



Working Together to Promote
Invasive Species Prevention

CKISS OPERATIONAL PLANNING FRAMEWORK: 2017

Updated May 2017



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1. INTRODUCTION

1.1 PURPOSE OF THIS FRAMEWORK

Effectively managing invasive plant species is a critical component of maintaining ecosystem, community and economic health in the Central and Central/West Kootenay. 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 managers¹ 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 and Central/West Kootenay 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 2017.

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 species². 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 2020³. 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.

¹ 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.

² http://www.forrex.org/sites/default/files/forrex_series/fs20.pdf

³ 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 Central Kootenay Invasive Species Society 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 a Land Manager meeting in May 2017.



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 Central Kootenay Invasive Species Society (CKISS). 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. 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 and Regional District of Kootenay Boundary 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 plan⁴:

- 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 Invasive Plant Management Areas (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.

⁴ http://ckiss.ca/wp-content/uploads/2015/04/CKISS_Strategic_Plan_FNL_28Feb141.pdf

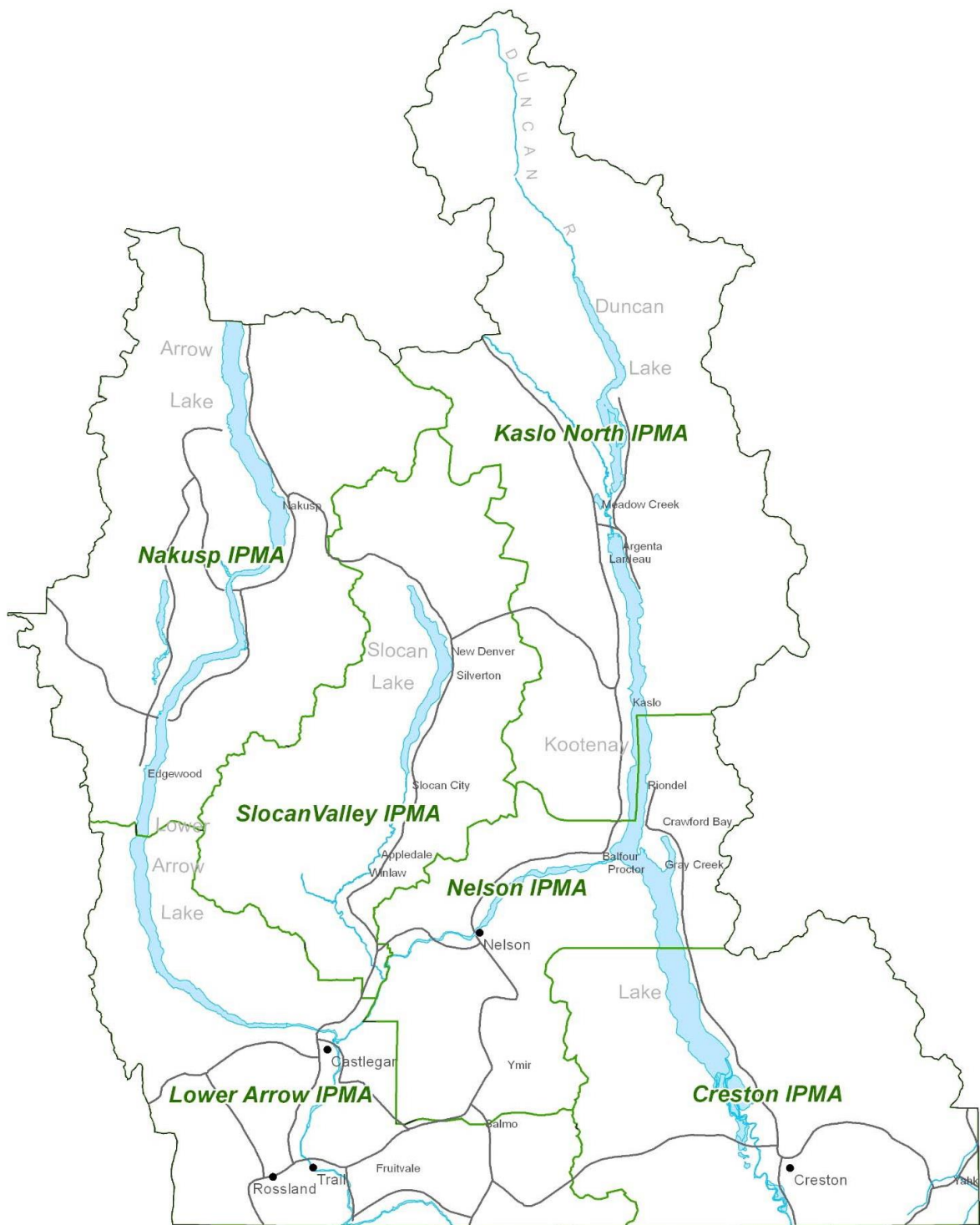


Figure 1: Map of the Invasive Plant Management Areas (IPMAs) of the Central Kootenay Invasive Species Society (CKISS)



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: IDFun, ICHxw, ICHmw2, ICHdw1, ESSFwc1, ESSFdc1 and ESSFdc1. The region has significant and diverse ecological values including ungulate winter range and species at risk. Economic activities include agriculture, hydro power, and recreational activities. The City of Rossland, in collaboration with CKISS, carried out an extensive Knotweed inventory in 2014. 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, Teck Metals Ltd., Ministry of Forests, Lands and Natural Resource Operations, and Ministry of Transportation and Infrastructure. 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: ICHxw, ICHdw1, ICHdm, ICHmk4, ESSFdm, ESSFdmw, ESSFdmp, ESSFwm, ESSFwc5 and ESSFwc6. 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 the East Kootenay Invasive Species Council (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.

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: ICHdw1, ICHmw4, ESSFdm, ESSFdmp, ESSFwm, ESSFwcw, ESSFwc4, ESSFwc5, and ESSFwc6. 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 East Kootenay Invasive Species Council (EKISC) to the east and the Columbia Shuswap Invasive Species Society (CSISS) to the north. This area encompasses the following biogeoclimatic zones: ICHmw2, ICHwk1, ICHdw1, ESSFdm, ESSFdm, ESSFwc4, ESSFwmw, ESSFwmp, ESSFwcp and 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: ICHmw2, ICHvk1, ICHwk1, ICHdw1, ESSFdc1, ESSFvc, ESSFwc1, ESSFwc4, and 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 (ILA) who received funding from the Ministry of Transportation as well as an Agriculture grant to provide treatments on their jurisdictions. 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 Plan⁵. 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: ICHmw2, ICHdw1, ESSFwc4, ESSFwc1, ESSFvc, ESSFdc1 and IMAun. Economic and social interests include agriculture, tourism, forestry operations and recreational activities. The Slocan Integral Forestry Cooperative (SIFCo) conducted an invasive plant inventory in 2008⁶ 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.

⁵ https://www.for.gov.bc.ca/hfd/library/FIA/2006/LBIP_4506021.pdf

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



3.0 PRIORITIES FOR INVASIVE SPECIES MANAGEMENT

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 and 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)⁷. Before a species arrives, the **prevention phase** includes activities such as distributing a “prevention watchlist” 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. Early detection, rapid response (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.

⁷ [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

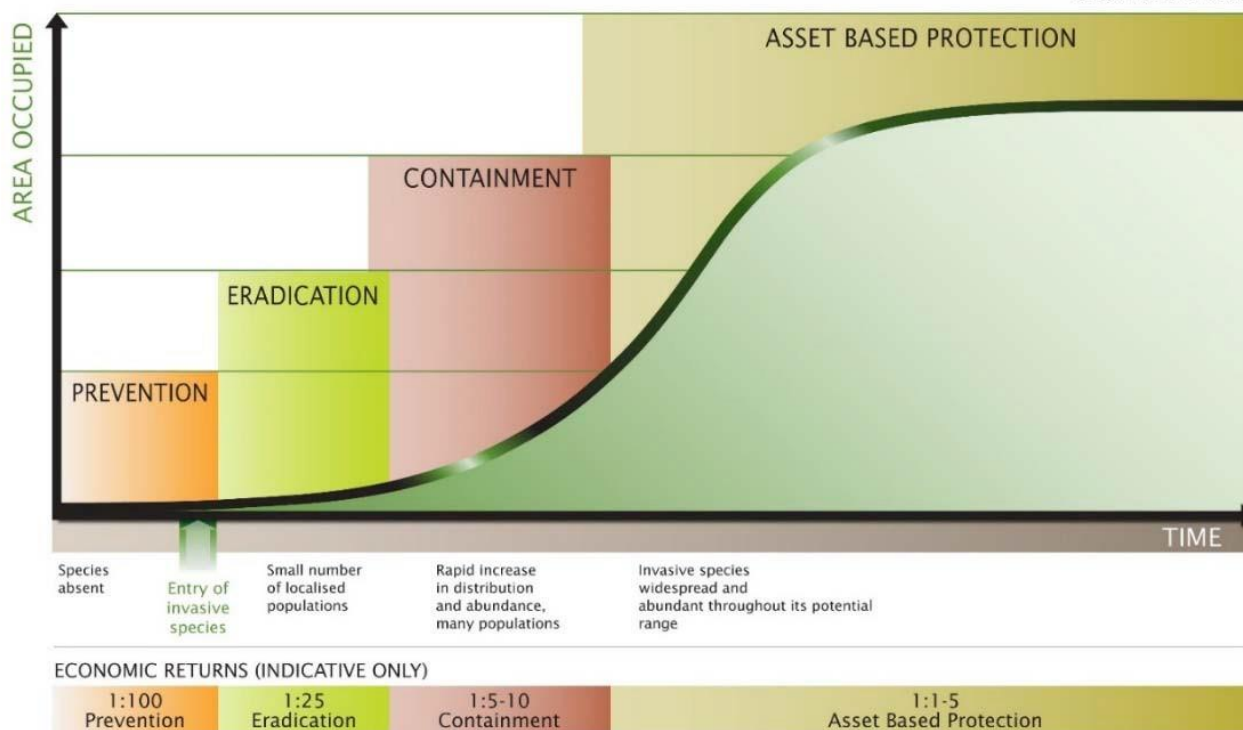



Figure 2: Diagram showing management strategies most useful during each phase of the invasion process.

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 (ranking tool and professional judgment);

- 
- 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/Central/West Kootenay. Plants were categorized into five categories (Table 1). See Appendix B for the most recent invasive plant priority lists and Appendix C for their Latin names.

Table 1: Definitions of priority invasive plant categories used in the Central and Central/West Kootenay.

Category	Title	Definition
1	Provincial EDRR	Those species that are considered provincial Early Detection Rapid Response (EDRR) species by the Provincial government as designated by "Prohibited" under the updated Weed Control Act regulations. CKISS reports occurrences to FLNRO; FLNRO will initiate treatment. For a list of current species, see: https://www.for.gov.bc.ca/hra/invasive-species/Proposed_Prohibited_Noxious_Weeds_Apr2016.pdf
1	Regional EDRR	These species are not currently known in this IPMA but do occur in the CKISS region. 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.
2	Eradication/ Annual Control	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.
3	Containment	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 gardens only).
3+	Contain to Gardens	Some of these species have biocontrol (BC) agents available which may be useful within the containment line.
4	Established: Biocontrol or Site Specific Approach	These species occur throughout the Kootenays, primarily in gardens. The goal is to contain them to gardens so they don't spread into natural areas, transportation corridors, or other "natural" lands.
		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. Some of these species have biological control agents available.
5	Watchlist	These species have insufficient information available in regards to their distribution and density. Targeted inventories 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 (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 categorized as EDRR WATCHLIST are not in the CKISS region or are in the region but not a particular IPMA (Appendix B). Detection of these species should be reported to CKISS within 48 hours. CKISS and other agencies promote the “Report- A-Weed” app⁸ for online invasive plant reporting. EDRR steps include:

1. Spotter **reports** the sighting to CKISS within 48 hours. CKISS immediately reports sightings of provincial EDRR species to the Provincial Invasive Plant Specialist.
2. CKISS representative visits the site to **confirm** the identification of the species, record GPS coordinates, take photos, and collect a voucher. If the species cannot be identified, voucher specimens and photos 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**⁹. CKISS will remain coordinated with the response action.

⁸ <http://reportaweedbc.ca/>

⁹ 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 **IAPP** during the calendar year.

