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Figure 1. The 2019-2024 CSISS Strategic Plan goals, along with CSISS mission and vision statements.

Thank you to all of our funders and partners in 2022!

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FWCP
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SHUSWAP
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HABITAT
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Executive Summary

April 2022 marked the start of the tenth operational season of the Columbia Shuswap Invasive Species Society (C SISS). Thanks to dedicated staff, diligent directors, knowledgeable partners and inspired volunteers, the C SISS expanded its programming and made significant progress on each goal identified in the 2019-2024 C SISS Strategic Plan:



Goal 1: Implement a collaborative and coordinated program

- Strengthened and expanded its network of partners;
- Collaborated with all levels of government, stakeholders, residents and NGO's;
- Worked with over 98 organizations, 22 of whom were new in 2022.



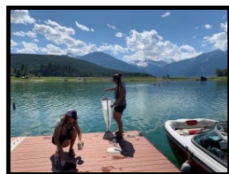
Goal 2: Educate, engage and inspire participation

- Completed targeted outreach to stakeholders and land managers;
- Hosted training workshops for government staff, contractors and the public;
- Engaged with over 4,602 people in the region and attended 56 events;
- Directly targeted outreach to various stakeholders through in-person and online;



Goal 3: Prevent the introduction of new invasive species

- Delivered the 'Plant Wise' message to 23 garden centers;
- Visited boat launches, marinas, and campgrounds with 'Clean Drain Dry';
- Completed nine press releases and was featured in 45 news pieces;
- Regularly created engaging posts on Facebook, Instagram and Twitter.



Goal 4: Maximize the probability of detection and eradication

- Completed 688 targeted invasive plant surveys across the region;
- Collected 116 water samples at 20 locations across 12 waterbodies for invasive mussels;
- Deployed 20 substrate samplers to monitor for adult invasive mussels;
- Completed surveys for invasive aquatic plants at 20 locations across 12 waterbodies.



Goal 5: Slow or reverse the spread of existing invasive species

- Completed mechanical treatment at 28 priority locations;
- Administered four herbicide spray contracts, treating 64 priority sites;
- Installed 'Do Now Mow' signage and 'Do Not Compost' signage across the region;
- Supported five weed pulls with six partner organizations.



Goal 6: Ensure program sustainability

- Seven staff members in 2022 and 11 volunteer Board Directors;
- Maintained a similar operating budget;
- Employed new funding sources and support from existing funding sources allow C SISS to continue and expand work in the Columbia Shuswap region;
- Followed a long term funding strategy, a detailed annual workplan and Strategic Plan;
- Helped lead annual updates to the regional 2020-2025 C SISS Operational Plan.

Table of Contents

Acknowledgments	2
Executive Summary	5
Introduction	8
<i>Project Area</i>	8
Goal 1: Collaborative and Coordinated Programming.....	9
<i>Indigenous Peoples Engagement</i>	9
Goal 2: Educate, Engage and Inspire	10
<i>Media Coverage</i>	11
<i>Website and Social Media</i>	12
<i>Community Outreach</i>	13
<i>Workshops and Events</i>	14
<i>Measures of Success</i>	15
Outreach Program Evaluations	15
Social Media Metrics	16
Website Google Analytics	17
Goal 3: Prevent the Introduction of New Species	17
<i>PlantWise Program</i>	17
<i>Play, Clean, Go Program</i>	18
<i>Clean Drain Dry Program</i>	19
Boater Surveys and Dock Outreach	19
<i>Don't Let It Loose Program</i>	21
Goal 4: Maximize the Probability of Detection and Eradication of New Invasives	22
<i>Public Reports</i>	22
<i>Targeted Invasive Plant Surveys</i>	23
<i>Field Operations Funder Updates</i>	23
CSRD Overview	23
BC Parks Overview	24
Shuswap Yellow Flag Iris Project Overview	26

City of Salmon Arm Overview	27
Ministry of Transportation and Infrastructure Overview	28
Parks Canada Overview	30
Nature Trust Overview	30
BC Hydro Overview	31
<i>Aquatic Invasive Species Surveys</i>	31
Invasive Dreissenid Mussels	31
Aquatic Invasive Plants	33
Goal 5: Slow and Reverse the Spread and Minimize the Impact of Existing Invasives .	33
<i>Mechanical Treatment</i>	33
<i>Chemical Treatment</i>	34
<i>Signage</i>	34
Goal 6: Program Sustainability	35
References.....	38
Appendix A: CSISS Board of Directors and Staff 2022.....	39
Appendix B: Events attended and partners contacted by CSISS staff in 2022.....	40
Appendix C: Media coverage of CSISS activities in 2022.....	43
Appendix D: Aquatic industries contacted by CSISS staff in 2022.....	45
Appendix E: Campgrounds contacted by CSISS staff in 2022.....	46
Appendix F: Invasive mussel sampling locations in 2022	47

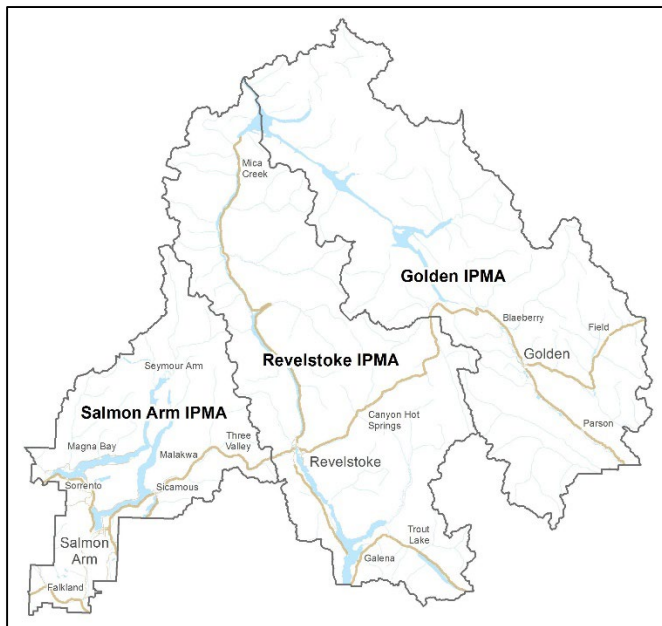
Introduction

The CSISS was established in April of 2013 after a series of meetings and consultations with land managers, residents and other stakeholders with the aim to develop a collaborative and coordinated approach to invasive species management in the region. The CSISS joins a network of 12 regional invasive species groups in BC. These groups work in cooperation with each other, the Invasive Species Council of BC (ISCBC) and government agencies to inspire action, coordinate management and prevent the spread of invasive species within their jurisdictions.

Based on its constitution, the objectives of the CSISS are:

1. To educate and engage public, private landowners, land and aquatic managers, First Nations and others about invasive species and their impacts.
2. To establish and operate invasive species management programs.
3. To do all other things as are incidental and ancillary to the attainment of the above purposes.

The summer of 2022 marked the Society's tenth season in operation. The seven CSISS staff in 2022, including four returning staff, found new and innovative ways for the organization's ability to engage community members and residents, as well as invest a presence in smaller communities across the regional district. The CSISS built and expanded connections within local communities and filled knowledge gaps regarding invasives on the landscape. In 2022, the CSISS continued operations, providing fee for service contract work to treat and monitor invasive plants, as well as grants to monitor waterways for aquatic invasive species, such as invasive zebra and quagga mussels.



Project Area

The Society's jurisdictional boundary includes the boundaries of the Columbia Shuswap Regional District (electoral areas A, B, C, D, E and F) (Figure 2). The CSISS operational area is divided into three Invasive Plant Management Areas (IPMAs) for planning purposes (Craig, 2013). This broad, ecologically diverse area includes the Ponderosa Pine (PP), Interior Douglas Fir (IDF), Interior Cedar Hemlock (ICH), Montane Spruce (MS) and high elevation Engelmann Spruce-Subalpine Fir (ESSF) biogeoclimatic zones (Craig, 2013).

Figure 2. The CSISS operating area, including the three IPMA boundaries in the region (Craig, 2013).

Goal 1: Collaborative and Coordinated Programming

The CSISS maintains a priority plant list for each IPMA within the CSRD (Figure 2) to help partners coordinate programming and treatments. In addition to the plant lists, the CSISS maintains a regional species watchlist tracking the presence or absence of invasive mammals, birds, fish, amphibians, reptiles, invertebrates, fungi and diseases. The CSISS continues to seek and engage partners to participate in collaborative planning and management. In doing so, the CSISS is the “one-stop-shop” for invasives in the CSRD: CSISS is the point of contact and lead on many invasive species related issues in the region.

To maximize efficiencies, ensure program sustainability and secure joint funding, the CSISS collaborates with invasive species groups within the Columbia Basin, regional committees across the province, the ISCBC, the Columbia Basin Trust (CBT), First Nations and various stewardship groups and non-governmental organizations. The CSISS currently partners with over 280 groups, including over 470 subscribers to the CSISS newsletter. These partnerships expanded the CSISS’ successful outreach program, which include PlantWise, Clean Drain Dry, Play Clean Go, and Don’t Let It Loose campaigns.

The CSISS has been working in collaboration with the East Kootenay Invasive Species Council (EKISC) and the Central Kootenay Invasive Species Society (CKISS) to implement coordinated invasive species strategies within the Columbia Basin. This includes designing shared outreach materials to maintain consistent messaging throughout the region, collaborating on advertising and promotion, attending regional meetings and training opportunities.

To maintain and grow awareness across the region, CSISS staff attended and/or hosted over 50 regional meetings, training opportunities and workshops (Appendix B). The CSISS worked closely with the regional municipalities (City of Salmon Arm, City of Revelstoke, District of Sicamous, and Town of Golden/Wildsight Weed Coordinator) to provide staff training on invasive plant identification, provide high priority treatment lists and discuss other invasive plant management options. The CSISS continued to work closely with the Columbia Shuswap Regional District to conduct extensive invasive plant surveys and respond to landowner requests/reports. The CSISS also collaborated with neighbouring regional groups to coordinate the invasive mussel monitoring program, participated in the Columbia Basin Aquatic Invasive Species (AIS) Steering Committee and Shuswap Water Quality Monitoring Meetings.

Indigenous Peoples Engagement

In 2022, the CSISS continued to develop Indigenous Peoples partnerships and collaborations. Staff cultivated relationships with various indigenous groups through networking at conferences and trail meetings, as well as undertook indigenous perspectives cultural training.

Engagement included:

- Shuswap Trails Working Group Meetings and networking with First Nations participants who included: Splatins, Neskonlith, Little Shuswap and Adams Lake Indian Bands;
- Indigenous engagement meeting and trainings with the Invasive Species Council of BC and Splatins First Nation;
- Land Acknowledgement from Mike Archie, Cultural Advisor for Shuswap Indian Band at Blanket Creek Restoration event

All Indigenous Peoples within the CSISS region were invited to our Annual General Meeting and Workshops. Any Indigenous Peoples interested in participating in the CSISS or receiving training within the CSISS region are encouraged to contact CSISS staff.

Goal 2: Educate, Engage and Inspire

The CSISS continues to educate, engage and inspire residents and others to participate in invasive species management. CSISS staff continue to receive significant numbers of requests for information and presentations; in the past year, the CSISS received 109 requests for information and presentations. In 2022, CSISS education and outreach activities continued to focus on target audiences and pathways of spread. The CSISS was represented at 120 community events and meetings (See Appendix B for a complete list of events and meetings attended), hosted 22 workshops/presentations, attended 13 farmer's markets, facilitated two online training sessions, supported five community weed pulls, and hosted four youth/school events (Figure 3).

