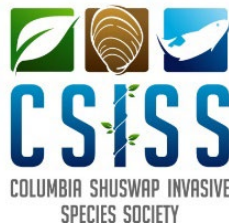


Columbia Shuswap Operational Plan for Invasive Species 2020-2025



Prepared by: Columbia Shuswap Invasive Species Society, with input
from land managers in the Columbia Shuswap region



Updated March 2023

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- City of Salmon Arm
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- Columbia Shuswap Regional District
- East Kootenay Invasive Species Council
- Central Kootenay Invasive Species Society
- Ministry of Forests, Lands, Natural Resource Operations and Rural Development
- Ministry of Transportation and Infrastructure
- Parks Canada
- Town of Golden
- Wildsight Golden
- Invasive Species Council of BC
- Interested residents



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1.0 INTRODUCTION

This Operational Plan (Plan) was prepared by the Columbia Shuswap Invasive Species Society (CSISS) to provide a framework for invasive species management activities within the Columbia Shuswap region. Since invasive species cross multiple jurisdictions, a cooperative and collaborative approach is essential to ensure that invasive species management activities are not hindered by geographic, jurisdictional, and political boundaries. By adopting a cooperative approach, land managers can more efficiently utilize limited funds and personnel, and can collaboratively achieve mutual objectives.

This Plan provides direction to resource managers, community groups, First Nations, and private citizens on invasive species of highest management priority for control, inventory, and monitoring in the Columbia Shuswap region. It has been developed through an ongoing collaborative process through which many organizations provided guidance and input during meetings in Salmon Arm, Revelstoke and Golden in the fall of 2013; and subsequently, helped develop a new 2020-2025 Operational Plan during a meeting in Revelstoke in the spring of 2019.

The scope of this Operation Plan takes an “all invasive species” approach to determining the terrestrial, riparian, and aquatic invasive species that have the potential to impact the ecological, economic and/or social well-being of the region; and to facilitate their prevention, reduction, and management. This plan reflects local priorities for invasive species management within a five-year time frame with the understanding that the plan will be revisited annually.

1.1 IMPACTS OF INVASIVE SPECIES

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 (Global Invasive Species Programme 2000). In BC, it is estimated that 25% of our endangered species, 31% of our threatened species, and 16% of our species of special concern are negatively impacted by invasive alien species (Voller and McNay 2007). Without efforts to contain their spread, invasive species will generally increase their distribution area exponentially, making the task of eventual control impossible and financially insurmountable.

Detrimental impacts of invasive species on the agriculture and forest industries include harbouring insects and diseases of crops, reducing crop quality and market opportunities, and decreasing farm income and grazing opportunities. An estimated combined damage for six important invasive plants in BC was estimated to be at least \$65 million in 2008 and with further spread, impacts would more than double to \$139 million by 2020 (ISCBC 2009). In forestry, invasive plants compete with seedlings for light, nutrients, and water which reduces forest yield. Some invasive plant species are extremely flammable and can exacerbate natural fire cycles by causing an increased fuel bed load and frequency of fire. In addition, invasive insects and fungi can weaken forest health by infecting and killing off entire stands.

When established in crops, working forests or natural areas, invasive plants, animals and pathogens can result in a myriad of impacts, such as: reduced water quality and quantity; increased erosion and sedimentation; reduced property values; damage to private property and infrastructure; loss of traditional food and medicinal plants; reduced land and water recreational opportunities; increased control and management costs; and export and import trade restrictions imposed. Invasive plants also impact human health and safety by obstructing sightlines and road signs along transportation corridors, as well as causing skin burns and dermatitis, and increasing allergies.

Invasive species also threaten biodiversity. Many rare and endangered species are at risk of extinction from non-native invasions of invasive plants and other alien organisms. Without prevention or intense and costly

management, invasive species can disrupt the natural migrations of wildlife since their habitat can be damaged or destroyed, with impacts to the local ecosystem often irreversible.

Given these potential impacts of invasive species, the Columbia Shuswap region has significant ecological, economic and social values and assets at risk. Therefore, land managers must work together on common priorities for prevention, reduction and management of invasive species.

1.2 COLUMBIA SHUSWAP INVASIVE SPECIES SOCIETY

The Columbia Shuswap Invasive Species Society (CSISS) is a non-profit society founded in 2013, by a group of individuals and organizational representatives who recognized the need for a coordinated regional approach to the growing threat of invasive species in the Columbia Shuswap Regional District. The vision statement of the CSISS states:

The environment, economy and society of the Columbia Shuswap region are protected from the adverse impact of invasive species.

The goals of CSISS (as per CSISS Strategic Plan) are to:

- Implement a collaborative and coordinated program
- Educate, engage and inspire participation in invasive species management
- Prevent the introduction of new invasive species
- Maximize the probability of detection and eradication of new invaders
- Slow or reverse the spread of existing invasive species and reduce their harmful impacts
- Ensure program sustainability

CSISS is not a landowner and does not hold land management responsibilities. Rather, CSISS is a network of partners that facilitate the prevention, reduction and management of invasive species through collaboration, engagement and education. It is the responsibility of each land owner or occupier to manage invasive species within their jurisdiction.

1.3 KEY ORGANIZATIONS AND LAND MANAGERS

Given the diverse land use and ownership in the region, a collaborative and coordinated approach to invasive species management is extremely beneficial. Key partners in the Columbia Shuswap region include: the Columbia Shuswap Regional District (which has a noxious weed program under bylaw #5110), First Nations and tribal bands, federal and provincial government agencies, municipalities, utility companies, agriculturalists, conservation and stewardship groups, regional invasive species committees, private landowners, forest licensees, and industry.

This plan provides a framework for this diverse range of organizations and individuals to develop work plans for their own land that are consistent with the goals and objectives of other land managers. *Each land owner or occupier is responsible for prevention, containment, and/or control of invasive species within their jurisdiction* and in accordance with their mandates, legal obligations and procedures (e.g. Pest Management Plans, Range Use Plans, Forest Stewardship Plans, BC Weed Control Act).

2.0 COLUMBIA SHUSWAP REGION

The Columbia Shuswap Invasive Species Society encompasses the geographic area of the Columbia Shuswap Regional District. For the purposes of planning, this region has been divided into three Invasive Plant Management Areas (IPMAs): Salmon Arm, Revelstoke and Golden (Figure 1). The label “IPMA” will continue to be used even though it is understood that management strategies will expand to include non-plant invasive species.



Figure 1: Map of the invasive Plant Management Areas (IPMAs) in the Columbia Shuswap Region.

2.1 SALMON ARM IPMA

The Salmon Arm IPMA includes CSRD Electoral Areas “C”, “D”, “E” and “F” including the City of Salmon Arm and District of Sicamous. There are a number of Indian Reserves in this IPMA including Switsemalph, Salmon River, North Bay and Quaaout. This IPMA borders the Thompson Nicola Regional District (TNRD) and the Thompson-Nicola Invasive Plant Management Committee as well as the Regional District of North Okanagan. Herald, Shuswap Lake, Yard Creek, Albas, Shuswap Lake Marine, White Lake, Tsutswec and Cinnemousun Narrows Provincial Parks are within this IPMA. Major transportation corridors include CP Rail, Highway 1, Highway 97A and Highway 97B. This IPMA encompasses the dry Ponderosa Pine to the wetter Interior Cedar Hemlock biogeoclimatic zones¹ including: PPxh2, MSdm3, IDFxh1, IDFxh2, IDFmw2, ICHdw4, IDFdK2, ICHwk1, ICHvk1, ICHmw3, ICHmw5, ICHmk2, ESSFwc2, ESSFwc4, ESSFvc, ESSFmh, and ESSFdc3.

2.2 REVELSTOKE IPMA

The Revelstoke IPMA includes CSRD Electoral Area “B” including the City of Revelstoke. This IPMA borders the Central Kootenay Invasive Species Society (CKISS) area to the south and the Northwest Invasive Plant Council (NWIPC) to the north. Shelter Bay, Blanket Creek and Martha Creek Provincial Parks are included in this IPMA along with Mount Revelstoke and Glacier National Park. Major transportation corridors include CP Rail, Highway 1, Highway 23N and Highway 23S. This IPMA is the wettest of the region, encompassing the following biogeoclimatic zones: ICHdw4, ICHmw3, ICHvk1, ICHwk1, ESSFrep, ESSFvc, ESSFvcp, ESSFwh1, ESSFwc4, ESSFwcp, ESSFdkw, and IMAun.

2.3 GOLDEN IPMA

The Golden IPMA includes CSRD Electoral Area “A” including the Town of Golden. This IPMA borders the East Kootenay Invasive Species Council (EKISC) area to the south, Northwest Invasive Plant Council (NWIPC) to the north, and Alberta to the east. This IPMA includes Marl Creek, Burges James Gadsen, and Cummins Lake Provincial Parks, as well as Yoho National Park. Major transportation corridors include CP Rail, Highway 1, and Highway 95. The IPMA includes the dry northern portion of the East Kootenay trench including the following biogeoclimatic zones: IDFdK5, ICHmw1, ICHwk1, ICHmk5, ICHvk1, MSdk, ESSFdk2, ESSFwcp, ESSFwc2, ESSFwcw, ESSFmmp, ESSFmm1, and IMAun.

