halogeton glomeratus</i> (M. Bieb.) C.A. Mey.	Terrestrial
Hawkweed, Mouse-ear	<i>Hieracium pilosella</i> L.	Terrestrial
Hyacinth, Water	<i>Eichhornia crassipes</i> (Mart.) Solms	Aquatic - semi- emergent
Hydrilla	<i>Hydrilla verticillata</i> (L. f.) Royle	Aquatic – submerged, rooted
Johnsongrass	<i>Sorghum halepense</i> L.	Terrestrial
Jointed Goatgrass	<i>Aegilops cylindrica</i> Host	Terrestrial
Knapweed, Squarrose	<i>Centaurea virgata</i> Lam. ssp. <i>squarrosa</i> (Boissier) Gugler	Terrestrial
Kudzu	<i>Pueraria montana</i> (Lour.) Merr. var. <i>lobata</i> (Willd.) Maesen & S. Almeida	Terrestrial

REPORT Priority Invasive Species: [www.reportinvasives.ca](http://www.reportinvasives.ca)

## B.C. Proposed Prohibited Noxious Weeds

Common Name	Scientific Name	Type
Meadow Clary	<i>Salvia pratensis</i> L.	Terrestrial
Medusahead	<i>Taeniatherum caput-medusae</i> (L.) Nevski	Terrestrial
Nightshade, Silverleaf	<i>Solanum elaeagnifolium</i> Cav.	Terrestrial
North Africa Grass	<i>Ventenata dubia</i> (Leers) Coss.	Terrestrial
Nutsedge, Purple	<i>Cyperus rotundus</i> L.	Terrestrial
Pepperweed, Perennial	<i>Lepidium latifolium</i> L.	Terrestrial
Red Bartsia	<i>Odontites serotina</i> Dum.	Terrestrial
Reed, Giant	<i>Arundo donax</i> L.	Terrestrial
Sage, Clary	<i>Salvia sclarea</i> L.	Terrestrial
Sage, Mediterranean	<i>Salvia aethiopis</i> L.	Terrestrial
Spring Milletgrass	<i>Milium vernale</i> M. Bieb.	Terrestrial
Spurge Flax	<i>Thymelaea passerina</i> (L.) Coss. & Germ.	Terrestrial
Starthistle, Iberian	<i>Centaurea iberica</i> Trev. ex Sprengel	Terrestrial
Starthistle, Purple	<i>Centaurea calcitrapa</i> L.	Terrestrial
Starthistle, Yellow	<i>Centaurea solstitialis</i> L.	Terrestrial
Syrian Bean-Caper	<i>Zygophyllum fabago</i> L.	Terrestrial
Texas Blueweed	<i>Helianthus ciliaris</i> DC.	Terrestrial
Thistle, Italian	<i>Carduus pycnocephalus</i> L.	Terrestrial
Thistle, Slenderflower	<i>Carduus tenuiflorus</i> W. Curtis	Terrestrial
Water soldier	<i>Stratiotes aloides</i> L.	Aquatic – submerged/emergent, rooted

### What Can You Do?

- Learn to identify provincial eradication candidate species: <https://www.for.gov.bc.ca/hra/invasive-species/edrr.htm>
- If you find a new plant species in BC: collect a pressed sample, take pictures, record site location and description.
- Report new sightings to the provincial government via Report-Invasives-BC website or smartphone application: [www.reportinvasives.ca](http://www.reportinvasives.ca)

**REPORT Priority Invasive Species: [www.reportinvasives.ca](http://www.reportinvasives.ca)**



## APPENDIX C: CROWN LAND TOP 25 INVASIVE PLANT SPECIES



### "Top 25" Invasive Plant Species - Crown land priorities

Invasive Plant Species (Species with Crown land containment lines in red)	RANK 2018
Bohemian knotweed	1
Giant knotweed	1
Japanese knotweed	1
Giant hogweed	2
Marsh plume thistle	3
Wild chervil	4
Himalayan knotweed	5
Garlic mustard	6
Rush skeletonweed	7
Common tansy	8
Yellow flag iris	9
Common bugloss	10
Blueweed	11
Poison Hemlock	12
Wild Parsnip	13
Field scabious	14
Spotted knapweed	15
Scotch broom	16
Hoary alyssum	17
Himalayan blackberry	18
Teasel	19
Puncturevine	20
Leafy spurge	21
Hoary cress	22
Orange hawkweed	23
Whiplash hawkweed	23
Policeman's helmet/Himalayan ba	24
Yellow archangel	25