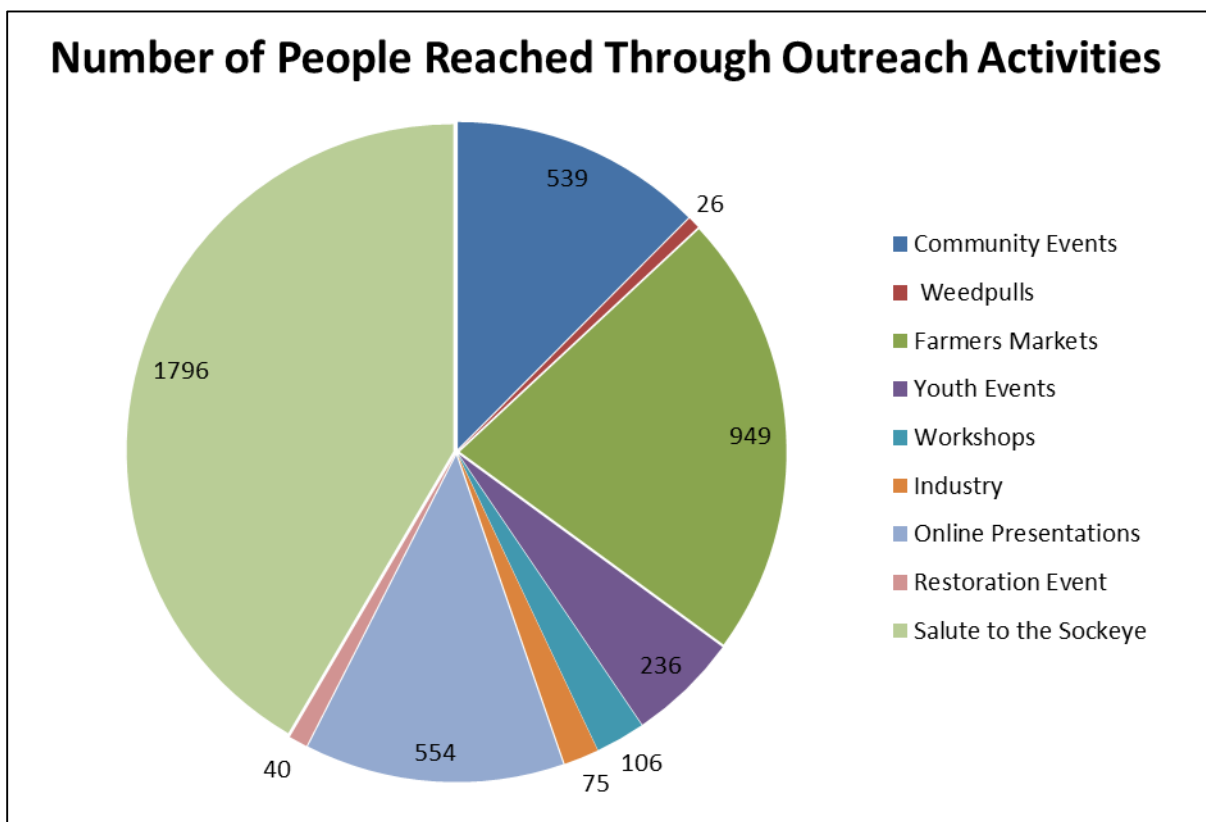


Figure 3. Summary of outreach activities completed by the CSISS in 2022.

In total, the CSISS had direct interactions with 5,301 people (Table 1). The CSISS outreach program continues to review and evaluate for improvements annually. After presentations and workshops, CSISS staff distributed feedback forms to participants and will work to incorporate suggestions for the 2023 season.

Table 1. Community events and activities attended by the CSISS between January and November 2022.
Note: Generally, all campaigns (PlantWise, Play Clean Go, Clean Drain Dry and Don't Let It Loose) are delivered at Youth Events, Farmer's Markets/Festivals and Forums/Radio Interviews.

Type of Event Hosted/Campaign Delivered	# Events	Direct Interactions
Youth Events and Environmental Educator Workshops (12 within Columbia Basin)	19	368
Weed Pulls and Restoration Events (4 within Columbia Basin)	7	66
Farmer's Markets and Festivals (6 within Columbia Basin)	16	1,384
Forums and Radio Interviews	7	424
Play Clean Go Outreach (1 within Columbia Basin)	4	145
PlantWise Outreach Events (9 within Columbia Basin) (23 Garden Centers received outreach, 12 within Columbia Basin)	33	311
Clean Drain Dry and Don't Let It Loose 38 Marina, Campground and Park visits (6 Columbia) 14 Boater outreach events (9 Columbia) 3 Pet stores visits Other events: Kingfisher Learn to Fish, Goldfish Info Day at White Lake, Salute to the Sockeye	65	2,603
Events total in the Columbia Basin	29	2,745
Events total for CSISS 2022	151	5,301

Media Coverage

Since January 2022, the CSISS delivered four e-newsletters, eight press releases, and has been mentioned in 45 news pieces (See Appendix C for a full listing of media interactions). Behaviour change 'Play Clean Go' and 'Clean Drain Dry' messaging was shared in the following publications:

- BC Backroad Mapbooks, Thompson Nicola/ Kootenay Rockies editions: circulated for a 3-year period 2021-2023 to thousands of residents and visitors to the region;
- BC Backroad Fishing Mapbooks, Thompson Okanagan edition: circulated for a 3-year period 2022-2024 to thousands of residents and visitors to the region;
- The Kootenay Mountain Culture magazine: completed a collaborative advertisement with other Columbia Basin invasive species groups;
- Play Clean Go messaging placed in hiking maps supplied by Tourism Golden, See Revelstoke and Shuswap Tourism.

See Revelstoke supported media coverage with a dedicated 'Sustain the Stoke' website page to promote messaging to prevent the spread of invasive species in the Revelstoke area and highlighting CSISS campaigns (Figure 4). See Revelstoke shared a series of social media posts and event promotion for

Wildflower Festival, including inviting a social media influencer on the ‘Wildflower Festival- Invasive Plant Identification Walk’ who produced several videos amassing over 40,000 views on TikTok.

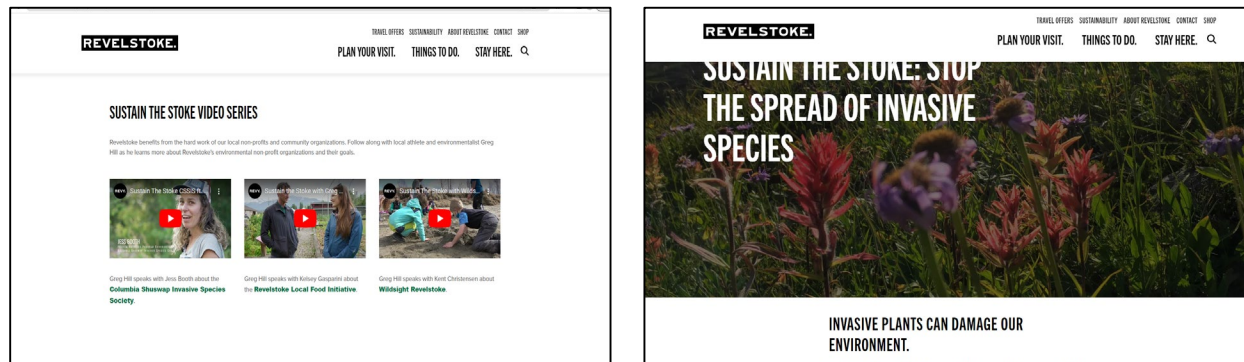


Figure 4. See Revelstoke-Sustain the Stoke Video Series and Invasive Species web site page. Found at: <https://seerevelstoke.com/sustain-the-stroke-stop-the-spread-of-invasive-species/>

Website and Social Media

The website continues to be a user-friendly platform for both public and land managers to enable people to connect with events and resources for the management of invasive species (Figure 5). The CSISS website, which is updated regularly with news and events, is found at: www.columbiashuswapinvasives.org.

The CSISS also hosts a Facebook page and posts updates of events, information and reminders of behavior change activities throughout the year (Figure 5). The CSISS Facebook page now has 800 followers and the CSISS Instagram has 1,045 followers. The CSISS continues to deliver quarterly e-newsletters to more than 470 recipients highlighting our local and regional events and activities. Social media accounts actively encourage best practices, promote events and share relevant news with followers.

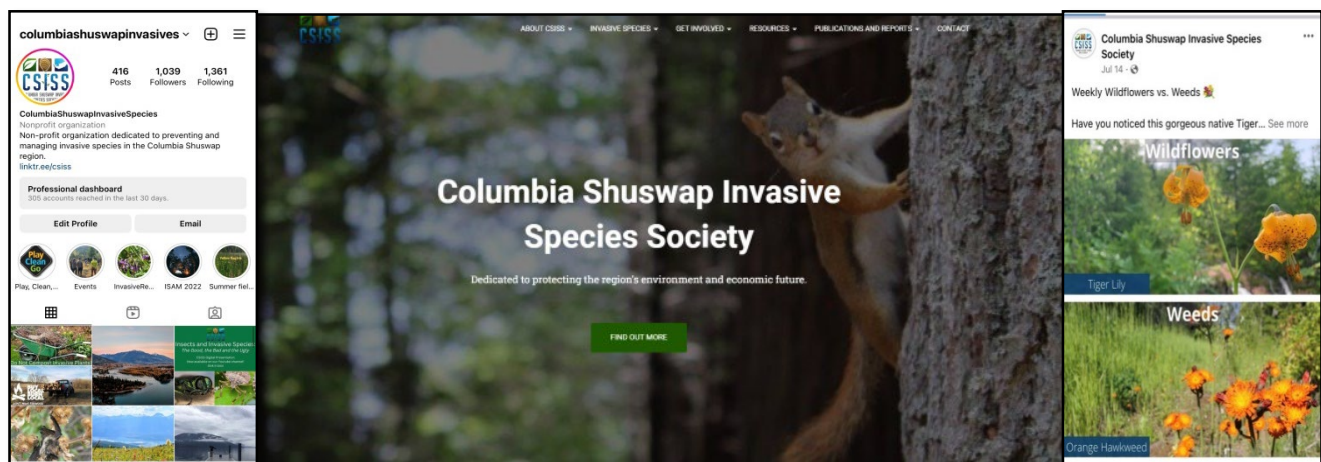


Figure 5. Preview of the CSISS Instagram page (left), the CSISS website page (centre), and the CSISS Facebook page (right).

Community Outreach

The CSISS collaborated with numerous non-profit groups to raise awareness about invasive species in the Columbia Shuswap region. The CSISS provided outreach brochures to partner organizations to distribute at workshops and information booths throughout the region, as well as at accommodation and tourist locations, such as marinas, campgrounds and resorts.

With many Covid-19 public health restrictions lifting in 2022, the CSISS resumed attending and hosting in-person workshops, conferences and events. The CSISS shared invasive species education by connecting with communities through:

- Six Community Radio Segments on Stoke FM;
- 12 Community Farmers Markets;
- Classrooms 2 Communities Conference in Revelstoke, Invasive Species Session collaborating with CKISS;
- HCTF Wild Schools Program Earth Day Field Trip and two school workshop days (200 students);
- Learn to Fish at the Kingfisher Interpretive Centre;
- Salute to the Sockeye at Tsútswecw Provincial Park;
- Five Community Weed Pulls

See Appendix B for a complete list sessions attended.



Figure 6. Left: Volunteers from Back Country Horseman of BC Shuswap Chapter, removing bittersweet nightshade at Skimikin Lake Recreation Site. Right: Farmers Market Outreach Booth (Photo: Shoal Raymond).

The CSISS coordinated five community weed-pull events, throughout the region in 2022. Community weed-pull events provide a unique outreach opportunity for connecting individuals to their local environments. Weed-pull events also present a meaningful way for residents and visitors to make positive improvements to local biodiversity. With support from partner organizations, the CSISS was able to engage volunteers in removing priority species (Table 2).

Table 2. The CSISS supported five weed pulls and mechanical treatment contracts in collaboration with community groups.

Target species	Location	In collaboration with:
Spotted knapweed	Golden Rotary Trail	Wildsight Golden
Yellow flag iris	Little White Lake	ISCBC Salmon Arm
Bittersweet nightshade	SABNES Foreshore Trail	Salmon Arm Bay Nature Enhancement Society & Nature Conservation Trust
Himalayan Balsam	Revelstoke Greenbelt	Illecillewaet Greenbelt Society
Spotted knapweed	Blanket Creek Provincial Park	BC Parks

Workshops and Events

To build capacity amongst partners, interested residents and stewardship groups, the CSISS hosted various workshops and training opportunities in 2022.