Regional Early Detection Rapid Response WATCHLIST species

Report to the CKISS representative within 48 hours at:

operations@ckiss.ca

1-844-352-1160

Provincial Early Detection Rapid Response WATCHLIST species

Report to Report-A-Weed app or

www.reportinvasives.com



3.5 INVENTORY RECOMMENDATIONS

Inventories and surveys¹⁰ 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 Invasive Alien Plant Program (IAPP)¹¹ 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 Proposed Provincial Prohibited EDRR;
- All species on Regional EDRR;
- All species under ERADICATION/ANNUAL CONTROL (including CONTAINMENT species outside containment lines); and
- All species within 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)

¹⁰ 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)

¹¹ 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 (Appendix B).

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.*
 - *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 (Appendix F).

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/West Kootenay 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**:

1. Immediately report and then enter Regional EDRR species;
2. Enter ERADICATION species and CONTAINMENT species *outside* containment lines;
3. Enter WATCHLIST species; then
4. 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.

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:

- Alan Stanley, Regional District Kootenay Boundary
- Andrea Vienneau, Atco Wood Products
- Candace Batycki, City of Nelson
- Carol Hughes, Village of Kaslo
- Cary Gaynor, RDCK Parks
- Catherine MacRae, MFLNRO
- Chris Price, BC Parks
- Claire de la Salle, Friends of Kootenay Lake and Kootenay Conservation Partnership
- Crystal Klym, Central Kootenay Invasive Species Society
- Darrell Smith, Ministry of Agriculture
- Darren Murrey, MFLNRO
- Dave Heagy, BC Parks
- Dave Wickstrom, Nature Conservancy of Canada (Darkwoods)
- Erik Leslie, Harrop Procter Community Forest
- Frances Swan, on behalf of Interfor and Nakusp Community Forest
- Grant Trower, Friends of Lardeau
- Greg Lay, Village of Kaslo
- Hugh Ackroyd, BC Parks
- Irene Manley, Fish and Wildlife Compensation Program
- Jenny Mingo, FortisBC Inc.
- Jennifer Vogel, Central Kootenay Invasive Species Society
- John Cathro, Cathro Consulting (Fire Interface Program for Kaslo)
- Juliet Craig, Silverwing Ecological Consulting
- Karen MacDonald, City of Nelson
- Katie Ward, Ministry of Transportation and Infrastructure
- Leah Main, Regional District Central Kootenay
- Lisa Farr, Slocan Integral Forestry Cooperative
- Marc-Andre Beaucher, Creston Valley Wildlife Management Area
- Marcy Mahr, Kootenay Conservation Partnership
- Margaret Hartley, Slocan Lake Stewardship Society
- Marlene Machmer, Pandion Ecological Research Ltd.
- Matthew Chilakos, Central Kootenay Invasive Species Society
- Michael Hounjet, Hatfield Consultants
- Mike Gall, BC Parks
- Natalie Stafl, Columbia Shuswap Invasive Species Society
- Neil Smith, Village of Kaslo
- Nicole Ward, Regional District Central Kootenay
- Rob Davidson, Creston Valley Beef Growers
- Ross Clarke, Fish and Wildlife Compensation Program
- Sharon Laughlin, Yaqan Nuki Wetlands Friendship Society
- Sheila Street, FortisBC Inc.
- Terry Anderson, MFLNRO
- Tom Bradley, Central/West Kootenay Woodlot Association
- Val Miller, MFLNRO

APPENDIX B: B.C. PROPOSED PROHIBITED NOXIOUS WEEDS

Proposed Provincial Prohibited EDRR– ALL IPMA's

Report these species through the Report-A-Weed app.

Common name	Scientific name
African rue	<i>Peganum harmala</i>
Black henbane	<i>Hyoscyamus niger</i>
Camel thorn	<i>Alhagi maurorum</i>
Common crupina	<i>Crupina vulgaris</i>
Dyer's woad	<i>Isatis tinctoria</i>
Eggleaf spurge	<i>Euphorbia oblongata</i>
False/slender brome	<i>Brachypodium sylvaticum</i>
Slender/meadow foxtail	<i>Alopecurus myosuroides</i>
Giant reed	<i>Arundo donax</i>
Goat's rue /French lilac	<i>Galega officinalis</i>
Saltlover	<i>Halogeton glomeratus</i>
Johnsongrass	<i>Sorghum halepense</i>
Jointed goatgrass	<i>Aegilops cylindrica</i>
Kudzu	<i>Pueraria montana</i>
Meadow clary	<i>Salvia pratensis</i>
Medusahead	<i>Taeniatherum caput-medusae</i>
Mouse-ear hawkweed	<i>Hieracium pilosella</i>
North Africa grass	<i>Ventenata dubia</i>
Purple nutsedge	<i>Cyperus rotundus</i>
Perennial pepperweed	<i>Lepidium latifolium</i>
Red bartsia	<i>Odontites serotina</i>
Clary sage	<i>Salvia sclarea</i>
Mediterranean sage	<i>Salvia aethiopsis</i>
Silverleaf nightshade	<i>Solanum elaeagnifolium</i>
Spring millet grass	<i>Milium vernale</i>
Spurge flax	<i>Thymelaea passerina</i>
Squarrose knapweed	<i>Centaurea virgata ssp. squarrosa</i>
Iberian starthistle	<i>Centaurea iberica</i>
Purple starthistle	<i>Centaurea calcitrapa</i>
Yellow starthistle	<i>Centaurea solstitialis</i>
Syrian bean-caper	<i>Zygophyllum fabago</i>
Texas blueweed	<i>Helianthus ciliaris</i>
Italian thistle	<i>Carduus pycnocephalus</i>
Slender-flowered thistle	<i>Carduus tenuiflorus</i>



APPENDIX C: INVASIVE PLANT PRIORITY LISTS BY IPMAS.

LOWER ARROW PEND D'OREILLE IPMA INVASIVE PLANT PRIORITY LIST – 2017

(* not known in CKISS region; BC=biocontrol; **species distribution/density to be verified in 2017)

Regional EDRR - Not currently known in this IPMA (and may also not be known in the CKISS region*). Follow EDRR reporting and action protocols.		
<ul style="list-style-type: none"> - Bighead knapweed - Buffalobur* - Caraway - Coltsfoot* - Common bugloss - Cypress spurge* - Flowering rush* - Garlic mustard* 	<ul style="list-style-type: none"> - Giant hogweed - Gorse* - Greater celandine - Leafy spurge (one site in IPMA but managed by FLNRO) - Longspine sandbur* - Marsh plume thistle - Meadow/brown/black knapweed 	<ul style="list-style-type: none"> - Nodding thistle* - Puncturevine* - Russian knapweed* - Scentless chamomile - Tansy ragwort - Wild four o'clock* - Wood sage*
ERADICATION or ANNUAL CONTROL – Species known in IPMA but with very limited distribution. Enter inventory data, report and treat or monitor annually.		
<ul style="list-style-type: none"> - Containment species OUTSIDE lines and: - Baby's breath - Blueweed 	<ul style="list-style-type: none"> - Greater knapweed - Purple loosestrife - Rush skeletonweed - Scentless chamomile 	<ul style="list-style-type: none"> - Scotch broom - Scotch thistle - Teasel - Wild chervil**
CONTAINMENT – Enter inventory data, report and treat all sites outside containment lines. Some of these species have biocontrol available which can be used within the containment line (BC).		
<ul style="list-style-type: none"> - Field scabious (contain to Salmo) - Himalayan blackberry (prevent from spreading north of Cayuse Cr.) - Hoary alyssum (prevent from spreading north of Deer Park) 	<ul style="list-style-type: none"> - Hoary cress (contain to Warfield and Waneta/Nelway) - Policeman's helmet (contain to Trail/Rossland) - Yellow flag iris (contain to Meldeanna pond) 	Contain to gardens: <ul style="list-style-type: none"> - Butterfly bush - Cypress spurge - English ivy - Field bindweed - Goutweed - Japanese butterbur - Lamium/Yellow archangel - Periwinkle - Russian olive - Salt cedar - Siberian elm
ESTABLISHED (BIOCONTROL OR SITE-SPECIFIC APPROACH) – Widespread species that are beyond landscape-level control or have relatively low impact. Treat based on specific land management objectives.		
<ul style="list-style-type: none"> - Black locust - Bull thistle (BC) - Burdock - Canada thistle (BC) - Chicory - Common tansy - Curled dock - Dalmatian toadflax (BC) 	<ul style="list-style-type: none"> - Dame's rocket - Diffuse knapweed (BC) - Hairy cat's ear - Hound's tongue (BC) - Mullein - Orange hawkweed - Oxeye daisy - Plumeless thistle (BC) 	<ul style="list-style-type: none"> - Spotted knapweed (BC) - St. John's Wort (BC) - Sulphur cinquefoil - Queen Anne's lace - Yellow/common toadflax - Yellow hawkweeds
WATCHLIST – There is a lack of information on the distribution and density of this species within this IPMA.		
<ul style="list-style-type: none"> - Wormwood - Yellow bedstraw 		

CRESTON IPMA INVASIVE PLANT (TERRESTRIAL AND RIPARIAN) PRIORITY LIST- 2017

(* not known in CKISS region; BC=biocontrol)

Regional EDRR - Not currently known in this IPMA (and may also not be known in the CKISS region*). Follow EDRR reporting and action protocols. Bolded species are EDRR for the province.

- | | | |
|---|--|---|
| <ul style="list-style-type: none"> - Bighead knapweed - Black knapweed - Buffalobur* - Caraway - Coltsfoot - Field scabious - Flowering rush* - Garlic mustard* | <ul style="list-style-type: none"> - Giant hogweed - Gorse* - Greater celandine - Greater knapweed - Hoary cress - Longspine sandbur* - Marsh plume thistle | <ul style="list-style-type: none"> - Nodding thistle* - Puncturevine* - Russian knapweed* - Tansy ragwort - Wild chervil - Wild four o'clock* - Wood sage* |
|---|--|---|

ERADICATION or ANNUAL CONTROL – Species known in IPMA but with very limited distribution. Enter inventory data, report and treat or monitor annually.

- | | | |
|---|--|---|
| <ul style="list-style-type: none"> - ALL containment species OUTSIDE containment lines - Baby's breath - Black locust - Common bugloss | <ul style="list-style-type: none"> - Leafy spurge - Meadow/brown/black knapweed - Plumeless thistle - Policeman's helmet | <ul style="list-style-type: none"> - Purple loosestrife - Rush skeletonweed - Scotch thistle - Teasel |
|---|--|---|

CONTAINMENT – Enter inventory data, report and treat all sites outside containment lines. Some of these species have biocontrol available which can be used within the containment line (BC).

- | | | |
|--|--|---|
| <ul style="list-style-type: none"> - Blueweed (contain to Wynndel) - Common tansy (keep out of E. Kootenay – Crackerjack FSR east) - Himalayan blackberry (prevent from spreading east of Kitchener) - Hoary alyssum (contain to W. of Erickson) | <ul style="list-style-type: none"> - Knotweeds (contain to sites that do not border natural lands, transportation corridors, or riparian areas) - Scotch broom (contain to Kuskanook north) - Spotted knapweed (contain to west of Yahk gas line) - Yellow flag iris (contain to CVWMA and gardens) | <p>Contain to gardens:</p> <ul style="list-style-type: none"> - Butterfly bush - Cypress spurge - English ivy - Field bindweed - Goutweed - Japanese butterbur - Lamium/Yellow archangel - Russian olive - Periwinkle - Salt cedar - Siberian elm |
|--|--|---|

ESTABLISHED (BIOCONTROL OR SITE-SPECIFIC APPROACH) – Widespread species that are beyond landscape-level control or have relatively low impact. Treat based on specific land management objectives.

- | | | |
|--|---|--|
| <ul style="list-style-type: none"> - Bull thistle (BC) - Burdock - Canada thistle (BC) - Chicory - Curled dock - Dalmatian toadflax (BC) | <ul style="list-style-type: none"> - Dame's rocket - Diffuse knapweed - Hairy cat's ear - Hound's tongue (BC) - Mullein - Orange hawkweed | <ul style="list-style-type: none"> - Oxeye daisy - Scentless chamomile - St. John's wort (BC) - Sulphur cinquefoil - Yellow hawkweeds - Yellow/common toadflax |
|--|---|--|

WATCHLIST – There is a lack of information on the distribution and density of this species within this IPMA.

<ul style="list-style-type: none"> Sea buckthorn Queen Anne's Lace Wormwood (Absinth) Yellow bedstraw 		
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NELSON IPMA INVASIVE PLANT (TERRESTRIAL AND RIPARIAN) PRIORITY LIST – 2017

(* not known in CKISS region; BC=biocontrol)

Regional EDRR - Not currently known in this IPMA (and may also not be known in the CKISS region*). Follow EDRR reporting and action protocols. Bolded species are EDRR for the province.

