

British Columbia Salmon Restoration and Innovation Fund Annual Results Summary (2019-20)



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COLUMBIA

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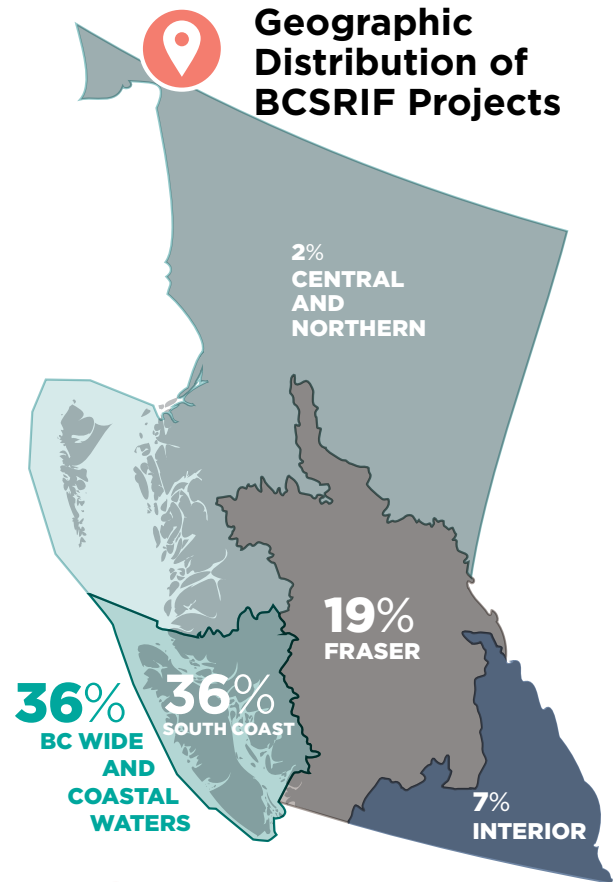
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Program Summary

The [British Columbia Salmon Restoration and Innovation Fund](#) (BCSRIF) was initiated in 2019. In the first year of the program, 42 projects were approved. To supplement internal analysis of early project results and outcomes, BCSRIF conducted a voluntary recipient survey that focused on preliminary ecological and socio-economic project outcomes. Significant on-the-ground results were reported by recipients that received early funding; of the 42 projects approved in the inaugural year of the program, 20 were already beginning to show tangible results by spring 2020, and were in a position to report on how their projects have benefitted BC's fish and seafood sector and contributed to the sustainability of BC fish stocks, including wild Pacific salmon. Additional data on the remaining projects approved in 2019 will be made available in the subsequent edition of this report.



Total Fish Habitat Restored

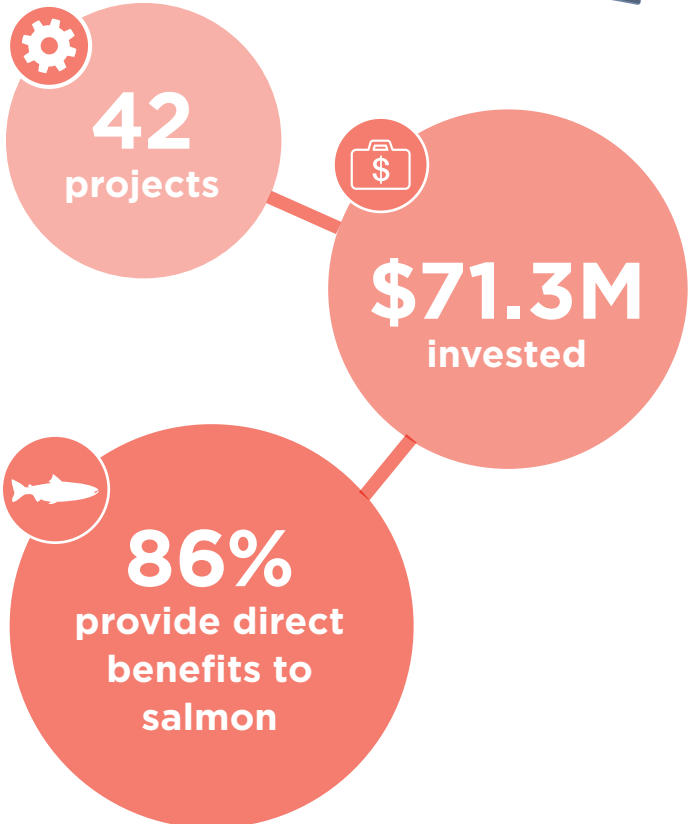
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Over **955,000** square meters of fish habitat restored in Year 1.



Engagement

Since fall 2019, BCSRIF has held more than **144 meetings** with Indigenous organizations and stakeholders.