The CSISS hosted workshops, including:

- Red-ear sliders and American bullfrogs Presentation and Wildsight Revelstoke Toad Training Day (April);
- Clean Drain Dry workshop with Royal Canadian Marine Search and Rescue Station 106 Shuswap (June);
- Shuswap Gardening Club ‘Invasive species in the garden and beyond’ workshop (April);
- Invasive plant ID workshop (May);
- Hawkweed ID workshop with Agriculture and Agri-Food Canada and Parks Canada (June);
- Speaker Series See Revelstoke ‘Wildflowers and Invasives’ (August);
- Invasive plant ID walk with Revelstoke Wildflower Festival (August);
- Revelstoke Bee City Seed Saving Workshop (September);
- Soap Making and Invasive Species (November).

See Appendix B for a complete list sessions attended.

Interested and diverse members of the community attended workshops and events, such as invasive plant identification walks. Local invasive species workshops delivered throughout the region, are an interactive and tangible way to add value to individuals understanding of and connection to natural spaces and local ecosystems. At these workshops participants learn about the importance of biodiversity, foster stewardship and learn how to implement measures that help prevent the spread of invasive species. The CSISS collaborated with other environmental groups for some events and workshops, which proved to be beneficial for all organizers in the way that resources could be shared and bigger audiences could be reached.



Figure 7. Left: CSISS, Parks Canada, and Agriculture and Agri-Food Canada staff at Hawkweed ID Workshop, Mount Revelstoke National Park. Centre: Soap Making Workshop with Revelstoke Local Food Initiative and Earth Scents Soap, Revelstoke Community Connections Kitchen. Right: CSISS Interim Outreach Program Coordinator Jess Booth presenting an invasive species plant identification walk on the Revelstoke Greenbelt (Photo: Shoal Raymond).

Measures of Success

Outreach Program Evaluations

The CSISS continues to use feedback to help evaluate the effectiveness of our workshops and programs. Understanding and reviewing results from surveys help guide our future outreach programming. In general, the CSISS received positive feedback from workshop participants (Figure 8).

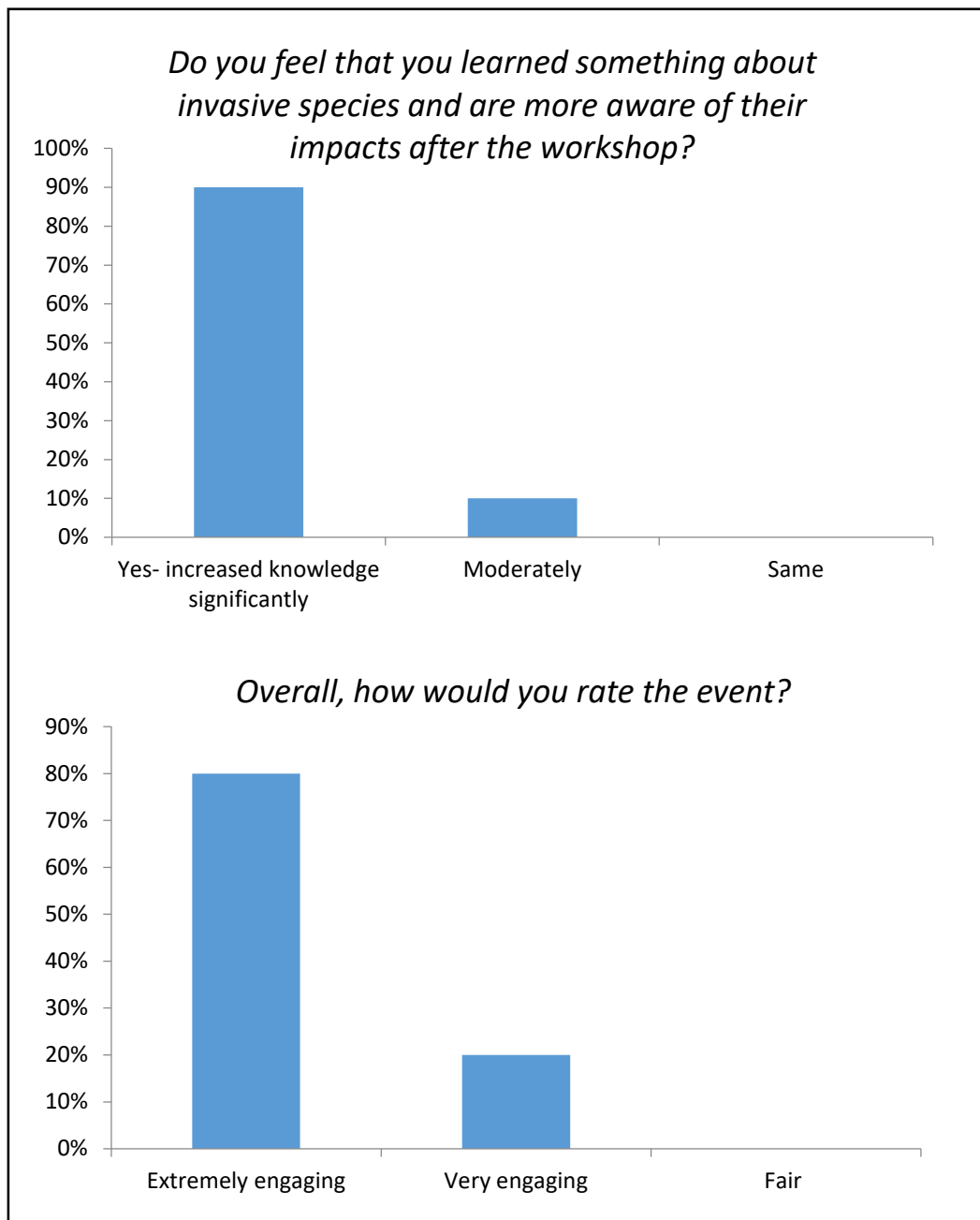


Figure 8. Survey Results from CSISS evaluation forms in 2022.

Social Media Metrics

The CSISS utilizes Facebook analytics to help develop engaging content and guide future social media campaigns. In 2022, the CSISS reached 15,400 people through Facebook and engaged with many others through posting to targeted groups, such as gardening pages, outdoor recreation groups, community pages and aquatic-related pages (Figure 9).

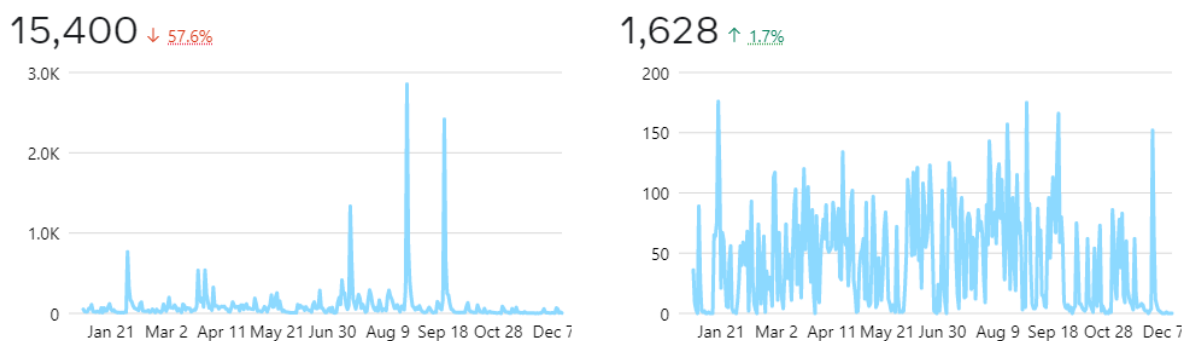


Figure 9. Number of people reached through @ColumbiaShuswapInvasives Facebook (left) and Instagram (right) pages in between January-November 2022.

Website Google Analytics

Google Analytics results show over 4,746 website users in 2022. The CSISS website welcomed 12.3% returning visitors and 87.7% new website visitors. Metrics were used to determine which pages were most trafficked by user. Audience behavior data was used to determine the most frequently visited webpages (Figure 10).

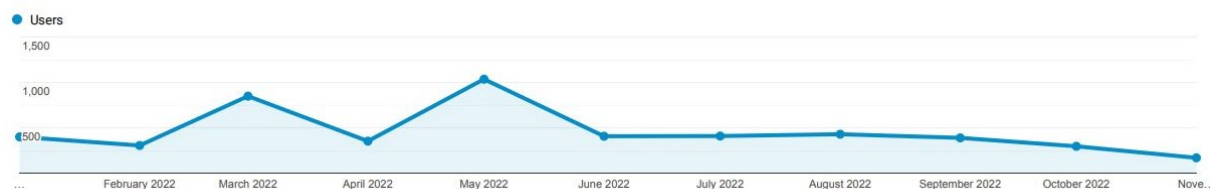


Figure 10. Number of page views of www.columbiashuswapinvasives.org webpage from Jan-Nov 2022.

Data from Google Analytics will continue to be used to reconfigure website layout and content in order to optimize public access to important resources and information regarding invasive species awareness and management.

Goal 3: Prevent the Introduction of New Species

The CSISS focuses on various behaviour change programs in partnership with others to help prevent the introduction of new species. The CSISS provides training, resources and best management practices to partners in order to help prevent new introductions (*see Workshops and Events section above*).

PlantWise Program

The CSISS continued to actively partner with the ISCBC to deliver the PlantWise program, encouraging key groups, such as the horticulture industry and consumers, to commit to choosing and utilizing only native or non-invasive plants instead of their invasive alternatives.

CSISS staff delivered the PlantWise message and distributed updated 2022 PlantWise Brochures at 82 community-based events, workshops and meetings, speaking to youth, home gardeners, land managers, and stewardship groups, directly reaching 2,553 individuals (Table 1).

In April and May, the CSISS visited 23 garden centres and nurseries to providing PlantWise materials and assessing inventory. Seed mixes were found to be the most common source of invasive plants in the region and many garden centers had removed invasive seed mixes, including Baby's Breath and English Ivy from their stock. Feedback from garden centres emphasized the importance of consumer demand; when packs are removed from shelves and returned to suppliers, some suppliers automatically discontinue distributing those seeds the subsequent year. In general, most garden centres in the region are interested in following PlantWise practices.

Additionally, the CSISS supplied non-invasive seed packs from Kinseed Ecologies at outreach events this year (Figure 11). Seed packs were available for a recommended \$5 donation and included CSISS contact information and the benefits of gardening with native plants.

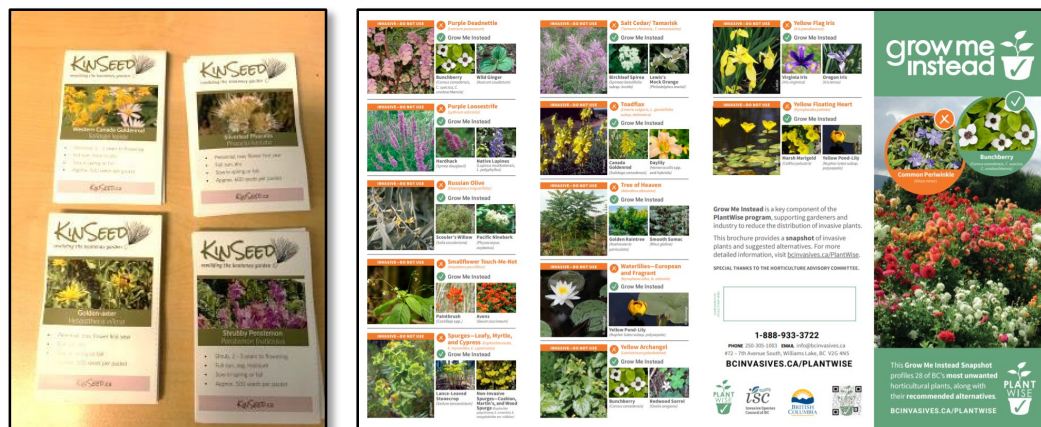


Figure 11. Left: Kinseed non-invasive seed packs used as an outreach resource at community events. Right: The 2022 'Grow Me Instead' brochure distributed across the region at events.

Play, Clean, Go Program

In 2022, the CSISS continued to promote Play Clean Go, a program encouraging trail users to reduce the spread of invasive species by cleaning equipment, clothing, vehicles and pets when arriving at and leaving a recreation site. Through partnerships with trail user groups, race organizers, and youth outdoor education programs, the CSISS successfully delivered the Play Clean Go message at 53 community events, directly reaching 2,387 individuals (Table 1).

