



Columbia Shuswap Invasive Species Society

Annual Report 2019

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ACKNOWLEDGMENTS



Figure 1: CSISS 2019 Board of Directors and staff left to right: Bruce Husband, Robyn Hooper, Laurel Corrigan, Laura Gaster, Diane Millar, Adam Croxall, Hamish Kassa, Sue Davies, John Braisher, Kim Kaiser, Chris Cochran (not pictured: Darren Komonoski, Chris Gill, Natalie Stafil, Hannah Kendall, Sam Legebokow, Janelle Weslowski)

The accomplishments and success of this organization can be attributed to our dedicated staff, Board of Directors, the generous funding agencies that contributed to the project, our expert contractors, consultants and numerous volunteers. Special thanks to our 2018-2019 outstanding Board Directors whose dedication and direction has continued to guide the CSISS on its trajectory of growth: Hamish Kassa (CSRD), Chris Cochran (Town of Golden), Diane Millar (MFLNRORD), Natalie Stafil (Parks Canada), John Braisher (Golden Area Rancher), Darren Komonoski (City of Revelstoke), Bruce Husband (Shuswap Agricultural Strategy Group), Adam Croxall (BC Hydro), Chris Gill (Shuswap resident and environmental consultant) and Laurel Corrigan (Revelstoke resident) (Figure 1 and Appendix A). In October 2019, CSISS also welcomed Joe McCulloch from the District of Sicamous to the Board. We would like to thank Sam Legebokow and Hannah Kendall, CSISS summer staff through Canada Summer Jobs and Janelle Weslowski, a summer intern through the Loran Scholarship Program, for their exceptional efforts engaging residents across the CSRD in invasive species outreach activities and invasive plant and aquatic field work this summer.

We are extremely grateful to the Columbia Basin Trust (CBT), Ministry of Forests, Lands and Natural Resource Operations and Rural Development (MFLNRORD), Ministry of Environment and Climate Change Strategy (ENV), Ministry of Transportation and Infrastructure (MoTI), the Columbia Shuswap Regional District (CSRD), Shuswap Watershed Council (SWC), the Habitat Conservation Trust Foundation (HCTF), Employment and Social Development Canada (Canada Summer Jobs Program), City of Salmon Arm, Parks Canada, BC Parks, BC Hydro, The

Nature Trust, Shuswap Trails Alliance, RBC Blue Water Grant, Public Conservation Assistance Fund, Fish and Wildlife Compensation Program for providing funding and partnership. Additional thanks are due to the City of Revelstoke, Town of Golden, District of Sicamous, Central Kootenay Invasive Species Society, East Kootenay Invasive Species Council, Columbia Basin Environmental Education Network, Kootenay Conservation Partnership, Shuswap Trail Alliance (White Lake Stewards), North Columbia Environmental Society, Gardom Lake Stewardship Society, RBC Revelstoke, Okanagan Regional Library, Shuswap Trails Roundtable and Working Group, Invasive Species Council of BC and Wildsight Golden for their support in-kind and partnerships with the CSISS.



Figure 2: The new 2019-2024 CSISS Strategic Plan goals, along with CSISS mission and vision statements.

Thank you to all our funders and partners in 2019!



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Social Development Canada

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SHUSWAP
watershed council



HABITAT
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EXECUTIVE SUMMARY

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



Goal 1: Implement a collaborative and coordinated program

- CSISS strengthened and expanded its network of partners;
- CSISS Partnered with all levels of government, ISCBC, other regional invasive species groups, local stakeholders, residents and NGO's;
- CSISS worked with over 307 partner organizations, 90 of whom were new in 2019.



Goal 2: Educate, engage and inspire participation

- CSISS completed targeted outreach to stakeholders, First Nations and landowners;
- CSISS hosted training workshops for government staff, contractors and the public;
- CSISS engaged with over 4,125 people in the region and attended 153 events;
- CSISS directly targeted outreach to boaters and marinas, trail users, and gardeners.



Goal 3: Prevent the introduction of new invasive species

- CSISS inventoried 16 garden centers and delivered the 'Plant Wise' message;
- CSISS visited boat launches, boat industry and marinas with 'Clean Drain Dry' message;
- CSISS worked with various trail associations, collaborated with 13 trail groups and race organizers
- CSISS installed 37 new Clean Drain Dry Signs at boat launches.
- CSISS completed 11 press releases and was featured in 60 news pieces;
- CSISS regularly created engaging posts on Facebook, Instagram and Twitter.



Goal 4: Maximize the probability of detection and eradication

- CSISS completed 1,201 targeted invasive plant surveys across the region;
- CSISS engaged with 265 landowners regarding invasive plant management;
- CSISS completed 139 zebra and quagga veliger samples at 28 locations across 11 waterbodies
- CSISS deployed 16 substrate samplers and used local substrates to monitor for adult mussels at all shore based locations;



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

- CSISS completed mechanical treatment at 46 priority locations;
- CSISS administered 4 herbicide spray contracts, treating 38 priority sites;
- CSISS installed 'Do Now Mow' signage and 'Do Not Compost' signage across the region;
- CSISS completed 7 weed pulls with 9 partner organizations.



Goal 6: Ensure program sustainability

- CSISS employed six staff members, and a volunteer intern in 2019;
- CSISS added \$22,583 to its operating budget;
- New funding sources and increases from existing funding sources allow CSISS to continue and expand work in the Columbia Shuswap region;
- Followed CSISS Funding Strategy, 2019-2024 Strategic Plan and 2020-2025 regional Operational Plan renewed and revisited with partners

CONTENTS

<i>Acknowledgments</i>	2
<i>Executive Summary</i>	5
<i>Introduction</i>	7
<i>Project Area</i>	7
<i>Goal 1: Collaborative and Coordinated Programming</i>	8
<i>Aquatic Invasive Species Partnerships</i>	8
<i>Goal 2: Educate, Engage and Inspire</i>	9
<i>Media Coverage</i>	11
<i>Website and Social Media</i>	12
<i>Community Outreach</i>	13
<i>Workshops and Events</i>	14
<i>First Nations Engagement</i>	16
<i>Outreach Program Evaluations</i>	16
<i>Goal 3: Prevent the Introduction of New Species</i>	17
<i>PlantWise Program</i>	17
<i>Play, Clean, Go Program</i>	18
<i>Clean Drain Dry Program</i>	19
<i>Events and Presentations</i>	19
<i>Conferences and Meetings</i>	19
<i>Industry visits</i>	20
<i>Boat Launch Signage</i>	21
<i>Boat Launch Outreach</i>	22
<i>Don't Let It Loose Program</i>	24
<i>Goal 4: Maximize the Probability of Detection and Eradication of New Invasives</i>	25
<i>Public Reports</i>	25
<i>Targeted Invasive Plant Surveys</i>	26
<i>Field Operations Funder Updates</i>	27
<i>CSRD Overview</i>	27
<i>BC Parks Overview</i>	28
<i>City of Salmon Arm Overview</i>	29
<i>Ministry of Transportation and Infrastructure Report</i>	29
<i>Scope</i>	29
<i>Summary of Work Completed</i>	29
<i>Parks Canada Overview</i>	31
<i>Public Conservation Assistance Fund Overview</i>	32
<i>Nature Trust Overview</i>	33
<i>BC Hydro Overview</i>	33
<i>Aquatic Invasive Species Surveys</i>	34
<i>Zebra and Quagga Mussels</i>	34
<i>Aquatic Invasive Plants</i>	36
<i>American Bullfrogs</i>	36
<i>Goal 5: Slow and Reverse the Spread and Minimize the Impact of Existing Invasives</i>	37
<i>Mechanical Treatment</i>	37
<i>Chemical Treatment</i>	37
<i>Signage and Education</i>	38
<i>Goal 6: Program Sustainability</i>	39
<i>References</i>	41
<i>Appendix A: CSISS Staff and Board Directors 2019</i>	42
<i>Appendix B: Events Attended by CSISS and partners 2019</i>	43
<i>Appendix C: Media coverage of CSISS activities in 2019</i>	47
<i>Appendix D: Collaboration, Workshops and Training Opportunities Attended or Hosted by CSISS in 2019</i>	49
<i>Appendix E: CSISS Invasive Mussel Sampling Locations 2019</i>	51

INTRODUCTION

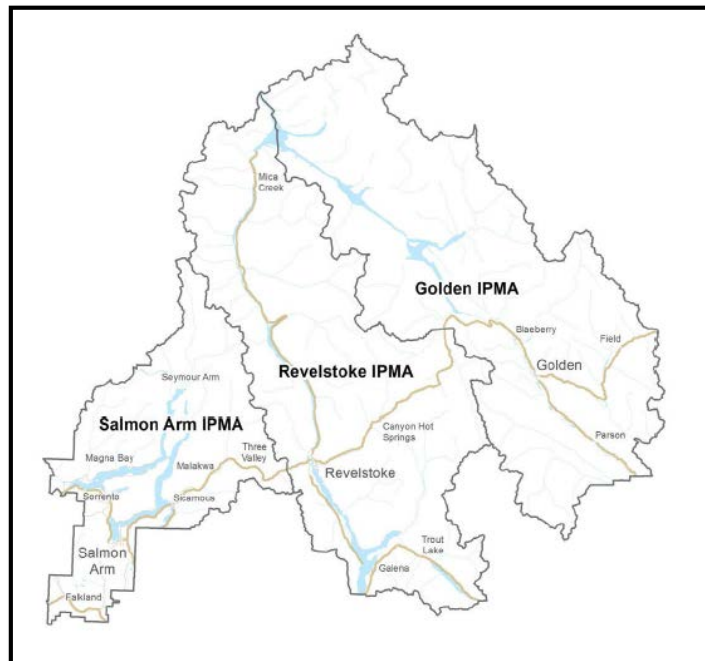
The CSISS was established in April of 2013 after a series of meetings and consultations with land managers, residents and other stakeholders with the aim to develop a collaborative and coordinated approach to invasive species management in the region. The CSISS joined a network of 13 regional invasive 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:

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

The summer of 2019 marked the Society's seventh season in operation. The seven CSISS staff in 2019, including four returning staff, greatly increasing 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 2019, the CSISS continued operations, providing fee for service contract work to treat and monitor invasive plants.

PROJECT AREA



The jurisdiction encompassed by the Society includes the boundaries of the Columbia Shuswap Regional District (electoral areas A, B, C, D, E and F). The CSISS operational area has been further 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 3: 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 Invasive Plant Management Area (IPMA) within the CSRD (Figure 3) to help partners coordinate programming and treatments. In addition to the plant lists, the CSISS has created a new non-plant list showing presence/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 has become the “one-stop-shop” for invasives in the CSRD and is the point of contact and lead on many invasive species-related issues in the region.

To maximize efficiencies and ensure program sustainability, the CSISS collaborated with invasive species groups within the Columbia Basin, regional committees across the province, the Invasive Species Council of BC (ISCBC), the Columbia Basin Trust (CBT), First Nations and various stewardship groups and NGOs. The CSISS currently partners with 307 groups, including over 400 subscribers to the CSISS newsletter. These partnerships expanded CSISS’ successful outreach program, which include PlantWise, Clean-Drain-Dry, Play Clean Go, and Don’t Let It Loose campaigns, and continued to secure joint funding (Columbia Basin Collaboration).

The CSISS has been working in collaboration with the East Kootenay Invasive Species Council (EKISC), Central Kootenay Invasive Species Society (CKISS) and Northwest Invasive Plant Council (NWIPC) 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, and designing a set of 2 posters that were presented at the International Columbia River Transboundary Conference, the Columbia Mountains Institute Researcher’s Forum in Golden, and other meetings in the Columbia Basin.

To maintain and grow presence across the region, CSISS staff attended and/or hosted 39 regional meetings, training opportunities and workshops (Appendix D). The CSISS worked closely with the regional municipalities (City of Salmon Arm, City of Revelstoke, District of Sicamous, 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. CSISS continued to work closely with the Columbia Shuswap Regional District to conduct extensive invasive plant surveys and respond to landowner requests/reports.

AQUATIC INVASIVE SPECIES PARTNERSHIPS

The 2019 season continued to see program growth and refinement of the Aquatic Invasive Species (AIS) program for the CSISS. CSISS Executive Director and AIS Program Coordinator continue to participate in the Columbia Basin AIS Steering Committee Meetings. Steering Committee members have a combined wealth of knowledge and increase communication and collaboration between regional, provincial and international governing bodies, stakeholders and First Nations. The CSISS strengthened our partnership with the Shuswap Watershed Council, participating in water quality monitoring meetings, and working together to increase invasive mussel monitoring and AIS outreach.

CSISS staff have continued to implement the AIS Framework within the Columbia Basin in collaboration with other regional Columbia Basin invasive species organizations (EKISC, CKISS, NWIPC) with support from the CBT and the Ministry of Environment (ENV). This involved carrying out AIS surveys in priority water bodies, as well as collaborating on AIS outreach programs, including outreach materials for the Basin, delivering the Clean, Drain, Dry program, as well as conducting outreach at boat launches, marinas and lake-focused campgrounds. Close

communication was maintained with the regional partners (ENV, EKISC, CKISS, NWIPC, and BC Hydro) to coordinate AIS survey efforts and identify gaps.

The CSISS partnered with 14 different organizations in a national project to install CDD signage at 37 new locations in 2019. Partnerships included MOTI, MFLNRORD, BC Hydro, BC Parks, CSRD, City of Salmon Arm, District of Sicamous, Village of Chase, community groups, and private marina owners.

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 received 180 requests for information and presentations in the past year. In 2019, CSISS education and outreach activities continued to focus on target audiences and pathways of invasion. The Play Clean Go program focused on cyclists through setting up bike wash stations at local bike races and completing trail user surveys at busy trailheads (Figures 4 and 5). CSISS provided data on location of knotweed infestations (which can impact infrastructure) and other priority invasive plants to city and district planners. This dataset is now part of the land information systems that flag properties when applications are made for development.