- | | | |
|---|---|--|
| <ul style="list-style-type: none"> - Bighead knapweed - Black knapweed* - Buffalobur* - Caraway* - Coltsfoot - Common bugloss* - Flowering rush* - Garlic mustard* - Giant hogweed | <ul style="list-style-type: none"> - Gorse* - Greater celandine - Greater knapweed - Hoary cress - Leafy spurge - Longspine sandbur* - Marsh plume thistle* - Meadow/brown knapweed - Nodding thistle* | <ul style="list-style-type: none"> - Plumeless thistle - Puncturevine* - Russian knapweed* - Tansy ragwort - Wild chervil - Wild four o'clock* - Wood sage* |
|---|---|--|

ERADICATION or ANNUAL CONTROL – Species known in IPMA but with very limited distribution. Enter inventory data, report and treat or monitor annually. Some of these species have biocontrol (BC) available.

- | | | |
|--|---|--|
| <ul style="list-style-type: none"> - ALL containment species OUTSIDE containment lines) - Baby's breath - Blueweed | <ul style="list-style-type: none"> - Black knapweed - English ivy - Mouse-ear hawkweed | <ul style="list-style-type: none"> - Rush skeletonweed - Scentless chamomile - Scotch thistle - Teasel |
|--|---|--|

CONTAINMENT – Enter inventory data, report and treat all sites outside containment lines. Some of these species have biocontrol (BC) available which can be used within the containment line.

- | | | |
|--|--|--|
| <ul style="list-style-type: none"> - Field scabious (contain to Salmo) - Knotweeds (contain to sites that do not border natural lands, transportation corridors, or riparian areas) - Policeman's helmet (contain to Blewett) - Purple loosestrife (contain 4-Mile to Kootenay Canal) | <ul style="list-style-type: none"> - Scotch broom (contain from spreading south and west of Nelson) - Yellow flag iris (contain to 4-mile to Bird Creek Marsh) <p>Contain to gardens:</p> <ul style="list-style-type: none"> - Butterfly bush - Cypress spurge - English ivy - Field bindweed | <p>Contain to gardens:</p> <ul style="list-style-type: none"> - Goutweed - Japanese butterbur - Lamium/Yellow archangel - Russian olive - Periwinkle - Salt cedar - Siberian elm |
|--|--|--|

ESTABLISHED (BIOCONTROL OR SITE-SPECIFIC APPROACH) – Widespread species that are beyond landscape-level control or have relatively low impact. May have biocontrol (BC) available. Treat based on land management objectives.

- | | | |
|--|--|---|
| <ul style="list-style-type: none"> - Bladder campion - Bull thistle (BC) - Burdock - Canada thistle (BC) - Chicory - Common tansy - Curled dock - Flat peavine | <ul style="list-style-type: none"> - Dalmatian toadflax (BC) - Dame's rocket - Diffuse knapweed (BC) - Hairy cat's ear - Himalayan blackberry - Hoary alyssum - Hound's tongue - Mullein | <ul style="list-style-type: none"> - Orange hawkweed - Oxeye daisy - Spotted knapweed (BC) - St. John's wort (BC) - Sulphur cinquefoil - Yellow hawkweeds - Yellow/common toadflax |
|--|--|---|

WATCHLIST – There is a lack of information on the distribution and density of this species within this IPMA.

- | | |
|---|--|
| <ul style="list-style-type: none"> - Queen Anne's lace - Black locust | <ul style="list-style-type: none"> - Bristly locust |
|---|--|

KASLO NORTH IPMA INVASIVE PLANT (TERRESTRIAL AND RIPARIAN) PRIORITY LIST – 2017

(* not known in CKISS region; BC=biocontrol)

Regional EDRR - Not currently known in this IPMA (and may also not be known in the CKISS region*). Follow EDRR reporting and action protocols. **Bolded species are EDRR for the province.**

<ul style="list-style-type: none"> - Baby's breath - Bighead knapweed - Buffalobur* - Caraway* - Common bugloss* - Field scabious - Flowering rush* - Garlic mustard* - Gorse* 	<ul style="list-style-type: none"> - Greater celandine - Greater knapweed - Hoary cress - Leafy spurge - Longspine sandbur* - Marsh plume thistle - Meadow/brown/black knapweed - Nodding thistle* - Plumeless thistle 	<ul style="list-style-type: none"> - Puncturevine* - Rush skeletonweed - Russian knapweed* - Scentless chamomile - Scotch thistle - Teasel - Wild four o'clock* - Wood sage* - Yellow flag iris - Tansy Ragwort
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ERADICATION or ANNUAL CONTROL – Species known in IPMA but with very limited distribution. Enter inventory data, report and treat or monitor annually. Some of these species have biocontrol (BC) available.

<ul style="list-style-type: none"> - ALL containment species OUTSIDE their containment lines (see next section) 	<ul style="list-style-type: none"> - Blueweed - Giant hogweed - Hoary alyssum 	<ul style="list-style-type: none"> - Policeman's helmet - Purple loosestrife
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CONTAINMENT – Enter inventory data, report and treat all sites outside containment lines. Some of these species have biocontrol (BC) available which can be used within the containment line.

<ul style="list-style-type: none"> - Coltsfoot (contain to Kaslo) - Himalayan blackberry (prevent from spreading north of Kaslo) - Knotweeds (contain to sites that do not border natural lands, transportation corridors, or riparian areas) 	<ul style="list-style-type: none"> - Scotch broom (prevent from spreading north of Shutty Bench) <p>Contain to gardens:</p> <ul style="list-style-type: none"> - Butterfly bush - Cypress spurge - English ivy - Field bindweed 	<p>Contain to gardens:</p> <ul style="list-style-type: none"> - Goutweed - Japanese butterbur - Lamium/Yellow archangel - Russian olive - Periwinkle - Salt cedar - Siberian elm
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ESTABLISHED (BIOCONTROL OR SITE-SPECIFIC APPROACH) – Widespread species that are beyond landscape-level control or have relatively low impact. May have biocontrol (BC) available. Treat based on land management objectives.

<ul style="list-style-type: none"> - Bull thistle (BC) - Burdock - Canada thistle (BC) - Chicory - Common tansy - Curled dock - Dalmatian toadflax (BC) 	<ul style="list-style-type: none"> - Dame's rocket - Diffuse knapweed (BC) - Hairy cat's ear - Hound's tongue (BC) - Mullein - Orange hawkweed - Oxeye daisy 	<ul style="list-style-type: none"> - Spotted knapweed (BC) - St. John's wort (BC) - Sulphur cinquefoil - Yellow hawkweeds - Yellow/common toadflax
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WATCHLIST – There is a lack of information on the distribution and density of this species within this IPMA.

<ul style="list-style-type: none"> - Black locust - Bur chervil - Comfrey - Meadow salsify - Wall lettuce 	<ul style="list-style-type: none"> - Wild carrot/Q. Anne's Lace - Wild chervil - Wormwood (Absinth) - Yellow bedstraw 	
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SLOCAN VALLEY IPMA INVASIVE PLANT (TERRESTRIAL AND RIPARIAN) PRIORITY LIST- 2017

(* not known in CKISS region; BC=biocontrol)

Regional EDRR - Not currently known in this IPMA (and may also not be known in the CKISS region*). Follow EDRR reporting and action protocols. Bolded species are EDRR for the province.		
<ul style="list-style-type: none"> - Baby's breath - Bighead knapweed - Buffalobur* - Caraway* - Coltsfoot - Common bugloss* - Field scabious - Flowering rush* - Garlic mustard* 	<ul style="list-style-type: none"> - Gorse* - Greater knapweed - Hoary cress - Leafy spurge - Longspine sandbur* - Marsh plume thistle - Meadow/brown/black knapweed - Nodding thistle* 	<ul style="list-style-type: none"> - Plumeless thistle - Puncturevine* - Russian knapweed* - Scentless chamomile - Tansy ragwort - Teasel - Wild chervil - Wild four o'clock* - Wood sage*
ERADICATION or ANNUAL CONTROL – Species known in IPMA but with very limited distribution. Enter inventory data, report and treat or monitor annually. Some of these species have biocontrol (BC) available.		
<ul style="list-style-type: none"> - ALL containment species OUTSIDE containment lines) - Blueweed 	<ul style="list-style-type: none"> - Giant hogweed - Greater celandine - Policeman's helmet - Purple loosestrife 	<ul style="list-style-type: none"> - Scotch broom - Scotch thistle - Yellow flag iris
CONTAINMENT – Enter inventory data, report and treat all sites outside containment lines. Some of these species have biocontrol (BC) available which can be used within the containment line.		
<ul style="list-style-type: none"> - Himalayan blackberry (prevent from spreading north of Passmore) - Hoary alyssum (contain to south of Passmore) - Knotweeds (contain to sites that do not border natural lands, transportation corridors, or riparian areas) 	<ul style="list-style-type: none"> - Rush skeletonweed (contain to junction/Krestova/Slocan Park) <p>Contain to gardens:</p> <ul style="list-style-type: none"> - Butterfly bush - Cypress spurge - English ivy - Field bindweed - Goutweed 	<p>Contain to gardens cont.:</p> <ul style="list-style-type: none"> - Japanese butterbur - Lamium/Yellow archangel - Russian olive - Periwinkle - Salt cedar - Siberian elm
ESTABLISHED (BIOCONTROL OR SITE-SPECIFIC APPROACH) – Widespread species that are beyond landscape-level control or have relatively low impact. May have biocontrol (BC) available. Treat based on land management objectives.		
<ul style="list-style-type: none"> - Bull thistle (BC) - Burdock - Canada thistle (BC) - Chicory - Common tansy - Curled dock - Dalmatian toadflax (BC) 	<ul style="list-style-type: none"> - Dame's rocket - Diffuse knapweed (BC) - Hairy cat's ear - Hound's tongue - Mullein - Orange hawkweed - Oxeye daisy 	<ul style="list-style-type: none"> - Spotted knapweed (BC) - St. John's wort (BC) - Sulphur cinquefoil - Yellow hawkweeds - Yellow/common toadflax
WATCHLIST – There is a lack of information on the distribution and density of this species within this IPMA.		
<ul style="list-style-type: none"> - Black locust - Bur chervil - Plumeless thistle - Wall lettuce - Queen Anne's Lace 	<ul style="list-style-type: none"> - Wormwood 	

NAKUSP IPMA INVASIVE PLANT (TERRESTRIAL AND RIPARIAN) PRIORITY LIST – 2017

(* not known in CKISS region; BC=biocontrol; **species verification 2017)

Regional EDRR - Not currently known in this IPMA (and may also not be known in the CKISS region*). Follow EDRR reporting and action protocols. Bolded species are EDRR for the province.		
<ul style="list-style-type: none"> - Bighead knapweed - Buffalobur* - Caraway* - Coltsfoot - Common bugloss* - Field scabious - Flowering rush* - Garlic mustard* - Giant hogweed 	<ul style="list-style-type: none"> - Gorse* - Greater celandine - Greater knapweed - Hoary cress - Leafy spurge - Longspine sandbur* - Nodding thistle* - Plumeless thistle* - Puncturevine* 	<ul style="list-style-type: none"> - Rush skeletonweed - Russian knapweed* - Scotch thistle - Tansy ragwort* - Teasel - Wild chervil - Wild four o'clock* - Wood sage*
ERADICATION or ANNUAL CONTROL – Species known in IPMA but with very limited distribution. Enter inventory data, report and treat or monitor annually.		
<ul style="list-style-type: none"> - Containment species outside lines 	<ul style="list-style-type: none"> - Baby's breath - Blueweed 	<ul style="list-style-type: none"> - Marsh plume thistle - Policeman's helmet - Yellow flag iris
CONTAINMENT – Enter inventory data, report and treat all sites outside containment lines. Some of these species have biocontrol (BC) available which can be used within the containment line.		
<ul style="list-style-type: none"> - Himalayan blackberry (contain to Nakusp) - Hoary alyssum (contain to Nakusp) - Meadow/brown/black knapweed (contain to Nakusp IPMA) 	<ul style="list-style-type: none"> - Knotweeds (contain to sites that do not border natural lands, transportation corridors, or riparian areas) - Purple loosestrife (contain to Fauquier) - Scotch broom (contain to Nakusp) 	Contain to gardens: <ul style="list-style-type: none"> - Butterfly bush - Cypress spurge - English ivy - Field bindweed - Goutweed - Japanese butterbur - Lamium/Yellow archangel - Russian olive - Periwinkle - Salt cedar - Siberian elm
ESTABLISHED (BIOCONTROL OR SITE-SPECIFIC APPROACH) – Widespread species that are beyond landscape-level control or have relatively low impact. May have biocontrol (BC) available. Treat based on specific land management objectives.		
<ul style="list-style-type: none"> - Bull thistle (BC) - Burdock - Canada thistle (BC) - Chicory - Curled dock - Dalmatian toadflax (BC) - Dame's rocket 	<ul style="list-style-type: none"> - Diffuse knapweed (BC) - Hairy cat's ear - Hound's tongue (BC) - Mullein - Orange hawkweed - Oxeye daisy - Scentless chamomile** 	<ul style="list-style-type: none"> - Spotted knapweed (BC) - St. John's wort (BC) - Sulphur cinquefoil - Queen Anne's Lace - Yellow hawkweeds - Yellow/common toadflax
WATCHLIST – There is a lack of information on the distribution and density of this species within this IPMA.		
Black locust		

APPENDIX C: LATIN NAMES OF INVASIVE PLANTS ON PRIORITY LISTS

These invasive plants are referred to by their common name in the priority plant lists (Appendix B).