The CSISS continued to attend trails meetings to engage with local trail users and provide input on regional activities. The CSISS attended local sporting events to target recreational and competitive cyclists encouraging them to wash their bikes when using new trails (Figure 12).



Figure 12. Left: Boot brush Station installed in 2021 on the Revelstoke Greenbelt, utilized by the community and on Plant ID walks, education sessions and weed-pull events throughout 2022. Centre: Play Clean Go poster displayed at outreach events. Right: Outreach Booth at 'Revy 50 Bike Fest' exhibition.

Clean Drain Dry Program

The Clean Drain Dry (CDD) program encourages aquatic recreationists and watercraft owners to recognize the potential for watercraft to act as vectors of spread and to prevent the spread of harmful aquatic invasive species in BC.

The CSISS promotes the CDD program across the CSRD by contacting aquatic-focused industries and organizations, such as marinas, campgrounds and recreational groups. Most marinas and lakeside campgrounds were contacted by phone or visited in person in the spring (Appendices D and E). A selection of aquatic-focused materials including CSISS brochures, provincial aquatic invasive species (AIS) booklets, AIS wallet cards, zebra and quagga mussel rack cards and invasive clam alert cards were distributed where requested. Business owners and staff were also reminded of the impacts of AIS on tourism in B.C. and the best practices to prevent the spread of AIS (i.e. provincial watercraft inspection stations and CDD program).

Boater Surveys and Dock Outreach

Boater outreach days are important for the CSISS to maintain a presence in the region and connect with both local and visiting watercraft owners. Boater outreach days consist of setting up an information booth at boat launches across the watershed where watercraft (both motorized and non-motorized) owners can receive important information about AIS (Figure 13). A total of 24 person days were spent at nine boat launches across the CSRD. We were able to speak with 291 watercraft owners and parties this season. Drain plug observations were not conducted this season.



Figure 13. A typical AIS Outreach Booth will display information about high-priority AIS, such as ZQM, in addition to species of regional interest, such as Invasive Freshwater clams, Yellow perch and Smallmouth bass. A variety of resources are available for boaters, paddlers and anglers.

Resources and information provided to watercraft owners promote the CDD message. Stickers (Figure 14) were given to every watercraft owner and CSISS staff encouraged them to place the sticker on the boat trailer coupler or near the trailer hitch; stickers in this location provide a timely reminder to “Clean Drain Dry” at each launch and retrieval of their watercraft. Chamois cloths were also given out to encourage and aid boaters to thoroughly dry their watercraft. Whenever possible, these behaviour change resources were paired with information resources, such as highly informative fold-out wallet cards, brochures and species booklets.



Figure 14. Watercraft owners are encouraged by CSISS staff to place a Clean Drain Dry sticker in an appropriate location on their boat trailer that will provide a timely reminder every time they remove their watercraft from a waterbody.

During outreach surveys, watercraft owners and parties are asked their place of origin to determine whether they are local to the CSRD, the province of BC, from elsewhere in Canada or the United States. Through their summer outreach program, CSISS staff found that 55% of boaters (115 surveyed) were local to the Columbia Shuswap region, 20% were from other areas of BC, and 20% were from Alberta; almost half of the visiting Albertans keep their boat in the Columbia Shuswap. During interactions, watercraft owners were informed about provincial watercraft inspection stations. CSISS staff emphasized that every watercraft, including small non-motorized and inflatable craft, must be inspected.

When sampling for invasive mussel veligers, CSISS staff are often approached by people curious about our activities and equipment. CSISS staff are always prepared to give information and resources to encourage behaviour change in these interactions. Staff spoke with 111 people while collecting water samples this season.

Don't Let It Loose Program

The Don't Let It Loose (DLIL) program promotes returning or rehoming unwanted pets rather than releasing them into the environment where they may become invasive. The program also focuses on ensuring live bait fish and other non-native species are not released by anglers and hunters. Most pet/aquarium and fishing stores were contacted by phone or visited in person in the spring (Appendix

D). Staff at pet stores were reminded about the mussel-infested moss balls that appeared in 2021 and to continue to remain vigilant.

CSISS staff created a DLIL-focused webinar about [Red-eared sliders \(*Trachemys scripta elegans*\) and American bullfrogs \(*Lithobates catesbeianus*\)](#), two invasive species which are found in BC but have not yet been confirmed in the Shuswap region. These invasive species have look-alikes that are found in the Shuswap region. The Rocky Mountain population of the Western painted turtle, *Chrysemys picta*, is listed as Special Concern by the Committee on the Status of Endangered Wildlife in Canada. At a quick glance, this turtle is often confused as a Red-eared slider, familiar to many due to its popularity as a household pet turtle. The Western toad (*Anaxyrus boreas*) is also a species of special concern. They can grow quite large (up to 15 cm) and this can lead them to be reported as Bullfrogs, which are often characterized by their abnormally large size. We created this resource to highlight the negative impacts of the invasive turtle and frog, particularly on our native turtles and toads that are already endangered in the region.

Posters warning about invasive American bullfrogs were installed at 27 sites across the CSRD. These sites were identified as sensitive wetland areas that could serve as potential dumping or release sites for unwanted pets or wildlife, such as bullfrogs. American bullfrogs are not present in the CSRD; pet releases or transfer of wildlife from other areas of BC are considered to be the primary vectors of spread for bullfrogs into the CSRD.

To continue building on our knowledge of turtle distribution in the Shuswap, and to also increase the probability of detecting invasive turtles, the ISCBC Stronger BC Salmon Arm Action Team surveyed wetlands around the City of Salmon Arm for Red-eared sliders living in the wild. Field surveys were conducted from May 24 to October 19. The turtles were photographed and identified. At least 296 Western painted turtles were observed. No Red-eared sliders (or other turtle species) were observed.

Goal 4: Maximize the Probability of Detection and Eradication of New Invasives

The CSISS maximized the probability of detection and eradication of new invasives by raising public awareness and delivering invasive species workshops described above. Additionally, CSISS staff responded to invasive species reports and conducted terrestrial and aquatic targeted invasive species surveys on behalf of partner agencies.

Public Reports

The CSISS categorizes reports from the public in four ways: 1) requests for information, 2) invasive plant reports, 3) noxious weed complaints and 4) landowner outreach. Depending on the nature and priority of the report, the CSISS confirmed the report by a site visit and/or responded with landowner extension, an outreach letter, or by enacting the provincial Early Detection Rapid Response (EDRR) protocol.

In total, the CSISS had:

- 108 requests for information;
- 28 invasive plant reports;
- Nine invasive non-plant reports.

Targeted Invasive Plant Surveys

In 2022, the CSISS inventoried 189 sites and completed 688 invasive plant surveys. Priority invasive plants were found in all three of the CSISS' IPMAs. Priority invasive plants inventoried in 2022 include: baby's breath, blueweed, bohemian knotweed, cypress spurge, field scabious, garlic mustard, giant knotweed, Himalayan blackberry, hoary alyssum, leafy spurge, poison hemlock, policeman's helmet, rush skeletonweed, teasel, wild chervil, wild parsnip and yellow flag iris (Figure 15). The CSISS entered all invasive plant surveys, site surveys, treatment records and monitoring records completed on behalf of partner/funding agencies into the Provincial Invasive Alien Plant Program (IAPP) database.

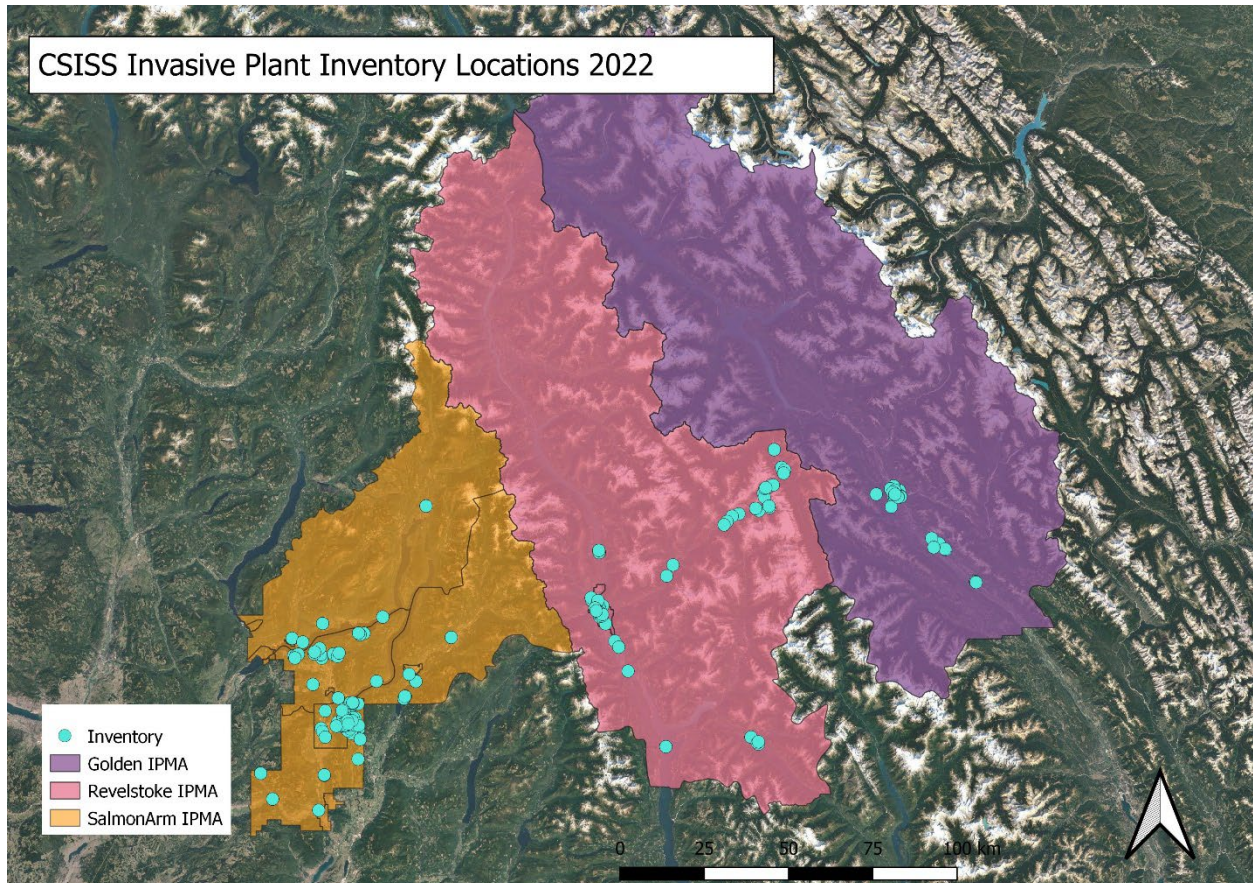


Figure 15. Invasive plant inventories in the Columbia Shuswap region in 2022.

Field Operations Funder Updates

CSRD Overview

In 2022, the CSISS completed invasive plant inventories of Columbia Shuswap Regional District properties including landfills, transfer stations, parks, fire halls and parcels (Figure 15). In addition to inventories, the CSISS administered and monitored landfill and transfer station invasive plant chemical treatments, completed mechanical removal of priority invasive plants and completed landowner outreach throughout the region.

The CSISS identified seven landfills and transfer stations for priority invasive plant treatment. A certified herbicide applicator treated five sites and 0.0155 hectares (Ha) over two rounds of treatment from June to August 2022. CSISS staff completed herbicide monitoring at four of the sites. All sites passed

inspection. CSISS staff completed mechanical treatment at two sites, removing a total of 0.0002 Ha of priority invasive plants. From previous years, the CSISS found a reduction of infestation size at some sites treated and four locations had 'No Weed Found' for priority species. CSISS staff also inventoried 37 CSRD properties: 30 parks, four fire halls and three parcels.

A high priority site of leafy spurge along the CSRD rail trail near Sicamous identified in 2018 was approved for treatment and chemically treated in 2021 and 2022 (Figure 16).



Figure 16. Left: Leafy spurge on CSRD Rail Trail. Right: Skimikin Transfer Station.

In total, CSISS staff mechanically treated three sites and 0.0160 Ha. The CSISS found a reduction of infestation size at some sites treated and three locations had 'No Weed Found' for priority species in 2022.