3.0 PRIORITIES FOR INVASIVE SPECIES MANAGEMENT

CSISS promotes partnerships, practices, policies, tools and operations that prevent the introduction and spread of invasive species and facilitate collaborative management. These activities include: collaboratively prioritizing species, following prevention and best management practices (BMPs), ensuring early detection and rapid response (EDRR) of new invaders, conducting inventories to acquire enough information to make sound management decisions, coordinating treatment activities, monitoring efficacy, and ensuring that data are easily available.

A species-specific approach is limited in that it does not necessarily consider the entire ecosystem as a whole. Often invasive species 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.). As well, many invasive plant species ranked as “low priority” in this plan may have detrimental

¹ Biogeoclimatic zones based on maps from MFR at <http://www.for.gov.bc.ca/hre/hecweb/resources/maps/index.html>.

impacts to a specific sector/land area and, in such cases, potentially all invasive plant species pose a threat and may be targeted for treatment, regardless of their regional priority. Land owners and occupiers are encouraged to consider their own land management objectives when prioritizing invasive species 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 species management, it is usually necessary to prioritize activities to achieve the “biggest bang for the buck”. Invasive species can be prioritized for treatment based on the following factors (Figure 2):

- Risks from not managing the species;
- Phase of invasion (current and potential distribution);
- Effectiveness of available treatment strategies;
- Effectiveness and availability of biocontrol agents (for invasive plants); and
- Priorities in neighbouring jurisdictions.

The *phase of invasion* may be determined by the current and potential distribution of the species in the Columbia Shuswap. Before a species arrives, the *prevention phase* includes activities such as distributing a “prevention watchlist” of species of concern, preventing intentional plantings or releases, cleaning vehicles and watercraft, and implementing other best management practices. During the *eradication phase*, the species has a very limited distribution and early detection, rapid response (EDRR) efforts are likely to eradicate the species. As the population expands during the *containment 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 *asset-based protection phase*, species are often too widespread or costly to control and restoration activities are focused on small, high-priority sites.

It can be helpful for land managers to use prioritization and risk assessment tools when resources are limited in invasive species management. Annually, resources permitting, the Columbia Shuswap Invasive Species Society will host a Columbia Shuswap Land Manager meeting to review this Operational Plan, the Columbia Shuswap priority lists for invasive plants by Invasive Plant Management Area (Appendix D, E and F), and the watchlist for non-plant invasive species (Appendix G).

The presence/absence watchlist for non-plant invasive species (vertebrates, invertebrates, fungi, and pathogens) (Appendix G) is useful for education, outreach and prevention work, including reporting; however, the watchlist is not a thorough risk assessment meant for active control programs. Land managers are encouraged to discuss control of non-plant species with Provincial specialists.

GENERALISED INVASION CURVE SHOWING ACTIONS APPROPRIATE TO EACH STAGE

Version 1.0: 30 APR 2009

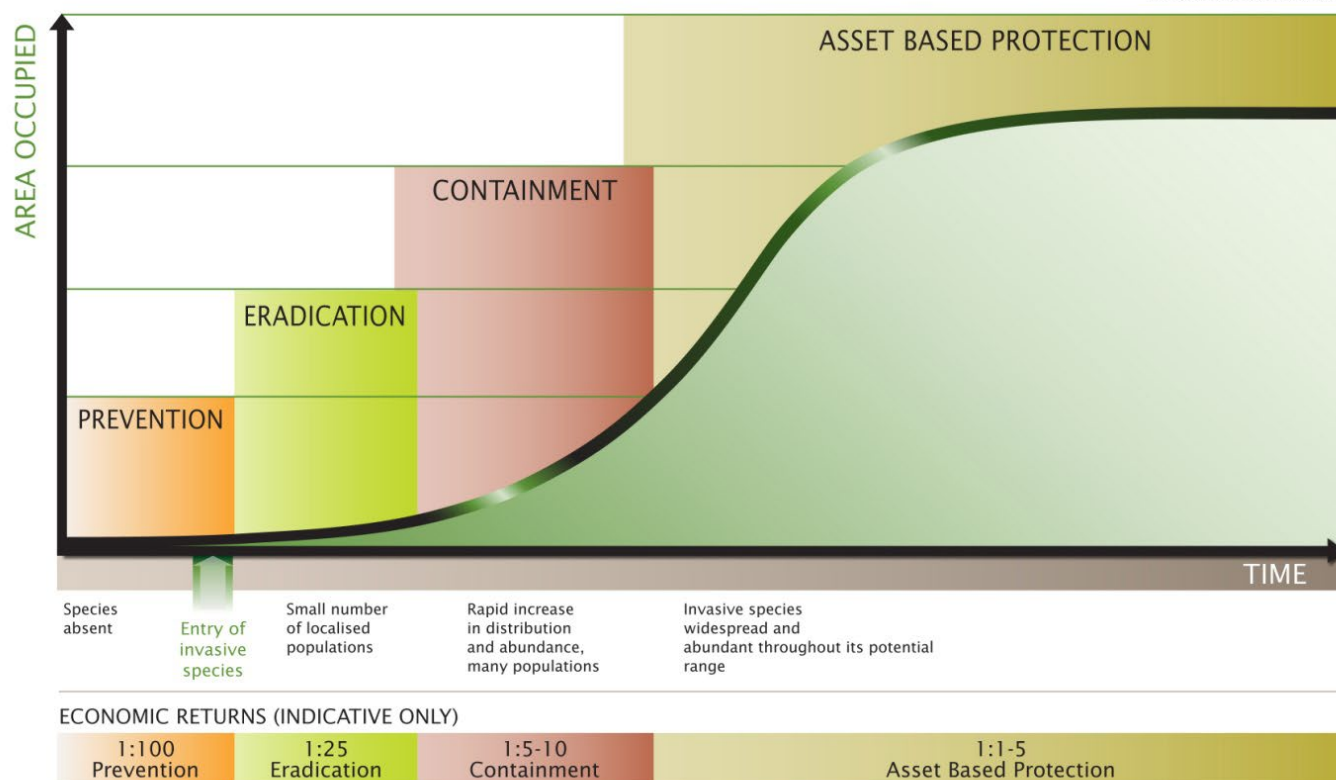


FIGURE 2: DIAGRAM SHOWING MANAGEMENT STRATEGIES MOST USEFUL DURING EACH PHASE OF THE INVASION PROCESS².

² Victoria State Government, Australia. <http://www.depi.vic.gov.au/agriculture-and-food/pests-diseases-and-weeds/protecting-victoria-from-pest-animals-and-weeds>

3.2 PLANNING, PREVENTION AND BEST MANAGEMENT PRACTICES

There are a number of factors to consider when planning invasive species management programs. When planning non-plant invasive species management programs, there are a number of resources available depending on the species, vectors of spread, and other factors. Some resources include Provincial and regional planning documents, such as *Invasive Species Strategy for BC 2018-2020*, which is a collaborative document developed with input from governments, partners, industry and others (ISCBC 2018). As well, the *Ministry of Forests Invasive Alien Species Framework for BC: Identifying and Addressing Threats to Biodiversity* (2004) and the *Canadian Columbia Basin Aquatic Invasive Species Framework* (2016) offer great resources and recommendations. There are also a number of best practice guidelines, available through Province of BC, Invasive Species Council of BC, and other jurisdictions. For example, there are resources and best practices available for preventing the introduction of aquatic invasive species (ISCBC Resources <https://bcinvasives.ca/resources>). It is important to note the distinction between Clean Drain and Dry for preventing the spread of the majority of AIS within BC, and Decontamination for preventing the spread of Zebra and Quagga mussels into BC.

When planning invasive plant management programs, factors to consider include: the biology of the plant species, site-level considerations, proximity to species at risk and their habitats, proximity to water and wells, and goals of treatment (see Section 3.6).

Preventing the introduction and spread of invasive plants can be achieved through best management practices (BMPs) including:

- Minimizing soil disturbance
- Re-vegetating disturbed soil
- Using invasive plant free seed mixes
- Cleaning vehicles, clothing, equipment and machinery between sites
- Using clean (invasive plant-free) soil, gravel and fill
- Using invasive plant free hay for agriculture and restoration purposes
- Ensuring horticultural species that are planted, traded, sold and used are non-invasive
- Keeping equipment yards, storage areas and transportation corridors free of invasive plants
- Carefully disposing of invasive plant material

It is beyond the scope of this Plan to outline all best management practices (BMPs). Please see Appendix H for “Useful Resources” for more information.

Outreach plays a critical role in preventing the establishment and spread of invasive species and promoting best practices. For example, outreach activities can prevent invasive horticultural species from being planted or an invasive animal from being released or transported; provide the tools for a farmer to develop an invasive plant management plan; or promote invasive species reporting by a naturalist group. Although this Operational Plan does not include details of an outreach program, CSISS is aware of its importance and will continue to focus on outreach activities over the next five years ensuring that activities are consistent with the Communications Framework of the Invasive Species Council of BC (ISCBC).

3.3 EARLY DETECTION, RAPID RESPONSE (EDRR) PROTOCOL

Early Detection and Rapid Response (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 not known in the Columbia Shuswap are listed in Appendix B (plants) and G (non-plants).

Definitions of Regional EDRR plant species are also listed in Appendix A. Detection of Provincial EDRR species should be reported to the Province and follow Provincial EDRR protocol for reporting and treatment (<https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/invasive-species/edrr> ; https://www2.gov.bc.ca/assets/gov/environment/plants-animals-and-ecosystems/invasive-species/guidance-resources/final_imiswg_bc_is_edrr_plan_nov_2014.pdf)

Detection of **Regional EDRR species** should be reported to CSISS within 48 hours. CSISS and other agencies promote the '[Report-Invasives](#)' App for online invasive species reporting.