Common Name	Latin Name	Common Name	Latin Name
Absinth wormwood	<i>(Artemesia absinthium)</i>	False brome / slender brome	<i>Brachypodium sylvaticum</i>
African rue	<i>Peganum harmala</i>	Fiddleneck	<i>(Amsinckia)</i>
Baby's breath	<i>(Gypsophila paniculata)</i>	Field bindweed	<i>(Convolvulus arvensis)</i>
Black henbane	<i>(Hyoscyamus niger)</i>	Field scabious	<i>(Knautia arvensis)</i>
Black knapweed	<i>(Centaurea nigra)</i>	Flat pea	<i>(Lathyrus sylvestris)</i>
Black locust	<i>(Robinia hispida)</i>	Flowering rush	<i>(Butomus umbellatus)</i>
Blueweed	<i>(Echium vulgare)</i>	Foxtail, slender / meadow	<i>Alopecurus myosuroides</i>
Bristly locust	<i>(Robinia hispida)</i>	Garlic mustard	<i>(Alliaria petiolate)</i>
Brown knapweed	<i>(Centaurea jacea)</i>	Giant reed	<i>Arundo donax</i>
Buffalobur	<i>(Solanum rostratum)</i>	Goat's rue / French lilac	<i>Galega officinalis</i>
Bull thistle	<i>(Cirsium vulgare)</i>	Gorse	<i>(Ulex europaeus)</i>
Bur chervil	<i>(Anthriscus caucalis)</i>	Goutweed (Bishop's weed)	<i>(Aegopodium podagraria)</i>
Burdock	<i>(Arctium minus)</i>	Greater celandine	<i>(Chelidonium majus)</i>
Butterfly bush	<i>(Buddleja davidii)</i>	Green foxtail	<i>(Setaria viridis)</i>
Camel thorn	<i>Alhagi maurorum</i>	Hairy cat's ear	<i>(Hypochaeris radicata)</i>
Canada thistle	<i>(Cirsium arvense)</i>	Halogeton / Saltlover	<i>Halogeton glomeratus</i>
Caraway	<i>(Carum carvi)</i>	Hawkweed spp.	<i>(Hieracium spp.)</i>
Chicory	<i>(Cichorium intybus)</i>	Himalayan blackberry	<i>(Rubus armeniacus)</i>
Chilean tarweed	<i>(Madia sativa)</i>	Hoary alyssum	<i>(Berteroa incana)</i>
Colt's foot	<i>(Tussilago spp.)</i>	Hoary cress	<i>(Cardaria draba)</i>
Comfrey	<i>(Symphytum spp.)</i>	Hound's tongue	<i>(Cynoglossum officinale)</i>
Common bugloss	<i>(Anchusa officinalis)</i>	Japanese butterbur	<i>(Petasites japonicas)</i>
Common crupina	<i>(Crupina vulgaris)</i>	Johnsongrass	<i>(Sorghum alepense)</i>
Common periwinkle	<i>(Vinca minor)</i>	Jointed goatgrass	<i>Aegilops cylindrica</i>
Common reed	<i>(Phragmites australis ssp. Australis)</i>	Knapweed spp.	<i>(Centaurea spp.)</i>
Common tansy	<i>(Tanacetum vulgare)</i>	Knotweeds	<i>(Fallopia spp.)</i>
Creeping buttercup	<i>(Ranunculus repens)</i>	Kudzu	<i>Pueraria montana</i>
Curled dock	<i>(Rumex crispus)</i>	Leafy spurge	<i>(Euphorbia esula)</i>
Dalmatian toadflax	<i>(Linaria dalmatica)</i>	Longspine sandbur	<i>(Cenchrus longispinus)</i>
Dame's rocket	<i>(Hesperis matronalis)</i>	Marsh plume thistle	<i>(Cirsium palustre)</i>
Diffuse knapweed	<i>(Centaurea diffusa)</i>	Meadow clary	<i>Salvia pratensis</i>
Dyer's woad	<i>(Isatis tinctoria)</i>	Meadow goat's beard	<i>(Tragopogon pratensis)</i>
Eggleaf spurge	<i>Euphorbia oblongata</i>	Meadow knapweed	<i>(Centaurea debeuxii)</i>
English ivy	<i>(Hedera helix)</i>	Medusahead	<i>Taeniatherum caput-medusae</i>

Latin Names of Invasive Plants on Priority Lists (Continued)

Common Name	Latin Name
Mouse-ear hawkweed	<i>(Hieracium pilosella)</i>
Mullein	<i>(Verbascum thapsis)</i>
Night-flowering catchfly	<i>(Silene noctiflora)</i>
Nightshade	<i>(Solanum spp.)</i>
Nodding thistle	<i>(Carduus nutans)</i>
North Africa grass	<i>Ventenata dubia</i>
Norway maple	<i>(Acer platanoides)</i>
Nutsedge, purple	<i>Cyperus rotundus</i>
Orange hawkweed	<i>(Hieracium aurantiacum)</i>
Oxeye daisy	<i>(Leucanthemum vulgare)</i>
Perennial pepperweed	<i>Lepidium latifolium</i>
Perennial sow thistle	<i>(Sonchus arvensis)</i>
Periwinkle	<i>(Vinca spp.)</i>
Plumeless thistle	<i>(Carduus acanthoides)</i>
Policeman's helmet	<i>(Impatiens glandulifera)</i>
Puncturevine	<i>(Tribulus terrestris)</i>
Purple loosestrife	<i>(Lythrum salicaria)</i>
Red bartsia	<i>Odontites serotina</i>
Rush skeletonweed	<i>(Chondrilla juncea)</i>
Russian knapweed	<i>(Acroptilon repens)</i>
Russian olive	<i>(Elaeagnus angustifolia)</i>
Sage, clary	<i>Salvia sclarea</i>
Sage, Mediterranean	<i>Salvia aethiopsis</i>
Saltcedar	<i>(Tamarix spp.)</i>
Scentless chamomile	<i>(Matricaria perforata)</i>
Scotch broom	<i>(Cytisus scoparius)</i>
Scotch thistle	<i>(Onopordum acanthium)</i>
Sheep sorrel	<i>(Rumex acetosella)</i>
Siberian elm	<i>(Ulmus pumila)</i>
Silverleaf nightshade	<i>Solanum elaeagnifolium</i>
Spotted knapweed	<i>(Centaurea biebersteinii)</i>
Spring millet grass	<i>Milium vernale</i>
Spurge flax	<i>Thymelaea passerina</i>
Squarrose knapweed	<i>Centaurea virgata ssp. squarrosa</i>

Common Name	Latin Name
Squarrose knapweed	<i>(Centaurea virgata ssp. Squarrosa)</i>
St. John's Wort	<i>(Hypericum perforatum)</i>
Starthistle, Iberian	<i>Centaurea iberica</i>
Starthistle, purple	<i>Centaurea calcitrapa</i>
Starthistle, yellow	<i>Centaurea solstitialis</i>
Sulphur cinquefoil	<i>(Potentilla recta)</i>
Sweet fennel	<i>(Foeniculum vulgare)</i>
Syrian bean-caper	<i>Zygophyllum fabago</i>
Syrian beancaper	<i>(Zygophyllum fabago)</i>
Tall buttercup	<i>(Ranunculus acris)</i>
Tansy ragwort	<i>(Senecio jacobaea)</i>
Tartary buckwheat	<i>(Fagopyrum tataricum)</i>
Teasel	<i>(Dipsacus fullonum)</i>
Texas blueweed	<i>Helianthus ciliaris</i>
Thistle, Italian	<i>Carduus pycnocephalus</i>
Thistle, slender-flowered	<i>Carduus tenuiflorus</i>
Velvetleaf	<i>(Abutilon theophrasti)</i>
Wall lettuce	<i>(Lactuca muralis)</i>
Western goat's beard	<i>(Tragopogon dubius)</i>
White cockle	<i>(Lychnis alba)</i>
Queen Anne's Lace (Wild Carrot)	<i>(Daucus carota)</i>
Wild four o'clock	<i>(Mirabilis nyctaginea)</i>
Wood sage	<i>(Salvia nemorosa)</i>
Wild Chervil	<i>(Anthriscus sylvestris)</i>
Wormwood (absinth)	<i>(Artemisia absinthium)</i>
Yellow archangel	<i>(Lamium galeobdolon)</i>
Yellow bedstraw	<i>(Galium verum)</i>
Yellow flag-iris	<i>(Iris pseudacorus)</i>
Yellow hawkweeds	<i>(Hieracium spp.)</i>
Yellow starthistle	<i>(Centaurea solstitialis)</i>
Yellow/common toadflax	<i>(Linaria vulgare)</i>



APPENDIX D: USEFUL RESOURCES

Central Kootenay Invasive Species Society

- Website includes invasive species to watch for, useful resources, and CKISS reports
- All six regional IPMA plans can be downloaded from this website
- www.ckiss.ca

BC Inter-Ministry Invasive Species Working Group

- Invasive Plant Early Detection and Rapid Response Plan for British Columbia
- https://www.for.gov.bc.ca/hra/Plants/publications/EDRR_Plan_Final_Draft_Nov2012.pdf

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.
- Best Management Practices for Roadside booklet
- Best Management Practices for Parks and Protected Areas booklet
- Local government toolkit and Legislative Guidebook
- <http://bcinvasives.ca/resources>

WeedsBC

- Information on over 80 invasive plant species including identification and control techniques.
- Seven Steps to Managing Your Weeds manual
- <https://www.for.gov.bc.ca/hra/plants/weedsbcdocuments.htm>

Invasive Alien Plant Program Application

- 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
- 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 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



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 F – 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 sites¹²;
- 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 area¹³; 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, CKISSs 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.

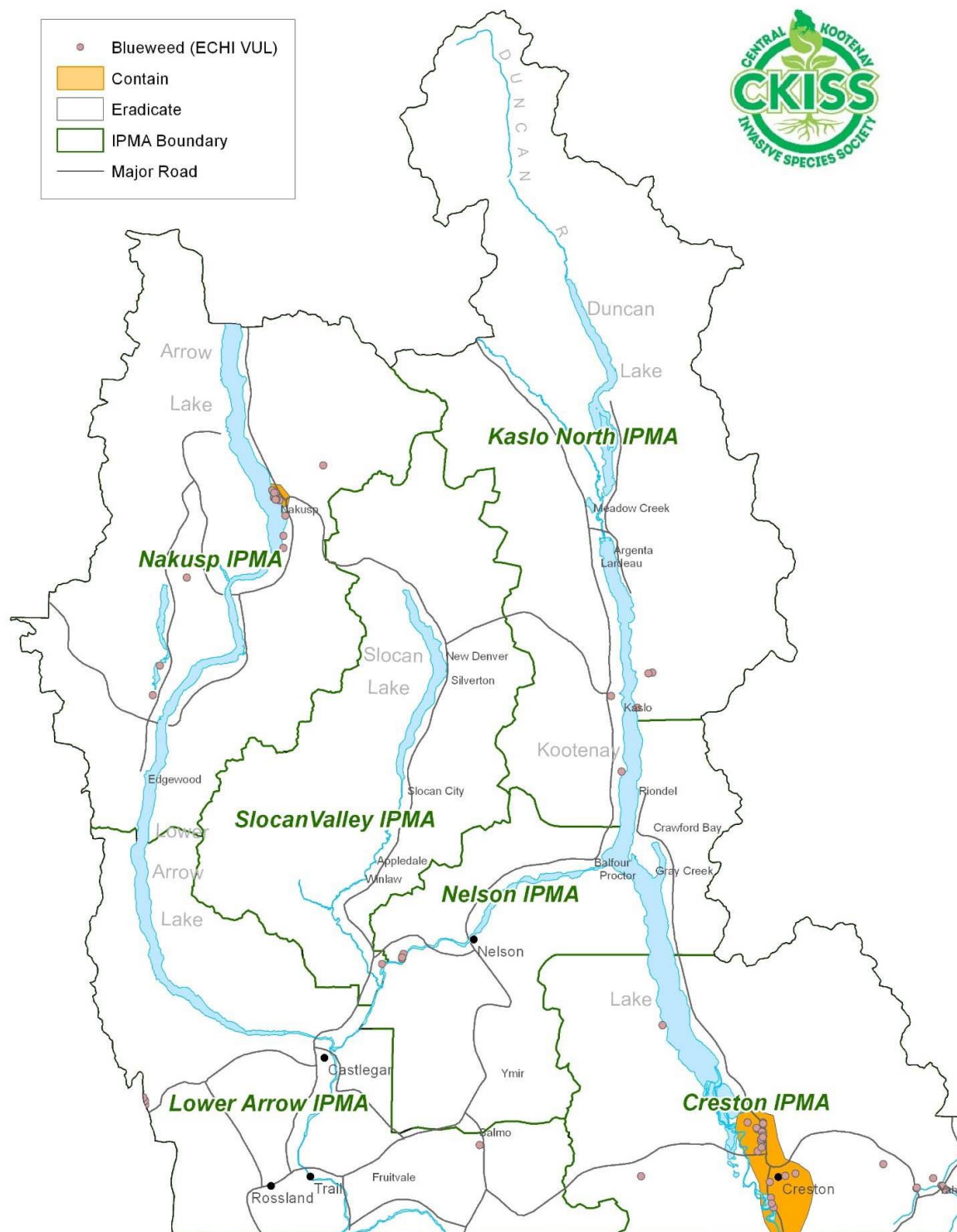
NOTE: It is important to hire a qualified contractor and to conduct all treatments in compliance with applicable legislation.