BC Parks Overview

In 2022, the CSISS inventoried Martha Creek, Blanket Creek and Shelter Bay Provincial Parks focusing on expansion project areas and completed multiple mechanical treatments at each of the parks (Figure 17). A certified herbicide applicator completed herbicide treatment at Martha Creek, Blanket Creek, and Shelter Bay Provincial Parks within the expansion project areas. BC Parks Rangers and CSISS staff completed mechanical treatment at Blanket Creek Provincial Park, CSISS staff completed mechanical treatment at Shelter Bay Provincial Park, and a community weed pull took place at Blanket Creek Provincial Park. The CSISS entered all data into the Provincial IAPP database.



Figure 17. Left: Martha Creek Provincial Park, Leafy spurge. Centre: Blanket Creek Provincial Park expansion area. Right: Shelter Bay Provincial Park priority invasive plant, Hoary alyssum.

Blanket Creek Provincial Park Restoration Project

The CSISS is now in the third year of a collaborative restoration project with BC Parks in Blanket Creek Provincial Park. The site has been impacted by invasive plants, such as knapweed species. Blanket Creek Provincial Park is located within the traditional territories of the Okanagan and Secwepemc First Nations and holds important conservation values, such as kokanee spawning habitat and winter ungulate range. The park also contains mature second growth stands of western hemlock and western red cedar.

The project aims to remove and displace invasive species by re-establishing native species and promote a resilient native plant assemblage for the future. Shearing Environmental Consultants Ltd. provided expertise to help plan restoration and choose indigenous vegetation to support the natural ecosystem.

Following restoration efforts in 2020 and 2021, the CSISS watered restoration project areas weekly throughout the summer months. This fall, the CSISS hosted a volunteer event at the restoration site, focusing on education, indigenous storytelling and planting indigenous vegetation. With guidance from Shearing Consultants Ltd., the CSISS and 40 volunteers planted 185 plants, filling in gaps in the areas planted in 2020 and 2021. A sign highlighting the project was also installed with support from BC Parks to provide education to park visitors about the restoration project. This project was undertaken with the financial support of Environment and Climate Change Canada (Eco Action grant), Habitat Conservation Trust Foundation (restoration grant) and the BC Parks License Plate funding. In-kind support was provided by See Revelstoke (volunteers), Mike Archie (volunteers, indigenous land acknowledgement), Revelstoke Tree Care (mulch donation) and Jake and Jay (soil donation).

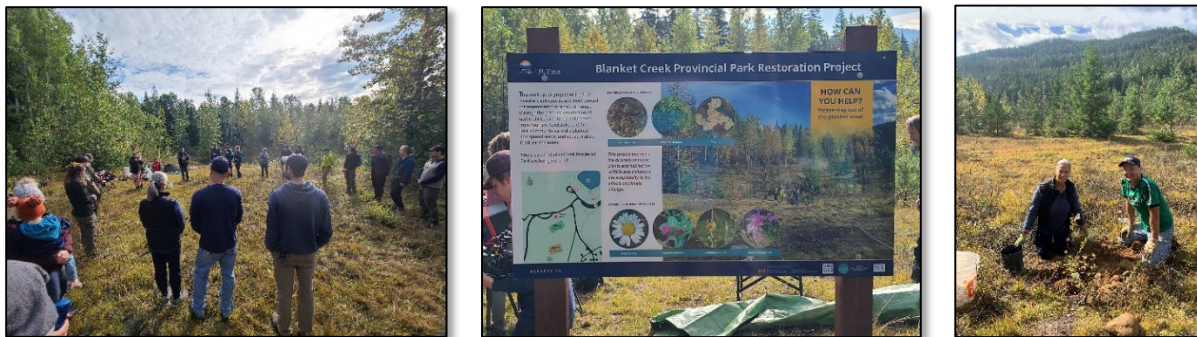


Figure 18. Blanket Creek Restoration Project. Left: Indigenous land acknowledgment by Mike Archie. Centre: New installed sign highlighting the project's accomplishments. Right: Volunteers installing trees and shrubs in the restoration area.

Shuswap Yellow Flag Iris Project Overview

In 2022, the CSISS completed detailed site inventory using iPads and a GIS mapping program for invasive yellow flag iris in sites around the Shuswap, including White Lake, Turner Creek, McGuire Lake, Gardom Lake and Little White Lake. In 2022, there was a combined infestation size of 0.0884 Ha in the Shuswap: 0.0031 Ha at White Lake and 0.0645 Ha Little White Lake, 0.0199 Ha at Gardom Lake, 0 Ha at SABNES foreshore trail (site eradicated), 0.0001 Ha at McGuire lake and 0.0006 Ha at Turner Creek. A total of 0.0724 Ha were treated (mechanically or dead-heading to prevent seed-spread): 0.0031 Ha at White Lake and 0.0645 Ha Little White Lake, 0.0161 Ha at Gardom Lake, 0.0001 Ha at McGuire lake, and 0.0006 Ha at Turner Creek. Many more sites were treated by local residents at Gardom Lake. We have seen reductions in total infestation size at White Lake, Gardom Lake and Turner Creek and the SABNES foreshore trail site has been eradicated. Monitoring and further treatment is recommended for future years, as with all invasive species, especially aquatic/riparian plants, eradication is a multi-year effort.

Our contractor, the Shuswap Trail Alliance crews, mechanically treated all infestations of yellow flag iris at White Lake as highest priority, as well sites at Turner Creek and McGuire Lake, while CSISS worked to coordinate and monitor these efforts. The CSISS received funding from Environment and Climate Change Canada (EcoAction Community grant) and the Habitat Conservation Trust Foundation to help with this project. The CSISS leveraged funding through a wage subsidized summer student position and other grant funding for outreach activities. CSISS staff completed deadheading of yellow flag iris seed pods and flowers at a majority of locations on Little White Lake. CSISS staff completed mechanical treatment monitoring at each waterbody to ensure successful treatment. A community weed pull was held at Little White Lake. Many other volunteer participants (local residents, Invasive Species Council of BC StrongerBC Team, BC Parks staff) helped to treat yellow flag iris.



Figure 19. Left: Invasive yellow flag iris infestation on Little White Lake. Centre: Deadheaded yellow flag iris stalks. Right: CSISS staff and volunteer deadheading yellow flag iris on Little White Lake.

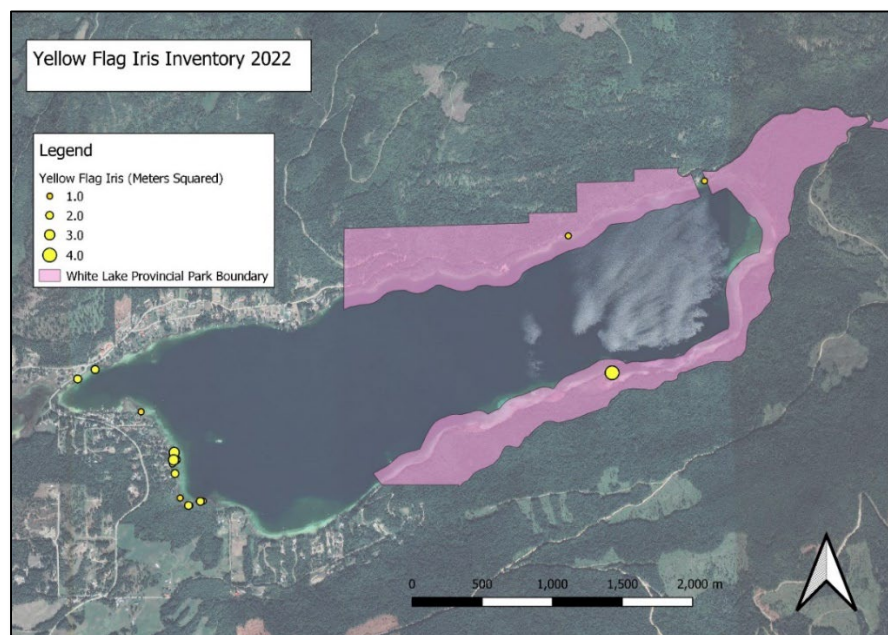


Figure 20. Yellow flag iris infestation on White Lake in 2022.

City of Salmon Arm Overview

In 2022, CSISS staff and contractors inventoried 56 priority sites on municipal properties, completing 99 invasive plant surveys (some sites have more than one plant species). CSISS administered and coordinated an herbicide contract to ensure effective treatment timing for priority species. Spot treatment of herbicide occurred at 35 municipal priority sites over two passes from May to September 2022. The CSISS completed herbicide monitoring at nine of the treated sites; all sites passed inspection. CSISS staff completed mechanical treatment at seven municipal priority sites with a total of 72 m² of invasive plant material removed. Through additional funding, the CSISS coordinated a work plan for the Invasive Species Council of BC Stronger BC Salmon Arm Team to complete mechanical and chemical treatment on municipal properties in Salmon Arm. Through this program, mechanical treatment was completed at four sites with a total of 0.0679 Ha of invasive plant material removed. CSISS installed eight Do Not Mow signs along city right-of-ways to alert roadside mowers and public of the infestation.



Figure 21. Left: Poison hemlock infestation at Cress Creek. Centre: Spot application of herbicide treating knotweed. Right: Marked reduction in yellow flag iris infestation at Turner Creek.

Ministry of Transportation and Infrastructure Overview

As part of the CSISS' contract with the MoTI, CSISS staff completed pre-season maintenance contractor meetings regarding invasive plant identification and best management practices. Sessions covered new and existing priority invasive plants in the area, mowing schedules, Do Not Mow signage, best management practices for mowing/ ditching/ gravel pit activities and reporting. Emcon Services (Golden and Revelstoke) and AIM Roads (Salmon Arm) took part in the contractor meetings.

CSISS staff installed 12 Do Not Mow signs for knotweed infestations along MoTI right-of-ways, prior to mowing (Figures 22 and 23). During signage installation, CSISS staff directly spoke with adjoining private landowners delivering information about knotweed when required. The CSISS sent roadside contractors mapping files containing the locations of knotweed infestations with and without signage.

Throughout the season, CSISS staff re-visited Do Not Mow signage sites and removed one Do Not Mow Sign where a landowner requested. CSISS staff removed, cleaned and stored the signage in a secure CSISS lock-up after the mowing season ended. In some locations, due to continued landowner removal, the signs were not set up and the CSISS communicated with MOTI staff and contractors. Signs were not installed where knotweed has not been found at the site for multiple years. During the mowing season, the CSISS continued communication with mowing contractors and MoTI staff. CSISS staff continued to monitor for Early Detection and Rapid Response (EDRR) species, and report new priority sites to the Province. No MoTI Provincial EDRR sites were found in 2022 by the CSISS.



Figure 22. Do Not Mow signage installed for the MoTI in 2022.