Regional EDRR steps include:

1. Spotter **reports** Regional EDRR species sightings to CSISS within 48 hours. CSISS immediately reports sightings to the Provincial Invasive Plant/Species Specialist and the land manager/owner/occupier.
2. CSISS representative visits the site to **confirm** the identification of the species, records GPS coordinates, takes photos, and collects a voucher specimen. If the species cannot be identified, voucher specimens and photos will be submitted to Provincial identification specialists for confirmation, or a regional specialist may be contacted to visit the site (e.g. Provincial/Federal/Regional Habitat or Fisheries biologists). Information also will be shared with the Provincial Invasive Plant/Species 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 Invasive Plant/Species Specialist.
4. CSISS will enter the site into **IAPP/appropriate invasive species database**.
5. CSISS 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 for invasive plant species, all **root and seed material will be bagged immediately until further treatments** can be conducted.
6. CSISS will **issue an Alert** on the species through the CSISS network (e.g., mailing lists, press releases etc.).

Provincial EDRR Steps:

1. Spotter reports directly to Province via "Report Invasives" app, or RAPP line for Mussels. If the species is new to BC, the Provincial Invasive Plant/Species Specialist will **trigger the Provincial EDRR Response Plan** (BC IMISWG 2010, https://www.for.gov.bc.ca/hra/invasive-species/Publications/How_EDRR_works.pdf). CSISS will remain coordinated with the response action.

Provincial Early Detection Rapid Response WATCHLIST Species

Report to: 'Report-A-Weed' / 'Report Invasives'

www.reportinvasives.ca

Any suspected, transport, possession, sale or release of Dreissenid mussels regulated under the BC Wildlife Act, Controlled Alien Species Regulation should be reported immediately to the Conservation Officer Services RAPP LINE 1-877-952-7277

Regional Early Detection Rapid Response WATCHLIST Species

Report to CSISS within 48 hours at:

info@columbiashuswapinvasives.org

INVENTORY

Inventories and surveys³ provide fundamental information for assessing and prioritizing invasive species 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. Inventory methods for non-plant invasive species may vary depending on the species and should follow recommended provincial or scientific protocols.

CSISS promotes the use of standardized invasive plant inventory methodology and data forms that are based on the provincial Invasive Alien Plant Program (IAPP) standards (MFR 2010). Further or continued inventory is required for some species to determine their full extent and to develop better management approaches. Priorities for invasive plant inventory include:

- All species on Non-Plant Watchlist;
- All species under PREVENT, REGIONAL EDRR and ANNUAL CONTROL (including CONTAINMENT species outside containment lines); and
- All species with INSUFFICIENT INFORMATION.

Border areas between regional invasive species society/regional district areas are high priority for annual invasive plant surveys to detect new invasive species. The following areas are a priority in the Columbia Shuswap:

- | | |
|-----------------|---|
| Salmon Arm IPMA | <ul style="list-style-type: none"> • Hwy 1 between Chase and Sorrento • Hwy 97A south of Sicamous • Hwy 97 B south of Salmon Arm |
| Revelstoke IPMA | <ul style="list-style-type: none"> • Hwy 23S south of Galena Bay |
| Golden IPMA | <ul style="list-style-type: none"> • Hwy 95 south of Parson • Hwy 1 east of Field |

Other priority sites for inventory are:

³ In this Plan, inventory and survey are used interchangeably. Technically, "...an inventory is a cataloguing of all invasive species 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)

- Priority waterbodies as defined in the CSISS AIS Priority Ranking Matrix and Provincial ZQM Risk Matrix
- Gravel pits
- Rail lines, utility rights-of-way, and other corridors of spread
- Newly developed/disturbed areas e.g., forestry, mining, other industry areas
- Trailheads/Recreation sites/Parks with high traffic and potential source areas
- Other sites that are potential vectors of spread (e.g., area around Field Town-site adjacent to federal Parks jurisdiction)

3.5 TREATMENT PRIORITIES FOR INVASIVE PLANTS

Treatment priority level is based on the category of the invasive species (see Appendix D, E and F) as well as the specific land management objectives. The goal of treatment is to reduce impacts and/or prevent spread.

Treatment Priority level 1: All species under PREVENT, REGIONAL EDRR and ANNUAL CONTROL: These plant species/sites should be treated or visited every year. New occurrences of Annual Control species should be reported to CSISS/ Report-Invasives Application for entering into IAPP database and contacting land owner/manager. New occurrences of PREVENT, REGIONAL EDRR and PROVINCIAL EDRR species should follow EDRR Reporting protocols (see section 3.3).

Treatment Priority level 2: CONTAINMENT species *outside* containment lines: Isolated populations of invasive plants outside the containment lines will be treated as a higher priority than established populations within the containment lines. See invasive plant priority lists for descriptions/containment maps if applicable.

Treatment Priority level 3: MANAGEMENT and/or CONTAINMENT species *inside* containment lines on or near sites of high value or with high potential to spread: Sites will be considered based on land use values including agricultural values, livestock use, ecological and wildlife habitat values, spread vectors (e.g. waterways, utility corridors, road systems, 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.

TREATMENT METHODS

Treatment is recommended to follow an Integrated Pest Management approach, which is based on:

- Strategic, monitoring-based, prevention-oriented management;
- Extensive communication and cooperation amongst stakeholders and landowners;
- Pairing control programs with public education and awareness.

Treatment options are considered after it has been determined that a species or site is designated as a high priority for control. The following treatment options are considered for use either individually or in combination:

- Mechanical control
- Cultural control
- Biological control
- Selective spot application of herbicides

Treatment methods are selected to ensure that an invasive plant species will receive the most effective treatment. The control method used at a particular site is determined by the land owner and/or qualified contractor, and depends on many factors:

- Location, including the remoteness of a site and proximity to riparian zones;
- Invasive plant species;
- Target species composition and percent cover;
- Stage of invasive plant life cycle (rosette vs. seed-set);
- Current and proposed land use;
- Proximity to primary biocontrol release sites⁴;
- 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);
- Seasonality;
- Weather conditions;
- Financial and human resources;
- Species at risk in area⁵; and
- Wells and waterbodies in area.

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

TREATMENT TIMING

The ideal treatment recommendation (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 ideal minimal treatment approach is a two pass system:

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.

3.6 ENFORCEMENT

⁴ Contact Invasive Plant Specialist (MFLNRORD)

⁵ Contact Conservation Data Centre (CDC) and MFLNRORD

High priority outreach efforts include private landowners whose properties contain REGIONAL EDRR, ANNUAL CONTROL species or CONTAINMENT species outside containment lines. The Columbia Shuswap Regional District has the ability to enforce the *BC Weed Control Act* under Bylaw 5110.

Invasive plant infestations of MANAGEMENT species may also be a high priority if:

- 1) The infestation(s) of established invasive plants spreading onto, or adjacent to and threatening to spread onto, agricultural land or rangeland;
- 2) The infestation is an isolated occurrence for that portion of the IPMA;
- 3) There are citizens in the same area as the infestation(s) who are controlling these invasive plants on their own land and are concerned about their future spread; and
- 4) The invasive plant is toxic to livestock/wildlife or otherwise detrimental to the agricultural or rangeland values.

Parks Canada is exploring enforcement within its jurisdiction, including a permitting system for launching boats into some Parks Canada waterbodies (e.g., Lake Louise, Yoho, Kootenay Parks for 2019).

3.7 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 and allows for adaptive management within and between seasons. In association with IAPP, there are standardized forms for monitoring chemical, mechanical and biocontrol treatment efficacy⁶. Entering this data into IAPP allows land managers to easily share this information and assists with long term planning and management.

The Ministry of Forests, Lands, Natural Resource Operations and Rural Development requires that **a minimum of 10% of treatment sites be monitored** for efficacy and contractor diligence (BC MFR 2010) and this target has generally become the standard for BC. Sites may either be chosen at random or selected based on treatment priority. Mechanically or chemically treated sites are monitored during the same field season while biological treatment sites are monitored the following year to determine establishment success of bioagents.

Where possible, land owners and occupiers are encouraged to:

- Monitor 10% of all treated sites, 2-6 weeks after treatment as appropriate and/or the following spring as appropriate;
- Use IAPP Monitoring Forms;
- Enter monitoring data into IAPP;
- Take monitoring photographs from the same location, aspect and viewpoint as in previous years;
- Monitor for at least 3 more years (depending on species longevity in the seed bank), following a season where 0 m² of the plant is observed; and
- See Provincial monitoring guidelines for species specific monitoring guidelines

6 IAPP Application and standardized forms: <https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/invasive-species/iapp>

3.8 RECORD-KEEPING AND DATA MANAGEMENT

Sharing invasive plant inventory, treatment and monitoring data facilitates a collaborative and long-term approach to management. Entry of this information into the IAPP database⁷ 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** (See Table 2):

1. Immediately report and then enter PREVENT AND REGIONAL EDRR species;
2. Enter ANNUAL CONTROL species and CONTAINMENT species *outside* containment lines;
3. Enter INSUFFICIENT INFORMATION species; then
4. Enter CONTAINMENT species *inside* containment lines and MANAGEMENT species.

Provincial government, in partnership with regional organizations, can provide courses on IAPP data entry.