In 2019, the CSISS was represented at over 153 community events and meetings (See Appendix B for a complete list of events attended), hosted 11 workshops and training events, presented to 32 community/ recreation groups, hosted info booths at 25 community events, supported 7 community weed pulls, presented at 4 conferences, hosted 22 youth/school events and presented 4 delegations.

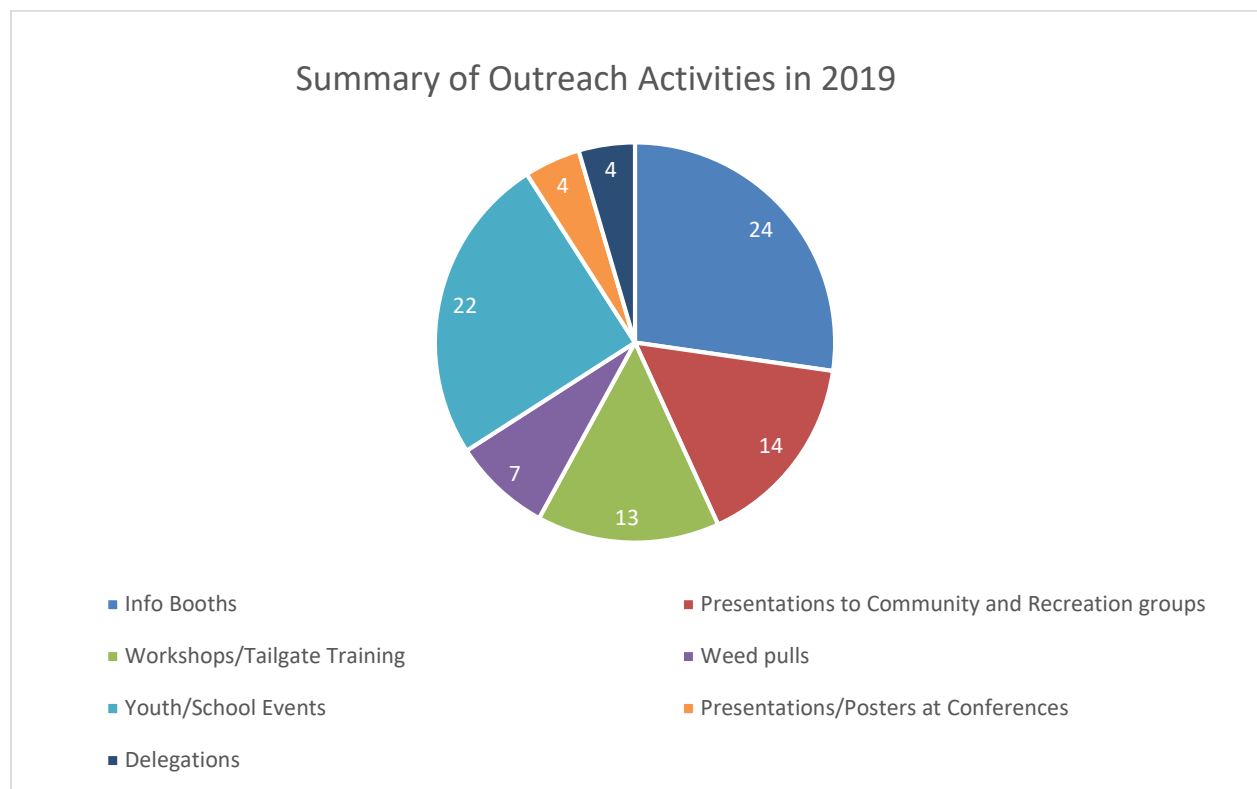


Figure 4. Chart showing a summary of outreach activities completed by CSISS in 2019.

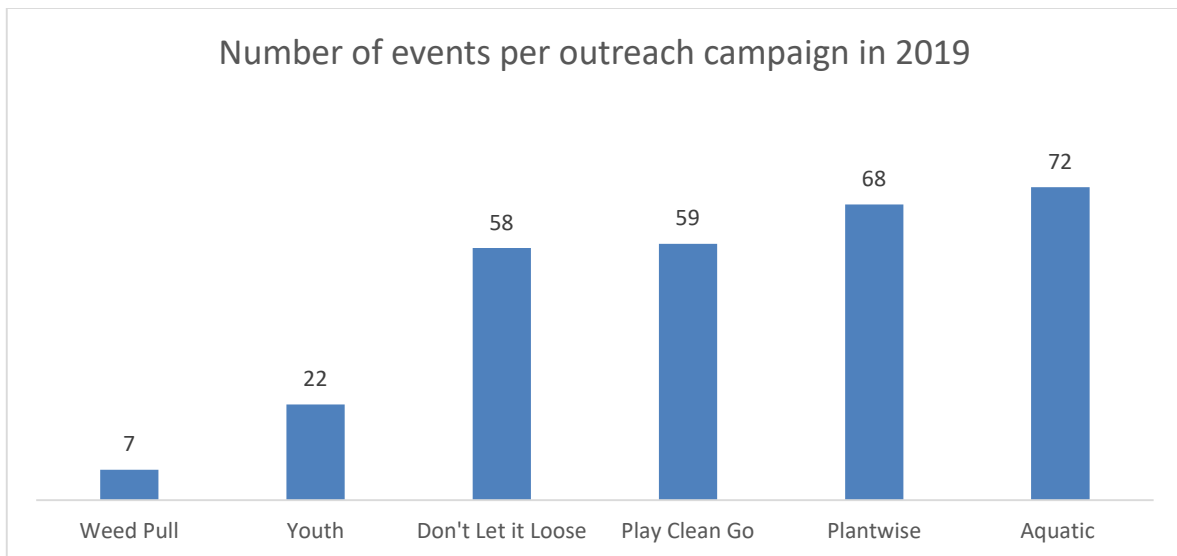


Figure 5: Chart showing the number of events where each outreach campaign was delivered.

The CSISS continues to receive significant numbers of requests for information and presentations. This year the CSISS focused on targeting our message to people most likely to be vectors of spread of invasive species. Events catering to people engaged in trail sports and water sports were sought out and attended by CSISS staff in an effort to influence behaviours of these groups of people in ways that reduce the spread of invasives.

In total, the CSISS had direct interactions with 4,125 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 2019 season. CSISS staff will also be incorporating barrier and benefit research into the outreach program in 2019

Table 1: Community Events and Meetings Attended by CSISS Jan- Dec 2019

Number of Events	# Attendees	Direct Interactions
22 Youth Events (8 within Columbia Basin)	3,537	1,307
7 Weed Pulls (4 within Columbia Basin)	70	70
72 Aquatic-related Outreach events (29 within Columbia Basin) (41 Boat launches visited, 15 within Columbia Basin)	38,049	3,226
59 Play Clean Go Outreach Events (25 within Columbia Basin)	37,531	2,498
68 PlantWise Outreach events (29 within Columbia Basin) (16 Garden Centers visited, 7 within Columbia Basin)	37,509	2,726
58 Don't Let It Loose Outreach Events (24 within Columbia Basin) (8 Pet stores visited, 3 within the Columbia Basin)	37,327	2,641
77 Events total in the Columbia Basin	4,399	1,523
153 Events total for CSISS 2019	40,139	4,125

MEDIA COVERAGE

Since January, the CSISS delivered 10 e-newsletters, 11 press releases, and has been mentioned in 60 news and radio pieces including: Revelstoke Times Review, Revelstoke Mountaineer, The Salmon Arm Observer, The Revelstoke Current, Columbia Shuswap/Salmon Arm EZ Rock, Stoke FM, and Reved Quarterly (See Appendix C for a full listing of media interactions). The CSISS partnered with the Shuswap Watershed Council (SWC) to help design Clean, Drain, Dry advertisements in printed media such as tourist guides (Figure 6) and a billboard sign on the Trans-Canada Highway between Revelstoke and Sicamous (Figure 7). Advertisement with 'Clean Drain Dry' and Play Clean Go' messaging was placed in the popular Kootenay Mountain Culture magazine in collaboration with other Columbia Basin groups (Figure 8).

Figure 6: Clean, Drain, Dry ads developed with SWC included in various media sources in 2019.



Figure 7: Billboard Clean, Drain, Dry advertisement installed near Craigellachie on Highway 1



Figure 8. Clean, Drain, Dry advertisement placed in Kootenay Mountain Culture spring 2019



Figure 9. Play, Clean, Go advertisement placed in Kootenay Mountain Culture magazine spring 2019

CSISS Play, Clean, Go messaging was also included in Tourism Golden trails map and Shuswap Tourism trail maps (Figure 9). Invasive Plant management information was included in the Kootenay Conservation Program’s Stewardship Solutions Toolkit for the Golden region (Figure 10).



Figure 10. CSISS contact info in The KCP Stewardship Solutions Toolkit for Golden region.

WEBSITE AND SOCIAL MEDIA

The CSISS website is updated regularly (www.columbiashuswapinvasives.org), with a focus on being 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. In 2019, additional resource pages were added to the CSISS website including a link to the Kootenay Conservation Toolkit and an invasive plant profiles page. The website security was updated, website pages cleaned up, and google analytics was installed to better quantify our website usage and reach. A donation page was also added to the website to make donating to CSISS easier (Figure 11).

The CSISS also hosts a Facebook page and posts updates of events, happenings, information and reminders of behavior change activities throughout the year. The CSISS Facebook page now has 326 ‘Likes’ and CSISS Instagram has 360 followers. The CSISS continues to deliver quarterly e-newsletters to more than 400 recipients highlighting our local and regional events and activities. Instagram and twitter are also actively used as platforms to encourage best practices, promote events and share relevant news with followers.

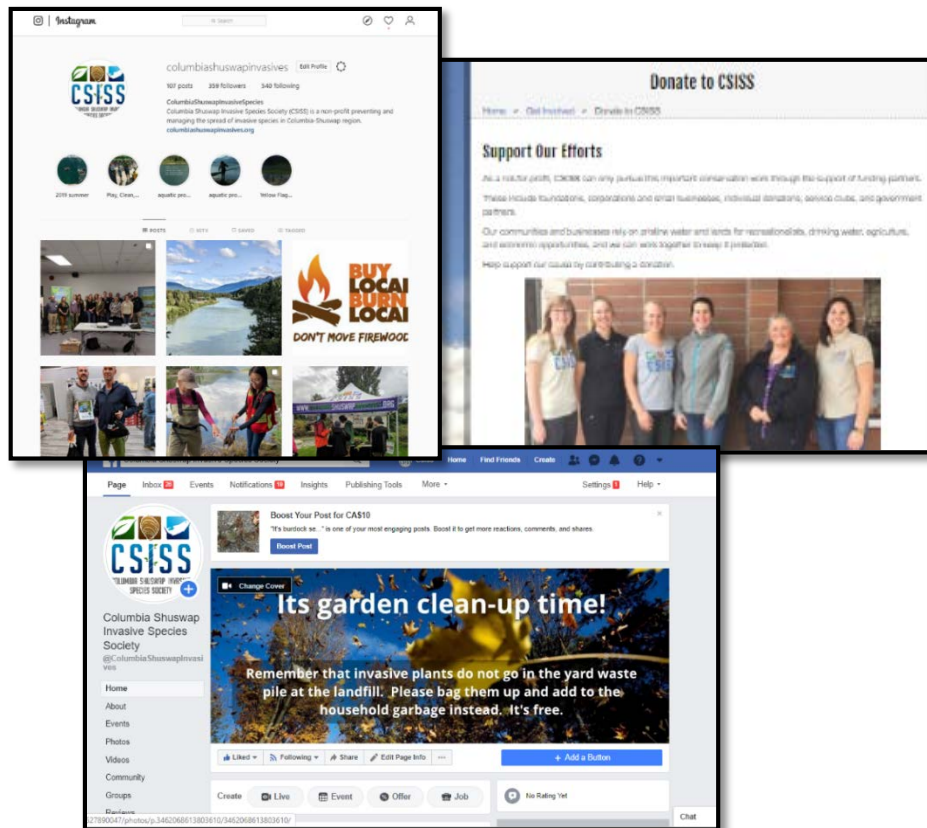


Figure 11: The CSISS Instagram page (left), the new CSISS website page for donations (right), Facebook page (bottom)

COMMUNITY OUTREACH

The CSISS partnered with numerous non-profit groups to raise awareness of invasive species in the Columbia-Shuswap region. CSISS outreach brochures were provided 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, resorts, municipal offices, Service BC locations, the CSRD office and on the Shelter Bay/Galena ferry.

Delegations to the City of Salmon Arm, CSRD, City of Revelstoke and Town of Golden were also completed in 2019 with the new municipal councils. CSISS Executive Director and Board members also met with the Federal Members of Parliament and Provincial Members of the Legislative Assembly to provide information about invasive species. The ED also provided witness statements to the Provincial Standing Committee on Finance and the Federal AIS Committee.

In addition to community weed pulls (Table 2), CSISS staff set up information booths at Farmers Markets and community events in Golden, Salmon Arm, Revelstoke, Blind Bay, Carlin, Sicamous, Scotch Creek and Celia, to raise awareness of invasive species issues and educate the public on how to prevent their spread. The CSISS presented to a variety of community groups, school groups, youth groups, clubs, stewardship and recreation groups, reaching a wide audience while also focusing on important user groups and pathways of spread (Figure 12).



Figure 12. Sam Legebokow hosting youth activities at Revelstoke Timber days (left) and Sue Davies presenting to the Canoe outdoor school stream project (right).

Table 2: The CSISS supported 7 weed pulls in collaboration with community groups.