¹² Contact Catherine MacRae (MFLRNO)

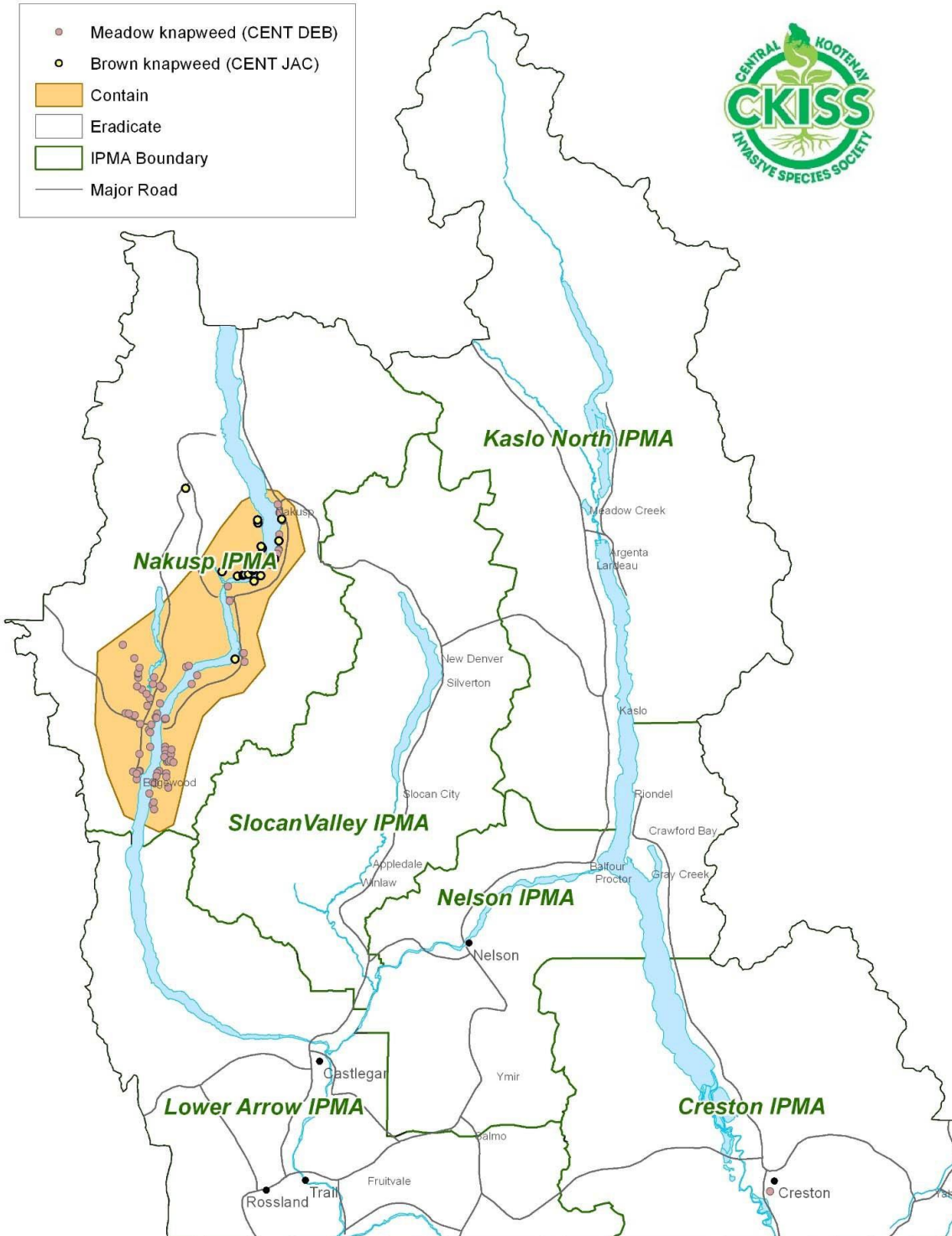
¹³ Contact Conservation Data Centre (CDC)



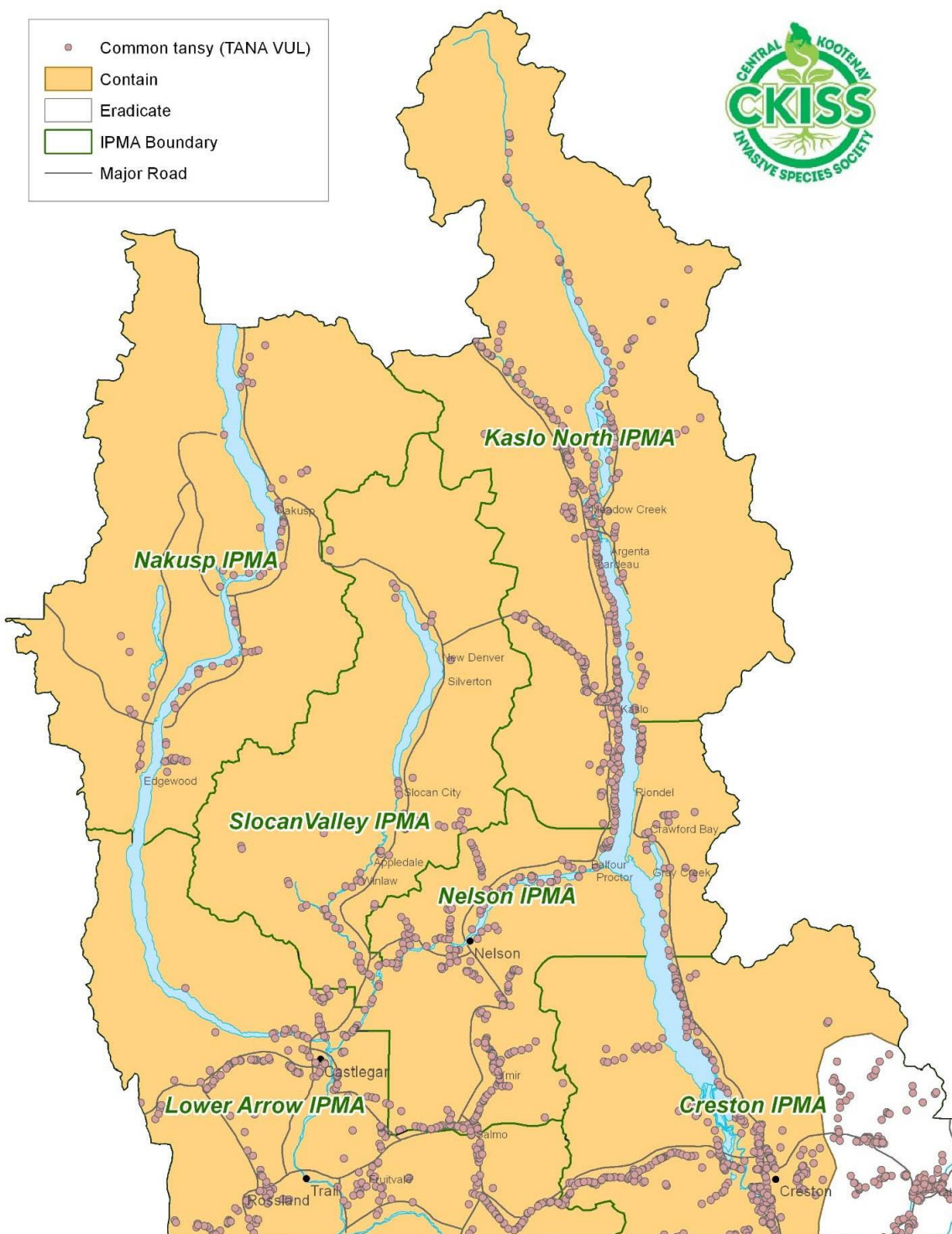
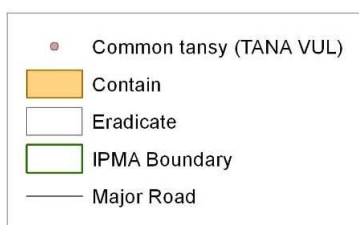
APPENDIX F: MAPS OF CONTAINMENT LINES



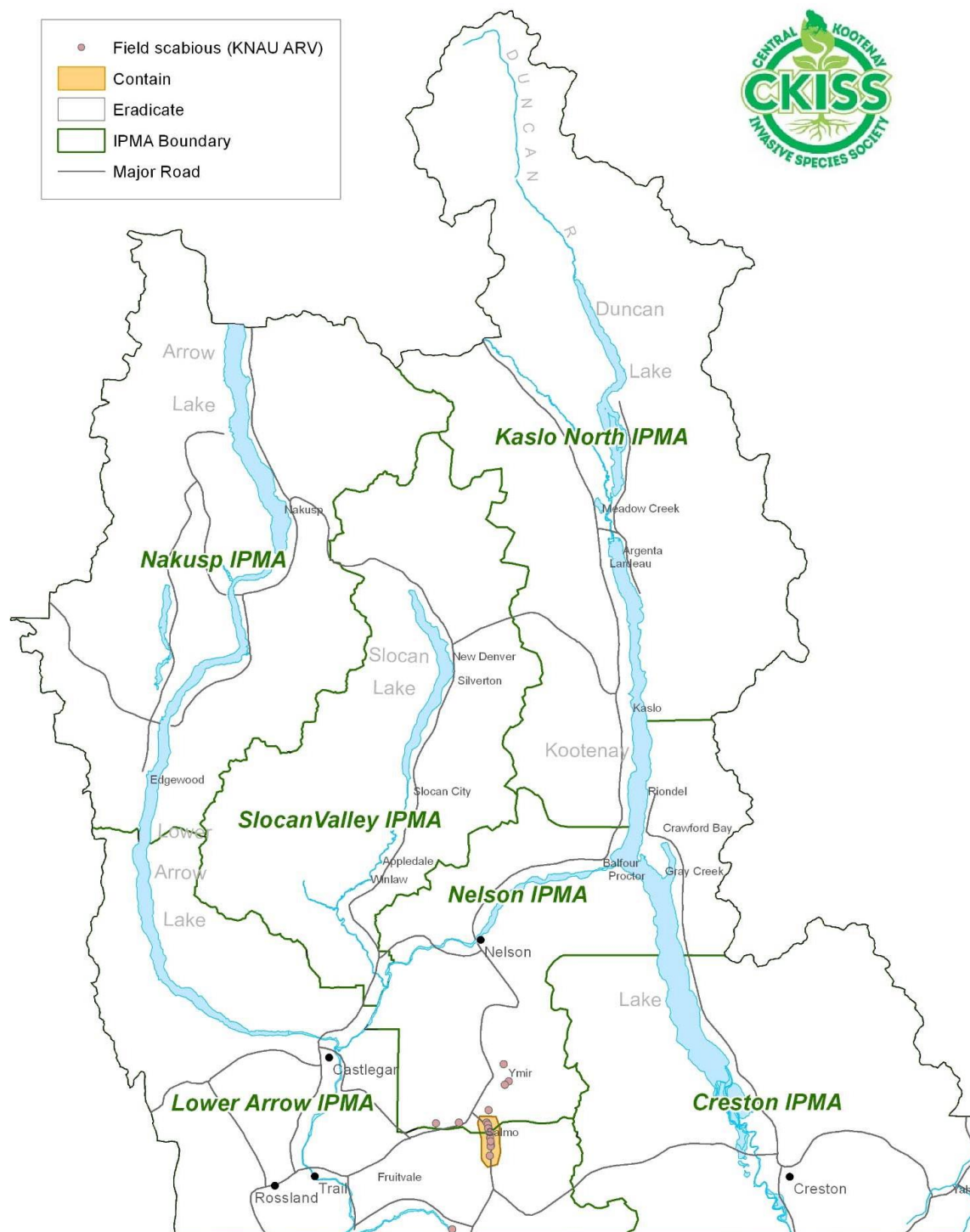
Containment line for **blueweed** in the Central/West Kootenay. Contain to Creston/Wyndel. Eradicate in other parts of region.