4.0 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 priority plant and non-plant lists (Appendix B, C, D, E, F and G).
2. Measure success of eradication and containment of integrated pest management efforts annually (e.g., before and after photos and/or plot counts).
3. Evaluate education and outreach activities (as preventative measures) 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, community groups, and the public annually and identify gaps.
7. Solicit input annually from all stakeholders to share successes, publish results, update priorities and coordinate activities.

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APPENDIX A: DEFINITION OF PRIORITY RANKING CATEGORIES FOR INVASIVE PLANTS

REGIONAL DEFINITIONS	
Prevent 0	High priority species not currently known in the IPMA and/ or within the region. Management objective is to prevent the introduction and establishment.
Regional EDRR 1	High priority species extremely limited in extent (less than 10 very small sites) within the Columbia Shuswap Regional District boundary. Management objective is eradication.
Annual Control 2	Species with limited extent and/ or significant potential to spread. Management objective is to prevent further expansion into new areas with the ultimate goal of reducing the overall extent.
Containment 3	Species is established or with high potential for spread. Management objective is to prevent further expansion into new areas within the region through establishment of containment lines and identification of occurrences outside the line to control.
Management 4	Species is more widespread but may be of concern in specific situations with certain high values - e.g., conservation lands, specific agriculture crops. Management objective is to reduce the invasive species impacts locally or regionally, where resources are available.
Insufficient information 5	Species have insufficient information on their distribution, impacts, potential for spread and/or feasibility of control. Further information is required.

APPENDIX B: REGIONAL PRIORITY INVASIVE PLANTS IN THE COLUMBIA SHUSWAP BY IPMA

Species	Bio-control?	Relevant legislation ¹	Salmon Arm IPMA	Revelstoke IPMA	Golden IPMA
Baby's breath (GYPS PAN)		CCSCJ, FRPA	2	2	2
Bachelor's button (CENT CYA)			5	5	5
Bighead knapweed (CENT MAC)			0	0	0
Black knapweed (CENT NIG)	Y	FRPA	2	2	0
Black locust (ROBI PSE)			5	5	5
Blueweed (ECHI VUL)		WCA, CCSCJ, FRPA	2	2	2
Bohemian knotweed (FALL BOH)		WCA	2	2	2
Brown Knapweed (CENT JAC)		FRPA	2	2	0
Buffalobur (SOLA ROS)			0	0	0
Bull thistle (CIRS VUL)	Y	CCSCJ, FRPA	4	4	4
Bur chervil (ANTH CAU)		WCA	0	0	0
Burdock (ARCT SPP)		WCA, CCSCJ, FRPA	4	4	4
Canada thistle (CIRS ARV)	Y	WCA, CCSCJ, FRPA	4	4	4
Caraway (CARU CAR)			4	4	4
Carpet burweed (SOLI SES)		CCSCJ	5	5	5
Chicory (CICH INT)			4	4	4
Colt's Foot (TUS FAR)			0	0	0
Common bugloss (ANCH OFF)			0	0	1
Common comfrey (SYMP OFF)			4	4	4
Common tansy (TANA VUL)		WCA, CCSCJ, FRPA	3	3	2
Contain to gardens: - Butterfly bush (BUDD DAV) - Common periwinkle (VINC MIN) - English holly (ILEX AQU) - English ivy (HEDE HEL) - Garden yellow loosestrife (LYSI VUL) - Goutweed (AEGO POD) - Mountain bluet (CENT MON) - Myrtle spurge (EUPH MYR) - Russian olive (ELAE ANG) - Salt cedar/ Tamarisk (TAMA RAM) - Siberian elm (ULMU PUM)		CCSCJ (English ivy, Salt cedar)	3	3	3
Creeping buttercup (RANU REP)			5	5	5

Curly leaf pondweed (POTA CRI)		CCSCJ	5	5	5
Cypress spurge (EUPH CYP)			1	1	1
Dalmatian toadflax (LINA DAL)	Y	WCA, CCSCJ, FRPA	4	4	4
Dame's rocket (HESP MAT)			5	5	5
Diffuse knapweed (CENT DIFF)	Y	WCA, CCSCJ, FRPA	4	4	2
Eurasian Water Milfoil (MYRI SPI)		CCSCJ	3	3	5
Eyebright (EUPH NEM)			5	5	5
Field bindweed (CONV ARV)			5	5	5
Field scabious (KNAU ARV)		FRPA	1	0	0
Flat Peavine (LATH SYL)			5	5	5
Fragrant water lily (NYMP ODO)			3	5	5
Garlic mustard (ALLI PET)		WCA, CCSCJ	0	1	0
Giant hogweed (HERA MAN)		WCA, CCSCJ	1	0	0
Giant knotweed (FALL SAC)		WCA, CCSCJ, FRPA	0	1	0
Gorse (ULEX EUR)		WCA, CCSCJ, FRPA	0	0	0
Greater celandine (CHEL MAJ)			5	5	5
Greater knapweed (CENT SCA)			0	0	0
Green foxtail / green bristlegrass (SETA VIR)			5	5	5
Himalayan blackberry (RUBU ARM)		CCSCJ	2	2	0
Himalayan knotweed (POLY POL)		WCA	0	0	0
Hoary alyssum (BERT INC)		FRPA	4	2	2
Hoary cress (CARD DRA)		WCA, CCSCJ, FRPA	0	0	1
Hound's tongue (CYNO OFF)	Y	WCA, CCSCJ, FRPA	4	4	4
Japanese butterbur (PETA JAP)			0	0	0
Japanese knotweed (FALL JAP)		WCA, CCSCJ, FRPA	2	2	2
Knapweed species (CENT SPP)	Y		4	4	2
Kochia (KOCH SCO)			5	5	5
Lady's thumb (POLY PER)			5	5	5
Leafy spurge (EUPH ESU)	Y	WCA, CCSCJ, FRPA	2	2	2
Longspine sandbur (CENC LON)			0	0	0

Marsh plume thistle (CIRS PALU)		FRPA	3	2	0
Meadow buttercup (RANU ACR)			4	4	4
Meadow goat's beard (TRAG PRA)			4	4	5
Meadow knapweed (CENT DEB)	Y	WCA, CCSCJ, FRPA	4	4	2
Nightshade (SOLA SPP)			4	5	5
Nodding thistle (CARD NUT)	Y	CCSCJ, FRPA	0	0	0
North Africa grass (VENT DUB)			0	0	0
Orange hawkweed (HIER AUR)		WCA, CCSCJ, FRPA	4	4	3
Oxeye daisy (LEUC VUL)		FRPA	4	4	4
Plumeless thistle (CARD ACA)	Y	FRPA	0	0	0
Poison hemlock (CONI MAC)		CCSCJ	2	0	2
Policeman's helmet (IMPA GLA)		CCSCJ	2	2	2
Puncturevine (TRIB TER)		FRPA	0	0	0
Purple loosestrife (LYNT SAL)	Y	WCA, CCSCJ, FRPA	4	4	4
Queen anne's lace / wild carrot (DAUC CAR)			4	5	5
Rush skeletonweed (CHON JUN)	Y	WCA, CCSCJ, FRPA	2	0	0
Russian knapweed (ACRO REP)		FRPA	1	0	0
Russian thistle (SALS KAL)			5	5	5
Scentless chamomile (MATR PER)	Y	WCA, CCSCJ, FRPA	5	5	2
Scotch broom (CYTI SCO)		CCSCJ, FRPA	2	2	0
Scotch thistle (ONOP ACA)		FRPA	2	0	0
Short-fringed knapweed (CENT NIR)	Y		1	0	1
Spotted knapweed (CENT BIE)	Y	WCA, CCSCJ, FRPA	4	4	2
Spurge laurel (DAPH LAU)		CCSCJ	0	0	0
St. John's wort (HYPE PER)	Y	CCSCJ, FRPA	4	4	3
Sulphur cinquefoil (POTE REC)		WCA, CCSCJ, FRPA	4	4	5
Sweet fennel (FOEN VUL)			5	5	5
Tansy ragwort (SENE JAC)	Y	WCA, CCSCJ, FRPA	0	0	0
Teasel (DIPS FUL)		FRPA	2	2	0

Tree of heaven (AILA ALT)			0	0	0
Western Goat's Beard (TRAG DUB)			4	4	4
Wild chervil (ANTH SYL)			1	1	0
Wild four o'clock (MIRA NYC)			5	5	5
Wild parsnip (PAST SAT)			1	1	1
Woolly vetch (VICI VIL)			5	5	5
Wood sage (SALV NEM)			0	0	0
Wormwood (ARTE ABS)			4	4	4
Yellow archangel (LAMI GAL)			2	2	0
Yellow flag iris (IRI PSE)		WCA, CCSCJ, FRPA	2	0	0
Yellow hawkweed spp (HIER SPP) (including: king devil, meadow, polar, queen devil, spotted, tall, whiplash, yellow devil)		FRPA (meadow)	4	4	4
Yellow toadflax (LINA VUL)	Y	WCA, CCSCJ, FRPA	4	4	4

¹ WCA= Weed Control Act; CCSCJ= Community Charter- Spheres of Concurrent Jurisdiction, Environment and Wildlife Regulation; FRPA=Forest and Range Practices Act- Invasive Plants Regulation