1 Report Purpose

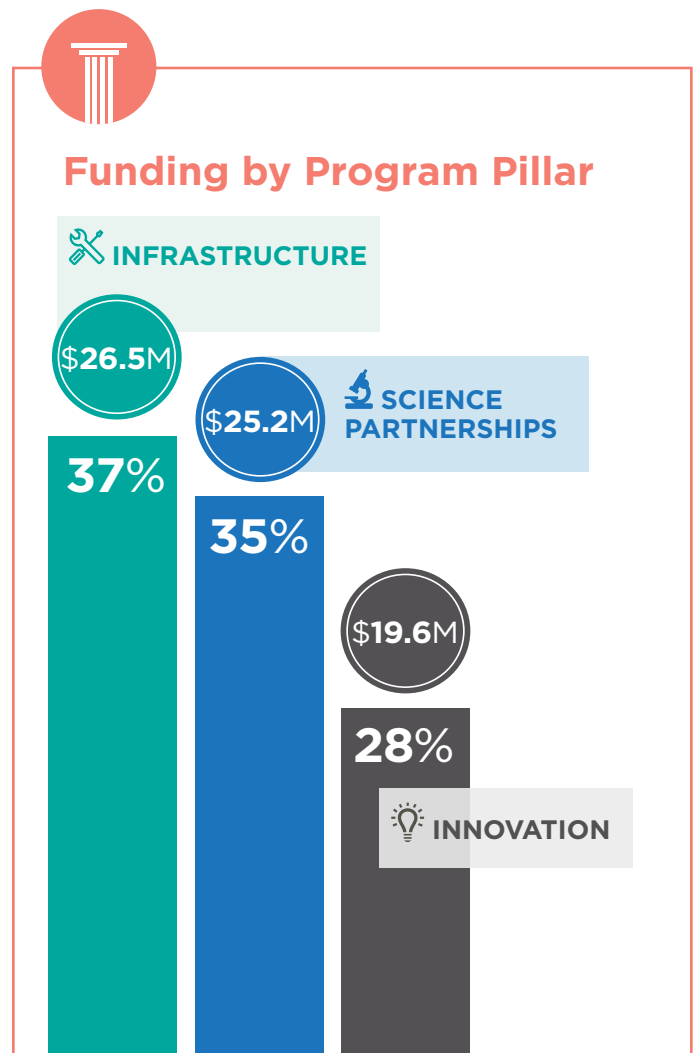
The “British Columbia Salmon Restoration and Innovation Fund: Annual Results Summary (2019–20)”, provides an overview of the British Columbia Salmon Restoration and Innovation Fund (BCSRIF) contribution program, and its performance in meeting its objectives toward sustainability of fisheries and BC’s fish and seafood sector.

This report highlights key project achievements and outcomes after the first fiscal year of the program, from April 1, 2019 to March 31, 2020. It provides early results on how BCSRIF projects are benefiting BC’s fish and seafood sector and contributing to the sustainability of BC fish stocks, including wild Pacific salmon (i.e. socio-economic and ecological outcomes). Cumulative program results will be reported annually.

These results are primarily compiled from recipient responses to a voluntary survey undertaken after the first fiscal year of program funding (2019–20), which was conducted to assess key project achievements, outcomes and metrics, as well as internal analysis undertaken by BCSRIF. Survey responses served to supplement financial and progress-based reports that recipients are required to submit under the terms of their Contribution Agreements, in order to provide a more holistic understanding of the program’s overall progress and results. The survey garnered information on project scope and scale of benefits, as well as metrics related to economic and environmental performance. Recipients were also requested to provide short narratives about key project achievements products, outcomes and benefits.

In the first year of the program, 42 projects were approved. Recipients that were able to commence project activities during the first year of the program were able to provide reporting on early outcomes from their projects in spring 2020. Of the 42 recipients, twenty were in a position to

report preliminary results on how their project are providing benefits to BC’s fish and seafood sector and contributing to the sustainability of BC fish stocks, including wild Pacific salmon. While the remaining projects had limited results to report by spring 2020, these additional outcomes will be provided in next year’s Annual Summary report.



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Introduction

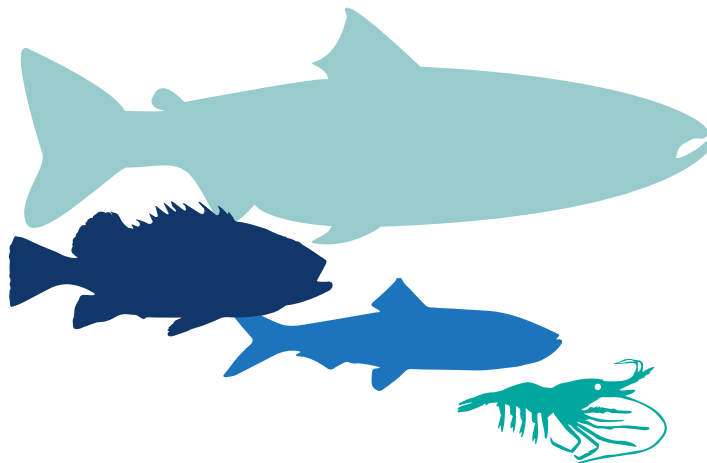
Healthy wild fish stocks and a thriving fishing sector are integral to the economic prosperity and social well-being of BC's coastal communities. Wild salmon are culturally important for many First Nations in BC, and are a vital part of the province's recreational, sport and commercial fishing industries.

BCSRIF was officially launched on March 15, 2019 and represents a joint federal/provincial investment of up to \$142.85 million over five years, until March 2024. BCSRIF provides opportunities for commercial and recreational fishers, non-governmental organizations and Indigenous communities to participate in activities that will enhance the sustainability of BC's fish and seafood sector by improving the resiliency of Pacific salmon and other wild fish stocks and supporting the modernization and improved sustainability of regional fisheries. Over the life of the program, funding is intended to result in large-scale, long-lasting, and far-reaching outcomes that will help ensure that the fish and seafood sector in BC is positioned for long-term success under rapidly evolving environmental and economic conditions. Further information on the program is provided in [Appendix 1](#).



About BCSRIF

BCSRIF supports protection and restoration activities for priority wild fish stocks, including salmon. BCSRIF also supports projects that will ensure the fish and seafood sector in BC is positioned for long-term environmental and economic sustainability.



3

Program Funding Categories

Program Pillars

BCSRIF supports activities under the three investment categories, or program “pillars” of Innovation, Infrastructure and Science Partnerships.



BCSRIF supports **innovation** in the research and development of new products, methodologies or activities to advance Canada’s fish and seafood sector markets as well as in the creation of partnerships and networks that support the protection and restoration of wild fish stocks.



Investments in **infrastructure** encourage capital investments in new products, technologies and processes that improve the effectiveness, quality and sustainability of the fish and seafood sector or support the advancement of sustainable fishing practices.



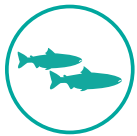
Investing in **science partnerships** supports scientific activities and research in the development of sustainable harvesting, processing and aquaculture technologies, research on the impacts of climate change and the resulting ecosystem shifts in fisheries, as well as other science activities that protect and restore priority wild fish stocks in BC, with a focus on wild Pacific salmon species.