Target Species	Location	In Collaboration with:
Yellow Flag Iris	White Lake	Invasive Species Council JCP
Yellow Flag Iris	Little White Lake	White Lake Stewards
Himalayan Balsam	Illecillewaet Walkway	Royal Bank of Canada, Revelstoke Branch
Himalayan Balsam	Illecillewaet Walkway	Glacier Adventure Stewardship Program, Revelstoke
Spotted Knapweed	Martha Creek Provincial Park	BC Parks
Bittersweet Nightshade	SABNES Foreshore Trail	Nature Trust BC, Shuswap Naturalists Club, Salmon Arm Nature Bay Enhancement Society
Burdock, Spotted Knapweed	Kicking Horse River banks	Wildsight Golden

WORKSHOPS AND EVENTS

To build capacity amongst partners, interested residents and stewardship groups, the CSISS hosted various workshops and training opportunities in 2019. New in 2019 CSISS hosted workshops for Marina staff and garden center staff (Figure 13).

CSISS-hosted workshops included:

- Invasive species plant identification workshops (x 4) in Salmon Arm, Revelstoke, Sicamous and Golden (May 2019);
- PlantWise workshop with High Mountain Farms (April 2019);
- Twin Anchors, Little River Boat world, FINZ, Waterway Houseboats, The Marina staff briefings (April-June 2019);
- Techniques for Recording and Reporting Invasive Plants (July 2019); and
- Edible Invasives workshop (September 2019)

Workshops were well-attended and provided useful skill development for various groups of land managers, educators, and the general public. Participants in these workshops included: Parks Canada, municipal and regional government staff, stewardship groups, recreation groups, landscapers, industry groups, teachers, and others. The CSISS also provided training to the Golden Wildsight Weed Coordinator.



Figure 13: Techniques for Recording and Reporting Invasive Plants course (left) and staff briefing at Waterway Houseboats (right).

In addition to workshops and training events, the CSISS presented at several conferences in 2019 (Figure 14), which included:

- Invasive Species Council of BC Annual Forum – Presenter (February 2019);
- 6th International Columbia River Transboundary Conference - Poster Presentation (Sept 2019);
- Columbia Mountains Institute Research Forum- Poster presentation (Oct 2019); and
- 21st International Conference on Aquatic Invasive Species –Presenter (Oct 2019)



Figure 14: Robyn Hooper (CSISS) and Kendall Benesh (EKISC) at the International Columbia River Transboundary Conference (left) and Robyn Hooper (CSISS), Erin Vieira (SWC), Lisa Scott (OASISS) and Hamish Kassa (CSRD) at International Conference on Aquatic Invasive Species in Montreal (right).

FIRST NATIONS ENGAGEMENT

In 2019, the CSISS continued to develop First Nations partnerships and collaborations. Staff cultivated relationships with various indigenous groups through networking at conferences, trail meetings, and providing educational booths at indigenous events.

Engagement included:

- Indigenous day event at Pierre's Point (Adams Lake Indian Band);
- Information booth at the Neskonlith Career Fair;
- Presenting at the Adam's Lake Indian Band Earth Day Information Session;
- Working with Adams Lake Indian Band to sample for AIS at reserve locations; and
- Shuswap Trails Working Group Meetings and networking with First Nations participants who included Splatnin, Neskonlith, Little Shuswap, and Adams Lake Indian Bands

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

OUTREACH PROGRAM EVALUATIONS

The CSISS continues to use feedback forms as a first step to evaluate the effectiveness of our workshops and programs. People reported that they are more likely to take action to prevent the spread and reduce impacts of invasives (Figure 15). The results from our surveys help to guide our future outreach programming (Figure 16).

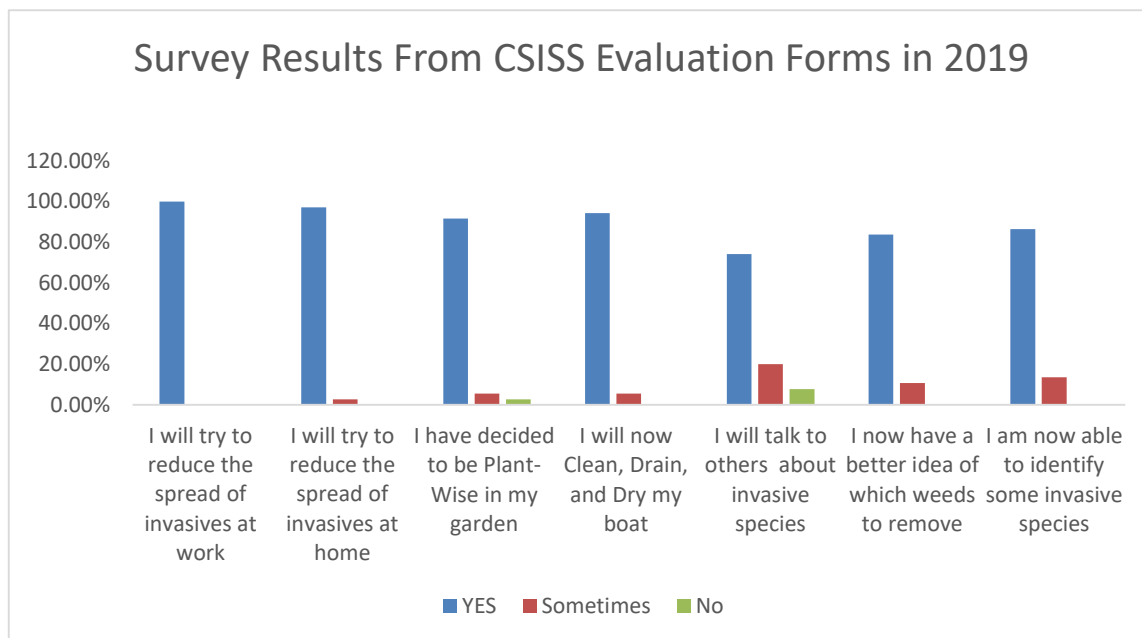


Figure 15. Survey Results from CSISS evaluation forms in 2019

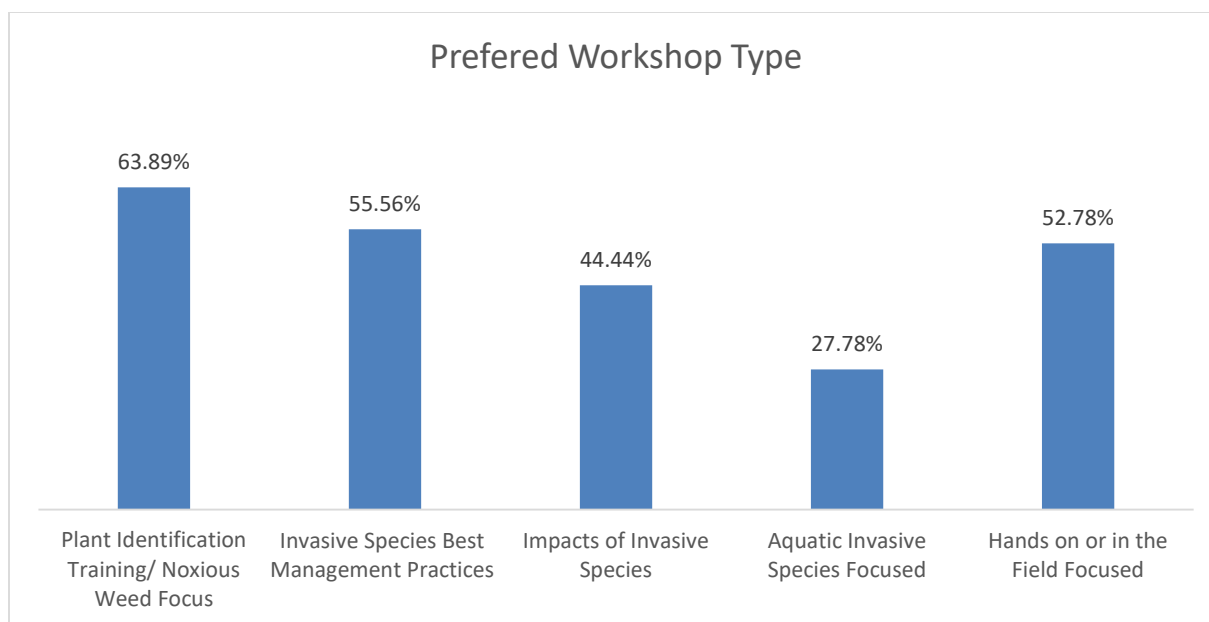


Figure 16: Survey results from 2019 workshop participants regarding future CSISS event types.

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 Invasive Species Council of British Columbia (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 at 68 community-based events, workshops and meetings, speaking to youth, home gardeners, land managers, and stewardship groups, directly reaching 2,726 individuals.

In 2019, CSISS offered workshops to garden centres throughout the region. CSISS hosted a workshop with High Mountain Farms in Salmon Arm, which also provides inventory for other local garden shops in the Salmon Arm Area.

CSISS contacted garden centres in February to assist with ordering inventory. In April and May, the CSISS visited garden centres and nurseries to providing PlantWise Materials and assessing inventory.



Figure 17: PlantWise workshop at High Mountain Farms

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 such as ones including Baby's Breath and Mountain Bluet from their stock. Walmart in Salmon Arm removed all seed packs contain invasive seeds from their shelves following a conversation with a representative from their seed mix supplier Mackenzie Seeds.

Invasive plants found at garden centres in the region included Butterfly Bush, English Ivy and Virginia Creeper.

Additionally, the CSISS supplied non-invasive seed packs from Nature's Garden Seed Company at outreach events this year. Seed packs were available for a recommended \$5 donation and included CSISS contact information and the benefits of gardening with native plants.

In general, most garden centers in the region are interested in following PlantWise practices.

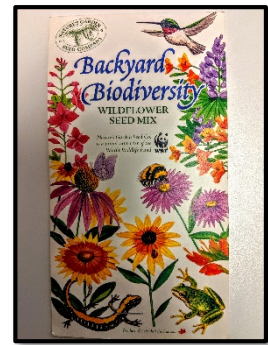


Figure 18: Non-invasive seed packs used as an outreach resource at community events.

PLAY, CLEAN, GO PROGRAM

In 2019, the CSISS promoted 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, First Nations, and youth outdoor education programs the CSISS successfully delivered the Play Clean Go message at 59 community events, directly reaching 2,498 individuals (Table 1). Coordinators Laura Gaster and Sue Davies, provided a presentation on Play Clean Go outreach at the Invasive Species Council of BC Annual Forum.

The CSISS continued to attend trails meetings, local races and continued to identify areas in the region to install Play Clean Go signage at trail heads. New outreach materials including an information board for outreach events were developed in 2019 (Figure 19).



Figure 19. Bike wash signage Revelstoke Mountain Resort (left), and information board for outreach booth (right).

The CSISS provided a bike wash station at the Salty Dog Enduro mountain bike race in Salmon Arm, encouraging participants to clean their bikes when entering and exiting the race site. Signage explaining the benefits of cleaning gear were provided to all locations in the region where bike wash stations are available (Revelstoke Mountain Resort, Big Eddy Pub in Revelstoke, Bluebird Café in Golden). The CSISS supplied race organizers with social media posts to promote PCG and messaging was included in race-packages for the Golden Ultra and the Lewiston Ultra - prominent trail races in our region (Figure 20).



Figure 20. Insert for Golden Ultra Racer kit

Staff provided Play Clean Go presentations for participants of a revegetation project at a new mountain bike trail system called 'Sunnyside' on Mount Cartier in Revelstoke. Play Clean Go boot brushes and a bike wash kit was supplied to the Revelstoke Cycling Association for use at bike race events. A Work Clean Go presentation was also provided to the BC Wildfire Branch, Columbia Fire Zone crews in Revelstoke.

CLEAN DRAIN DRY PROGRAM

EVENTS AND PRESENTATIONS

CSISS staff attended 72 CDD related events including fishing derbies, paddle-sport, Father's Day, Canada Day, school presentations, fishing group presentations, dragon boat festivals, fairs, and music festivals. Staff had direct CDD interactions with 3,226 individuals and indirect interactions with over 38,000 people who attended events and saw CSISS messaging.

AIS CONFERENCES AND MEETINGS

CSISS staff attended several significant conferences and meetings in 2019, as described previously, and several of them pertained to aquatic invasive species and the Clean Drain Dry program. Robyn Hooper (Executive Director) presented at the International Conference on Aquatic Invasive Species (AIS) in Montreal in November, along with the Shuswap Watershed Council's Erin Vieira. Hooper was a witness at both the Federal Committee on AIS and BC Select Standing Committee on Finance for 2020 Budget. Hooper presented a poster with other regional groups about our Basin-wide aquatics programming at the International Columbia River Transboundary Conference in Kimberly and the Columbia Mountains Institute Researcher Forum in Golden. Staff also attended Columbia Basin AIS Steering Committee meetings, Columbia Basin Watershed Network meetings, Shuswap Watershed Council meetings, regional invasive species organizations (RISO) meetings, and Provincial AIS meetings throughout the year to share information about aquatic invasive species programs.

INDUSTRY VISITS

Marinas are a focus point for boaters, both from within BC and from out of Province. Twenty-nine marinas in the region were visited in the spring (Figure 21, Table 3) with information about aquatic invasive species. Five of the largest marinas agreed to host special aquatic invasive species staff briefings presented by CSISS. Marina staff were provided with a package of information that included:



Figure 21. Marina staff briefing

- Impacts of invasive mussels on BC and the Shuswap
- Invasive mussel identification, the difference between native and invasive mussels
- Where mussels are currently found in North America
- What to ask clients about their boats before launch
- What to do if infestation on a boat is suspected
- Identification and impacts of other aquatic invasives
- Information to give out to clients
- Posters advertising the Invasive-Wise Marina program and invasives in general

In an effort to reach boaters visiting from out of province, CSISS staff visited 29 campgrounds (Table 4). Campground staff were given information about aquatic invasive species and how invasive mussels in particular could negatively impact tourism in the region. This information was well received by campground staff and most agreed to act as ambassadors and pass on information to visitors, especially those with boats and those from out of province. Resources including the AIS wallet card, CSISS aquatic brochure, and AIS specific posters, were left at all campgrounds to be given out.