APPENDIX C: UNLISTED LOWER PRIORITY SPECIES FOR COLUMBIA SHUSWAP

UNLISTED Lowest Priority in all IPMAs (therefore not included in ranking, some jurisdictions may choose to control - consider as priority 4)		
Species Name	Rank	IPMA
Annual hawksbeard (CREP TEC)	6	All
Annual sow thistle (SONC OLE)	6	All
Bladder campion (SILE VUL)	6	All
Cudweed (GNAP ULI)	6	All
Curled dock (RUME CRI)	6	All
Groundsel (SENE VUL)	6	All
Hairy cat's ear (HYPO RAD)	6	All
Hedge false bindweed (CALY SEP)	6	All
Mullein (VERB THA)	6	All
Night-flowering catchfly (SILE NOC)	6	All
Perennial sow thistle (SONC ARV)	6	All
Sheep sorrel (RUME ACE)	6	All
Shepherd's purse (CAPS BUR)	6	All
Watercress (NAST OFF)	6	All
White cockle (LYCH ALB)	6	All
Wild buckwheat (POLY CON)	6	All

APPENDIX D: SALMON ARM PRIORITY PLANT LIST

PREVENT – High priority species not currently known in the IPMA and/ or within the region. Management objective is to prevent the introduction and establishment.		
<ul style="list-style-type: none"> - Bighead knapweed - Buffalobur - Bur chervil - Colt's foot - Common bugloss - Garlic mustard - Giant knotweed 	<ul style="list-style-type: none"> - Gorse - Greater knapweed - Himalayan knotweed - Hoary cress - Japanese butterbur - Longspine sandbur - Nodding thistle 	<ul style="list-style-type: none"> - North Africa grass - Plumeless thistle - Puncturevine - Spurge laurel - Tansy ragwort - Tree of heaven - Wood sage
REGIONAL EDRR – High priority species extremely limited in extent (less than 10 very small sites) within the Columbia Shuswap Regional District boundary. Management objective is eradication.		
<ul style="list-style-type: none"> - Cypress spurge - Field scabious - Giant hogweed 	<ul style="list-style-type: none"> - Russian knapweed - Short-fringed knapweed 	<ul style="list-style-type: none"> - Wild chervil - Wild parsnip
ANNUAL CONTROL – Species with limited extent and/ or significant potential to spread. Management objective is to prevent further expansion into new areas with the ultimate goal of reducing the overall extent.		
<ul style="list-style-type: none"> - Baby's breath - Black knapweed (BC) - Blueweed - Bohemian knotweed - Brown knapweed - Himalayan blackberry 	<ul style="list-style-type: none"> - Japanese knotweed - Leafy spurge (BC) - Poison hemlock - Policeman's helmet - Rush skeletonweed (BC) 	<ul style="list-style-type: none"> - Scotch broom - Scotch thistle - Teasel - Yellow archangel - Yellow flag iris
CONTAINMENT – Species is established or with high potential for spread. Management objective is to prevent further expansion into new areas within the region through establishment of containment lines and identification of occurrences outside the line to control.		
Contain to gardens: <ul style="list-style-type: none"> - Butterfly bush - Common periwinkle - English holly - English ivy - Garden yellow loosestrife - Goutweed - Mountain bluet - Myrtle spurge 	Contain to gardens Cont'd: <ul style="list-style-type: none"> - Russian olive - Salt cedar/ Tamarisk - Siberian elm Contain to White Lake: <ul style="list-style-type: none"> - Fragrant water lily Contain to Crazy Creek RR: <ul style="list-style-type: none"> - Marsh plum thistle 	Contain to west portion of IPMA (treat Seymour Arm and east portion of IPMA): <ul style="list-style-type: none"> - Common tansy Contain to Shuswap/ Mara/White Lake: <ul style="list-style-type: none"> - Eurasian water milfoil
MANAGEMENT – Species is more widespread but may be of concern in specific situations with certain high values - e.g., conservation lands, specific agriculture crops. Management objective is to reduce the invasive species impacts locally or regionally, where resources are available.		
<ul style="list-style-type: none"> - Bull thistle (BC) - Burdock - Canada thistle (BC) - Caraway - Chicory - Common comfrey - Dalmatian toadflax (BC) - Diffuse knapweed (BC) - Hoary alyssum 	<ul style="list-style-type: none"> - Hound's tongue (BC) - Knapweed spp. (BC) - Meadow buttercup - Meadow goat's beard - Meadow knapweed (BC) - Nightshade - Orange hawkweed - Oxeye daisy - Purple loosestrife (BC) 	<ul style="list-style-type: none"> - Queen Anne's Lace - Spotted knapweed (BC) - St. John's Wort (BC) - Sulphur cinquefoil - Western goat's beard - Wormwood - Yellow hawkweed spp. - Yellow toadflax (BC)
INSUFFICIENT INFORMATION – Species have insufficient information on their distribution, impacts, potential for spread and/or feasibility of control. Further information is required.		
<ul style="list-style-type: none"> - Bachelor's button - Black locust - Carpet burweed - Creeping buttercup - Curly leaf pondweed - Dame's rocket 	<ul style="list-style-type: none"> - Eyebright - Field bindweed - Flat peavine - Greater celandine - Green foxtail - Kochia 	<ul style="list-style-type: none"> - Lady's thumb - Russian thistle - Scentless chamomile (BC) - Sweet fennel - Wild four o'clock - Woolly vetch

BC – biocontrol

APPENDIX E: REVELSTOKE IPMA PRIORITY PLANT LIST

PREVENT – High priority species not currently known in the IPMA and/ or within the region. Management objective is to prevent the introduction and establishment.		
<ul style="list-style-type: none"> - Bighead knapweed - Buffalobur - Bur chervil - Colt's foot - Common bugloss - Field scabious - Giant hogweed - Gorse - Greater knapweed 	<ul style="list-style-type: none"> - Himalayan knotweed - Hoary cress - Japanese butterbur - Longspine sandbur - Nodding thistle - North Africa grass - Plumeless thistle - Poison hemlock - Puncturevine 	<ul style="list-style-type: none"> - Rush skeletonweed (BC) - Russian knapweed - Scotch thistle - Short-fringed knapweed - Spurge laurel - Tansy ragwort - Tree of heaven - Wood sage - Yellow flag iris
REGIONAL EDRR – High priority species extremely limited in extent (less than 10 very small sites) within the Columbia Shuswap Regional District boundary. Management objective is eradication.		
<ul style="list-style-type: none"> - Cypress spurge - Garlic mustard 	<ul style="list-style-type: none"> - Giant knotweed - Wild chervil 	<ul style="list-style-type: none"> - Wild parsnip
ANNUAL CONTROL – Species with limited extent and/ or significant potential to spread. Management objective is to prevent further expansion into new areas with the ultimate goal of reducing the overall extent.		
<ul style="list-style-type: none"> - Baby's breath - Black knapweed (BC) - Blueweed - Bohemian knotweed - Brown knapweed 	<ul style="list-style-type: none"> - Himalayan blackberry - Hoary alyssum - Japanese knotweed - Leafy spurge (BC) - Marsh plume thistle 	<ul style="list-style-type: none"> - Policeman's helmet - Scotch broom - Teasel - Yellow archangel
CONTAINMENT – Species is established or with high potential for spread. Management objective is to prevent further expansion into new areas within the region through establishment of containment lines and identification of occurrences outside the line to control.		
Contain to gardens: <ul style="list-style-type: none"> - Butterfly bush - Common periwinkle - English holly - English ivy - Garden yellow loosestrife - Goutweed 	<ul style="list-style-type: none"> - Mountain bluet - Myrtle spurge - Russian olive - Salt cedar/ Tamarisk - Siberian elm 	Contain to southern portion of IPMA: <ul style="list-style-type: none"> - Common tansy Contain to Revelstoke and Arrow Reservoirs: <ul style="list-style-type: none"> - Eurasian water milfoil
MANAGEMENT – Species is more widespread but may be of concern in specific situations with certain high values - e.g., conservation lands, specific agriculture crops. Management objective is to reduce the invasive species impacts locally or regionally, where resources are available.		
<ul style="list-style-type: none"> - Bull thistle (BC) - Burdock - Canada thistle (BC) - Caraway - Chicory - Common comfrey - Dalmatian toadflax (BC) - Diffuse knapweed (BC) 	<ul style="list-style-type: none"> - Hound's tongue (BC) - Knapweed spp. (BC) - Meadow buttercup - Meadow goat's beard - Meadow knapweed (BC) - Orange hawkweed - Oxeye daisy - Purple loosestrife (BC) 	<ul style="list-style-type: none"> - Spotted knapweed (BC) - St. John's Wort (BC) - Sulphur cinquefoil - Western goat's beard - Wormwood - Yellow hawkweed spp. - Yellow toadflax (BC)
INSUFFICIENT INFORMATION – Species have insufficient information on their distribution, impacts, potential for spread and/or feasibility of control. Further information is required.		
<ul style="list-style-type: none"> - Bachelor's button - Black locust - Carpet burweed - Creeping buttercup - Curly leaf pondweed - Dame's rocket - Eyebright 	<ul style="list-style-type: none"> - Field bindweed - Flat peavine - Fragrant water lily - Greater celandine - Green foxtail - Kochia - Lady's thumb 	<ul style="list-style-type: none"> - Nightshade - Queen Anne's Lace - Russian thistle - Scentless chamomile (BC) - Sweet fennel - Wild four o'clock - Woolly vetch