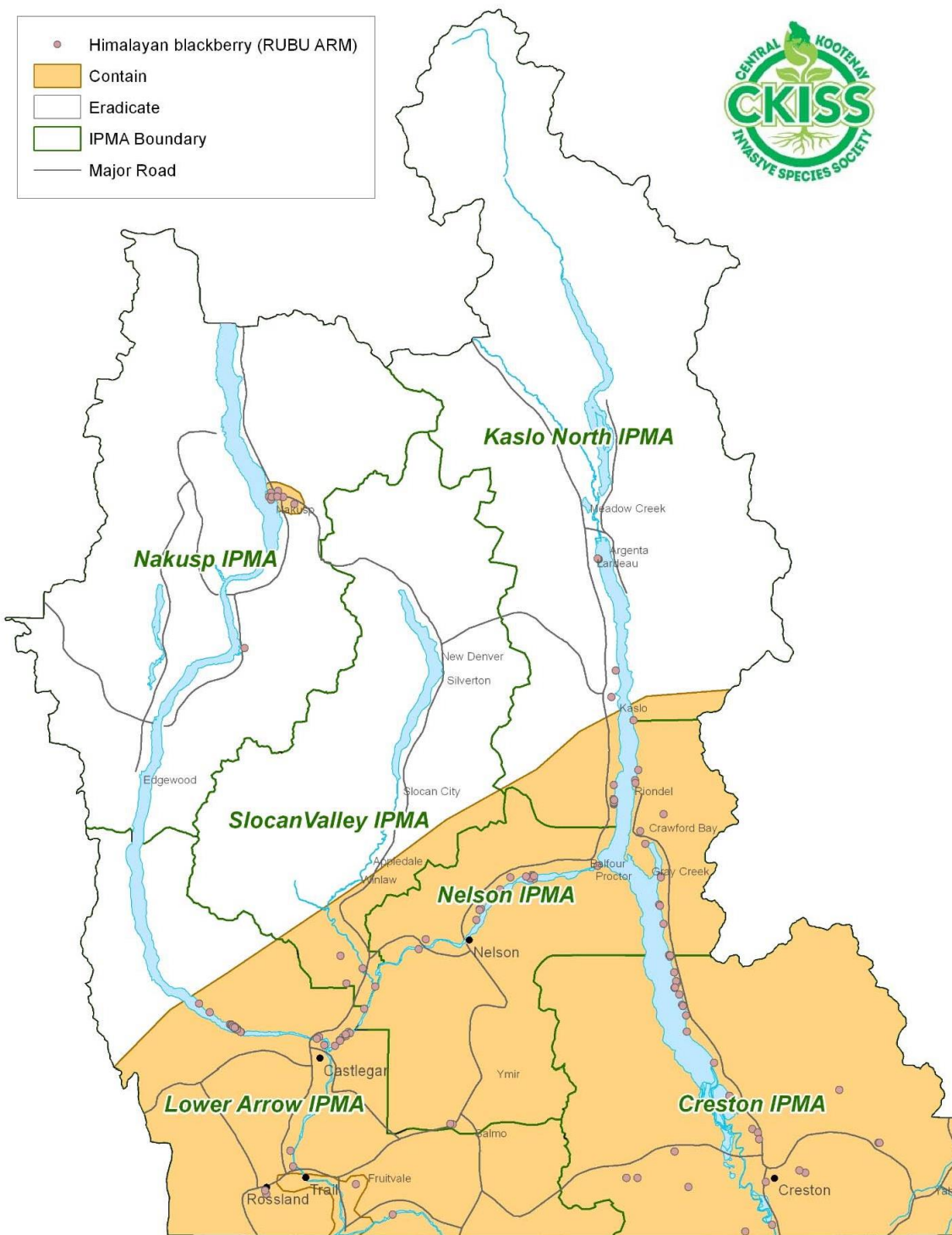
Containment line for **brown/meadow knapweed** in the Central/West Kootenay. Contain to Nakusp/ Fauquier/ Edgewood/ Whatshan area. Eradicate in other parts of region.



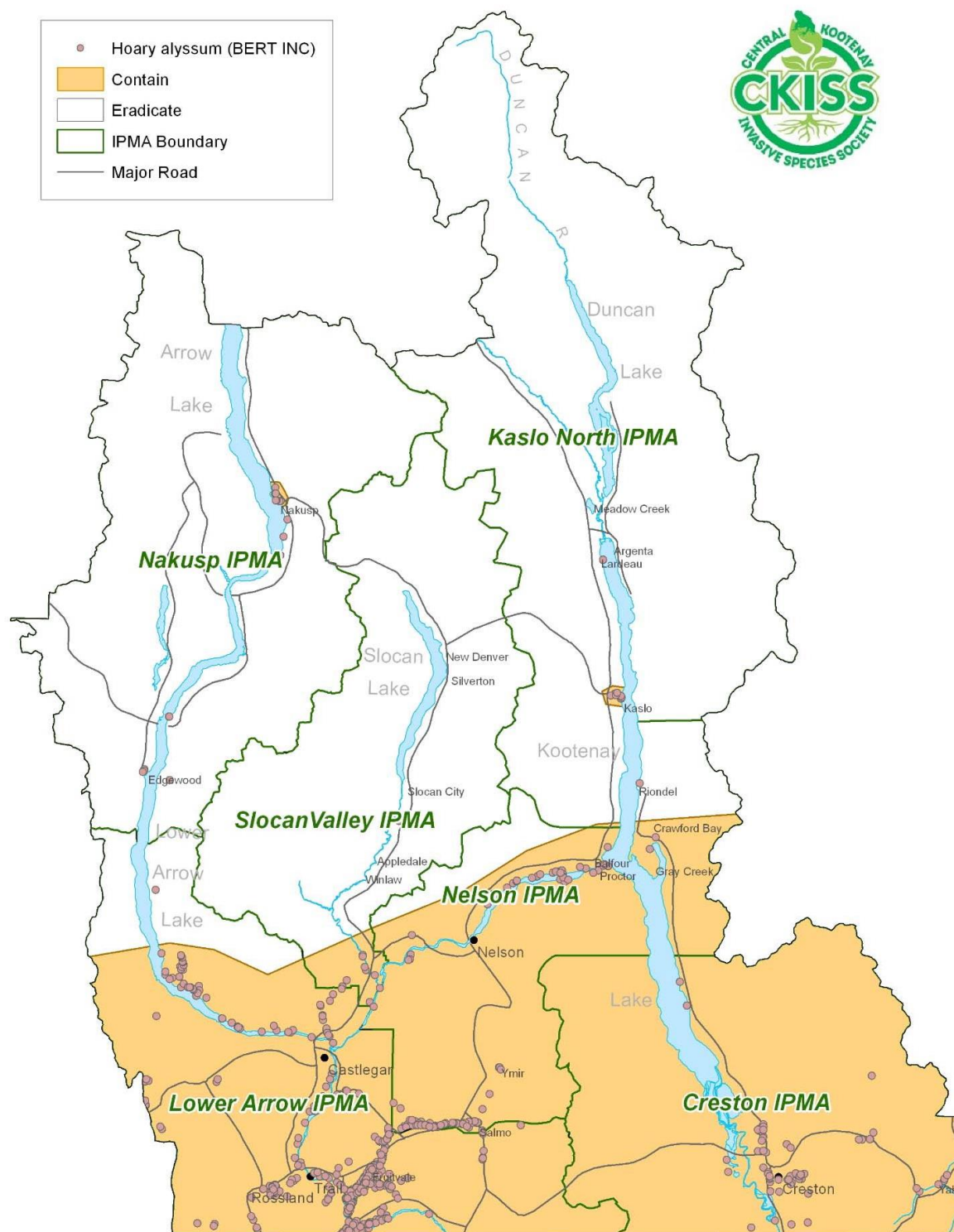
Containment line for **common tansy** in the Central/West Kootenay. Prevent from spreading into East Kootenay by treating sites east of Crackerjack FSR.



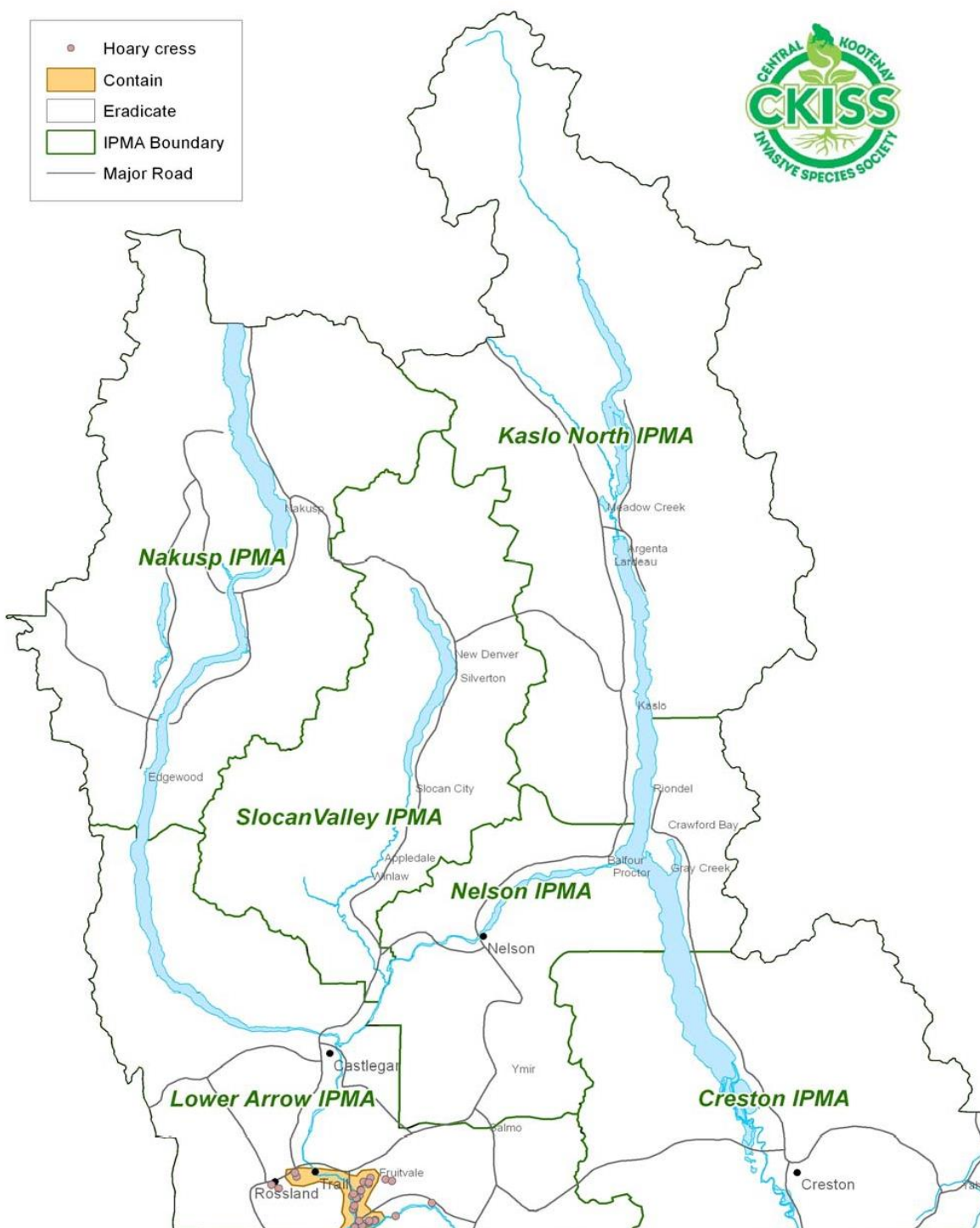
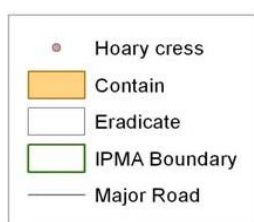
Containment line for **field scabious** in the Central/West Kootenay. Contain to Salmo. Eradicate in other parts of region.