Many of the projects selected for funding in 2019 align with more than one program pillar; 100% of the funded projects support innovation in some capacity, either as a direct linkage through, for example, the development of new technology, or more indirectly through the use of novel or innovative process or collaborations to engage partners in the pursuit of common objectives. Examples of projects funded under each program pillar can be found in [Appendix 2](#).

Program Priorities (2019)

In addition to basic criteria outlined in the program's terms and conditions, BC and DFO identified joint priority investment areas to provide scope to the application process.

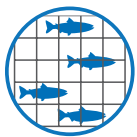
These priorities were informed by engagement with Indigenous organizations, regional stakeholders, government experts (e.g. fisheries managers), academia, and experience in delivering other funding programs of similar scope. Program-specific priorities are reflective of broader provincial and federal areas of interest, including mandate commitments and significant policy initiatives. Under the three broad themes of Aquaculture, Habitat & Healthy Salmon, and Fisheries & Seafood Innovation, the 2019 priorities established for were:



Restoration, protection and maintenance of healthy and diverse salmon populations;



Improved performance and sustainability of commercial and recreational fisheries, and seafood processing sector; and,



Improved sustainability of the aquaculture industry to ensure the protection and conservation of marine ecosystems and wild fish populations.

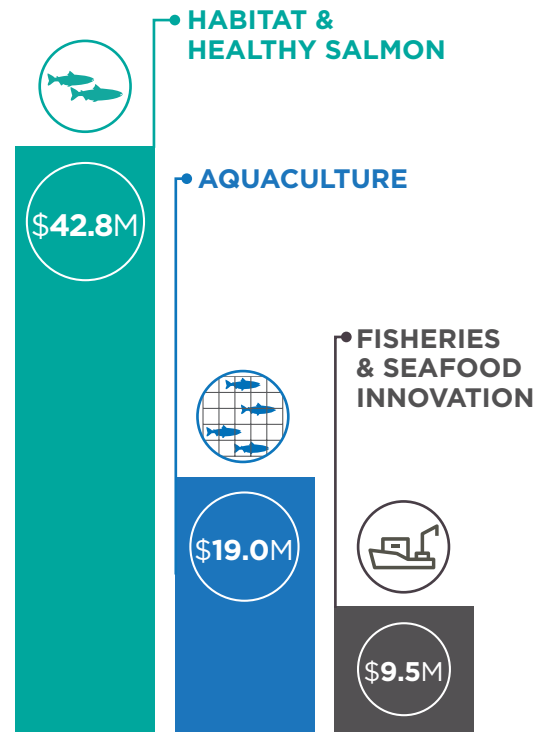
Examples of projects that support these priorities can be found in [Appendix 3](#).

In addition, projects were considered for their alignment with the Province of BC's 2019-20 strategic priorities:

- Protecting critical salmonid habitats from loss or degradation and investing in the restoration of critical habitats that have been lost or degraded;
- Maintenance of healthy and diverse salmon populations, with focus on existing community-based hatcheries and community education; and,
- Supporting the implementation of the recommendations that were provided by First Nations governments, industry and the Province around aquaculture in the Broughton Archipelago.



Funding by Priority



4 2019 in Review

In 2019, BCSRF completed one call for applications (Round 1), and 192 Expressions of Interest (EOIs) for program funding were submitted from March 15 to April 15, 2019, requesting more than \$327M. As a result of the process, 42 projects were approved for funding in three batches, resulting in a total investment of \$71.3M over the five years of the program.

Table of Approved Projects

	Project Proponent	Project Title	Allocation
Projects approved in summer 2019			
1	Canadian Groundfish Research and Conservation Society	Electronic application for enhanced selective fishing and bycatch avoidance	\$ 600,000
2	University of Victoria, School of Environmental Studies	Enhancing rockfish recovery through citizen science, outreach & field experiments	\$ 758,780
3	BC Centre for Aquatic Health Sciences	Build wet lab to investigate wild/farmed interaction & stock restoration	\$ 3,550,000
4	British Columbia Conservation Foundation (BCCF)	Innovative habitat restoration demonstration	\$ 4,980,780
5	National Indigenous Fisheries Institute	National Indigenous Fisheries Institute: engagement	\$ 355,095
6	Scw'exmx (Nicola) Tribal Association	Rehabilitation of critical infrastructure to improve survival of Thompson steelhead & chinook	\$ 1,314,027
7	The Nature Trust of BC	Enhancing estuary resiliency: An innovative approach to sustaining fish and fish habitat in a changing climate	\$ 8,552,415
8	UBC (Department of Forest and Conservation Sciences)	Enhancing sustainability of capture & release marine recreational Pacific salmon fisheries using new tools/technology	\$ 1,938,002
9	Secwepemcul'ecw Restoration and Stewardship Society	Elephant Hill fire riparian restoration project	\$ 2,629,833
10	Baker Creek Enhancement Society with Nazko First Nations	Plateau Fire Recovery - Riparian plant collection and planting for restoration of chinook and coho salmon habitat in the Nazko area	\$ 750,000
11	Pacific Climate Impacts Consortium (University of Victoria)	Place-based risk of climate change to sustainability of BC wild and hatchery-origin salmon	\$ 1,025,000
12	Namgis First Nation	Broughton wild salmon restoration project	\$ 4,220,529
13	Namgis First Nation	Independent BC First Nations' Genomic Lab for BC (Phase 1)	\$ 50,560
14	Namgis First Nation	Implementation of the Broughton First Nations Indigenous Monitoring and Inspection Plan	\$ 7,349,000
15	Comox Valley Project Watershed Society	Field application and testing of tools for identifying, mapping and quantifying important forage fish populations and their habitats to support enhanced conservation of chinook salmon in coastal BC	\$ 321,779
16	Makeway Charitable Society (formerly Tides Canada Foundation)	Resilient Waters: Phase 1	\$ 598,755
17	Cowichan Valley Regional District	Cowichan River salmon restoration program - sustainable water supply - Engineering	\$ 4,075,912