Table 3. Marinas and Boat Stores visited by CSISS staff in 2019

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

Marina Name	Location
Anglemont Marina	Anglemont
Bayside Marina and Grill	Blind Bay
Bluewater Houseboats	Sicamous
Bulldog Rentals	Sicamous
Captains Cove Marina	Canoe
Captains Village	Scotch Creek
Copper Island Diving	Salmon Arm
Cottonwood Cove RV	Scotch Creek
Daniels Marina	Seymour arm
FINZ Marina	Blind Bay

Marina Name	Location
Little River Boat World	Sorrento
Papa's Marina	Sicamous
Performance Watercraft	Sicamous
Reds Rentals and Marina	Sicamous
Sea Dog Rentals	Salmon Arm
Seadogs	Sicamous
Shuswap Marina	Blind Bay
Shuswap Waterfront Marina	Sicamous
Sunny Shore Fishing Resort	White Lake
The Marina	Sicamous

Get Wet Rentals	Sicamous
Indian point resort	Adams Lake
J.B. Marine	Sicamous
Waterway Houseboats	Sicamous

Totem Pole Marina	Bastion Bay
Twin Anchors Resort	Sicamous
Golden Paddle	Nicholson
Kinbasket resort	Kinbasket

Table 4. Campgrounds visited by CSISS staff in 2019.

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

Campground Name	Location
Joe Schmucks	Sicamous
Salmon Arm Camping Resort	Salmon Arm
Glen Echo Resorts	Salmon Arm
FINZ Campground	Blind Bay
Blind Bay Resort	Blind Bay
Shuswap Lake Motel and Resort	Sorrento
Scotch Creek Cottages	Scotch Creek
Manga Bay Resort	Magna Bay
Sunny Shore Fishing Resort	White Lake
Woodhaven Campground	White Lake
White Lake Winery	White Lake
Cedars RV Resort	Malakwa
Family Tree Riverside Campground	Sicamous
Sicamous KOA	Sicamous
Eagle River Campground	Malakwa
Crazy creek camping	Malakwa
Viewpoint Cottages RV Park	Tappen

Campground Name	Location
Silver Sands Resort	Sicamous
Our Place on Mara	Mara
King Baker Resort	Mara
Sandy Pont Campground	Tappen
Pierre's Point Campground	Tappen
Sky Blue Waters Resort	Sunny Brae
Emanuel's RV Park	Sunny Brae
Hidden Valley Campground and RV	Canoe
Smoky Bear Campground	Revelstoke
Boulder Mountain Resort	Revelstoke
Lamplighter Campground	Revelstoke
Revelstoke Campground	Revelstoke
Canyon Hot Springs	Revelstoke
Williamson Lake Campground	Revelstoke
Campers Haven RV	Golden
Golden Municipal Campground	Golden

BOAT LAUNCH SIGNAGE

In 2019 the Canadian Council on Invasive Species received funding from the Federal Department of Fisheries and Oceans to run a pilot project trialing Clean Drain Dry (CDD) messaging across BC. The Invasive Species Council of BC (ISCBC) managed this pilot project and CSISS partnered with them, receiving 30 new signs for the region. An additional 7 signs of a similar design were added to make a total of 37 new signs at boat launches across the region (Figure 22).

CSISS then partnered with 15 local agencies (local districts, private marina owners, municipalities etc.) to install 32 new Clean Drain Dry signs at boat launches on Shuswap Lake, Little Shuswap Lake, Adams Lake, White Lake, Mara Lake, Gardom Lake, Lake Revelstoke, and Kinbasket Reservoir. The remaining signs will be installed in the spring of 2020. The locations, previously without good quality signage, were chosen due to how busy the boat launches were. Permission was gained from all jurisdictional managers before any signs were erected. Three different sign designs were used: motorized watercraft, non-motorized watercraft, and general (including fishing).



Figure 22. Clean Drain Dry signs, motorized close-up (left), non-motorized at Teal Rd on Gardom lake (centre) and general being installed at Whitehead Rd, Shuswap Lake (right).

BOAT LAUNCH OUTREACH

CSISS staff visited 54 boat launches across the region. At six of the busiest launches, staff surveyed a total of 89 boaters (Figure 23) both as a way of gaining information about Clean Drain Dry (CDD) practices, and as a platform for education. Surveys help CSISS gain information on whether boaters CDD their watercraft, their prior knowledge of invasives, and how that prior knowledge was gained.

A previous study by CSISS showed that many boaters thought it was very time consuming to CDD their boat, and that there are many hard to reach parts to clean. Staff helped boaters understand the process of better by performing a walk around the boat, highlighting the CDD process and showing that it can be achieved in a reasonably short time.

Another factor preventing boaters from cleaning, draining and drying their watercraft was that many simply forgot. This year CSISS staff concluded their surveys by asking each boater to affix a CDD sticker to the trailer hitch of their watercraft as a location-specific reminder. The stickers were obtained by CSISS at no cost from the ISCBC as part of the BC Pilot project that provided the signs (previous section).

To increase the chances of positive behaviour change, messaging focused on the link between good boat maintenance and good CDD practices, stressing to the boater that it is to their own advantage to CDD their boat every time it is drawn from the water.

Many boaters were curious when staff were sampling for invasive mussels, often leading to opportunistic outreach. Staff spoke to an additional 133 people at launches during sampling. This opportunistic outreach is valuable as people are often engaged and willing to learn.



Figure 23. CSISS staff surveying boaters at a launch (left), a boater affixing a Clean Drain Dry sticker to his trailer hitch (centre), and youth searching for mussels after opportunistic outreach during mussel sampling.

Boaters were provided with a floating key chain and chamois cloth, both with additional CDD messaging (Figure 24).



Figure 24. Boater with floating key chain, brochure, Clean Drain Dry sticker (blue version affixed to trailer hitch) and chamois cloth.

The messaging given at boat launches included: invasive aquatic plants and mussels, the mandatory requirement for all watercraft coming to or returning to BC to visit a watercraft inspection station, and specifics on how to properly CDD watercraft to prevent invasive species transmission. Watercraft inspection stations were promoted if the boater was likely to be taking their boat out of BC at any time in the future, or if they had friends bringing a boat to BC.

DON'T LET IT LOOSE PROGRAM

The 'Don't Let It Loose' program promotes returning or rehoming unwanted pets, rather than releasing them into the environment where they may become invasive. Additionally, the program focuses on ensuring live bait fish or other non-native species are not released by anglers/hunters.

In 2019, the CSISS inventoried aquarium/pet stores. Information was provided to owners and staff to encourage them to refrain from selling invasive species. Some pet stores reported that various invasive species are no longer available from their wholesalers. Brochures were provided for reference material and to give to customers. No invasive species were found for sale in any pet or aquarium store in the region.

Preventing human assisted transport of American Bullfrogs into this region is a priority for the CSISS. The program focuses on target audiences such as schools, youth groups, and water gardeners with messaging about the potential negative impacts of American Bullfrogs. A newly developed business card highlights bullfrog ID, impacts, and how to report sightings. Invader Alert posters were installed at 28 likely dumping areas in the region (Figure 25).



Figure 25. Bullfrog Invader Alert poster (left) and business cards (right).

The CSISS promoted the Don't Let It Loose message at school presentations and youth focused events, including the Kokanee Fish Festival in Revelstoke where 160 youth participated. The CSISS also attended fishing competitions throughout the region and promoted Don't let It Loose messaging on fishing and aquarium Facebook group pages. (Figure 26).

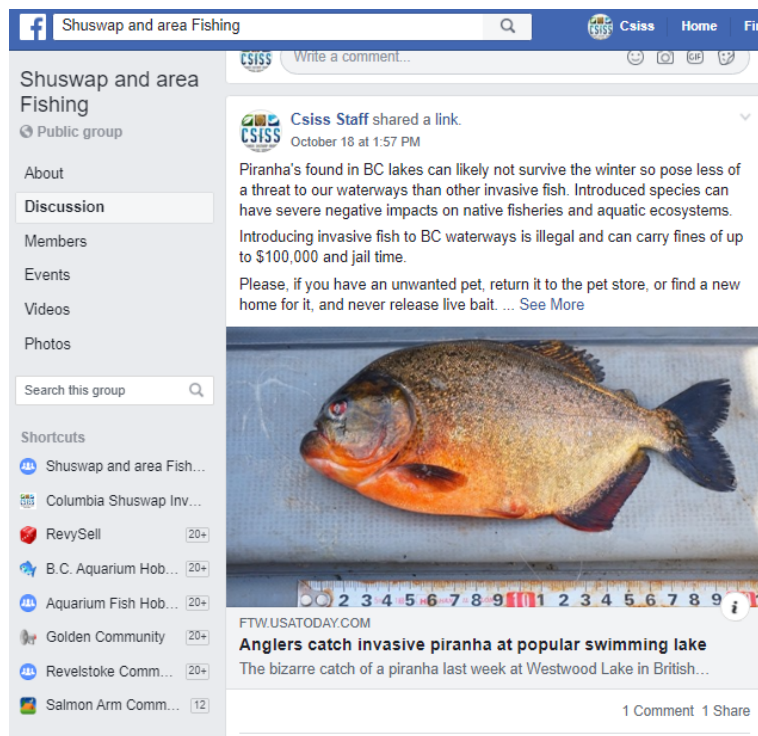


Figure 26. Don't Let It Loose post on Shuswap and Area Fishing Facebook page

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

CSISS categorizes reports from the public in four ways: requests for information, invasive plant reports, noxious weed complaints, and landowner outreach (Figure 27). Depending on the nature and priority of the report, it was confirmed by a site visit and/or responded to with landowner extension, an outreach letter, or by enacting the provincial Early Detection Rapid Response (EDRR) protocol.

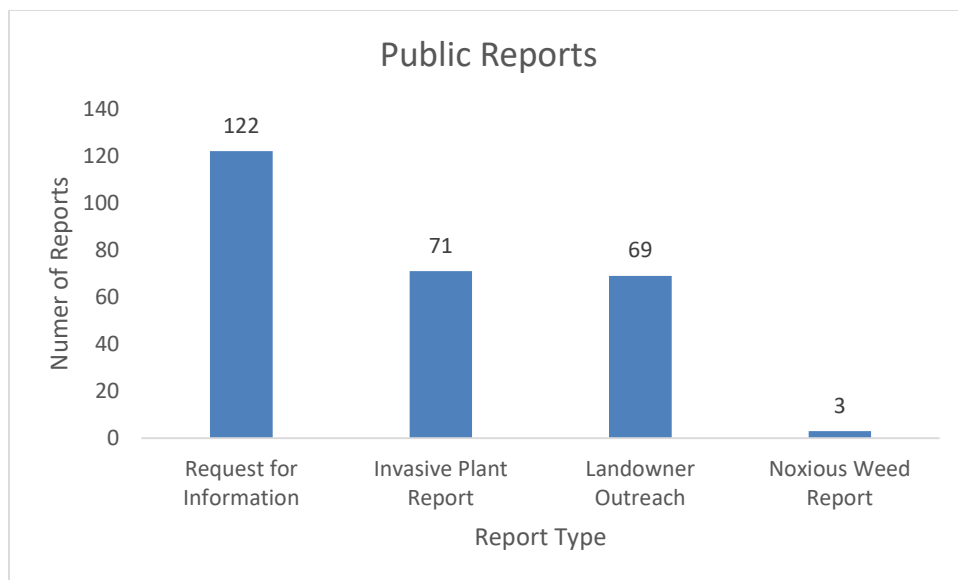


Figure 27. Public Reports Received in 2019

As knotweed continues to be a priority plant for the Columbia Shuswap region, the CSISS mailed an outreach package to all private landowners with known knotweed infestations. The information focused on identification, impacts, and best management practices for treatments. In total, 184 letters were delivered to private property owners with knotweed infestations and 17 letters were sent to landowners with other priority species infestations.

TARGETED INVASIVE PLANT SURVEYS

In 2019, the CSISS inventoried 332 sites (103 new sites) and completed 1201 invasive plant surveys. Priority invasive plants were found in all 3 of CSISS's Invasive Plant Management Areas (IPMA's). Priority invasive plants include: baby's breath, blueweed, cypress spurge, giant hogweed, Himalayan blackberry, knotweed spp., kochia, leafy spurge, poison hemlock, policeman's helmet, purple loosestrife, rush skeletonweed, scotch thistle, teasel, wild chervil, wild parsnip, yellow archangel, yellow flag iris (Figure 28). All invasive plant surveys, site surveys, treatment records and monitoring records completed by CSISS on behalf of partner/funding agencies were entered into the Provincial Invasive Alien Plant Program (IAPP) database.