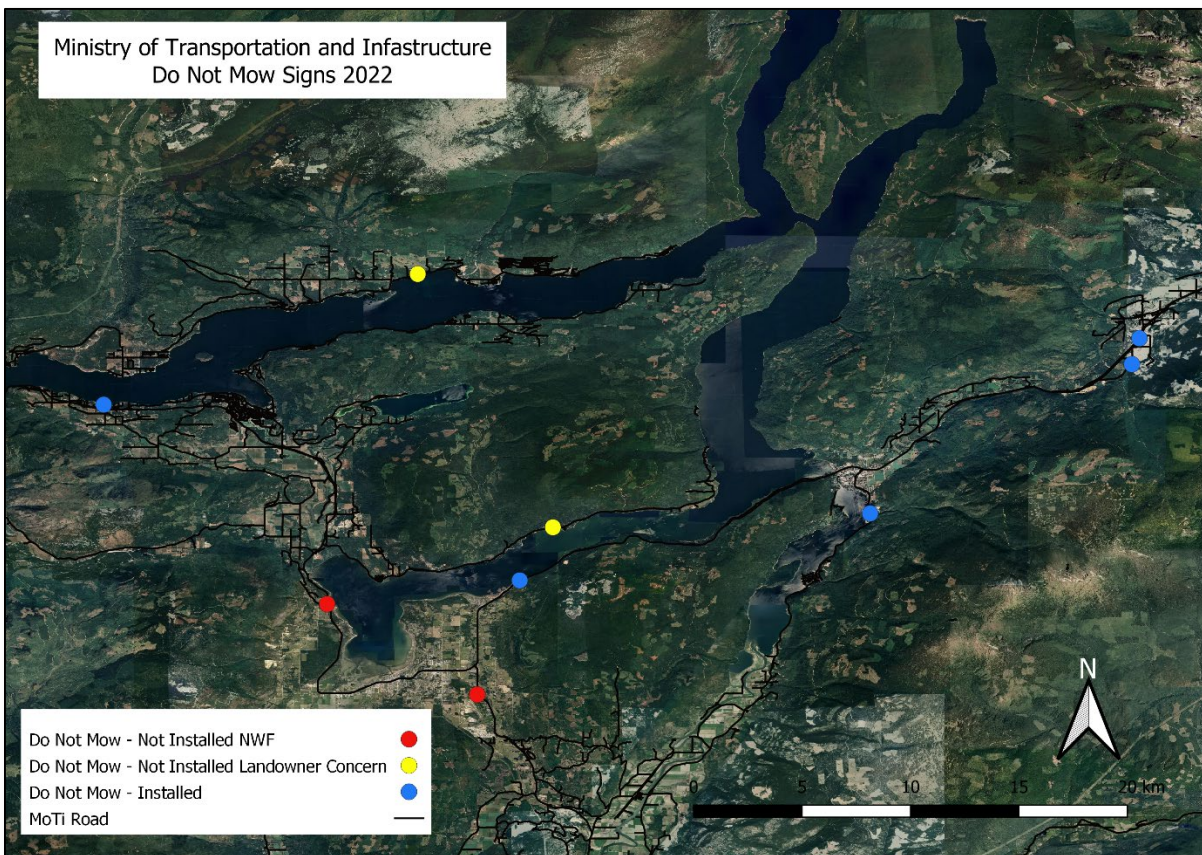


Figure 23. Ministry of Transportation and Infrastructure Do Not Mow Signage locations in 2022 (NWF = No Weed Found).

Parks Canada Overview

The CSISS, acting as a qualified contractor on behalf of Parks Canada, completed Invasive Alien Plant (IAP) Herbicide Monitoring in Mount Revelstoke and Glacier National Parks (MRG) at sites allocated for spot application of herbicide treatment. The sites monitored are found within the integrated control zone on the highway corridor, both high and very high priority invasive species are managed in this zone. In total, CSISS monitored 14 sites for herbicide effectiveness post-treatment from a certified pesticide applicator in MRG (Figure 24).



Figure 24. Mount Revelstoke and Glacier National Parks. Left: Herbicide monitoring sites post-treatment at Meadows in the Sky Parkway. Centre: Rogers Pass Discovery Center. Right: Glacier House.

Nature Trust Overview

As part of its contract with the Nature Trust, the CSISS completed a comprehensive inventory of priority invasive alien plants on the Salmon Arm Foreshore property and mechanically treated high priority invasive alien plants. All invasive plant inventory, treatment and monitoring data was entered into the provincial IAPP database.

In partnership with the Salmon Arm Bay Nature Enhancement Society (SABNES), the CSISS facilitated a community weed pull, treating invasive nightshade and other priority species. Additional treatment along the foreshore was completed by Nature Trust staff and the ISCBC Stronger BC Salmon Arm Team.



Figure 25. Left: Mechanical treatment of bittersweet nightshade infestation. Centre: Salmon Arm Foreshore boardwalk. Right: Nature Trust and CSISS staff.

BC Hydro Overview

In total, nine knapweed sites have been located along BC Hydro transmission line corridor 60L271G. In 2020, 0.0487 Ha of spotted knapweed was inventoried on BC Hydro transmission line circuit 60L271G Golden, BC across the nine site locations. Following successful chemical treatment in 2020 and 2021, spot application of herbicide was completed at five of the nine sites within the Golden IPMA, BC Hydro transmission line corridor 60L271G in 2022.

Mechanical treatment of spotted knapweed was also completed at five sites to prevent untreated knapweed from seeding. All chemical treatments were completed by a certified pesticide applicator using the herbicide Clearview to treat spotted knapweed. In total, 0.0385 Ha were treated on July 28, 2022. Mechanical treatment was completed where knapweed plants were missed by herbicide contractor. A total 0.0053 Ha was mechanically treated on September 6, 2022. All sites were monitored and passed inspection.



Figure 26. Golden IPMA herbicide monitoring on BC Hydro transmission line 60L271G in 2022.

Aquatic Invasive Species Surveys

Invasive Dreissenid Mussels

Zebra (*Dreissena polymorpha*) and quagga (*Dreissena rostriformis bugensis*) mussels, also known as Dreissenid mussels (and hereafter referred to as ZQM), are two of the most widespread invasive species that have notoriously transformed freshwater ecosystems across North America (Strayer, 2009). ZQM are not currently known to be found in BC but their introduction would certainly have negative environmental, economic and social welfare impacts.

Monitoring is critical for early detection of new invasive species introductions, including ZQM, in the province. As a signatory on the *Columbia River Basin Interagency Invasive Species Response Plan*, the province of BC has been conducting early detection monitoring for ZQM since 2011. With support from the Ministry of Water, Lands and Resource Stewardship (WLRS), the Habitat Conservation Trust Foundation and the Shuswap Watershed Council, the CSISS has been monitoring for ZQM across the CSRD since 2015.

The CSISS follows the province of B.C.'s *Dreissenid Mussel Lake Monitoring Field Protocol* to monitor for ZQM at priority waterbodies across the CSRD (Appendix F). Waterbodies are chosen for monitoring based on a list of priority waterbodies, which rank at-risk waterbodies based on probability of ZQM invasion, probability of ZQM survival and overall vulnerability (environmental, economic and social) of the waterbody. Funding provided by the Shuswap Watershed Council has enabled the CSISS to expand the Invasive Mussel Lake Monitoring Program to include additional waterbodies outside of the CSISS' operational region (Mabel Lake, Sugar Lake, Little Shuswap Lake and Adams Lake). The CSISS sampled these locations because there is no other agency was available for monitoring; however, they are of interest to the CSISS because they are in the Shuswap watershed and could have impacts on the CSRD.

Plankton Sampling

The first life stage of the ZQM life cycle is a free-floating veliger. Sampling for ZQM veligers began on June 1 and the final samples were taken on September 23. A total of 116 plankton samples were collected at 20 sites from 12 waterbodies (11 lakes, one river) (Figure 27). All plankton samples were tested at a designated analytical laboratory (chosen by the WLRS) for the presence of ZQM. No ZQM were detected in any sample collected by the CSISS in 2022.

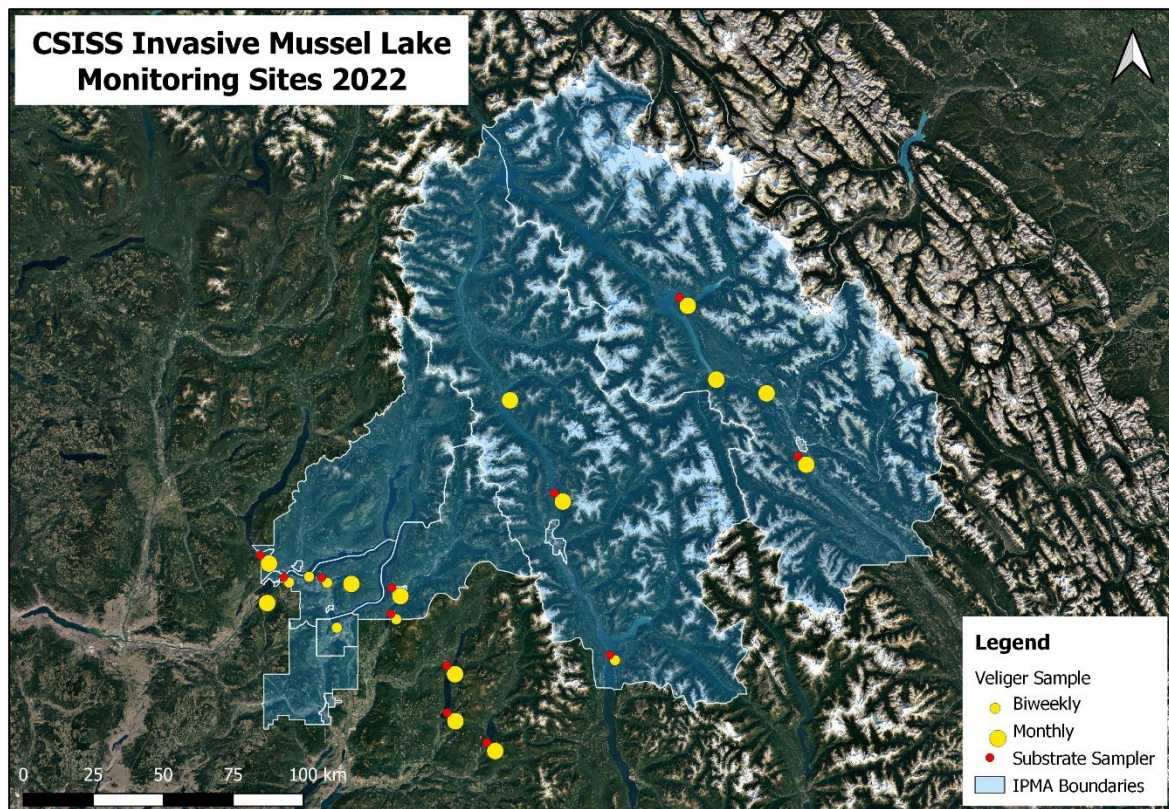


Figure 27. CSISS lake monitoring sites for ZQM in 2022.

Adult Mussel Monitoring

Monitoring for juvenile and adult ZQM helps to detect these mussels attached to hard, submerged surfaces in waterbodies of interest. ZQM are one of the few freshwater mussels capable of adhering to hard surfaces using byssal threads. Monitoring for newly settled ZQM can be performed either on local substrates (e.g. rocks, docks, pilings, ropes) or with specially constructed substrate samplers.

In 2022, substrate samplers were installed and monitored by CSISS staff at eight plankton sampling sites. The other plankton sampling sites that did not have suitable installment locations (e.g. too shallow, no permission), local substrates were monitored during sampling visits. The ISCBC Stronger BC Salmon Arm Action Team assembled, installed and monitored samplers at an additional eight locations. No ZQM were observed on any of the substrate samplers deployed by the CSISS or ISCBC team in 2022.

Aquatic Invasive Plants

Surveys for aquatic plants were conducted at all plankton sampling sites. Aquatic plants are collected from the dock and/or shoreline by throwing a thatch rake attached to a rope, allowing the rake to sink and then dragging for up to 8 m along the sediment. The collected macrophytes were photographed and identified; they were also visually inspected for ZQM. Plants that could not be identified on-site were photographed in detail and staff consulted species identification keys. All plants collected this season were identified. No new aquatic plant infestations were observed this season.

Goal 5: Slow and Reverse the Spread and Minimize the Impact of Existing Invasives

The CSISS works hard to slow and reverse the spread of existing invasive species and reduce their impacts. Collaboration, clear and effective communication, community participation and establishing realistic, obtainable treatment goals all play a role in minimizing the impact of invasives.

Mechanical Treatment

In 2022, the CSISS mechanically treated 28 priority invasive plant sites, removing a total of 0.1179 Ha of material. The invasive plants treated include: bladder campion, blueweed, Bohemian knotweed, bull thistle, burdock, English ivy, garlic mustard, hoary alyssum, leafy spurge, marsh plume thistle, nightshade, poison hemlock, policeman's helmet, spotted knapweed, St. John's wort, sulphur cinquefoil, teasel and yellow flag iris (Figure 28). As part of mechanical treatment, the CSISS supported five weed pulls throughout the Columbia Shuswap region. The Gardom Lake Stewardship Society also hosted a weed pull at Gardom Lake and removed 255 kg of thistles.



Figure 28. Left: Yellow flag iris removal. Centre: SABNES weed pull. Right: Garlic mustard infestation.

Chemical Treatment

In 2022, the CSISS administered four herbicide spray contracts treating 64 priority sites and 1.8216 Ha of land. All treatments were carried out by a certified herbicide applicator. The CSISS monitored each herbicide spray contract, all sites passed inspection. Invasive plants treated include: blueweed, Bohemian knotweed, bull thistle, Canada thistle, common comfrey, field scabious, Himalayan blackberry, hoary alyssum, leafy spurge (Figure 29), marsh plume thistle, meadow buttercup, oxeye daisy, poison hemlock, policeman's helmet, spotted knapweed and yellow hawkweed species.