□ Batch 1 □ Batch 2 □ Batch 3

	Project Proponent	Project Title	Allocation
18	Pacific Salmon Foundation	Science-based review of hatchery results in the Pacific Region	\$ 1,083,498
19	Canadian Wildlife Federation	BC Fish passage restoration initiative	\$ 3,999,721
20	British Columbia Cattlemen's Association	Promotion of habitat restoration and stewardship on agricultural lands in the BC Interior	\$ 550,000
21	North Pacific Anadromous Fish Commission	International Pan-Pacific Salmon Expedition (2021)	\$ 3,022,000
22	Sport Fishing Institute of BC	BC Fishing App	\$ 910,500
23	Sport Fishing Institute of BC	Vision 2021	\$ 700,879
Projects approved in winter 2019			
24	Peninsula Streams Society	Millstream fishway project	\$ 300,000
25	Pacific Salmon Foundation	Winter salmon survey in the Gulf of Alaska	\$ 650,000
26	Squamish River Watershed Society	Elaho River chinook salmon restoration project	\$ 522,486
27	Gitanyow Huwlip Society; Gitanyow Fisheries Authority	Kitwanga River sockeye salmon recovery plan implementation	\$ 867,020
Projects approved in spring 2020			
28	University of British Columbia	Optimizing recirculating aquaculture systems for sustainable salmon production	\$ 1,829,490
29	University of British Columbia	Drivers of inter-annual variability in zooplankton feeding in the Strait of Georgia: A combined model-observation approach	\$ 165,000
30	Pacific Prawn Fishermen's Association	Improving sustainability of British Columbia's commercial spot prawn (<i>Pandalus platyceros</i>) fishery and prawn stocks	\$ 117,996
31	Juan de Fuca Salmon Restoration Society	Creation of salmon conservation facility	\$ 920,000
32	Seymour Salmonid Society	Seymour Watershed Restoration Project	\$ 618,844
33	Spruce City Wildlife Association	Upper Fraser chinook strategic enhancement project	\$ 240,362
34	Adams Lake Indian Band (ALIB)	Upper Adams Salmon Restoration Program	\$ 2,521,181
35	Osoyoos Indian Band	Inkaneep Creek Restoration	\$ 360,283
36	Namgis First Nation	Phase 2: Independent First Nations' Genomic Lab for BC	\$ 1,977,828
37	Pacific Salmon Foundation	Percy Walkus Hatchery upgrade	\$ 336,895
38	Pacific Salmon Foundation	Determination of bottlenecks limiting wild and enhanced juvenile salmon and steelhead production in BC using PIT tags and spatially comprehensive arrays	\$ 4,619,877
39	Pacific Salmon Foundation	Empowering Indigenous community fisheries with deep learning - computer vision for adaptive management of terminal salmon fisheries	\$ 410,300
40	Lower Fraser Fisheries Alliance	Chilliwack Coho PIT tag escapement project	\$ 679,690
41	Nuu-chah-nulth Tribal Council	Partnership for a novel framework for assessing and managing Pacific Herring fisheries on the West Coast of Vancouver Island	\$ 390,500
42	Skeena Fisheries Commission	Bear River Autonomous Salmon Enumeration	\$ 402,439
			Total \$ 71,267,226

Batch 1 Batch 2 Batch 3

Additional information on these projects, including project descriptions, can be found on the [BCSRIF website](#).

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Measuring Success

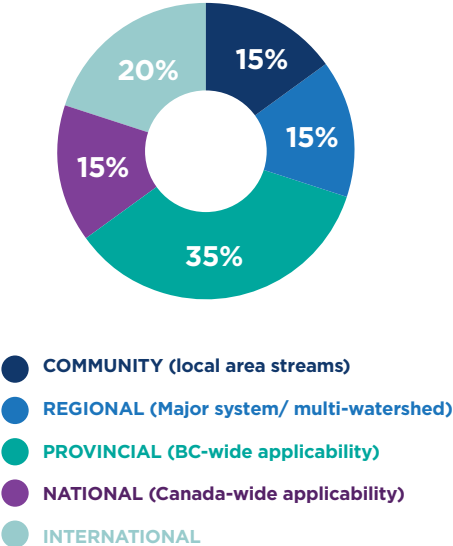
The extent to which projects generate tangible benefits to the fish and seafood sector can, in part, be measured by several key performance indicators. The following sections provide a “snapshot” of BCSRIF’s program performance to date, based on responses to the 2019 BCSRIF Annual Results Survey, and on observations through project monitoring by DFO. As previously noted, 20 of 42 project recipients provided survey responses to inform project performance-related data. These metrics are compiled to highlight the program’s successes related to: economic and socio-economic factors, the level of engagement and collaboration, and ecological outcomes. [Appendix 5](#) highlights examples of other outcomes and benefits that BCSRIF projects are providing for BC’s fish stocks, and those who participate in the fisheries and seafood sector.

The generation of potential practical benefits across sectors is an important objective of BCSRIF. The scope and scale of project influence is an indicator of the program’s broad support toward improved productivity and sustainability of regional fisheries, increased knowledge shared amongst national and international researchers, and the substantive efforts being made to restore fish stocks and habitat. Many BCSRIF funded projects have far-reaching influence; 70% of responding recipients report having a scale of project influence at the provincial, national or international levels.



55%
of survey respondents are making advancements in Information Technology.

Scale of project influence



5.1 Measuring Success: Engagement

Engagement with Indigenous organizations and stakeholders on funding priorities and distribution of funding are important during program development and for providing transparency or process for Grants & Contributions (G&C) programs like BCSRIF. Broad engagement provides a variety of eligible applicants with information related to funding opportunities as well as advice in generating high quality applications.