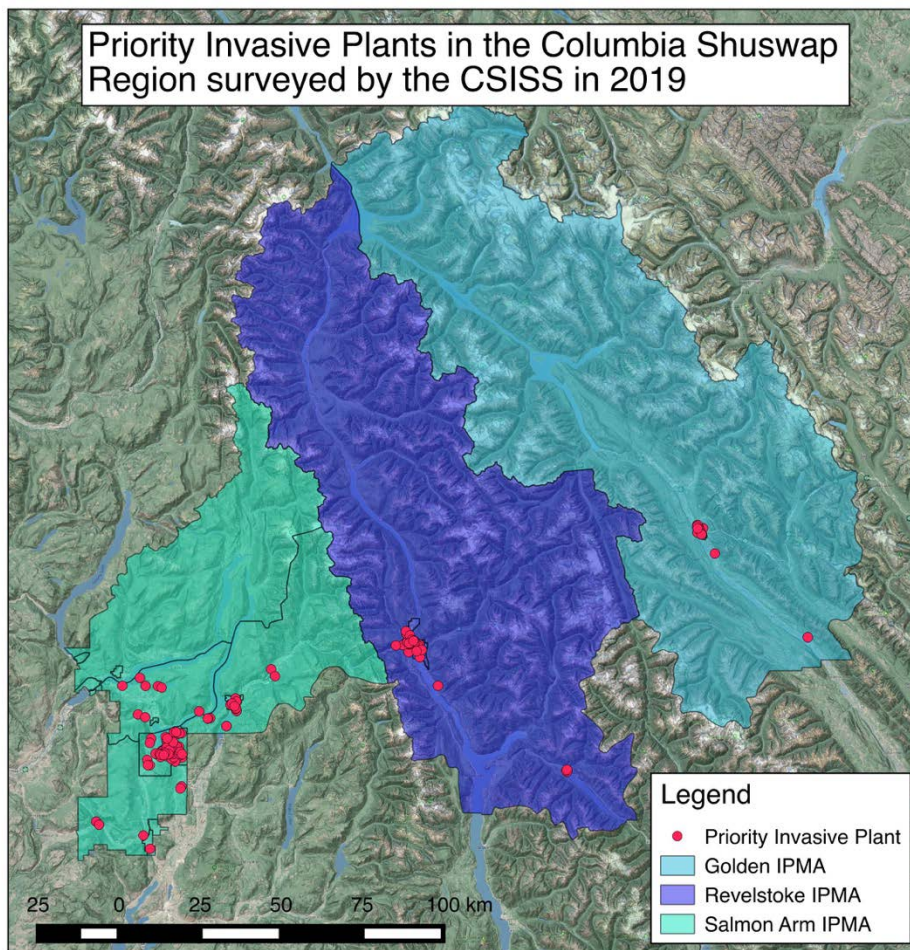


Figure 28. Priority Invasive Plants in the Columbia Shuswap Region 2019

FIELD OPERATIONS FUNDER UPDATES

CSRD OVERVIEW

In 2019, the CSISS completed invasive plant inventories of Columbia Shuswap Regional District properties including landfills, transfer stations, parks, fire halls and parcels (Figure 29). 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.

For landfills and transfer stations, 5 priority sites were identified and 1,015 m² were treated chemically by a certified herbicide applicator. Mechanical treatments occurred at 3 landfills removing a total of 18 m² of priority invasive plants. Some sites treated in 2017/2018 were found to be reduced in size and 6 locations had 'No Weed Found' in 2019.

For parks, fire halls and parcels, 33 properties were inventoried: 26 parks, 5 fire halls and 2 parcels. In total, 5 priority sites were identified, 4 sites (5 m²) were mechanically treated by CSISS staff and 1 site (1 m²) was chemically treated by CSRD staff. Sites treated in 2017/2018 were found to be reduced in size.



Figure 29. Canterbury Road Community Park (left), Greater Celandine at Gannor Road Property (centre), Revelstoke Airport (right).

BC PARKS OVERVIEW

In 2019, 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 30). Herbicide treatment was completed at Martha Creek, Blanket Creek, and Shelter Bay Provincial Parks within the expansion project areas by a certified herbicide applicator and herbicide monitoring was completed by CSISS staff.



Figure 30. Martha Creek Provincial Park expansion project area (left), Blanket Creek Provincial Park expansion project area (centre), Shelter Bay Provincial Park priority invasive plant, hoary alyssum (right)

CITY OF SALMON ARM OVERVIEW

In 2019, the CSISS completed invasive plant inventories of municipal properties, administered and monitored the City's herbicide spray contract, completed mechanical removal of priority invasive plants and installed Do Not Mow signage for knotweed infestations along City right-of-ways (Figure 31).

In 2019, CSISS staff inventoried 59 priority sites on municipal properties completing 83 invasive plant surveys. A herbicide spray contract was administered by CSISS and CSISS coordinated with the herbicide contractor to ensure effective treatment timing for priority species. In total, 28 municipal priority sites were treated over two passes from May to September 2019. Herbicide monitoring was completed at 15 of the treated sites by CSISS staff. The mechanical treatment was completed by CSISS staff at 18 municipal priority sites with a total of 189 m² of invasive plant material removed. In addition, 16 Do Not Mow signs were installed along City right-of-ways where the potential of mowing knotweed infestations existed.



Figure 31. Mechanical treatment of blueweed (left), mechanical treatment of poison hemlock (centre), installation of 'Do Not Mow' signs (right)

MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE REPORT

SCOPE

The Columbia Shuswap Invasive Species Society (CSISS), acting as a qualified contractor on behalf of the Ministry of Transportation and Infrastructure (MoTI), completed Do Not Mow signage installation prior to roadside mowing and removal and storage of Do Not Mow signage after mowing ceased for the 2019 season. Additionally, tailgate and information sessions were offered to all MoTI contractors throughout the season. CSISS staff tracked all deliverables in the workplan, and coordinated with relevant stakeholders in the region.

SUMMARY OF WORK COMPLETED

As part of the Columbia Shuswap Invasive Species Society's contract with the MoTI, CSISS staff installed 18 Do Not Mow signs for knotweed infestations along MoTI right-of-ways prior to mowing (Figure 32, Figure 33). During signage installation, CSISS staff directly spoke with adjoining private landowners delivering information about knotweed. Throughout the season, CSISS staff re-visited Do Not Mow signage sites and replaced or repaired 5

vandalized signs in the Revelstoke IPMA. CSISS staff removed, cleaned and stored the signage in a secure CSISS lock-up after the mowing season ended.

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 2019 by CSISS.



Figure 32. Do Not Mow signage installed for the MoTI 2019

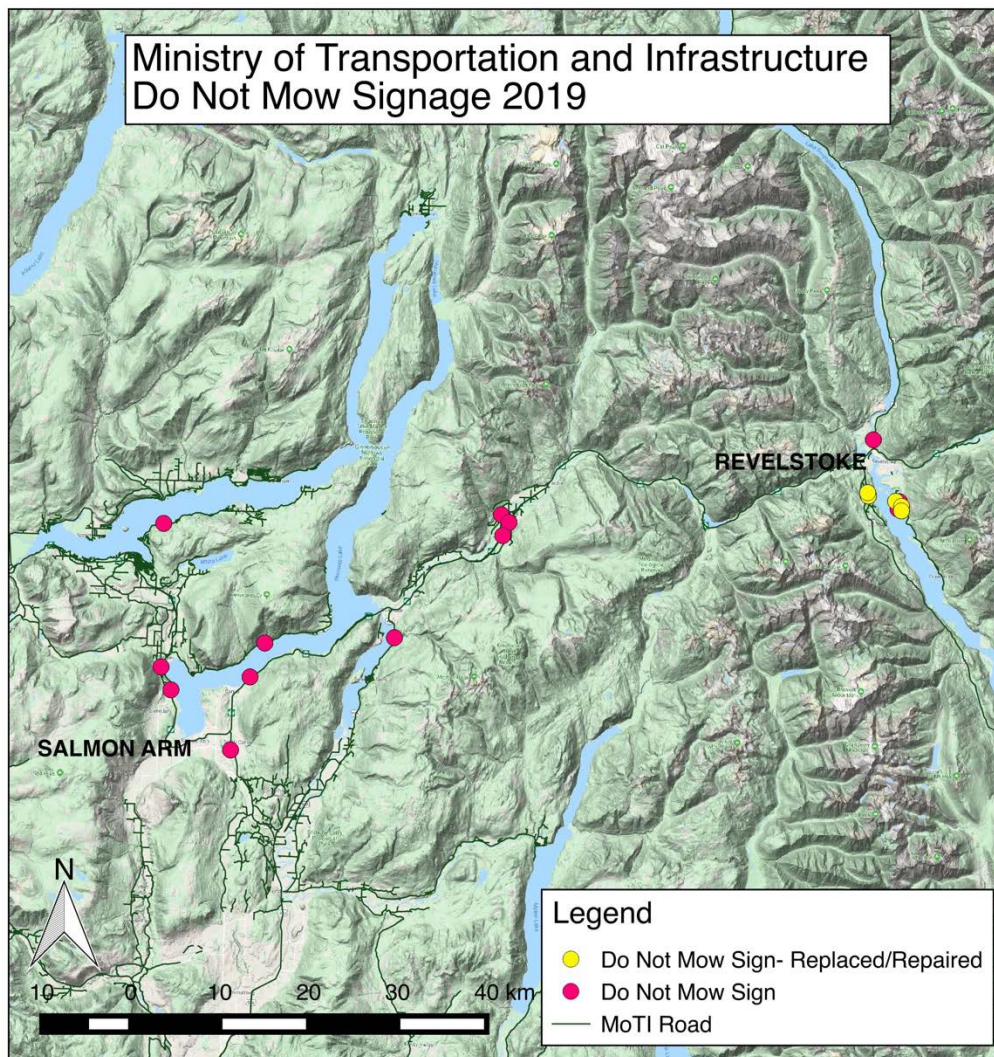


Figure 33. Ministry of Transportation and Infrastructure Do Not Mow Signage 2019

PARKS CANADA OVERVIEW

In 2019, the CSISS acting as a qualified contractor on behalf of Parks Canada, completed Invasive Alien Plant (IAP) Assessment and IAP Herbicide Monitoring in Mount Revelstoke and Glacier National Parks at pre-determined sites.

In total, 19 sites were monitored for herbicide effectiveness spanning two rounds of treatment from a certified herbicide spray contractor and 6 sites were assessed for IAPs at pre-determined sites in both Mount Revelstoke and Glacier National Parks (Figure 34).

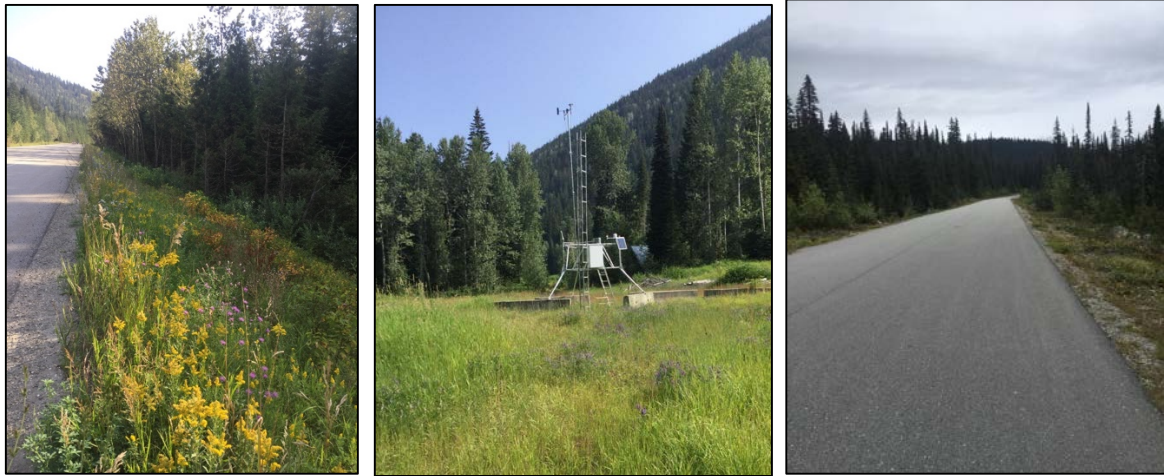


Figure 34. Spot herbicide application at Giant Cedars Deposition (left), East Gate weather station (centre), Meadows in the Sky Parkway (right)

PUBLIC CONSERVATION ASSISTANCE FUND OVERVIEW

In 2019, the CSISS completed detailed site inventory for invasive yellow flag iris (YFI) on both White Lake and Little White Lake in the Shuswap watershed located in central British Columbia. Using iPads and a GIS mapping program, a combined infestation size of 233 m² was determined. Mechanical treatment from CSISS staff, Invasive Species Council- Jobs Creation Program (JCP) and volunteers over two days were able to treat all sites on both lakes by a combination of digging and deadheading before seed set. In addition, a community weed pull with 8 volunteers was able to assist with treatment on Little White Lake (Figure 35).

In total, mechanical treatment from digging removed 44m² and dead-heading removed 189 m², approximately 2,000 kg. Native cattail planting occurred in areas free of YFI from previous years of treatment, approximately 180 cattails were planted. Monitoring and further treatment is recommended for future years, as with all invasive species, especially aquatic/ riparian plants, eradication is a multi-year effort.



Figure 35. YFI removal through digging (left), community weed pull participants (centre), native cattails to be planted (right)

NATURE TRUST OVERVIEW

In 2019, the CSISS completed a comprehensive inventory of invasive alien plants on the Nature Trust's Salmon Arm Foreshore property. Mechanical treatment of high priority invasive alien plants was completed summer 2019 for blueweed, nightshade, Himalayan balsam, teasel, yellow flag iris and poison hemlock (Figure 36). Treatment of invasive alien plants is a multi-year effort, it is recommended to continue inventory, treatment and monitoring of priority species in the following, consecutive years.