## APPENDIX D: USEFUL RESOURCES

### Central Kootenay Invasive Species Society

- Website includes invasive species to watch for, useful resources, and annual reports
- [www.ckiss.ca](http://www.ckiss.ca)

### BC Inter-Ministry Invasive Species Working Group

- Invasive Plant Early Detection, Rapid Response Plan for British Columbia
- <https://www.for.gov.bc.ca/hra/invasive-species/edrr.htm>

### Invasive Species Council of BC

- Best Management Practices Guides
- Brochures, Booklets, Rack and Wallet Cards
- Educational Resources
- Posters and Displays
- Technical Reports
- <http://bcinvasives.ca/resources/publications>

### WeedsBC

- The **WeedsBC.ca** site is temporarily off-line as it is being upgraded to the government new www2 web standards. The new site will also see the addition of the many terrestrial and aquatic plant species that are listed in the Report-a-Weed smartphone app and were not previously part of the WeedsBC site. The following are still available:
- [7 Steps To Managing Your Weeds](#)
- The complete [Guide to Weeds in British Columbia](#): over 80 invasive plant species including identification and control techniques.
- The list of [BC Proposed Prohibited Noxious Weeds](#)
- <https://www.for.gov.bc.ca/hra/plants/weedsbcdocuments.htm>

### Invasive Alien Plant Program Application (IAPP)

- Database that includes invasive plant inventory, treatment and monitoring information, map display, and training modules for standardized operations
- <http://www.for.gov.bc.ca/hra/plants/application.htm>

### Species at Risk locations

- Conservation Data Centre: <http://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/species-ecosystems-at-risk>
- BC Species and Ecosystem Explorer: <http://www.env.gov.bc.ca/atrisk/toolintro.html>
- Columbia River Basin Biodiversity Atlas: <http://biodiversityatlas.org/>



## **Invasive Plant Legislation**

- BC Weed Control Act:  
[http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/00\\_96487\\_01](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_96487_01)
- Forest and Range Practices Act Invasive Plant Regulation:  
[http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/18\\_18\\_2004](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/18_18_2004)
- Community Charter Act Environment and Wildlife Regulation:  
[http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/41\\_144\\_2004](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/41_144_2004)

## **Invasive Plant Pest Management Plan for Provincial Crown Lands in the Southern Interior of BC (2014):**

- [https://www.for.gov.bc.ca/hra/plants/publications/PMPs/FLNR\\_Southern\\_Interior\\_PMP\\_confirmed.pdf](https://www.for.gov.bc.ca/hra/plants/publications/PMPs/FLNR_Southern_Interior_PMP_confirmed.pdf)



## APPENDIX E: TREATMENT CONSIDERATIONS

The control method used at a particular site is determined by the land owner and/or qualified contractor, and depends on many factors (See Appendix D – Useful Resources for more information on some of these topics):

- Location, including the remoteness of a site and proximity to riparian zones;
- Invasive plant species;
- Stage of invasive plant life cycle (rosette vs. seed-set);
- Current and proposed land use;
- Proximity to primary biocontrol release sites<sup>12</sup>;
- Availability of a Pest Management Plan or Pesticide Use Permit (where applicable);
- Topography;
- Availability of biocontrol agents;
- Non-target vegetation impacts;
- Treatment objective (eradication, containment or control);
- Species at risk in area<sup>13</sup>; and
- Wells and water-bodies in area.

CKISS's ideal treatment recommendation for Priority 1 and 2 species (when funding is sufficient and an integrated treatment approach is implemented) is a three or more pass system as outlined below;

1. **First Pass:** Treatment occurs on known sites when plants are at the rosette stage.
2. **Second Pass:** Treatment occurs when plants have bolted and a few are about to bloom.
3. **Third Pass:** Treatment objective is to prevent any missed plants from treatments 1 and 2 from producing viable seed.

When resources are limited, the CKISS' ideal minimal treatment approach for Priority 1 and 2 species is a two pass system as outlined below:

1. **First Pass:** Treatment has been delayed until most plants are at the bolt stage and a few are ready to bloom.
2. **Second Pass:** Treatment objective is to prevent any missed plants from producing viable seed.

NOTE: It is important to hire a qualified contractor and to conduct all treatments in compliance with applicable legislation.

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<sup>12</sup> Contact MFLNRORD Invasive Species Specialist

<sup>13</sup> Contact Conservation Data Centre (CDC)