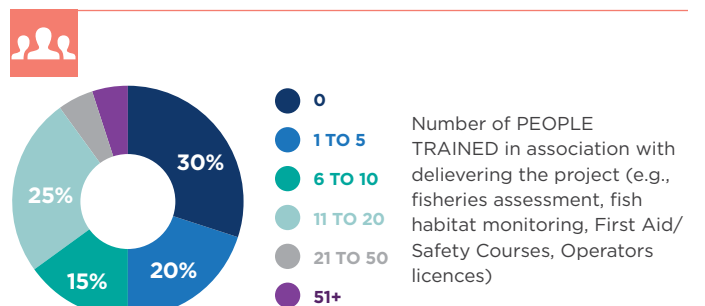
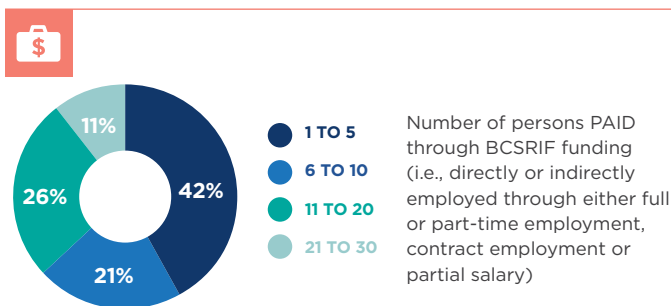
Early discussions were held with internal and external stakeholders to garner feedback on BCSRIF’s program development and its priorities. Throughout the first year of program implementation, BCSRIF continued engaging with Indigenous organizations, industry associations, academia, ENGOs, and stewardship groups regarding potential projects, and to review decisions on previous applications, to support resubmission of projects under a refined scope. These discussions also provided a valuable forum for BCSRIF representatives to seek feedback on early program progress, and to explore Indigenous and stakeholder interests to inform future investments and direction of the Fund. Since fall 2019, the BCSRIF team has held more than 144 meetings with Indigenous organizations and stakeholders to provide information and advice, and to discuss proposed projects.

Since that time, significant additional engagement has been undertaken by BCSRIF to support proponent applications under the 2020 funding intake; these results will be reported in the annual report for the second year of the program.

5.2 Measuring Success: Economic Outcomes

Success indicators regarding BCSRIF’s economic outcomes are measured by the number of people directly employed through BCSRIF funding, and the number of people engaged in training opportunities by BCSRIF-funded projects. An understanding of the number of people paid directly through BCSRIF funds provides a measure of the program’s generated employment opportunities. Indirect employment opportunities were not assessed, but would be realized by many employment sectors, for example, materials and equipment manufacturers. Training opportunities also represent a significant contribution to the economy; combining the benefits of education with attaining employable skills is an investment in human capital that can add to future labour-markets. This can be particularly important to Indigenous communities and people living in BC’s rural areas where resource-related employment, particularly in the fisheries sector, requires specific training; for example, fish habitat restoration and stock assessment work.

In fiscal year 2019-20, surveyed BCSRIF recipients report having directly employed up to 240 persons for 20 projects. Recipients also reported that training and skills development was a strong component in over 50% of the projects being undertaken. As a cumulative total, respondents report that up to 250 people have received some level of training related to the projects either in specific fisheries related areas such as fisheries assessment, fish habitat restoration and or monitoring, or in other associated areas such as first aid or other operational licensing. At the end of year one, six BCSRIF projects reported having delivered training to large numbers of individuals, with project personnel developing skills in riparian (i.e. streamside) planting, fish enumeration, water quality monitoring, aquaculture, and hatchery operations.

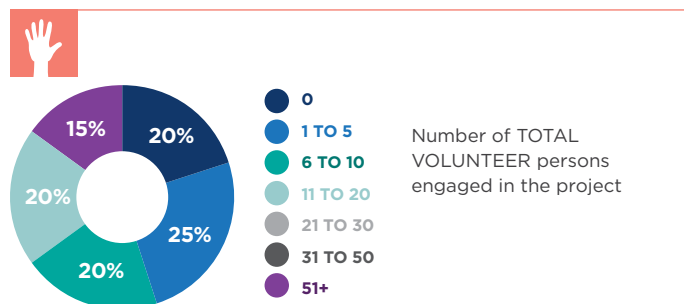
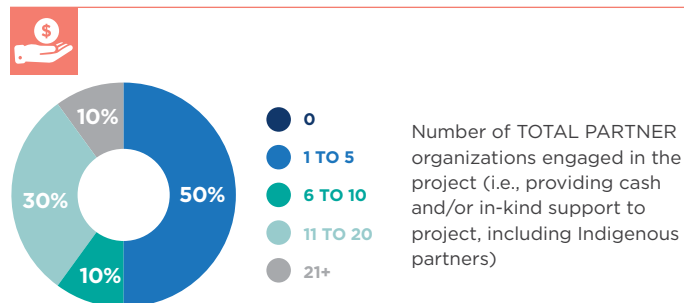


5.3 Measuring Success: Partnerships and Public Participation

Collectively, three metrics were assessed as success indicators regarding the level of collaboration and engagement stemming from funded projects: the total number of partner organizations, the total number of Indigenous partner organizations and the total number of volunteers involved in projects. These indicators provide a measurable outcome that shows BCSRIF projects have a high level of partnerships and volunteer participation, highlighting the far-reaching influence that BCSRIF funding has in providing benefits to multiple communities and stakeholders.

All BCSRIF projects reported partnerships between organizations, either at a financial level or as in-kind support; most projects are also supported by significant community volunteerism. Partnerships are critical – they aid in the pooling and sharing of resources, increase shared knowledge, provide opportunity for education and development of expertise, and promote communications and awareness of the challenges within the fish and seafood sector, fish and fish habitat, and sciences related to fisheries that BCSRIF aims to address. Having strong partnership support helps minimize the risk of project failure. In the first fiscal year, surveyed recipients reported having established (up to) 230 partnerships with other organizations.