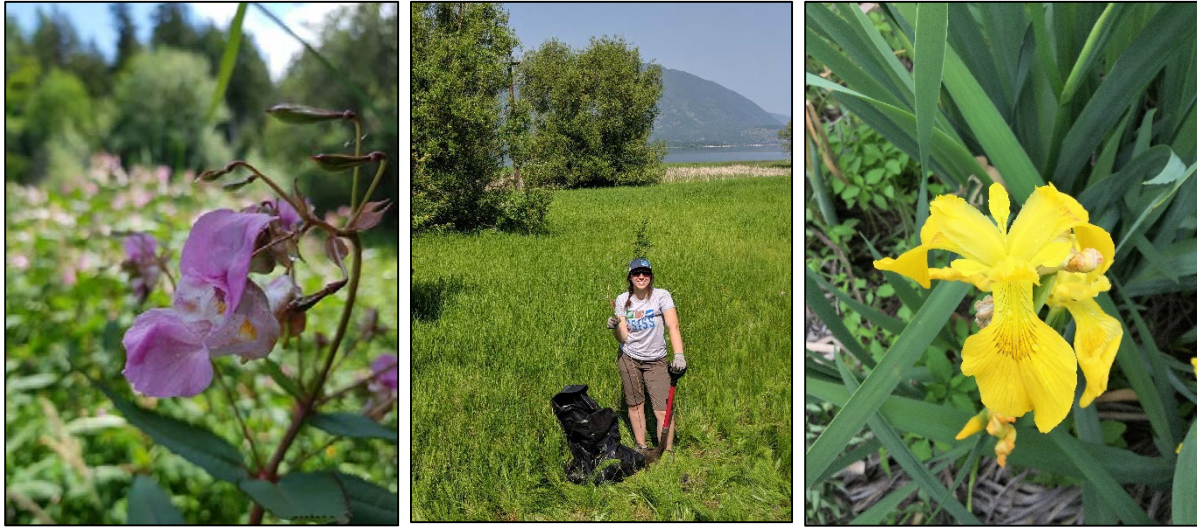


Figure 36. Salmon Arm Foreshore Himalayan balsam infestation (left), CSISS staff removing teasel (centre), yellow flag iris infestation (right)

BC HYDRO OVERVIEW

In 2019, the CSISS completed invasive alien plant assessment and baseline inventory on BC Hydro transmission line corridors for invasive alien plant treatment and monitoring in subsequent consecutive years. In total, 55 sites were inventoried based on their proximity to public, ease of access and proximity to previously mapped priority invasive alien plants (Figure 37).



Figure 37. BC Hydro transmission line corridor invasive alien plant inventories Golden IPMA (left), Revelstoke IPMA (centre), Salmon Arm IPMA (right)

AQUATIC INVASIVE SPECIES SURVEYS

ZEBRA AND QUAGGA MUSSELS

In 2019, the CSISS monitored waterbodies in the region for zebra and quagga mussels (ZQM) adhering to the 2019 Provincial Invasive Mussel Field Protocol. The Ministry of Environment (ENV) provides funds to monitor waterbodies through the Habitat Conservation Trust Foundation. Additional funds were obtained from the Shuswap Watershed Council. Waterbodies in the Province are ranked for ZQM invasion using the new provincial waterbody risk ranking matrix. This matrix takes into account probability of invasion, probability of mussel survival, and vulnerability of waterbody (environmental, social, and economic). CSISS ranked many of the waterbodies in the region using the new Provincial matrix for the HCTF funding application for sampling.

Plankton samples were taken at 28 locations (10 in the Columbia Basin) across 9 waterbodies (5 in the Columbia Basin) (Figure 38). Substrate samplers were deployed within 3 further waterbodies. Sampling frequency was determined using the risk rating matrix. The highest risk waterbodies received the highest frequency sampling efforts (Appendix E).

Plankton sampling began on May 29th 2019 and the last sample was taken on October 23rd 2019. In total, nine water bodies were sampled with plankton tows. Critical priority waterbodies included Shuswap Lake and Lake Revelstoke; high priority waterbodies included Mara Lake, White Lake, Gardom Lake, Upper Arrow Lake, Trout Lake, Kinbasket Reservoir, and the Columbia River

Waterbodies ranked as critical priority were sampled bi-weekly; the Shuswap lake started earlier and finished later than Lake Revelstoke due to its warmer waters. High priority waterbodies were sampled monthly, also beginning earlier and going later for warmer waterbodies (Gardom, White, Upper Arrow, Trout), and a shorter season for colder waterbodies (Kinbasket reservoir and Columbia River).

Critical priority sites on the Shuswap Lake (plus the very busy site on the Mara Lake at Sicamous Narrows) were sampled 9 times during the season with the exception of Sandy Point, Captains Village, and Cottonwood resort where access was difficult due to various factors, and at Canoe, which was only sampled 5 times to reduce costs. Sites on Lake Revelstoke were sampled 6 times by CSISS and once by BC Hydro.

High priority sites on White Lake, Gardom Lake, Mara Lake (excluding the Sicamous Narrows site), Trout Lake and Upper Arrow Lake were sampled 5 times each. Due to their shorter warm season, Kinbasket Reservoir and the Columbia River sites were sampled between 3 and 4 times each.

A total of 139 samples were collected and submitted by CSISS staff, and 5 samples were collected and submitted by Karen Brae (BC Hydro).

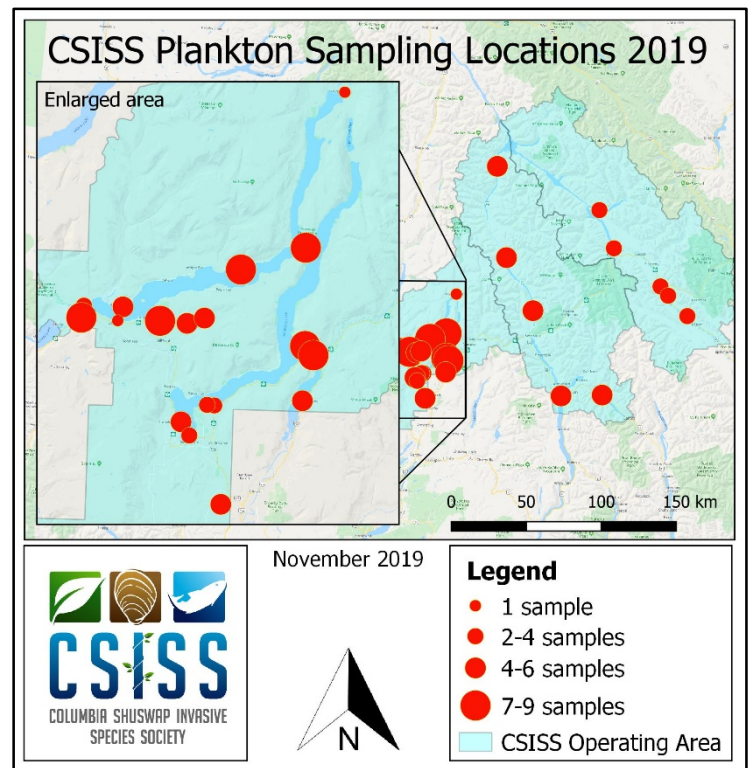


Figure 38. CSISS ZQM plankton sampling locations within the Columbia Shuswap Region, 2019.



Figure 39. CSISS staff Kim Kaiser and BC Parks Marine Wardens Britt McLeod and Colby Olsen setting off for a sampling day

The sites at Sandy Point and Cinnemousun Narrows were accessed by boat. Both Dennis Einarson (ENV) and BC Parks wardens provided assistance with boat access on several occasions (Figure 39).

Sixteen substrate samplers were deployed in ten waterbodies, including: 6 locations in Shuswap Lake, 2 locations in Lake Revelstoke, and one location each in Kinbasket reservoir, Mara Lake, Trout Lake, Upper Arrow Lake, White Lake, Little Shuswap lake (high priority) Adams Lake (medium priority), and Emerald Lake (low priority) (Figure 40). Local substrates, such as beaches and docks, were checked at locations without substrate samplers.

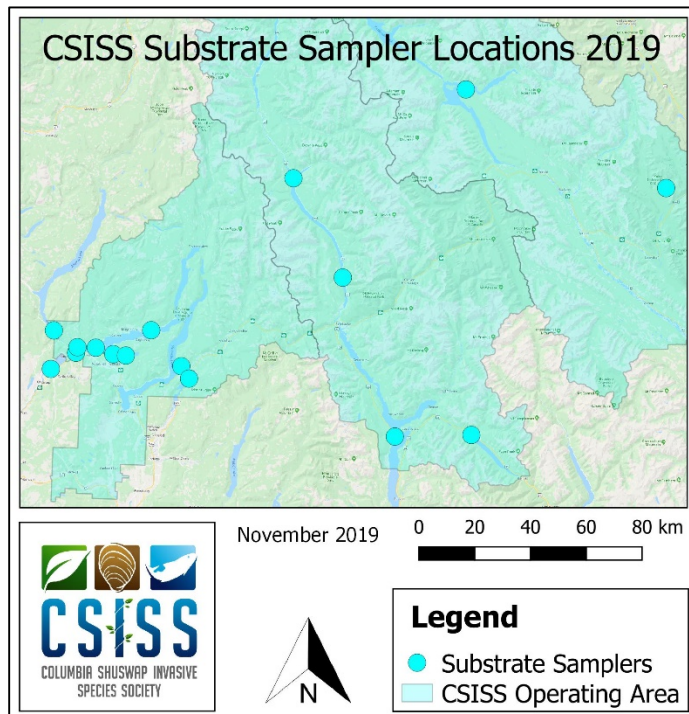


Figure 40. CSISS ZQM substrate sampler locations within the Columbia Shuswap Region, 2019.

At some sites, the substrate samplers went missing. CSISS staff installed labels on the samplers explaining what the sampler was for and asking the public to leave it in place (Figure 41). No samplers were lost after labels were installed.

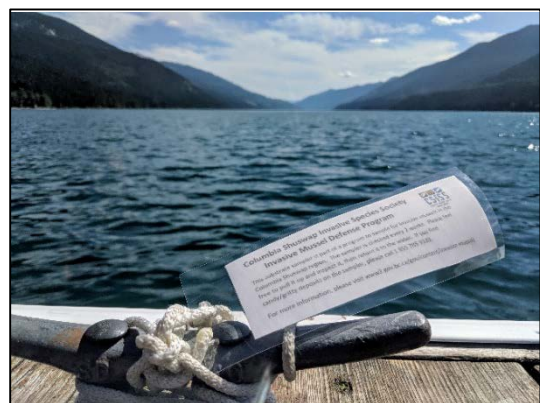


Figure 41. Labels attached to substrate samplers prevented their loss.

The CSISS worked closely with other organizations (BC Hydro, CKISS, ENV) sampling for ZQM in and around the Columbia Shuswap Region. CSISS sampling sites and dates complimented those other organizations to ensure sampling did not overlap, and maximized sampling efforts across regional waterbodies.

Samples were analyzed as part of the Provincial Mussel Defense Program. All waterbodies tested negative for ZQM veligers at all locations sampled by CSISS. There are currently no known cases of ZQM in the Province of BC.

AQUATIC INVASIVE PLANTS

All CSISS shore-based ZQM sampling sites (26 sites) and one extra site (McGuire Lake in City of Salmon Arm) were surveyed for aquatic invasive plants. A number of invasive plants are present in the Columbia Shuswap region including: Eurasian watermilfoil (*Myriophyllum spicatum*), yellow flag iris (*Iris pseudacorus*), curly-leaf pondweed (*Potamogeton crispus*), watercress (*Nasturtium officinale*), and fragrant waterlily (*Nymphaea odorata*). New sites of fragrant waterlily and curly pond weed at White Lake and McGuire Lake were entered into the IAPP database.

AMERICAN BULLFROGS

American bullfrogs are not known to exist in the Columbia Shuswap Region. The closest populations are in the lower mainland, Creston Valley, and an eradicated (but possibly re-emerging) population in the southern Okanagan.

Bullfrogs may be transported by humans for a variety of reasons; as pets, as garden ornaments, as educational dissection animals, or as food. Targeted outreach was designed to reach people who may unwittingly release these animals to the Columbia Shuswap (see more information on Don't Let It Loose message, page 25).

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 2019, the CSISS mechanically treated 46 priority invasive plant sites, removing a total of 793 m² of material. The priority invasive plants treated consist of: blueweed, bull thistle, English ivy, Himalayan blackberry, hoary alyssum, nightshade, poison hemlock, policeman's helmet, rush skeletonweed, scentless chamomile, spotted knapweed, scotch thistle, teasel, wild parsnip and yellow flag iris (Figure 42). As part of mechanical treatment, the CSISS supported 7 weed pulls throughout the Columbia Shuswap region.



Figure 42. CSISS staff treating poison hemlock (left), Glacier Adventure Stewardship Program weed pull (centre), yellow flag iris treatment (right)

CHEMICAL TREATMENT

In 2019, the CSISS administered four herbicide spray contracts treating 38 priority sites and 2.6476 Ha of land. All treatments were carried out by a certified herbicide applicator. The CSISS monitored each herbicide spray contract, all sites passed inspection. Priority invasive plants treated include: blueweed, bohemian knotweed, bull thistle, burdock, common tansy, giant hogweed, Himalayan blackberry, leafy spurge, hoary alyssum, meadow buttercup, oxeye daisy poison hemlock, policeman's helmet, rush skeletonweed, spotted knapweed, yellow hawkweed species (Figure 43).



Figure 43. Leafy spurge pre-treatment (left) post treatment (right) within the City of Salmon Arm.

SIGNAGE AND EDUCATION

To reduce the spread of knotweed on roadside right-of-ways, the CSISS installed 32 'Do Not Mow' signs for MoTI and City of Salmon Arm to alert mowers of the infestation ahead. Signs were installed prior to mowing, repaired throughout the growing season and removed post mowing to be stored in a secure area.

To encourage proper disposal of knotweed at landfills and transfer stations, the CSISS ensured each refuse station had a 'Do Not Compost Knotweed' sign visible to members of the public (Figure 44).