BC – biocontrol

APPENDIX F: GOLDEN IPMA PRIORITY PLANT LIST

PREVENT – High priority species not currently known in the IPMA and/ or within the region. Management objective is to prevent the introduction and establishment.		
<ul style="list-style-type: none"> - Bighead knapweed - Black knapweed (BC) - Brown knapweed - Buffalobur - Bur chervil - Colt's foot - Field scabious - Garlic mustard - Giant hogweed - Giant knotweed - Gorse 	<ul style="list-style-type: none"> - Greater knapweed - Himalayan blackberry - Himalayan knotweed - Japanese butterbur - Longspine sandbur - Marsh plume thistle - Nodding thistle - North Africa grass - Plumeless thistle - Puncturevine - Rush skeletonweed (BC) 	<ul style="list-style-type: none"> - Russian knapweed - Scotch broom - Scotch thistle - Spurge laurel - Tansy ragwort - Teasel - Tree of heaven - Wild chervil - Wood sage - Yellow archangel - Yellow flag iris
REGIONAL EDRR – High priority species extremely limited in extent (less than 10 very small sites) within the Columbia Shuswap Regional District boundary. Management objective is eradication.		
<ul style="list-style-type: none"> - Common bugloss - Cypress spurge 	<ul style="list-style-type: none"> - Hoary cress - Short-fringed knapweed 	<ul style="list-style-type: none"> - Wild parsnip
ANNUAL CONTROL – Species with limited extent and/ or significant potential to spread. Management objective is to prevent further expansion into new areas with the ultimate goal of reducing the overall extent.		
<ul style="list-style-type: none"> - Baby's breath - Blueweed - Bohemian knotweed - Common Tansy - Diffuse knapweed (BC) 	<ul style="list-style-type: none"> - Hoary alyssum - Japanese knotweed - Knapweed spp. (BC) - Leafy spurge (BC) - Meadow knapweed (BC) 	<ul style="list-style-type: none"> - Poison hemlock - Policeman's helmet - Scentless chamomile (BC) - Spotted knapweed (BC)
CONTAINMENT – Species is established or with high potential for spread. Management objective is to prevent further expansion into new areas within the region through establishment of containment lines and identification of occurrences outside the line to control.		
Contain to gardens: <ul style="list-style-type: none"> - Butterfly bush - Common periwinkle - English holly - English ivy - Garden yellow loosestrife 	<ul style="list-style-type: none"> - Goutweed - Mountain bluet - Myrtle spurge - Russian olive - Salt cedar/ Tamarisk - Siberian elm 	Contain to northern portion of IPMA: <ul style="list-style-type: none"> - St. John's Wort (BC) Contain to Town of Golden <ul style="list-style-type: none"> - Orange hawkweed
MANAGEMENT – Species is more widespread but may be of concern in specific situations with certain high values - e.g., conservation lands, specific agriculture crops. Management objective is to reduce the invasive species impacts locally or regionally, where resources are available.		
<ul style="list-style-type: none"> - Bull thistle (BC) - Burdock - Canada thistle (BC) - Caraway - Chicory 	<ul style="list-style-type: none"> - Common comfrey - Dalmatian toadflax (BC) - Hound's tongue (BC) - Meadow buttercup - Oxeye daisy 	<ul style="list-style-type: none"> - Purple loosestrife (BC) - Western goat's beard - Wormwood - Yellow hawkweed spp. - Yellow toadflax (BC)
INSUFFICIENT INFORMATION – Species have insufficient information on their distribution, impacts, potential for spread and/or feasibility of control. Further information is required.		
<ul style="list-style-type: none"> - Bachelor's button - Black locust - Carpet burweed - Creeping buttercup - Curly leaf pondweed - Dame's rocket - Eurasian water milfoil - Eyebright 	<ul style="list-style-type: none"> - Field bindweed - Flat peavine - Fragrant water lily - Greater celandine - Green foxtail - Kochia - Lady's thumb - Meadow goat's beard 	<ul style="list-style-type: none"> - Nightshade - Queen Anne's Lace Russian thistle - Sulphur cinquefoil - Sweet fennel - Wild four o'clock - Woolly vetch

BC – biocontrol

APPENDIX G: COLUMBIA SHUSWAP REGIONAL INVASIVE SPECIES WATCHLIST

PROVINCIAL PRIORITY DEFINITIONS (as per February 2020 list: https://www2.gov.bc.ca/assets/gov/environment/plants-animals-and-ecosystems/invasive-species/guidance-resources/provincial_priority_is_list_final2019_march2_2020_posted_online.pdf)		
Prevent	1	Species determined to be high risk to BC and not yet established. Management objective is to prevent the introduction and establishment.
Provincial EDRR	2	Species is high risk to BC and is new to the Province. Management objective is eradication.
Provincial Containment	3	Species is high risk with limited extent in BC but significant potential to spread. Management objective is to prevent further expansion into new areas with the ultimate goal of reducing the overall extent.
Regional Containment/Control	4	Species is high risk and well established, or medium risk with high potential for spread. Management objective is to prevent further expansion into new areas within the region through establishment of containment lines and identification of occurrences outside the line to control.
Management	5	Species is more widespread but may be of concern in specific situations with certain high values - e.g., conservation lands, specific agriculture crops. Management objective is to reduce the invasive species impacts locally or regionally, where resources are available.
Not listed	6	Species not listed by the Province, but presence/absence data collected for Columbia Shuswap region.

Note: the purpose of this watch-list is to improve awareness and reporting in the Columbia Shuswap region. For priority ranking, risk assessments and management tools for invasive species, the Province of BC is the authority. To report invasive species, go to: www.reportinvasives.ca

Amphibians	Priority	Genus	Species	Present in CSRD?	Known Location(s)
American bullfrog	4	<i>Lithobates</i>	<i>catesbeianus</i>	Absent	BC: Creston Valley, Nelway, Lower Mainland to Sunshine Coast, Vancouver Island, Okanagan (populations may be eradicated) USA: Idaho
Green frog	4	<i>Lithobates</i>	<i>clamitans</i>	Absent	BC: Lower Mainland, Southern Vancouver Island
Birds	Priority	Genus	Species	Present in CSRD?	Known Location(s)
American black duck	5	<i>Anas</i>	<i>rubripes</i>	Unknown	BC: Southern Vancouver Island
Eurasian collared dove	5	<i>Streptopelia</i>	<i>decaocto</i>	Present	CSRD
European house sparrow	5	<i>Passer</i>	<i>domesticus</i>	Present	CSRD

European starling	5	<i>Sturnus</i>	<i>vulgaris</i>	Present	CSRD
Mute swan	5	<i>Cygnus</i>	<i>olor</i>	Unknown	BC: Southern Vancouver Island, Vancouver
Rock pigeon	5	<i>Columba</i>	<i>livia</i>	Present	CSRD: Salmon Arm (iNaturalist observation)
Wild turkey	5	<i>Meleagris</i>	<i>gallopavo</i>	Unknown	CSRD: Golden(?)
California Quail	6	<i>Callipepla</i>	<i>californica</i>	Present	CSRD: Shuswap region
Chukar partridge	6	<i>Alectoris</i>	<i>chukar</i>	Unknown	BC: South Okanagan, Kamloops
Disease	Priority	Genus	Species	Present in CSRD?	Known Location(s)
Chytrid fungus	1	<i>Batrachochytrium</i>	<i>dendrobatidis</i>	Present	Found widespread across BC
Ranavirus	1	<i>Ranavirus</i>	<i>spp.</i>	Absent	Confirmed in northern BC in 2022
Whirling disease	1	<i>Myxobolus</i>	<i>cerebralis</i>	Absent	AB: BNP, Southern Alberta including Bow, Old Man, Spray, Red Deer, North Saskatchewan and Crowsnest Rivers
White-nose syndrome	1	<i>Pseudogymnoascus</i>	<i>destructans</i>	Unknown	Canada: MB/SK border
Bovine tuberculosis	6	<i>Mycobacterium</i>	<i>bovis</i>	Unknown	AB: Wood Buffalo National Park MB: Riding Mountain National Park
Chronic wasting disease	6	Abnormal protein called a Prion		Absent	Current USGS map shows none in BC but there is concern in the Peace region and the Kootenays as wild populations may have it.
Fish	Priority	Genus	Species	Present in CSRD?	Known Location(s)
American Shad	1	<i>Alosa</i>	<i>sapidissima</i>	Present	CSRD: Williamson Lake
Amur goby	1	<i>Rhinogobius</i>	<i>brunneus</i>	Absent	
Bighead carp (Asian)	1	<i>Hypophthalmichthys</i>	<i>nobilis</i>	Absent	
Bitterling	1	<i>Rhodeus</i>	<i>species</i>	Absent	
Black carp (Asian)	1	<i>Mylopharyngodon</i>	<i>piceus</i>	Absent	
Channel catfish	1	<i>Ictalurus</i>	<i>punctatus</i>	Absent	
Grass carp (Asian)	1	<i>Ctenopharyngodon</i>	<i>idella</i>	Absent	
Green sunfish	1	<i>Lepomis</i>	<i>cyaneus</i>	Absent	
Monkey goby	1	<i>Neogobius</i>	<i>fluviatilis</i>	Absent	
Muskellunge	1	<i>Esox</i>	<i>masquinongy</i>	Absent	
Prussian carp	1	<i>Carassius</i>	<i>carassius</i>	Absent	
Red bellied piranha	1	<i>Pygocentrus</i>	<i>nattereri</i>	Absent	
Rock bass	1	<i>Ambloplites</i>	<i>rupestris</i>	Absent	
Round goby	1	<i>Neogobius</i>	<i>melanostomus</i>	Absent	
Silver carp (Asian)	1	<i>Hypophthalmichthys</i>	<i>molitrix</i>	Absent	