Community volunteers are also providing significant support to BSRIF projects. Cumulatively, the surveyed recipients report that over 300 community volunteers have contributed to the success of BCSRIF projects over the first year of the program. Three project recipients – Comox Valley Project Watershed Society, Makeway Canada (formerly Tides Canada), and the BC Cattlemen’s Association – reported that over 50 people had volunteered on their projects, respectively, with additional support anticipated in future years. Furthermore, over 90% of survey respondents reported that public and stakeholder engagement, outreach and education are core components of their project.



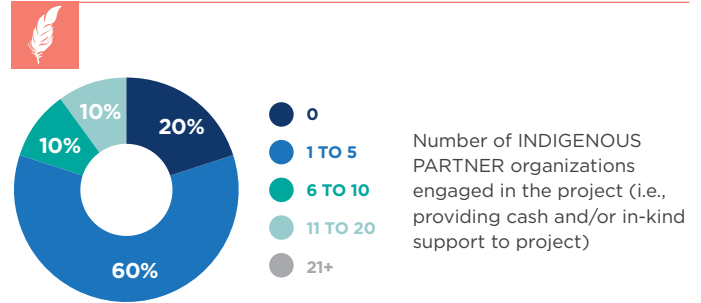
40%
of survey respondents will communicate project results through public media (i.e., journal article, video or web-based publication).

5.4 Measuring Success: Indigenous Participation

Indigenous involvement in the BCSRIF program is strong. Of the 42 funded projects, 13 (31%) are being led by Indigenous organizations. In addition, 14 (33%) recipients identified they had leveraged direct support from Indigenous partners in delivering their projects.

Surveyed recipients also reported the participation of (up to) 120 Indigenous organizations in aspects of their project undertakings to support its outcomes. Over 50% of the recipients also reported having high levels of collaboration with Indigenous organizations and highlighted improved project outcomes resulting from the incorporation of Indigenous Knowledge (IK) in the planning and implementation of their projects.

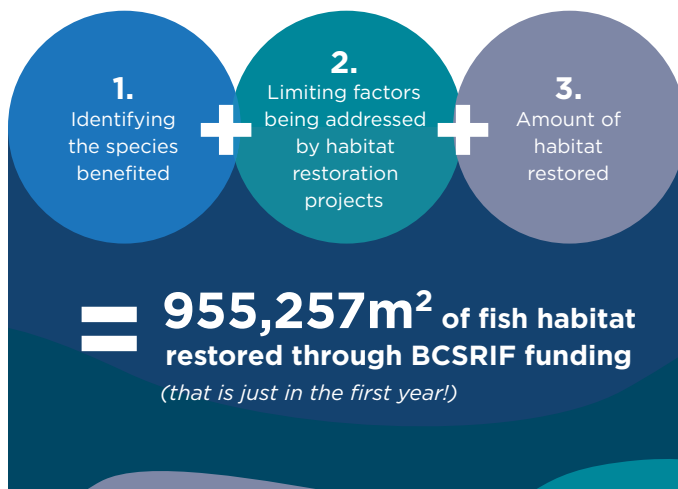
Indigenous participation continues to be a key area of focus for the program. Building on early lessons learned, BCSRIF will ensure that program policies and processes are designed to be inclusive, and enable opportunities to increase cooperation towards reaching shared goals related to protecting and restoring wild Pacific salmon, and improving the sustainability of the fishing sector.



5.5 Measuring Success: Ecological Outcomes

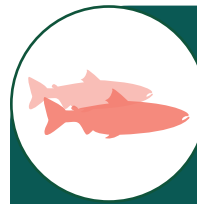
A critical piece when measuring BCSRIF project/program performance is the consideration of benefits to aquatic species, and more specifically, on their efforts to restore BC's wild salmon stocks. Metrics used to assess BCSRIF's ecological outcomes included the identification of direct benefits provided to targeted species at risk, and the identification of outcomes supporting fish and fish habitat.

METRICS USED TO ASSESS BCSRIF'S ECOLOGICAL OUTCOMES



60% of survey respondents reported their project would provide direct benefits to a targeted COSEWIC-assessed Species at Risk (SAR) population.

Of those projects, 11 provide targeted benefits to Southern BC Chinook; 8 to Interior-Fraser Coho; 7 to Fraser Sockeye, and 5 to Thompson-Chilcotin Steelhead. Benefits to these species are mainly being provided through fish habitat rehabilitation and restoration efforts.



50% of habitat restoration projects supported by BCSRIF identify the dominant limiting factors being addressed as relating primarily to fish passage and anthropogenic (human-caused) fish habitat effects (i.e. loss of fish habitat due to urban, transportation or industry-related impacts), and secondarily, to fish-harvest caused effects (46%).

Other high-ranking limiting factors being addressed by fish habitat restoration projects include: stream flow concerns (39%), floodplain disconnection (31%), riparian loss (31%), and water quality issues (31%).

Understanding what types of restoration activities are being undertaken to address the limiting factors for fish and improve fish habitat productivity for priority BC wild fish stocks is important. There are many components and stages of work that contribute to fish habitat restoration. Habitat restoration activities undertaken during fiscal year, 2019–20, were predominantly related to planning, assessment and design work in support of physical fish habitat restoration projects that will be implemented in future years. In fiscal year 2019–2020, BCSRIF approved 17 projects in support the priority of the restoration, protection and maintenance and healthy and diverse salmon populations and their habitats. In the first year of the program, five recipients completed elements of their projects that will significantly contribute to BCSRIF's outcomes related to habitat restoration. A description of these achievements are provided in [Appendix 4](#).



25%
of survey respondents reported that their project will result in peer-reviewed academic research papers.

6

Impacts from COVID-19

As expected, the rise of COVID-19 in 2020 has impacted BCSRIF-funded projects. Although disruptive, many recipients have developed innovative strategies to mitigate COVID-19 challenges and project delays. For example, planned in-person meetings and workshops have been held virtually, local staff have been hired to conduct activities where access to some BC communities has been restricted (e.g. many First Nation communities) and seasonal field activities have been reduced or rescheduled. In addition, some recipients have incurred additional expenses due to COVID-19, and/or were unable to complete scheduled activities as outlined in their Contribution Agreement. BCSRIF has worked with project proponents to consider potential measures, including re-allocation of project resources and extensions to timelines, in order to minimize impacts and ensure continued project success.