Figure 29. Left: Successful leafy spurge treatment on CSRD Rail Trail. Right: Bohemian knotweed treatment.

Signage

In May 2022, with support from CBT, CSISS had a billboard installed (Figure 30) near Kicking Horse canyon, approximately 10 km east of the Watercraft Inspection station at Golden, BC. The billboard faces west-bound traffic and is a timely reminder that all travelers with watercraft on board must stop at the inspection station. The billboard was in place from May to October and is planned to be reinstall each summer from now on. This billboard is in addition to the three supported directly by the Shuswap Watershed Council at Craigellachie, Malakwa, and Chase.



Figure 30. A billboard advertising and encouraging watercraft inspections approximately 10 km east of the Watercraft Inspection Station in Golden, B.C.

Goal 6: Program Sustainability

In 2022, the CSISS gratefully received in-kind and financial support for invasive species related programming in the region from over 24 sources and maintained a similar operating budget. The CSISS received funds from BC Community Gaming Grant, Parks Canada, Habitat Conservation Trust Foundation (Invasive Mussel Monitoring and Restoration grants), City of Salmon Arm, BC Hydro, Shuswap Watershed Council (Aquatic outreach and Mussel monitoring), the Nature Trust, Environment and Climate Change Canada (Eco Action grant), the Invasive Species Council of BC (Stronger BC program), Fish and Wildlife Compensation Program (Restoration Seed grant), and BC Parks (Capital funds, Park Enhancement and license plate funding for restoration project in Columbia region). In addition, the CSISS continued multi-year funding agreements from the Columbia Shuswap Regional District (CSRD, renewed in 2019 for 2019-2024 agreement and Operational Funding), the Ministry of Forests (Coordination and Awareness Grants through CSISS and CSRD), the Ministry of Transportation and Infrastructure (MoTI) and the Columbia Basin Trust (CBT). The CSISS received funding for two assistants (each with 8 week projects) from the federal government through the 'Canada Summer Jobs' program. Small contributions were also received from: Revelstoke Grant In Aid, Sustain the Stoke Ambassador program, Revelstoke Accommodation Association and Salmon Arm Garden Club. In-kind support was received from a number of sources and all in-kind and financial support will be recognized in the CSISS 2022 Financial Report. Additional funding sources are being pursued for the 2023 season.

The CSISS staff team in 2022 (Figure 32) included five continuing staff members, Robyn Hooper (Executive Director, on parental leave from April-September), Sue Davies (Interim Executive Director, Aquatics Program Coordinator, left CSISS in June 2022), Kim Kaiser (Interim Field Operations Program Coordinator, left CSISS in late October 2022) and Jess Booth (Interim Outreach Program Coordinator). Kelsey Desilets (Interim Aquatics Program Coordinator) and Invasive Species Program Assistants Marlee

Verleih and Nolan Novotny were welcomed additions to the team this season. There was a gap in the Executive Director position from June – September, during which time the staff (particularly Kim Kaiser, Jess Booth and Kelsey Desilets), the Board Chair Hamish Kassa, Day2Day Bookkeeping, and consultant Executive Director Erin Bates all stepped in to ensure smooth operations. We are very grateful for all their contributions during this staffing gap and the excellent teamwork.

Laura Gaster will be returning from parental leave as Field Operations Manager in mid-January to manage both aquatic and field operations. Retaining a quality staff team is important for the CSISS. Similarly, the CSISS has been fortunate to have received direction from a knowledgeable, diverse Board of Directors. Each individual brings a unique perspective to the organization and has been instrumental in helping the CSISS address many aspects of invasive species management in the region.



Figure 32. 2022 CSISS Staff. Top row, left to right: Robyn Hooper, Sue Davies, Kim Kaiser, Jess Booth. Bottom row, left to right: Kelsey Desilets, Marlee Verlieh, Nolan Novotny.

The CSISS Policy Manual was reviewed and updated in 2022; the manual helps to facilitate orientation of new staff and directors (Stafl, 2015, updated Hooper 2022). The manual is reviewed and signed by the Board Directors annually and updated as necessary. The Employee Handbook was reviewed and updated, which helps to further guide CSISS staff on organizational, human resources and administrative standards.

In 2022, CSISS staff continued to improve on handbooks for each coordinator position (Outreach, Aquatics, and Field Operations) to assist with new staff training in each role and the CSISS Executive Director handbook was completed as well. Coordinators have developed several “How To” documents for reference and training purposes. There are also various outreach planning documents that inform CSISS outreach targets, performance measures, staff work plans, calendars for specific outreach

programming and help to determine gaps in stakeholder groups and pathways of spread. Staff also work diligently from individual workplans and an organizational workplan that links to the CSISS Strategic Goals.

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Additional Resources:

CSISS Resources (Operational and Strategic Plans, Aquatic Survey Reports):

<http://columbiashuswapinvasives.org/about-csiss/csiss-resources/>

Information on high priority regional species: <http://columbiashuswapinvasives.org/invasive-species/high-priority-invasives/>

Appendix A: CSISS Board of Directors and Staff 2022

2021-2023 CSISS Board of Directors

Hamish Kassa	Chair 2021-2022	Columbia Shuswap Regional District
Chris Cochran	Vice-Chair 2021-2022, Chair 2022-2023, HR/Finance Committee (Treasurer)	Town of Golden
John Braisher	Board Director	Rancher and Golden Resident
Adam Croxall	Board Director	BC Hydro
Mike Manson	Board Director	City of Revelstoke
Diane Millar	Board Director, HR/Finance Committee	Ministry of Forests
Chris Gill	Board Director	Environmental Consultant and Shuswap Resident
Laurel Corrigan	Board Director, HR/Finance Committee	Revelstoke Resident
Peter Tarleton	Vice Chair 2022-2023, HR/Finance Committee	Parks Canada
Erin Vieira	Board Director	Shuswap Watershed Council and Fraser Basin Council
Jeromy Schuetze	Board Director	District of Sicamous

2022 CSISS Staff

Robyn Hooper	Executive Director
Kim Kaiser	Interim Field Operations Program Coordinator
Sue Davies	Aquatic Invasive Species Program Coordinator, Interim Executive Director
Kelsey Desilets	Interim Aquatic Invasive Species Program Coordinator
Jess Booth	Interim Outreach Program Coordinator
Nolan Novotny	Invasive Species Program Assistant
Marlee Verleih	Invasive Species Program Assistant

Appendix B: Events attended and partners contacted by CSISS staff in 2022

Events highlighted in grey pertain to the Columbia Basin Region of the CSISS Area

Date	Event	# of Attendees	# of Direct Interactions
18-Jan-22	ISCBC/Affiliate Community Science	14	14
21-Jan-22	Shuswap Trails Roundtable Working Group	22	22
24-Jan-22	Aquatic Invasive Species Meeting with 5 Federal MPs, hosted by MP Mel Arnold	10	10
25-Jan-22	FLNRO- Kootenay Stewardship Group	5	5
26-Jan-22	CSISS and Parks Canada	1	1
28-Jan-22	Stoke FM Radio Interview	500	500
8-Feb-22	CSISS and Nature Trust	1	1
8-Feb-22	CSISS and FLNRORD (now MoF)	2	2
9-Feb-22	RISO Outreach call	13	13
14-Feb-22	CSISS and BC Parks Shuswap	1	1
14-Feb-22	CSISS and MoTI	1	1
15-Feb-22	Forum Presentation	300	300
15-Feb-22	SWC Water Monitoring Group	32	32
15-Feb-22	CSISS and BC Hydro	1	1
15-Feb-22	RISO Partnerships and Collaboration Presentation at ISCBC Forum	45	45
16-Feb-22	ISCBC AGM		
16-Feb-22	CSISS and City of Salmon Arm	3	3
17-Feb-22	CSISS and CSRD	3	3
2-Mar-22	CSISS and BC Parks Columbia	4	4
3-Mar-22	TNIPC Land Manager Meeting	25	25
3-Mar-22	CSISS Land Manager Meeting prep MoF	3	3
3-Mar-22	CSISS Land Manager Meeting	28	28
3-Mar-22	TNRD Land Manager Meeting	34	34
3-Mar-22	CKISS Land Manager Meeting	30	30
7-Mar-22	CSISS and Shearing Ltd Consulting	2	2
8-Mar-22	CB AIS Program/Priority List Review	3	3
10-Mar-22	Les Cormier (Bareground Services)	1	1
17-Mar-22	CSISS and Wildsight Revelstoke Planning Meeting	2	2
21-Mar-22	Megan Goudie (Parks Canada)	1	1
28-Mar-22	Stoke FM Radio Interview	20	20
4-Apr-22	CSISS and CBEEN	1	1
8-Apr-22	STA Working Group Meeting	20	20
8-Apr-22	ZQM - Martina Beck (MOE), Dave Webster (COS)	2	2
8-Apr-22	Stronger BC Affiliates Meeting	10	10
8-Apr-22	STA Roundtable Meeting	12	12
12-Apr-22	CSISS and ISCBC	2	2
13-Apr-22	Data Collection Invasives BC RISO Meeting	15	15
14-Apr-22	Shuswap Trail Alliance YFI Meeting	4	4

16-Apr-22	Revelstoke Winter Market with Local Food Initiative Seed Swap	200	50
19-Apr-22	Greenbelt Meeting with Illecillewaet Greenbelt Society	1	1
23-Apr-22	Adams River and HCFT Earth-day	65	60
24-Apr-22	Wildsight Toads and Turtles	10	10
25-Apr-22	Stoke FM Radio Interview	20	20
30-Apr-22	Shuswap Gardeners Club Presentation	30	30
1-May-22	Shuswap Fishing Derby	180	110
1-May-22	ISCBC - Behaviour Change Workshop	60	60
10-May-22	See Revelstoke Ambassador Meeting	1	1
13-May-22	HCFT Wildschools Day	80	80
14-May-22	Brewed in Canada Fishing Derby	140	0
18-May-22	YouTube Presentation - Bullfrogs and Red-eared sliders	60	60
20-May-22	Stoke FM Radio Interview	20	20
26-May-22	EKISC AGM	23	23
26-May-22	Skookum Revelstoke- Public Bike Wash and Events	1	1
28-May-22	Salmon Arm Car Trunk Sale	300	32
2-Jun-22	CKISS /CSISS C2C Teacher Pro D - Planning Call	2	2
2-Jun-22	KCP Spring Meeting	15	15
3-Jun-22	HCFT Wildschools Day Sorrento Elementary	100	80
4-Jun-22	Gathering of Gratitude (Shuswap Community Foundation)	300	25
11-Jun-22	LFI Farmer and Craft Market	300	103
15-Jun-22	Sicamous Search and Rescue (Royal Canadian Marine Search and Rescue Station 106 Shuswap)	16	16
16-Jun-22	Columbia Park Greenbelt Walk	20	20
16-Jun-22	Trever Andrew (Adam's Lake Indian Band)	1	1
22-Jun-22	CSISS - Parks Canada - Hawkweed ID Workshop	16	16
23-Jun-22	CSISS Plant ID Walk	0	0
23-Jun-22	LFI Bee Hive Grand Opening	20	10
30-Jun-22	Yellow Flag Iris Weed Pull Little White Lake	3	3
1-Jul-22	North Shuswap Summer Festival	400	78
3-Jul-22	Stoke FM - Wildflower week and Weedpull	1	1
9-Jul-22	Salmon Arm Downtown Market	400	156
13-Jul-22	ZQM Sampling with Shuswap Watershed Council	1	1
14-Jul-22	Celista Farmers Market	300	140
14-Jul-22	LFI - Nicky Garden Guru	1	1
16-Jul-22	Golden Visitor Centre Showcase Saturday	13	13
17-Jul-22	Kingfisher Learn to Fish Event	250	150
19-Jul-22	Bee City	2	2
20-Jul-22	ISCBC - Outreach/Sign Installation	2	2
22-Jul-22	BC Wildfire - Greenbelt Mechanical Treatment Call	1	1
23-Jul-22	Sorrento Farmers Market	300	66
26-Jul-22	SABNES Weedpull	0	0
26-Jul-22	Nature Trust Meeting (with Alex Thomson - Okanagan Conservation Field Operations Technician)	5	5