Snakehead (Northern, Blotched, Rainbow)	1	<i>Channa</i>	<i>argus, bleheri, maculata</i>	Absent	BC: Northern snakehead eradicated from Burnaby Lake
Spottail shiner	1	<i>Notropis</i>	<i>hudsonius</i>	Absent	Note: Native to Peace River region
Tubenose goby	1	<i>Proterorhinus</i>	<i>semilunaris</i>	Absent	
Tui chub	1	<i>Gila</i>	<i>bicolor</i>	Absent	
Warmouth	1	<i>Lepomis</i>	<i>gulosus</i>	Absent	
Western mosquitofish	1	<i>Gambusia</i>	<i>affinis</i>	Absent	AB: Banff National Park (Banff Hot Springs)
White cloud mountain minnow	1	<i>Tanichthys</i>	<i>albonubes</i>	Absent	
Oriental weather loach	2	<i>Misgurnus</i>	<i>anguillicaudatus</i>	Absent	BC: Lower Fraser valley
Rosy red minnow (Fathead minnow)	2	<i>Pimephales</i>	<i>promelas</i>	Absent	BC: Lower Fraser valley, Two Island Lake (near Tupper)
Goldfish	4	<i>Carassius</i>	<i>auratus</i>	Present	CSRD: White Lake, Shuswap Lake, Canoe Pond (70th Ave Canoe), McGuire Lake (Salmon Arm)
Northern Pike	4	<i>Esox</i>	<i>lucius</i>	Absent	iMap BC shows at Pearson Crossing Columbia Wetlands: this is an incorrect GPS location. Northern pike have also been confirmed a few times in Koocanusa Reservoir during Montana State gill net assessments and I have confirmed northern pike caught on two occasions in the mainstem upper Kootenay River near Canal Flats and again in the lower St. Mary River (upper Kootenay River tributary) near the St. Eugene Mission. Those are the only confirmed catch records. (Source: Fish Biologist Kootenay region via Khaylish Fraser)
Yellow perch	4	<i>Perca</i>	<i>flavescens</i>	Present	CSRD: Upper Arrow Lake, Williamson Lake, Pinaus Lake, Little Pinaus Lake, Square Lake, Cedar Creek; Reported in Forest lake which drains into Adams Lake (Brennan Lund, ALIB).
Black crappie	5	<i>Pomoxis</i>	<i>nigromaculatus</i>	Absent	BC: Lower Fraser valley, South Okanagan valley, Trail
Bluegill sunfish	5	<i>Lepomis</i>	<i>macrochirus</i>	Absent	BC: South Okanagan
Largemouth bass	5	<i>Micropterus</i>	<i>salmoides</i>	Absent	BC: Lower Fraser valley, South Okanagan, Creston, Lower Kootenay River
Bullhead (Yellow, Black, Brown)	5	<i>Ameiurus</i>	<i>natalis, melas, nebulosus</i>	Absent	<i>melas</i> - BC: Okanagan, Kootenay River near Creston
Common carp	5	<i>Cyprinus</i>	<i>carpio</i>	Present	CSRD: Shuswap Lake, Upper Arrow Lake, Canoe Pond (70th Ave Canoe), Larch Hills Lake RDNO: Shuswap River (Enderby)

Pumpkinseed sunfish	5	<i>Lepomis</i>	<i>gibbosus</i>	Absent	CSRD: rotenone treatment in Skimikin Lake
Smallmouth bass	5	<i>Micropterus</i>	<i>dolomieu</i>	Absent	CSRD: rotenone treatment in Gardom Lake
Trench	5	<i>Tinca</i>	<i>tinca</i>	Absent	BC: Okanagan, Kootenay River (near Creston)
Walleye (southern BC)	5	<i>Sander</i>	<i>vitreus</i>	Absent	BC: Castlegar, Lower Arrow Lake
Atlantic salmon	6	<i>Salmo</i>	<i>salar</i>	Absent	BC: Lower Fraser Valley
Brown Trout	6	<i>Salmo</i>	<i>trutta</i>	Present	CSRD: Trout Lake
Eastern Brook Trout	6	<i>Salvelinus</i>	<i>fontinalis</i>	Present	CSRD: Gardom Lake, Columbia River System (iMapBC) *All IPMA's (consensus at land manager meeting)
Fathead minnow	6	<i>Pimephales</i>	<i>promelas</i>	Absent	BC: Lower Fraser valley, Two Island Lake (near Tupper)
Rainbow trout	6	<i>Oncorhynchus</i>	<i>mykiss</i>	Present	CSRD: all IPMAs
Red bellied pacu	6	<i>Piaractus</i>	<i>brachypomus</i>	Absent	BC: One caught in Nanaimo and one caught in Williams Lake but neither have established populations
Red shiner	6	<i>Cyprinells</i>	<i>lutrensis</i>	Absent	
Fungi	Priority	Genus	Species	Present in CSRD?	Known Location(s)
Death cap	3	<i>Amanita</i>	<i>phalloides</i>	Absent	BC: Vancouver, Victoria, Lower Fraser valley
White pine blister rust	6	<i>Cronartium</i>	<i>ribicola</i>	Present	CSRD: all IPMAs
Insects	Priority	Genus	Species	Present in CSRD?	Known Location(s)
Spotted lantern fly	1	<i>Lycorma</i>	<i>delicatula</i>	Absent	
Asian giant hornet	2	<i>Vespa</i>	<i>mandarinia</i>	Absent	BC: Eradicated from Nanaimo in 2019, confirmed in the Fraser Valley in 2020
Asian longhorned beetle	2	<i>Anoplophora</i>	<i>glabripennis</i>	Absent	
Spongy moths (Asian & European)	2	<i>Lymantria</i>	<i>spp.</i>	Unknown	Parks Canada: potentially trapping/monitoring in parks (unconfirmed), one detection in Revelstoke, one detection in Jasper
Japanese beetle	2	<i>Popillia</i>	<i>japonica</i>	Absent	BC: Vancouver
Apple maggot	3	<i>Rhagoletis</i>	<i>pomonella</i>	Absent	BC: Lower Mainland, Prince George
Argentine ant	4	<i>Linepithema</i>	<i>humile</i>	Absent	BC: Victoria
Asian needle ant	4	<i>Pachycondyla</i>	<i>chinensis</i>	Absent	
European fire ant	4	<i>Myrmica</i>	<i>rubra</i>	Absent	BC: Naramata, Vancouver, Southern Vancouver Island
Balsam woolly adelgid	5	<i>Adelges</i>	<i>piceae</i>	Present	Parks Canada: monitoring at MRG
Brown marmorated stink bug	5	<i>Halyomorpha</i>	<i>halys</i>	Present	CSRD: north of Salmon Arm (confirmed iNaturalist observation)

Drumming katydid	5	<i>Meconema</i>	<i>thalassinum</i>	Absent	
European chafer beetle	5	<i>Amphimallon</i>	<i>majale</i>	Absent	BC: Vancouver
European paper wasp	5	<i>Polistes</i>	<i>dominula</i>	Present	CSRD: All IPMAs
Large yellow underwing	5	<i>Noctua</i>	<i>pronuba</i>	Present	
Praying mantis	5	<i>Mantis</i>	<i>religiosa</i>	Present	
Spotted wing drosophila	5	<i>Drosophila</i>	<i>suzukii</i>	Present	CSRD: Columbia Basin
Winter moth	5	<i>Operophtera</i>	<i>brumata</i>	Absent	BC: Vancouver, Southern Vancouver Island
Woodlouse spider	5	<i>Dysdera</i>	<i>crocata</i>	Absent	BC: Victoria
Coddling moth	6	<i>Cydia</i>	<i>pomonella</i>	Present	CSRD: orchards in Salmon Arm
Garden soldier fly	6	<i>Exaireta</i>	<i>spinigera</i>	Unknown	
Impressive fire ant	6	<i>Myrmica</i>	<i>specioides</i>	Unknown	
Little fire ant	6	<i>Wasmannia</i>	<i>auropunctata</i>	Unknown	
Seven-spotted ladybug	6	<i>Coccinella</i>	<i>septempunctata</i>	Present	CSRD: All IPMAs
Tropical stinging ant	6	<i>Hypoponera</i>	<i>punctatissima</i>	Unknown	
Western yellow striped armyworm	6	<i>Spodoptera</i>	<i>praefica</i>	Unknown	BC: Reported for the first time in the North Okanagan Valley (Enderby, Armstrong and Spallumcheen) in July 2018
Invertebrates	Priority	Genus	Species	Present in CSRD?	Known Location(s)
Apple snail	1	<i>Ampullariidae</i>	spp.	Absent	
Conrad's false mussel	1	<i>Mytilopsis</i>	<i>leucophaeata</i>	Absent	
Marbled crayfish	1	<i>Procambarus</i>	<i>fallax f. virginalis</i>	Absent	
Quagga mussel	1	<i>Dreissena</i>	<i>bugensis</i>	Absent	Canada: Manitoba
Ringed crayfish	1	<i>Orconectes</i>	<i>neglectus</i>	Absent	
Rusty crayfish	1	<i>Orconectes</i>	<i>rusticus</i>	Absent	
Spiny waterflea	1	<i>Bythotrephes</i>	<i>longimanus</i>	Absent	
Northern crayfish	1	<i>Orconectes</i>	<i>virilis</i>	Absent	AB: Single individual confirmed in Bow Lake in 2022
Zebra mussel	1	<i>Dreissena</i>	<i>polymorpha</i>	Absent	Canada: Manitoba
European Brown garden snail	2	<i>Cornu</i>	<i>aspersum</i>	Unknown	
Red swamp crayfish	2	<i>Procambarus</i>	<i>clarkii</i>	Absent	BC: Lower Mainland
Cherry shrimp	3	<i>Neocaridina</i>	<i>davidi</i>	Absent	