In addition to signage, CSISS staff completed tailgate sessions with municipal and regional staff members highlighting priority invasive plants, reporting methods and best management practices. Specific knotweed education was provided to landfill and transfer station operators throughout the season. For invasive plant practitioners, members of the public and other interested individuals, CSISS hosted four 'Invasive Plant Identification and Management Training' workshops early spring to increase education and awareness about invasive plants, best management practices and reporting methods.



Figure 44. Do Not Mow sign (left) and Do Not Compost sign (right)

GOAL 6: PROGRAM SUSTAINABILITY

In 2019, the CSISS gratefully received increased support for invasive species related programming in the region. The CSISS received funds from B.C. Community Gaming Grant, Parks Canada, Habitat Conservation Trust Foundation (Invasive Mussel Monitoring and Public Conservation Assistance Fund), City of Salmon Arm, BC Hydro, Shuswap Watershed Council, the Nature Trust, MFLNRORD (Benson Pit treatment contract), and BC Parks (Parks Enhancement Funds and special capital 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), the Ministry of Forests, Lands and Natural Resource Operations and Rural Development (MFNLROD), the Ministry of Transportation and Infrastructure (MoTI), and the Columbia Basin Trust (CBT). CSISS received funding for two summer students from the federal government through the 'Canada Summer Jobs' program. Small contributions were also received from: Shuswap Trail Alliance (RBC Water Grant partnership with RBC Revelstoke), Fish and Wildlife Compensation Program Community Grant, BC Hydro community grant, Ministry of Environment and Climate Change (bullfrog outreach materials), and UN Association in Canada Green Spaces Programme. We also received small donations at workshops and events from various members and stakeholders.

Additional funding sources are being pursued for the 2020 season, including Community Foundations and other grant sources.

The CSISS staff team in 2019 included five returning staff members, Robyn Hooper (Executive Director), Laura Gaster (Field Operations Program Coordinator), Sue Davies (Aquatics Program Coordinator), Kim Kaiser (Education Program Coordinator), and Sam Legebokow (Invasive Species Program Assistant). One additional staff member was hired, Hannah Kendall (Invasive Species Program Assistant). CSISS was also fortunate to have a Loran Scholarship volunteer intern Janelle Weslowski join as a third Invasive Species Program Assistant. Staff helped greatly enhance the level of service the CSISS was able to deliver in the region (Figure 45). Retaining a quality staff team is important for the CSISS which has thus far been exceptionally successful. 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.

The CSISS Policy Manual was reviewed and updated in 2019; the manual helps to facilitate orientation of new staff and directors (Stafl, 2015, updated Hooper 2019). 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. CSISS staff have created and maintained an Outreach Framework 2015-2020. This framework informs CSISS outreach targets, performance measures, staff work plans, calendars for specific outreach programming, and helps to determine gaps in stakeholder groups and pathways of spread (Hooper et al. 2015 updated by Sue Davies 2017). CSISS staff also work diligently from individual workplans and an organizational workplan that links to the CSISS Strategic Goals.



Figure 45: CSISS Staff members (from left to right): Hannah Kendall (Program Assistant); Robyn Hooper (Executive Director); Kim Kaiser (Outreach Coordinator); Janelle Weslowski (Program Assistant); Sam Legebokow (Program Assistant); Laura Gaster (Fields Operations Coordinator); Sue Davies (Aquatic Coordinator)

REFERENCES

Craig, J.A. 2013. Columbia Shuswap Invasive Species Society Strategic Plan 2013-2017. Prepared for the Columbia Shuswap Invasive Species Society.

Craig, J.A. 2013. Operational Plan for Terrestrial Invasive Plants in the Columbia Shuswap 2014 to 2019. Prepared for Columbia Shuswap Invasive Species Society.

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Harkness, C. 2016. North Columbia Priority Aquatic Invasive Species Surveys. Prepared for the Columbia Shuswap Invasive Species Society.

Hooper, R, Stafl, N., Gaster, L., Spiler, E., Gibson, M. and Rooney, D. 2015. CSISS Outreach Framework 2015-2020. Prepared for the Columbia Shuswap Invasive Species Society. Updated in 2017 by Sue Davies to include pathways of spread.

Stafl, N. 2014. CSISS Invasive Species Reporting Protocol. Prepared for the Columbia Shuswap Invasive Species Society.

Stafl, N. 2015. CSISS Policy Manual Version 2. 0. Prepared for the Columbia Shuswap Invasive Species Society. Updated in 2016 and 2017 by R. Hooper and CSISS Board.

Additional Resources:

CSISS Resources (Operational and Strategic Plans, Aquatic Survey Reports): <http://columbiashuswapinvasives.org/about-csiss/csis-resources/>

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

APPENDIX A: CSISS STAFF AND BOARD DIRECTORS 2019

Current CSISS Board Directors (2019- 2020)

Hamish Kassa	Chair, CSISS	Columbia Shuswap Regional District
Chris Cochran	Vice-Chair, CSISS	Town of Golden
John Braisher	Board Director, CSISS	Rancher and Golden resident
Bruce Husband	Board Director, CSISS	Shuswap Agricultural Strategy Group
Adam Croxall	Board Director, CSISS	BC Hydro
Darren Komonoski	Board Director, CSISS	City of Revelstoke
Diane Millar	Board Director, CSISS	MFLNRORD
Chris Gill	Board Director, CSISS	Shuswap resident and environmental consultant
Laurel Corrigan	Board Director, CSISS	Revelstoke resident
Natalie Stafl	Board Director, CSISS	Parks Canada
Joe McCulloch	Board Director, CSISS	District of Sicamous

Previous CSISS Board Directors (2018- 2019)

Hamish Kassa	Chair, CSISS	Columbia Shuswap Regional District
Chris Cochran	Vice-Chair, CSISS	Town of Golden
John Braisher	Board Director, CSISS	Rancher and Golden resident
Bruce Husband	Board Director, CSISS	Shuswap Agricultural Strategy Group
Adam Croxall	Board Director, CSISS	BC Hydro
Darren Komonoski	Board Director, CSISS	City of Revelstoke
Diane Millar	Board Director, CSISS	MFLNRORD
Chris Gill	Board Director, CSISS	Shuswap resident and environmental consultant
Laurel Corrigan	Board Director, CSISS	Revelstoke resident
Natalie Stafl	Board Director, CSISS	Parks Canada

CSISS Staff 2019

Robyn Hooper	Executive Director, CSISS
Laura Gaster	Field Operations Program Coordinator, CSISS
Sue Davies	Aquatic Invasive Species Program Coordinator, CSISS
Kim Kaiser	Outreach and Education Program Coordinator, CSISS
Sam Legebokow	Program Assistant (Summer Staff), CSISS
Hannah Kendall	Program Assistant (Summer/Fall Staff), CSISS
Janelle Weslowski	Program Assistant (Loran Scholarship Summer Intern), CSISS

APPENDIX B: EVENTS ATTENDED BY CSISS AND PARTNERS 2019

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

Date	Event	# of Attendees	# of Direct Interactions
9-Jan-19	Regional Invasive Species Organization call	17	17
10-Jan-19	Regional Invasive Species Organization Call- Internal herbicide document	17	17
15-Jan-19	Meeting with Marcy- discuss Land Managers meeting	3	3
16-Jan-19	Canada Summer Jobs Forum	30	5
18-Jan-19	Robyn Shuswap Trails working group meeting	22	22
21-Jan-19	Columbia Basin Team Meeting	12	12
25-Jan-19	Work BC salmon Arm Job Fair	111	22
28-Jan-19	Field Call with Erin Central Kootenay Invasive Species Society	1	1
4-Feb-19	Regional Invasive Species Organizations and Partner Agencies	20	20
5-Feb-19	Invasive Species Council of BC Annual Forum	180	180
5-Feb-19	Robyn fund development meeting with Laurel and Chris	2	2
7-Feb-19	Invasive species Council of BC Aquatic Invasives Workshop	35	35
9-Feb-19	Sustainability Expo with North Columbia Environmental Society	170	20
11-Feb-19	Meeting with Parks Canada to discuss Invasive Plant Priority List and 2019 PC contract	4	4
13-Feb-19	Shuswap Trails Roundtable	87	87
15-Feb-19	Kim meet with Barb Wadey- Forestry museum interpretive signs	1	1
17-Feb-19	Okanagan Sheep Producers Association	16	16
19-Feb-19	Meeting with Rachel Darvil	1	1
21-Feb-19	Revelstoke Winter market with Local Food Initiative Seed Swap	150	22
21-Feb-19	Phone meeting with Millie (Parks Canada)	1	1
21-Feb-19	Job Creation Partnership meeting call	10	10
21-Feb-19	CSISS Board of Directors meeting	7	7
22-Feb-19	Calls to marinas	9	9
27-Feb-19	Shuswap Watershed Council water monitoring meeting	8	8
27-Feb-19	Meeting with Wes DeArmond re sampling 2019	1	1
27-Feb-19	Meeting with Dennis Einarson re sampling 2019	1	1
28-Feb-19	Call with Jazmine Lowther Ministry of Forests, Lands, Natural Resource Operations and Rural Development	1	1
28-Feb-19	Invasive Species action month call	8	8
2-Mar-19	Golden seed swap	60	36
4-Mar-19	Meeting with Marcy- discuss Land Managers meeting	1	1
6-Mar-19	Parks Canada engagement meeting	3	3
7-Mar-19	Salmon Arm PROBUS club presentation	42	42

7-Mar-19	Land Manager Meeting and Operational Planning Meeting	16	16
9-Mar-19	Garden Day Salmon Arm	65	65
15-Mar-19	Neskonlith Career Fair	275	50
15-Mar-19	Staff herbicide training	4	4
15-Mar-19	Kelsie/Marcia Ministry of Forests, Lands, Natural Resource Operations and Rural Development re signs	2	2
15-Mar-19	Mike/Wes/Cory BC Parks re signs	3	3
15-Mar-19	City Salmon Arm Parks staff re signs	2	2
15-Mar-19	Meeting with Ministry of Transportation and Infrastructure staff re signs	1	1
15-Mar-19	Jeromy Schuetze, District of Sicamous re signs	1	1
15-Mar-19	Clint/Jodie, Village of Chase re signs	2	2
15-Mar-19	Jared, Ryan, Veda Columbia Shuswap Regional District re signs	3	3
19-Mar-19	Town of Golden Delegation	10	10
21-Mar-19	CSRD Delegation	20	20
4-Apr-19	Bylaw officer meeting	1	1
8-Apr-19	PlantWise presentation High Mountain Farms	6	6
8-Apr-19	City of Salmon Arm delegation	20	20
9-Apr-19	Town of Revelstoke Delegation	12	12
12-Apr-19	Shuswap Trails Working Group Meeting	23	23
17-Apr-19	Wild Schools Day Sorrento elementary	250	75
18-Apr-19	Earth Day Event Tsutswew	50	50
23-Apr-19	Twin Anchors Staff briefing	35	35
24-Apr-19	Volunteer Day Salmon Arm Secondary	300	300
26-Apr-19	Presentation to Adam's Lake Forestry Division	80	80
26-Apr-19	Little River Boat World staff briefing	10	10
29-Apr-19	Witness to Federal Committee on AIS Study	20	20
29-Apr-19	Clean Drain Dry Working group meeting	15	15
1-May-19	Clean Drain Dry call with Habitat Conservation Trust Foundation and MOE	3	3
1-May-19	AIS sampling spring call	15	15
4-May-19	Revelstoke Block Party	200	53
6-May-19	Shuswap Fishing Derby	120	120
11-May-19	Salty Street Fest	500	65
11-May-19	Meeting with Mike Phelps, invasive fish	1	1
12-May-19	Salty Dog Enduro	250	34
18-May-19	Timber Days	150	40
21-May-19	Revelstoke Plant ID workshop	5	5
22-May-19	Golden Plant ID workshop	13	13
23-May-19	Sicamous Plant ID workshop	3	3

23-May-19	FINZ staff briefing	3	3
24-May-19	The Marina Staff Briefing	6	6
25-May-19	Carlin County Market	750	39
28-May-19	ALS steering committee meeting	15	15
29-May-19	Salmon Arm Plant ID workshop	23	23
29-May-19	Salmon Arm Nature Bay Enhancement Society Weed pull	13	13
31-May-19	Canoe South Stream project	80	80
1-Jun-19	Revelstoke Market	200	84
1-Jun-19	John Jimmo, Megan Goudie Parks re sampler	1	1
4-Jun-19	Presentation to Village of Chase works dept. re sampler	9	9
4-Jun-19	Rick, Indian Point Resort, re sampler	1	1
4-Jun-19	Meeting with Erin Vieira re outreach	1	1
5-Jun-19	Presentation to Adam's Lake Indian Band	14	14
6-Jun-19	Staff briefing to Waterway houseboat staff	14	14
8-Jun-19	Presentation to Salmon Arm 4-H club	20	20
12-Jun-19	Glacier Adventure Stewardship Program Himalayan Balsam weed pull	5	5
12-Jun-19	Eagle River Secondary Bullfrog Presentations	77	77
12-Jun-19	Witness to BC Select Standing Committee on Finance for 2020 Budget Consolation	15	15
13-Jun-19	White Lake/Little White Lake YFI weed pull	18	18
14-Jun-19	West Side Stores Fishing Event	30	30
14-Jun-19	Shuswap Trails Working Group Meeting	20	20
16-Jun-19	Williamson Lake Fishing Derby, Revelstoke	70	15
16-Jun-19	Meeting with BC parks marine wardens	2	2
18-Jun-19	Arrow Heights Elementary Presentations	25	25
19-Jun-19	Golden Market with Wildsight	200	38
20-Jun-19	Garden Guru Workshop with Terra Firma Farms	21	21
21-Jun-19	Pierre's Point National Indigenous Day Event	75	14
22-Jun-19	Salmon Arm Dragon Boat Festival	250	235
25-Jun-19	RBC Day of Service Weed pull	6	6
29-Jun-19	Golden Visitor Center booth at Inspection station	150	28
29-Jun-19	Wildsight Weed Pull	10	10
30-Jun-19	North Shuswap Summer Kick off	50	22
1-Jul-19	Salmon Arm Children's Festival	250	105
1-Jul-19	South Shuswap Canada Day	500	50
10-Jul-19	Celista Market	150	60
13-Jul-19	Martha Creek Weed Pull	12	12
21-Jul-19	Paddle sport Classic	39	39