BCSRIF will continue to work with clients to find new and innovative ways to adapt to emerging challenges facing the sector, including impacts to projects as a result of COVID-19. Despite the limitations posed by public health restrictions, many recipients were able to implement mitigation strategies to overcome these challenges, which in some cases, resulted in unanticipated positive benefits. For example, restrictions on entering certain communities to conduct project-related activities resulted in local community-members being provided with the tools and training to undertake the activities directly, providing a valuable source of employment during the COVID health crisis.

7 Looking forward

In fiscal year 2020–21, BCSRIF will continue to implement key program activities, including the consideration of funding for additional projects. Projects that were approved in early 2020 are beginning to implement work plans and report on results. A second opportunity to apply for funding was provided in summer 2020; details will be provided once new projects are approved.

New funding priorities were developed to guide the 2020 round of application intake, based on analysis of BCSRIF investments in 2019, emerging sectoral needs, programming gaps, and to address current federal and provincial areas of interest. Under the broad themes of Aquaculture, Habitat & Healthy Salmon, and Fisheries & Seafood Innovation established in 2019, the 2020 intake targeted projects related to:

- New aquaculture technologies and processes to improve environmental performance and increase supply chain transparency.
- Research to refine the scientific understanding of Fraser steelhead, Chinook and coho through science collaborations and the incorporation of Indigenous Knowledge.

- Projects to advance selective fishing practices aimed at minimizing bycatch of species of concern.
- Habitat restoration projects that target red status Conservation Units or COSEWIC-listed populations.
- Infrastructure upgrades or improvements to existing hatcheries.
- Innovative processes and technologies to increase the quality and value of BC fish and seafood products and optimize fishing operations.

Updates on the status of the program, including details of additional projects selected for funding, will be provided on the [BCSRIF website](#).

Future reports on program results will be further informed by ongoing project monitoring and evaluation activities, as well as additional year-end results reports submitted by recipients and the findings of in-field assessments. In the future, BCSRIF will report on the final results of individual projects, as well as providing summary information on the cumulative outcomes and impacts of program investments to wild stocks, and the regional fish and seafood sector.

Appendix 1: Program Overview

As part of the provincial and federal government effort to support BC's fish and seafood sector, projects funded under BCSRIF aim to address recent declines in salmon and other wild fish stocks and support the sustainability of Canada's marine resources for future generations through habitat restoration, research and science activities, improvements to community hatcheries, and innovation in the aquaculture and fishing sectors.




These investments support a response to advice and recommendations made by the [Minister of Agriculture's Advisory Council on Finfish Aquaculture](#) (MAACFA) and [Wild Salmon Advisory Council](#) (WSAC). They also complement DFO's commitment under [Canada's Policy for Conservation of Wild Pacific Salmon](#) (WSP) and address recommendations made by the Standing Committee on Fisheries and Oceans, as well as federal and provincial mandate commitments.

BCSRIF is one of four transfer payment programs delivered through the [Fish and Seafood Sector Program](#), which was established to advance a national approach for improved market access and branding, opportunities to maximize the value of Canada's fish and seafood sector and, in BC, to help to rebuild salmon stocks.




The BC Salmon Restoration and Innovation Fund is administered under a bi-lateral Framework Agreement that outlines the responsibilities of federal and provincial partners in delivering the program.

BCSRIF funding is open to BC-based applicants that are active in or support BC's fish and seafood sector. BCSRIF funding is awarded through a competitive application process. Additional information on the program and opportunities to apply for funding is available available on the [BCSRIF website](#).

Appendix 2: Examples of Projects Funded Under Each Program Pillar

 INNOVATION	 INFRASTRUCTURE	 SCIENCE PARTNERSHIPS
<p>The Vision 2021 project is led by the Sports Fishing Institute of BC (SFI). Its goal is to modernize the Sport Fish Advisory Board’s operational and financial processes to improve the Board’s ability to assist Canada’s decision-making regarding the public recreational fishery. In 2019, SFI commenced work toward an economic development model and data warehouse for storing socio-economic data for use in fisheries management decisions and actions. The improved access to reliable economic data will better inform management decisions and lead to enhanced capabilities to maximize potential economic rent and social benefits through improved decision making.</p>	<p>Efforts to improve flood control infrastructure and restore estuarine habitats on tributaries of the Fraser River is being undertaken by Makeway Charitable Society (formerly Tides Canada Initiatives). In 2019-20, MakeWay held advisory workshops to inform the development of a prioritization framework for remediation projects, and with international experts, pursued innovative solutions to fish passage through fish-friendly infrastructure flood control designs. This year, 25 projects will be further considered under the lens of balancing ecological and socio-economic benefits alongside engineering feasibility and willingness of partners; this will ultimately lead to a subset of fish habitat restoration projects through infrastructure remediation on the Fraser River, with the goal of improving estuarine habitats.</p>	<p>In 2019-20, the Pacific Salmon Foundation led a Winter Salmon Survey in the Gulf of Alaska as a collaborative study with international researchers from the United States and Russia. The expedition conducted surface and deep water trawl surveys to better understand variable, and recently very poor, Pacific salmon returns and the ecological effects of high surface temperatures and its linkage to salmon production. By monitoring and assessing ocean productivity and salmon distribution, scientists are hoping to improve our knowledge in order to address the impacts of climate change. Preliminary study results suggest that the abundance of Pacific salmon observed in our fisheries and communities is related to the productivity of the NE Pacific ocean ecosystem, which was the major hypotheses of the research.</p>