27-Jul-22	Golden Farmers Market	200	95
3-Aug-22	Plant ID walk	6	6
3-Aug-22	Kristen Silfvenius - Headwaters Marketing	1	1
3-Aug-22	Hunter- Invasive Species Guy	1	1
4-Aug-22	Plant ID walk - Revelstoke	4	4
6-Aug-22	Revelstoke Farmer and Craft Market	144	300
6-Aug-22	Wildflower week - Speaker Series	5	20
11-Aug-22	Revelstoke Tourism - Sustain the Stoke	99	99
11-Aug-22	Greenbelt Weedpull	4	4
11-Aug-22	Greg Hill Tourism Revelstoke	1	1
12-Aug-22	City of Revelstoke/Skookum	2	2
13-Aug-22	Golden Weedpull	12	12
17-Aug-22	Golden Farmers Market	81	81
20-Aug-22	Sicamous Seniors Market	11	11
24-Aug-22	Skimikin Lake Rec Site Weedpull	3	6
24-Aug-22	Skimikin Lake BC Parks Operator and Backcountry Horsemen - Shuswap Chapter	4	4
25-Aug-22	Blanket Creek Weedpull	1	1
25-Aug-22	Bee City	2	2
26-Aug-22	White Lake Goldfish	25	25
26-Aug-22	WLRA (Patrick Frank, Nick Najda, Sharon Williams)	3	3
27-Aug-22	Golden Visitor Centre Showcase Saturday	12	12
28-Aug-22	Scotch Creek Farm and Craft Market	180	86
30-Aug-22	Mike Archie Invitation	1	1
2-Sep-22	Salmon Arm Community Market	18	14
7-Sep-22	Celista Farmers Market	150	60
9-Sep-22	Revy 50 Bike Fest	300	74
17-Sep-22	LFI Farmer and Craft Market	250	87
20-Sep-22	LFI & Bee City Seed Harvesting Workshop	10	10
22-Sep-22	Blanket Creek Restoration Event	40	40
26-Sep-22	RISO Tour	30	30
30-Sep-22	Salute to the Sockeye	45000	1796
21-Oct-22	Classrooms 2 Communities	300	50
24-Oct-22	Blanket Creek Project Wrap up	3	3
26-Oct-22	Shuswap Trails Alliance Roundtable	66	20
1-Nov-22	YouTube Presentation – Insects and Invasive Species	19	19
1-Nov-22	Stoke FM - AGM	10	10
5-Nov-22	Soap Making Workshop	15	15
7-Nov-22	Shuswap Watershed Council Water Quality Monitoring Group	16	16
7-Dec-22	Aquatic Meeting with MP Arnold, CSRD, OBWB, SWC and OASSIS	9	9

Appendix C: Media coverage of CSISS activities in 2022

Date	Publisher	Headline
2022-01-14	Wildsight Revelstoke	One Revolution Sparks Many In Revelstoke
2022-01-21	Stoke FM	Local Radio Interview with Stoke FM
2022-01-18	Castanet	Waterways mussel free
2022-01-19	Vernon morning star	Shuswap water advocates push Ottawa for more action against invasive mussels
2022-01-19	Castanet	Waterways mussel free
2022-01-31	Castanet	Invasive Mussels IN Focus
2022-03-10	Wildsight Revelstoke	Trunks, turtles and toads!
2022-03-25	Wildsight Golden	Hiring Golden Invasive Plant Program
2022-03-28	Stoke FM	Local Radio Interview with Stoke FM
2022-04-19	Times Review Interview	Interview with Josh re Whirling disease
2022-04-20	Vernon Morning Star	Concerns raised about possibility of invasive fish disease in B.C. waters
2022-04-20	Surrey Now-Leader	Concerns raised about possibility of invasive fish disease in B.C. waters
2022-04-20	Castlegar News	Concerns raised about possibility of invasive fish disease in B.C. waters
2022-04-20	Terrace Standard	Concerns raised about possibility of invasive fish disease in B.C. waters
2022-04-20	Revelstoke Review	Concerns raised about possibility of invasive fish disease in B.C. waters
2022-04-20	Salmon Arm Observer	Concerns raised about possibility of invasive fish disease in B.C. waters
2022-04-25	Stoke FM	Local Radio Interview with Stoke FM
2022-05-02	Eagle Valley News	Prevent aquatic invasive species with these steps: Clean-Drain-Dry and stop for watercraft inspection
2022-05-02	Salmon Arm Observer	Prevent aquatic invasive species with these steps: Clean-Drain-Dry and stop for watercraft inspection
2022-05-02	The North Shuswap Kicker	Prevent the introduction of a deadly fish disease
2022-05-20	The Salmon Arm Observer	It makes you feel good to contribute
2022-06-13	The North Shuswap Kicker	Be PlantWise
2022-06-14	Vancouver Is Awesome	Things to do during the Revelstoke Wildflower Festival
2022-06-29	Wildsight Golden	Ways to Take Action Against Invasive Species
2022-06-30	Wildsight Golden	Wildsight brings back weed pull program to combat invasive species
2022-07-07	Revelstoke Review	Wildflower Festival to bring a splash of colour to Revelstoke
2022-07-12	Penticton Western News	Algal Bloom or Pollen

2022-07-28	Revelstoke Review	The Fish and Wildlife Compensation Program Funds Invasive Species Research
2022-07-28	Golden Star	The Fish and Wildlife Compensation Program Funds Invasive Species Research
2022-08-04	Revelstoke Review	Columbia Shuswap Invasive Species Society Commence Wildflower festival with a hike
2022-08-05	Revelstoke Mountaineer	Revelstoke Wildflower Festival events in full swing for the weekend
2022-08-12	Revelstoke Review	Tourism Revelstoke brings back visitor volunteer campaign
2022-08-14	Revelstoke Mountaineer	Brief: Tourism Revelstoke campaign incentivizes tourists to give back to the community
2022-08-16	Revelstoke Review	Wildflower Week Celebrates another successful year
2022-10-11	Castanet	Invasive beetle species found in Oregon puts B.C. trees at risk, CSISS says
2022-10-31	Revelstoke Mountaineer	Tourism Revelstoke hosts successful regenerative tourism campaigns
2022-11-03	Stoke FM	Interview with Robyn re: CSISS AGM and CSISS programs
2022-11-04	Revelstoke Review	Tourism Revelstoke's campaign worked to foster regenerative tourism
2022-11-08	The Golden Star	Invasion of the Iris: Shuswap invasive species project ongoing
2022-11-17	Vernon Morning Star	Shuswap group asks B.C. government for more resources to keep invasive mussels out of province
2022-11-29	The Golden Star	No invasive mussels in Columbia Shuswap waters
2022-11-29	The Revelstoke Review	No invasive mussels in Columbia Shuswap waters
2022-11-29	The Golden Star	No invasive mussels in Columbia Shuswap waters
2022-12-01	Salmon Arm Observer	Okanagan lakes remain mussel-free
2022-12-11	Castanet Vernon	Invasive Iris can kill an ecosystem

Appendix D: Aquatic industries contacted by CSISS staff in 2022

Businesses highlighted in grey are within the Columbia Basin Region of the CSISS Area

Aquatic Industry Name	Location
Anglemont Marina	North Shuswap
Bayside Marina and Grill	Blind Bay
Blind Bay Resort	Blind Bay
Bosley's by Pet Valu	Sicamous
Brewed in Canada Fishing Derby	Blind Bay
Canoe Boat Club	Canoe
Captains Cove Marina	Canoe
Captain's Village Marina	North Shuswap
Cottonwood Cove RV Resort	North Shuswap
Critters Pet Store	Salmon Arm
Finz Resort	Blind Bay
Get Wet Rentals	Sicamous
Kinbasket Resort	Donald
Little River Boatworld	Sorrento
Old Town Bay Marina	Sicamous
Pet Valu	Salmon Arm
Red's Rentals	Sicamous
Revelstoke Paddlesport Association	Revelstoke
Rivermouth Marina	Kingfisher
Sea Dogs Boat Sales and Services	Sicamous
Shuswap Fishing Derby	Sicamous
Shuswap Marina	Blind Bay
Sicamous Houseboats	Sicamous
Sugar Lake Recreational Properties	Sugar Lake
The Point on Adams Lake Resort and Marina	Adams Lake
Twin Anchors Houseboats	Sicamous
White Lake RV and Fishing Resort	White Lake

Appendix E: Campgrounds contacted by CSISS staff in 2022

Businesses highlighted in grey are within the Columbia Basin Region of the CSISS Area

Campground Name	Location
Blind Bay Resort	Blind Bay
Boulder Mountain Resort	Revelstoke
Campers Haven RV	Donald
Cedars RV Resort	Malakwa
Cottonwood Cove RV Resort	North Shuswap
Crazy Creek Resort	Malakwa
Eagle River Campground	Malakwa
Finz Resort	Blind Bay
Golden Municipal Campground	Golden
Kinbasket Resort	Donald
Lamplighter Campground	Revelstoke
Magna Bay Resort	North Shuswap
Pierre's Point Campground	Tappen
Revelstoke Campground	Revelstoke
Sandy Point Campground	Tappen
Scotch Creek Cottages	North Shuswap
Shuswap Lake RV Resort	North Shuswap
Sky Blue Waters Resort	Sunnybrae
Smoky Bear Campground	Revelstoke
Sugar Lake Recreational Properties	Sugar Lake
Sunnybrae Bible Camp	Sunnybrae
Viewpoint RV Park and Cottages	Tappen
Whispering Spruce Campground	Golden
White Lake RV and Fishing Resort	White Lake
Williamson Lake Campground	Revelstoke

Appendix F: Invasive mussel sampling locations in 2022

Locations highlighted in grey are within the Columbia Basin Region of the CSISS Area

Region	Waterbody	Sample site	Sampling frequency	Plankton samples
Shuswap	Shuswap Lake	Pierre's Point	Bi-weekly	9
Shuswap	Shuswap Lake	Blind Bay	Bi-weekly	9
Shuswap	Shuswap Lake	Little River Boat World	Bi-weekly	9
Shuswap	Shuswap Lake	Captain's Village	Bi-weekly	9
Shuswap	Shuswap Lake	Old Town Bay	Monthly	5
Shuswap	Mara Lake	Sicamous Narrows	Bi-weekly	9
Shuswap	Mara Lake	Swansea Point	Bi-weekly	9
Shuswap	Mabel Lake	Kingfisher	Monthly	5
Shuswap	Mabel Lake	Mabel Lake Provincial Park	Monthly	4
Shuswap	Adams Lake	Indian Point Resort	Monthly	5
Shuswap	Little Shuswap Lake	Chase	Monthly	5
Shuswap	Sugar Lake	Sugar Resort	Monthly	4
Shuswap	White Lake	White Lake Provincial Park	Monthly	5
Shuswap	Shuswap Lake	Shuswap Marina	Monthly	Adults only
Shuswap	Shuswap Lake	Cottonwood Cove	Monthly	Adults only
Shuswap	Shuswap Lake	Anglemont Marina	Monthly	Adults only
Shuswap	Shuswap Lake	Sunnybrae	Monthly	Adults only
Shuswap	Shuswap Lake	Canoe Wharf	Monthly	Adults only
Shuswap	Shuswap Lake	Salmon Arm Wharf	Monthly	Adults only
Shuswap	Mara Lake	Sicamous Houseboats	Monthly	Adults only
Shuswap	White Lake	Sunny Shores Resort	Monthly	Adults only
Shuswap Total Plankton Samples				87
Columbia	Upper Arrow Lake	Shelter Bay	Bi-weekly	9
Columbia	Cedar Lake	Cedar Lake Recreation Site	Monthly	3
Columbia	Columbia River	Donald Bridge	Monthly	3
Columbia	Kinbasket Reservoir	Kinbasket Resort	Monthly	3
Columbia	Kinbasket Reservoir	Bush Harbour Recreation Site	Monthly	3
Columbia	Lake Revelstoke	Martha Creek Provincial Park	Monthly	4
Columbia	Lake Revelstoke	Downie RV	Monthly	4
Columbia Total Plankton Samples				29
Total Plankton Samples				116