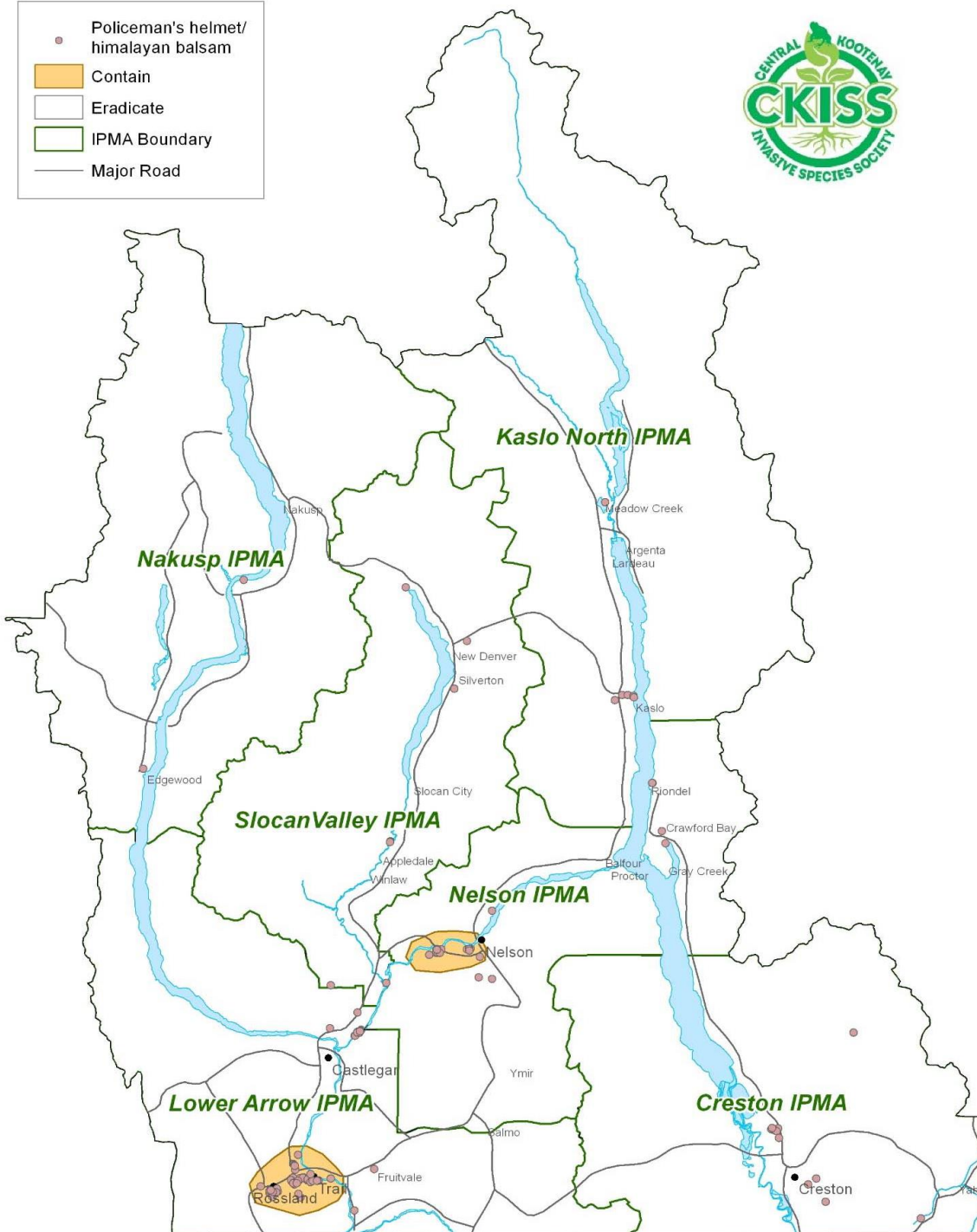
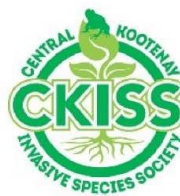
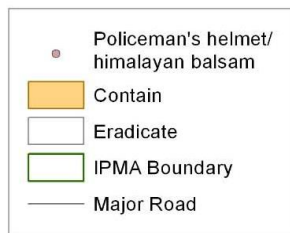
Containment line for **Himalayan blackberry** in the Central/West Kootenay. Prevent from spreading to the northern part of the region.



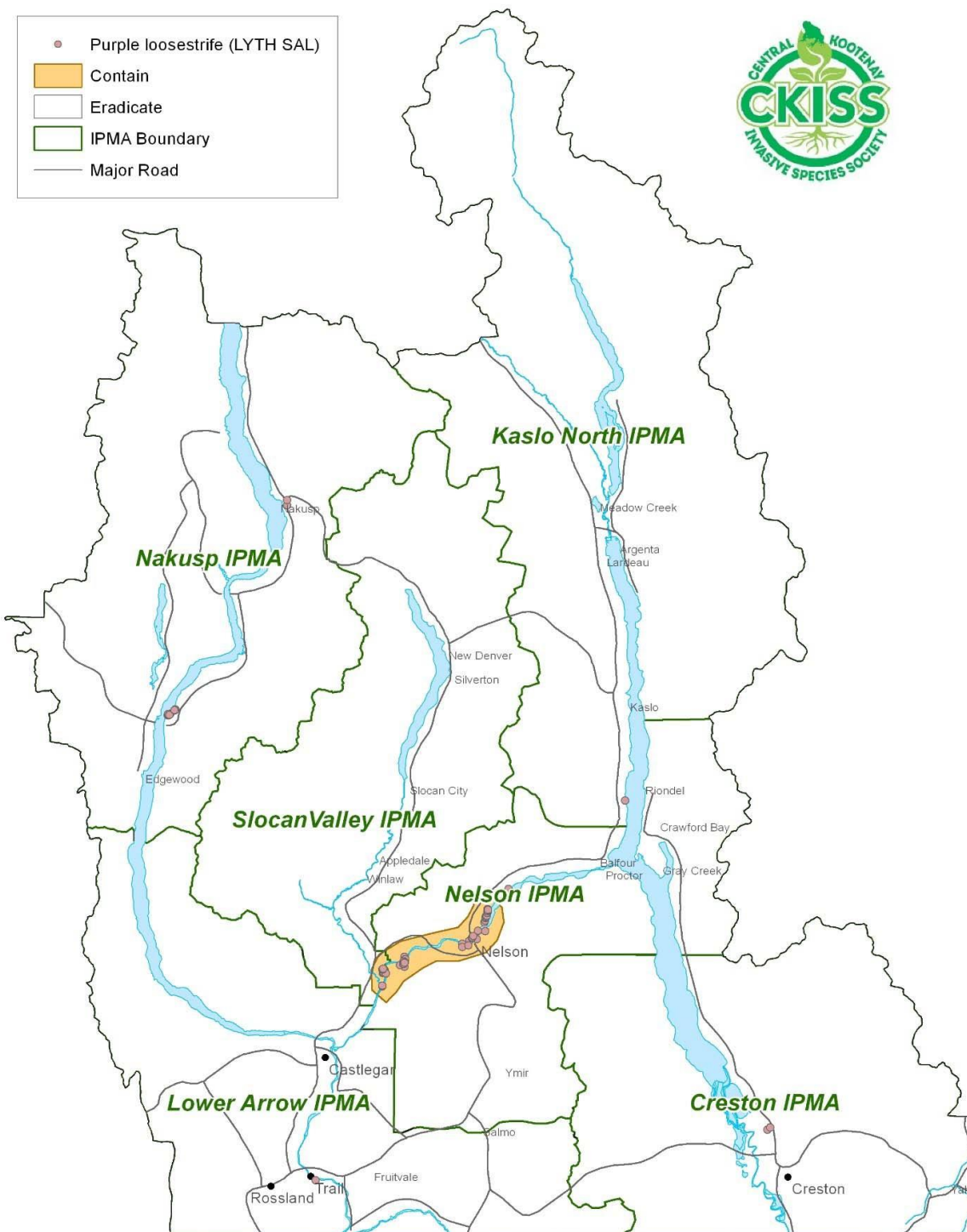
Containment line for **hoary alyssum** in the Central/West Kootenay. Prevent from spreading to the northern part of the region.



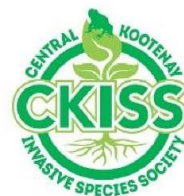
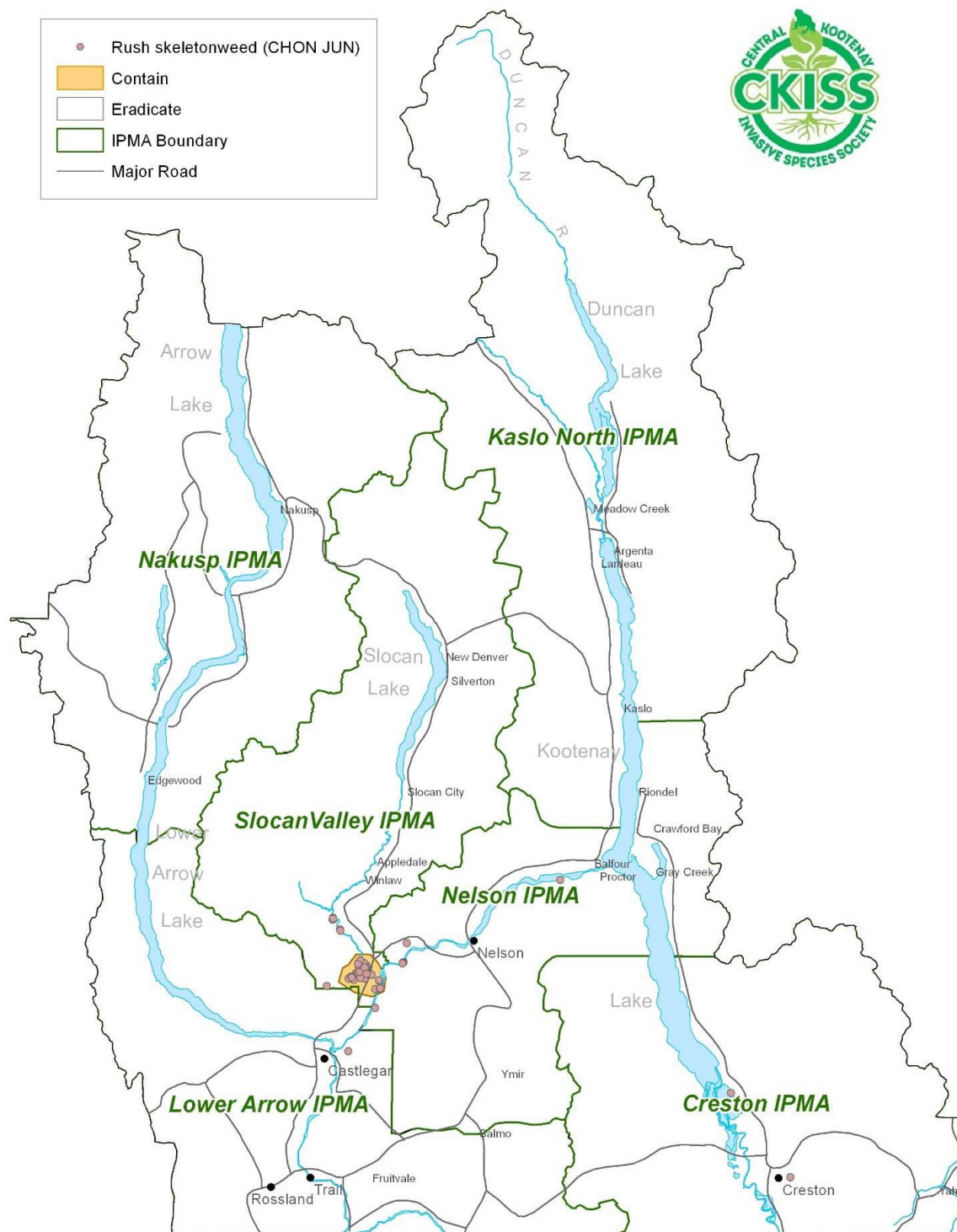
Containment line for **hoary cress** in the Central/West Kootenay. Contain to Warfield/Trail/Columbia Gardens. Eradicate in other parts of region.