Chinese, Japanese and other mystery snails	3	<i>Cipangopaludina spp./Bellamya</i>	<i>chinensis</i>	Absent	BC: Lower Fraser Valley (up to Hope), Southern Vancouver Island Idaho: Priest Lake
Freshwater clam	3	<i>Corbicula</i>	<i>fluminea</i>	Absent	CSRD: Shuswap Lake (Salmon Arm, Sicamous Narrows) Washington: Pend d'Oreille
New Zealand mudsnail	3	<i>Potamopyrgus</i>	<i>antipodarum</i>	Absent	BC: Vancouver Island (Port Alberni) Washington: Spokane
Banded garden snail	5	<i>Cepaea</i>	<i>nemoralis</i>	Present	CSRD: Golden, Revelstoke
Freshwater jellyfish	5	<i>Craspedacusta</i>	<i>sowerbyi</i>	Unknown	BC: Okanagan Lake, Kamloops, Lower Nainland, Sunshine Coast, Vancouver Island
Land slugs	5	<i>Arion</i>	<i>rufus</i> and <i>vulgaris</i>	Present	<i>rufus</i> - CSRD
European black slug	6	<i>Arion</i>	<i>ater</i>	Unknown	CSRD: potentially MRG
Giant garden slug/ leopard slug/ great grey slug	6	<i>Limax</i>	<i>maximus</i>	Present	CSRD: Revelstoke
Japanese mussel / Asian date mussel	6	<i>Musculista</i>	<i>senhousia</i>	Absent	
New Zealand green-lipped mussel	6	<i>Perna spp.</i>		Absent	
Northern quahog clam	6	<i>Mercenaria</i>	<i>mercenaria</i>	Absent	
Spanish slug	6	<i>Arion</i>	<i>vulgaris</i>	Absent	
Varnish clam	6	<i>Nuttalia</i>	<i>obscurata</i>	Absent	
Mammals	Priority	Genus	Species	Present in CSRD?	Known Location(s)
Nutria	1	<i>Myocastor</i>	<i>coypus</i>	Absent	BC: south Vancouver US: Oregon
Fallow deer	3	<i>Dama</i>	<i>dama</i>	Absent	BC: Vancouver Island, Lower Fraser Valley(?), Kelowna (HabitatWizard observation, accuracy unknown)
Feral swine	3	<i>Sus</i>	<i>scrofa</i>	Absent	BC: Lumby (no evidence of established population), Christina Lake(?), Williams Lake(?)
Virginia opossum	3	<i>Didelphis</i>	<i>virginiana</i>	Absent	BC: Lower Fraser Valley, Vancouver Island
Eastern fox squirrel	4	<i>Sciurus</i>	<i>niger</i>	Absent	BC: Southern Okanagan
Eastern grey squirrel	4	<i>Sciurus</i>	<i>carolinensis</i>	Absent	BC: Vernon, Falkland
European rabbit	4	<i>Oryctolagus</i>	<i>cuniculus</i>	Present	CSRD: unconfirmed in Revelstoke (Big Eddy)
Norway/Brown rat	4	<i>Ratus</i>	<i>norvegicus</i>	Absent	BC: Nelson (unconfirmed)
Roof/Black rat	4	<i>Ratus</i>	<i>ratus</i>	Present	CSRD: Revelstoke, Sicamous, Shuswap

Eastern cottontail rabbit	5	<i>Sylvilagus</i>	<i>floridanus</i>	Absent	BC: Lower Mainland, Vancouver Island
House mouse	6	<i>Mus</i>	<i>musculus</i>	Present	CSRD
Reptiles	Priority	Genus	Species	Present in CSRD?	Known Location(s)
Italian wall lizard	1	<i>Podarcis</i>	<i>siculus</i>	Absent	BC: Vancouver
European wall lizard	4	<i>Podarcis</i>	<i>muralis</i>	Unknown	CSRD: Reported at Little River Bridge (unconfirmed)
Red-eared slider	4	<i>Trachemys</i>	<i>scripta</i>	Absent	CSRD: Justin DeMerchant (ISCBC) did comprehensive turtle surveys in 2022 and found none in the shuswap
Snapping turtle	4	<i>Chelydra</i>	<i>serpentina</i>	Absent	BC: Port Alberni
Softshell turtle	6	<i>Apalone</i>	spp.	Absent	
Western fence lizard	6	<i>Sceloporus</i>	<i>occidentalis</i>	Absent	

APPENDIX H: USEFUL RESOURCES

Columbia Shuswap Invasive Species Society

- Local information about invasive species
www.columbiashuswapinvasives.org

Invasive Species Council of BC “Targeted Invasive Plant Solutions (T.I.P.S.)”

- Best management practices that are species-specific or on activities such as seed mixtures, transportation corridors, aquatic recreation or forestry operations.
<https://bcinvasives.ca/resources/publications/>

Invasive Species Council of BC – other resources

Publications can be found at: <https://bcinvasives.ca/resources/publications/> and include:

- Field Guide to Noxious Weeds and Other Selected Invasive Plants of British Columbia
- Best Management Practices for Invasive Plants in Parks and Protected Areas of British Columbia
- Best Practices for Preventing the Spread of Invasive Plants during Forest Management Activities
- Best Practices for Managing Invasive Species on Utility Operations
- Best Practices for Managing Invasive Plants on Roadsides
- Best Practices a Pocket Guide for British Columbia’s Oil and Gas Workers
- Best Management Practices for Soil Movement and Disposal
- Aquatic Invasive Species Best Practices for the Boating Industry
- Other ISCBC Resources: <https://bcinvasives.ca/resources>

Field Guide to Noxious Weeds and Other Selected Invasive Plants of British Columbia

- Information on priority invasive plant species including identification and control techniques.
https://bcinvasives.ca/wp-content/uploads/2021/02/Field_guide_to_Noxious_Weeds_11th_2021.pdf

Invasive Alien Plant Program Application

- Database that includes invasive plant inventory, treatment and monitoring information, map display, and training modules for standardized operations
<https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/invasive-species/iapp>

Invasive Species Legislation

- BC Laws. 2009 (updated 2017). Controlled Alien Species Regulation.
https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/94_2009

Invasive Plant Legislation

- IPCBC A Legislative Guidebook to Invasive Plant Management in BC:
<http://www.bcinvasives.ca/resources/outreach-materials/technical-reports>
- BC Weed Control Act:
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

- Community Charter Act Environment and Wildlife Regulation:
http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/41_144_2004

Invasive Species Frameworks/Strategies

- Columbia Basin Aquatic Invasive Species Steering Committee. 2015 (Updated 2017). Canadian Columbia Basin Aquatic Invasive Species Framework
<https://columbiashuswapinvasives.org/about-csiss/csiss-resources/>
<https://columbiashuswapinvasives.org/about-csiss/columbia-basin-aquatic-invasive-species-team/>
- Ministry of Forests. 2005. Invasive Alien Species Framework for BC: Identifying and Addressing Threats to Biodiversity
https://www2.gov.bc.ca/assets/gov/environment/plants-animals-and-ecosystems/invasive-species/imiswg/moe_alien_species_framework_bc_2004.pdf
- Invasive Species Council of BC. 2018. *Invasive Species Strategy for BC 2018-2022*.
<https://bcinvasives.ca/about/invasive-species-strategy-for-bc> ;
https://bcinvasives.ca/documents/Invasive_Species_Strategy_for_BC-2018-180117-WEB.pdf

Province of BC

- BC Inter-Ministry Invasive Species Working Group. 2021. *Provincial Priority Invasive Species*.
https://www2.gov.bc.ca/assets/gov/environment/plants-animals-and-ecosystems/invasive-species/publications/provincial_priority_is_list.pdf
- BC Inter-Ministry Invasive Species Working Group. 2023. *BC Invasive Plant Candidates for Eradication (EDRR Candidates)*.
- www2.gov.bc.ca/assets/gov/environment/plants-animals-and-ecosystems/invasive-species/guidance-resources/edrr_candidate_invasive_plants.pdf
- BC Ministry of Forests and Range (BC MFR). 2019. *Invasive Plant Pest Management Plan for the Southern Interior of British Columbia: MFR PMP 402-0656-10/15*. Range Branch, Ministry of Forests and Range
<https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/invasive-species/integrated-pest-management/pmp-pup>
- BC Inter-Ministry Invasive Species Working Group. 2014. *Invasive Species Early Detection and Rapid Response Plan for British Columbia*.
https://www2.gov.bc.ca/assets/gov/environment/plants-animals-and-ecosystems/invasive-species/guidance-resources/final_imiswg_bc_is_edrr_plan_nov_2014.pdf
<https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/invasive-species/edrr>

Regional Organizations/Partners

- Central Kootenay Invasive Species Society
<https://ckiss.ca/resources/publications/>
- East Kootenay Invasive Species Council
<https://www.ekisc.com/ekisc-publications>
- North Okanagan Regional District

<http://www.rdno.ca/index.php/services/community/environmental-services/noxious-weeds-invasive-plants>

- Thompson Nicola Regional Invasive Plant Management Committee
<http://tnipmc.com/index.php/resources/>
- Columbia Shuswap Regional District
<https://www.csr.d.bc.ca/services/noxious-weed-control>