22-Jul-19	Junior Naturalists Presentation	18	18
22-Jul-19	Wildfire Fighter Presentation	13	13
25-Jul-19	IAPP Workshop	5	5
29-Jul-19	Junior Naturalists Presentation	12	12
30-Jul-19	Boater outreach training day	5	5
31-Jul-19	Post installation with Nick Wong	1	1
3-Aug-19	Golden tourist centre showcase day	150	19
3-Aug-19	Revelstoke LFI Farmer's Market	200	39
11-Aug-19	Scotch Creek Farmer's Market	100	52
16-Aug-19	Roots & Blues Festival	25000	75
20-Aug-19	Meeting with Kevin Manuel Communications manager at Revelstoke Mountain Resort Re-bike wash signage	1	1
20-Aug-19	Bike wash sign phone call with Big Eddy Pub	1	1
4-Sep-19	Regional Invasive Species Organization Call	7	7
4-Sep-19	Kootenay Conservation Program Fall Gathering	50	20
6-Sep-19	Salmon Arm Fall Fair	5000	152
11-Sep-19	Centenoka Mall Booth	40	5
12-Sep-19	6th International Columbia River Transboundary Conference - Poster Presentation	200	20
15-Sep-19	Revelstoke Garlic Festival	1000	67
16-Sep-19	Edible Invasives Workshop with NCES	10	10
17-Sep-19	Sunnyside Revegetation Play, Clean, Go Presentation	12	12
18-Sep-19	Sunnyside Revegetation Play, Clean, Go Presentation	9	9
21-Sep-19	White Lake Fall Gathering	50	13
23-Sep-19	Regional Invasive Species Organization Tour Fraser Valley	30	30
25-Sep-19	Kokanee Fish Fest	140	140
25-Sep-19	Lewiston Ultra pre-race Expo	200	14
25-Sep-19	Salmon Arm Garden Club Presentation	45	45
1-Oct-19	Shuswap Naturalist Club Presentation	38	38
12-Oct-19	Salute to the Sockeye Market	350	28
15-Oct-19	Sicamous Interagency Committee Presentation	10	10
15-Oct-19	Meeting with Okanagan College Program Coordinator	1	1
17-Oct-19	CSISS Annual General Meeting	25	25
18-Oct-19	Columbia Mountains Institute Researcher Forum - Poster Presentation	30	0
18-Oct-19	Shuswap Trails Working Group Meeting	24	24
21-Oct-19	Call with Catherine McRae Yellow Flag Iris	1	1
21-Oct-19	Outreach Call with Regional Invasive Species Groups	11	11
27-Oct-19	International Conference Aquatic Invasive Species	200	30
13-Nov-19	Shuswap Watershed Council water monitoring Group	14	14

20-Nov-19	Annual Shuswap Trails RoundTable Meeting	66	66
20-Nov-19	Canadian Weed Science Conference	150	20
25-Nov-19	Presentation to South Shuswap Chamber	20	20
27-Nov-19	Revelstoke Secondary School Climate Change workshop	150	53
2-Dec-19	Shuswap Middle School Grade 8 science presentations	60	60
5-Dec-19	Regional Invasive Species Call	13	13
11-Dec-19	Shuswap Watershed Council Presentation to Council	18	18

APPENDIX C: MEDIA COVERAGE OF CSISS ACTIVITIES IN 2019

Date	Publisher	Headline
07-Jan-19	CSISS E-newsletter	Happy New Year from CSISS!
17-Jan-19	Society for Ecological Restoration (Western Canada Chapter)	Yellow Flag Iris Removal In BC's Shuswap Watershed
21-Jan-19	CSISS E-newsletter	Land Manager Meeting
01-Feb-19	CSRD Website	CSISS Invasive Plant Surveys: CSRD Lands
12-Feb-19	CSISS E-newsletter	CSISS is Hiring : 2019 Job Postings
02-Mar-19	Wildsight Golden Blog	Job- Invasive Plant Coordinator Golden
15-Mar-19	EZRock Radio interview	Live from Neskonlith Career fair in Salmon Arm
19-Mar-19	Reved Quarterly	These Plants Are Trying to Invade your Castle : Look For These Plants in Your Domain
27-Mar-19	Revelstoke Current	Columbia Shuswap Regional District Board Meeting Highlights March 2019
03-Apr-19	CSISS E-newsletter	CSISS Newsletter Spring 2019
06-Apr-19	Revelstoke Current	Learn to Identify Key Invasive Plants in Your Area
07-Apr-19	Revelstoke Review	Invasive Species Workshop Coming to Revelstoke May 21st
09-Apr-19	Revelstoke Review	Learn to Identify Invasive Plants in Your Backyard
09-Apr-19	Black Press	Learn to Identify Invasive Plants in Your Backyard
10-Apr-19	Salmon Arm Observer	Learn to Identify Invasive Plants in Your Backyard
30-Apr-19	Chamber of Commerce Revelstoke E-newsletter	CSISS Spring Plant ID workshops
09-May-19	EZRock Radio interview	Invasive Mussel Prevention in the Shuswap

09-May-19	Summerland Review Press Release Shuswap Watershed Council	Invasive Mussel Prevention CSISS and SWC
11-May-19	Eagle Valley News	Invasive mussel prevention ramps up for May long weekend
13-May-19	Revelstoke Current	CSISS ready tackle zebra mussels testing
15-May-19	Press Release Shuswap Watershed Council	Invasive Mussel Prevention CSISS and SWC
15-May-19	Revelstoke Mountaineer	May long Weekend prep-Even paddleboards can transmit invasive mussels
17-May-19	Voice of the Shuswap Radio Interview	Invasive Mussel Prevention in the Shuswap, Who Is CSISS, other invasive species priorities and what people can do
23-May-19	Thompson Okanagan Tourism Association	Invasive Mussels Threatening BC Waters
23-May-19	Shuswap Tourism	Invasive Mussels Threatening BC Waters
23-May-19	Kamloops Tourism	Invasive Mussels Threatening BC Waters
28-May-19	Arrow Lakes News	Blockade continues to keep invasive mussels out of BC waters
31-May-19	Revelstoke Current	CSISS Asks Bullfrog Pet Owners to Never Set Them Loose in Columbia Shuswap
31-May-19	Press Release American Bullfrogs CSISS	Invasive American Bullfrog Posters
01-Jun-19	BC Local News	Organizations come together to protect the Shuswap from bullfrogs
03-Jun-19	Revelstoke Review	Columbia invasive species society doesn't want American bullfrogs on the loose
03-Jun-19	Revelstoke Mountaineer	Combatting invasive species with a climate change lens
04-Jun-19	EZRock Radio interview	Invasive American Bullfrog Posters
06-Jun-19	CSISS E-newsletter	Spring News and Events
06-Jun-19	CSISS E-newsletter	Calling all volunteers: Yellow flag iris removal and community engagement in the Shuswap watershed
18-Jun-19	Castanet	Mussel report raises alarm
19-Jun-19	Revelstoke Mountaineer	Learn how to harvest and cook invasive plants at this Revelstoke workshop
20-Jun-19	Revelstoke Current	CSISS hosts Alien Invaders and Tasty Treats
22-Jun-19	Vernon Morning Star	North Okanagan-Shuswap MP says feds must act to stop aquatic invaders
24-Jun-19	CSISS E-newsletter	Register Now- IAPP workshop July 25th
25-Jun-19	Revelstoke Review	CSISS hosting workshop for professionals
25-Jun-19	Revelstoke Current	CSISS hosting workshop for professionals
30-Jul-19	Revelstoke Review	New signs remind boaters Clean Drain Dry to prevent spread of invasive species

09-Aug-19	CSISS E-newsletter	CSISS Midsummer News
29-Aug-19	Revelstoke Review	Learn to cook with weeds
04-Sep-19	Wildsight website	Golden Community Invasive Plant Program Final Report Released
04-Sep-19	Revelstoke Current	Alien Invaders and Tasty Treats
04-Sep-19	Revelstoke Mountaineer	Edible Invasives @ worker's memorial
04-Sep-19	CSISS E-newsletter	Your invited: CSISS AGM
18-Nov-19	CSISS-E-Newsletter	CSISS Autumn updates
18-Nov-19	BC Local News	Nineteen boats carrying invasive mussels stopped at BC borders
18-Nov-19	Vernon Morning Star	Nineteen boats carrying invasive mussels stopped at BC borders
18-Nov-19	Columbia Valley Pioneer	Nineteen boats carrying invasive mussels stopped at BC borders
19-Nov-19	Revelstoke Mountaineer	CSISS wraps up invasive mussel sampling for 2019
25-Nov-19	BCLSS	CSISS wraps up invasive mussel sampling for 2019, no mussels found so far

APPENDIX D: COLLABORATION, WORKSHOPS AND TRAINING OPPORTUNITIES ATTENDED OR HOSTED BY CSISS IN 2019

- Monthly conference calls and meetings with Columbia Basin invasive species groups
- Monthly conference calls with BC regional invasive species groups
- Provincial aquatic invasive species conference calls
- Meetings with Parks Canada
- Invasive Species Council of BC strategic planning meeting
- Invasive Species Council of BC Annual Forum
- Canada Summer Jobs Forum
- Herbicide training with partner organizations
- Delegations to the City of Salmon Arm, CSRD, City of Revelstoke and Town of Golden
- ISCBC Aquatic Invasive Species Workshop
- Clean Drain Dry signage meetings
- Shuswap Watershed Council meetings
- Shuswap Watershed Council Water Quality Monitoring Group meeting

- Annual Land Manager's meeting and Operational Planning Meeting
- Swift Water Rescue training course
- Participation in Invasive Species Action Month planning
- Clean Drain Dry working group meetings
- Columbia Basin Aquatic Invasive Species Steering Committee Meeting
- ISCBC Job Creation Partnership Meeting
- Meeting with BC Parks Marine Wardens
- Invasive Species Webinars for training purposes, e.g. ISCBC webinars, Aquatic Invasives webinars
- QGIS training course
- CSISS Invasive Species Identification Workshops in Salmon Arm, Revelstoke, Sicamous and Golden
- Best Management Practices presentation to Revelstoke BC Wildfire Crew
- Invasive Species Council of BC affiliate meetings
- Boater Outreach training with ISCBC Job Creation Partnership Program
- Shuswap Trails Working Group meetings
- Regional Invasive Species Organizations field tour and annual meeting in Fraser Valley
- Staff briefings on invasive mussels for Shuswap area marinas
- Meetings with Okanagan College Program Coordinators
- Techniques for Recording and Reporting Invasive Plants Course
- Edible invasive workshop
- Kootenay Conservation Program Fall Gathering
- International Columbia River Transboundary Conference
- CSISS Annual General Meeting with guest speakers
- Columbia Mountains Institute Research Forum
- International Conference on Aquatic Invasive Species
- Canadian Weed Science Conference

Appendix E: CSISS Invasive Mussel Sampling Locations 2019

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

Waterbody rank	Waterbody name	Location	Plankton samples	Substrate samplers
Critical	Shuswap Lake	Canoe Beach	4	Local substrates
Critical	Shuswap Lake	Canoe Wharf	1	Local substrates
Critical	Shuswap Lake	Anglemont Marina	9	Sampler
Critical	Shuswap Lake	Captian's Village	5	Sampler
Critical	Shuswap Lake	Cottonwood RV	4	Sampler
Critical	Shuswap Lake	Little River Boat World	8	Sampler
Critical	Shuswap Lake	Sorrento Public Wharf	1	Local substrates
Critical	Shuswap Lake	Blind Bay	9	Sampler
Critical	Shuswap Lake	Old Town Bay	9	Sampler
Critical	Shuswap Lake	Sandy Point	4	Boat access
Critical	Shuswap Lake	Salmon Arm Wharf	2	Local substrates
Critical	Shuswap Lake	Cinnemousun Narrows	8	Boat access
Critical	Shuswap Lake	Seymour Arm	1	Local substrates
Critical	Lake Revelstoke	Martha Creek	6	Sampler
Critical	Lake Revelstoke	Downie RV	6	Sampler
Critical	Lake Revelstoke	Mica Creek	6	Local substrates
High	Mara Lake	Sicamous Narrows	9	Local substrates
High	Mara Lake	Swansea Point	6	Local substrates
High	Mara Lake	Waterway Houseboats	0	Sampler
High	White Lake	White Lake Provincial Park	5	Local substrates
High	White Lake	Sunny Shores Resort	5	Sampler
High	Gardom Lake	Gardom Community Park	5	Local substrates
High	Upper Arrow Lake	Shelter Bay	5	Sampler
High	Trout Lake	Denver Street Launch	5	Sampler
High	Columbia River	Wetland Adventures Dock	3	Local substrates
High	Columbia River	Nicholson Bridge	3	Local substrates
High	Columbia River	Golden Airport	3	Local substrates
High	Kinbasket Reservoir	Bush Harbour	4	Sampler
High	Kinbasket Reservoir	Kinbasket Resort	3	Local substrates
High	Little Shuswap Lake	Village of Chase	0	Sampler
Medium	Adams Lake	Indian Point Resort	0	Sampler