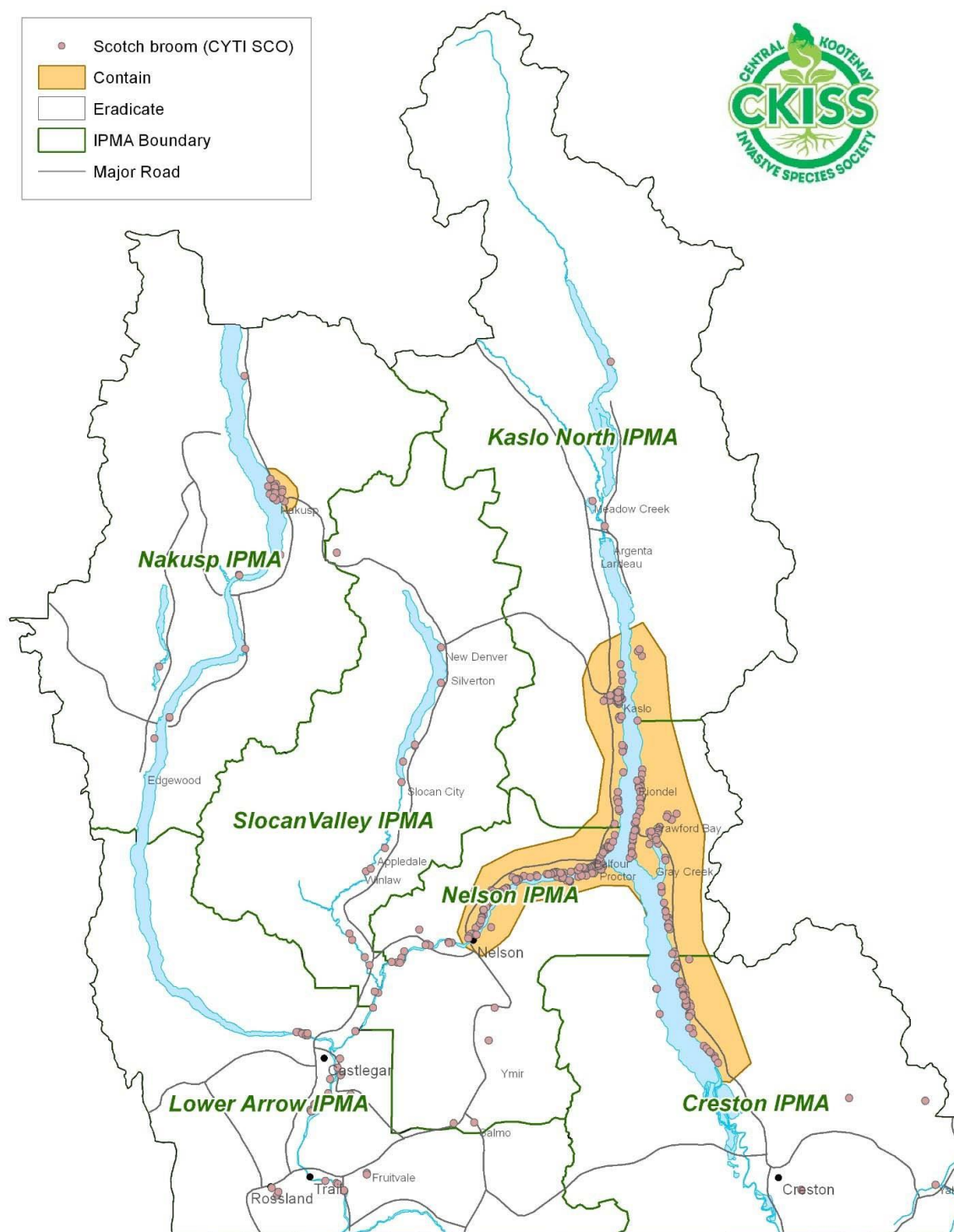
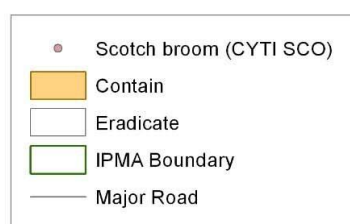
Containment line for **Policeman's helmet (Himalayan balsam)** in the Central/West Kootenay. Contain to Nelson/Blewett and Rossland/Trail. Eradicate in other parts of region.



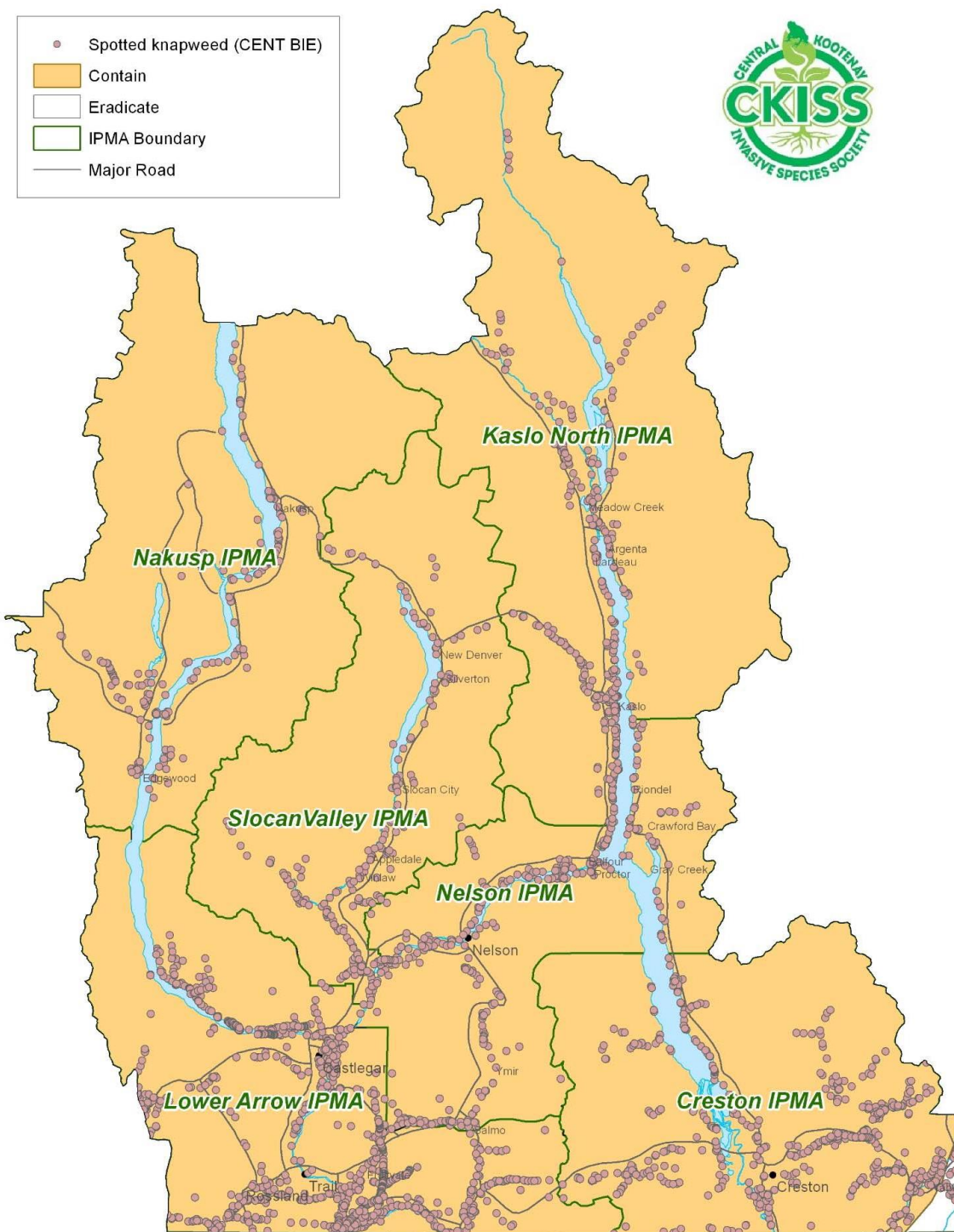
Containment line for **purple loosestrife** in the Central/West Kootenay. Contain to Nelson/Kootenay Canal. Eradicate in other parts of region.



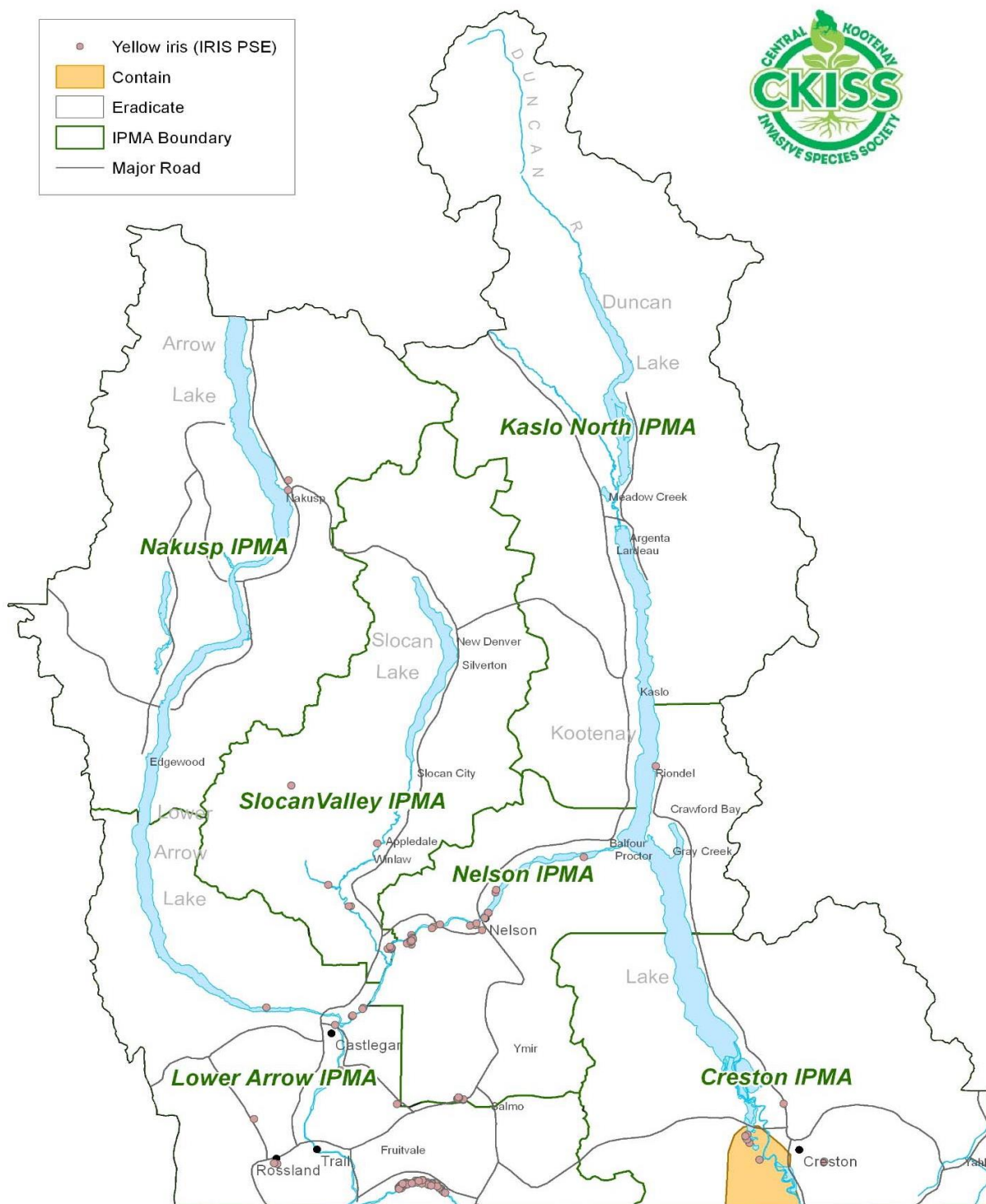
Containment line for **rush skeletonweed** in the Central/West Kootenay. Contain to Krestova/Crescent Valley. Eradicate in other parts of region.



Containment line for **Scotch broom** in the Central/West Kootenay. Contain to Nelson/North Shore/Harrop/East Shore. Eradicate in other parts of region.



Containment line for spotted knapweed in the Central/West Kootenay. Established in most of the region. Prevent from spreading to East Kootenay by treating any sites east of Yahk gas line.



Containment line for **yellow flag iris**. Contain to Creston Valley Wildlife Management Area (CVWMA) wetland complex. Eradicate in other parts of region.