Appendix 3: Examples of Projects that Support BCSRIF Priorities

 HABITAT AND HEALTHY SALMON	 FISHERIES AND SEAFOOD INNOVATION	 AQUACULTURE
<p>Osoyoos Indian Band is undertaking the Inkaneep Creek Restoration project which aims to restore the creek's floodplain and remediate mudslide damages. The project is about reconnections; it will reconnect natural land-water nutrient cycling systems from lowlands to uplands and support vegetation regrowth and other natural ecosystem functions, to benefit both fish and wildlife. The project applies innovation in sustainable fisheries co-management by combining Indigenous knowledge and western science in habitat restoration and conservation. Initial outreach and preliminary monitoring and evaluation is underway.</p>	<p>An electronic application (App) to minimize finfish bycatch and improve selective harvesting practices is being built by the Canadian Groundfish Research and Conservation Society in partnership with Vericatch Solutions Inc. The App utilizes at-sea monitoring data to create heat maps showing where marine species of concern are being encountered. It is intended for use by fishing vessels for access to real-time at-sea monitoring data from all commercial groundfish vessels such that incidental bycatch of marine species of concern (e.g., Chinook salmon, Bocaccio Rockfish) can be minimized or avoided. Map work and report modules were commenced during the 2019-20 fiscal year.</p>	<p>The 'Namgis, Kwikwasut'inuxw Haxwa'mis, and Mamalilikulla First Nations, and Okanagan Nation Alliance, MOWI Canada West and Cermaq Canada, are partnering in the 'Implementation of the Broughton First Nations Indigenous monitoring and inspection plan' which is intended to build capacity in the monitoring and oversight of finfish farms in the Broughton Archipelago, as well as capacity to monitor wild salmon, other marine species, and their ecosystems. They also plan to undertake salmon restoration activities.</p>

Appendix 4: Examples of Projects Resulting in Ecological Benefits

- The Squamish River Watershed Society successfully removed an anthropogenic (i.e. human-created) barrier to fish passage on the Upper Elaho River by removing rock debris left over from logging road construction. The work involved blasting and removal of rock, specifically to benefit Chinook salmon as well as other salmonids. SRWS reports that the work is of significance to the Squamish First Nation, as the Nation historically set up summer fishing camps in the upper river. This project opened up **35,000** square meters of the upper Elaho River for fish.
- The BC Conservation Foundation in partnership with Secwepemc Fisheries Commission and Thompson River University, completed three innovative habitat demonstration projects within the Thompson River watershed aimed at improving watershed resilience to climate change and providing improved spawning and rearing habitat for at-risk populations of Thompson Chinook, Interior Coho, and Steelhead. Innovative design principles were used to increase the durability of the restored site under increasingly volatile stream conditions associated with climate change. Collectively, the three restoration sites provide improved habitat values over an area of **5,257** square meters. Building on the results of the 2019–20 work, additional restoration work will follow in fiscal year 2020–21.
- The Baker Creek Enhancement Society and Nazko First Nation have undertaken riparian habitat restoration to address the impacts of the Nazko Plateau Fire on Chinook and Coho salmon habitat in the interior region of BC. The objective of the work is to reduce the long-term impacts from wild fires, including erosion (sheeting off of fire debris, ash and duff) and subsequent watercourse sedimentation which impacts habitat quality, infills pool habitats, and reduces food availability. To date, BCES and Nazko First Nation crews have planted **84,000** square meters with native riparian cuttings and conifers.
- The BC Cattlemen’s Association (BCCA) completed three projects in fiscal year 2019–20 through the Farmland–Riparian Interface Stewardship Program. In 2019–20, BCCA collaborated with DFO, the Adams Lake Indian Band, Adams Lake Salmon Society, Pacific Salmon Foundation, Secwepemc Fisheries Commission and others, to undertake habitat restoration of a 5km length of fish habitat side-channel of the Adams River. BCCA also worked to restore fish passage on a ranch with a small tributary to the Lower Nicola River that had been blocked for 30 years. This project involved culvert removal and replacement with a bridge and rebuilding of the creek channel to address a 4m drop that impeded fish access. BCCA also worked with the Gitsan Tribal Council, the Province of BC, and a local rancher to restore fish passage to McCully Creek in the Kispiox watershed area on an alluvial fan that had been impacted by human activities. BCCA estimates a total of **30,000** square meters of fish habitat were restored during the 2019–20 fiscal year.
- The Canadian Wildlife Federation has initiated a collaborative process with First Nations, governments, and multiple stakeholders, to develop a framework to prioritize fish passage projects in BC. The framework is intended to be watershed-based, and consistent and defensible, such that it can be expanded to inform similar activities across the country. In 2019, a project was undertaken on Birk Creek, in the Thompson–Nicola region of BC, to replace a culvert with a clear-span structure and open up over **45,000** square meters of fish habitat.

Appendix 5: Other Benefits and Outcomes of BCSRIF Projects



SCIENTIFIC RESEARCH

- In 2019–20, the University of British Columbia’s Department of Forest and Conservation Sciences completed a pilot study to evaluate different catch and release techniques that aim to improve the survival of released fish – including endangered stocks – and demonstrate that non-retention fisheries can sustainably be undertaken with minimal impacts to fish in areas where fisheries might otherwise be closed. A range of fishing types, locations and treatments are being explored. Through state-of-the-art telemetry and new approaches in genetic studies to assess fish health and condition, the study is obtaining accurate post-release mortality estimates which can be immediately used by fisheries managers. In 2020–21 the study will continue with additional coastal locations, higher sample sizes and additional intel gained from engagement and outreach with anglers and fisheries managers. Project results are expected in 2023, and guidelines will be developed in 2024.
- The North Pacific Anadromous Fish Commission (NPAFC) project funding is being used to establish international science partnerships between government, academic, and NGO researchers from five Pacific rim countries, to improve the understanding of the impacts of climate change on mechanisms that determine the distribution and productivity of wild Pacific salmon stocks. In 2019–20, the British Columbia High Seas Research Committee (BC HRC) was formed as a subset of the IYS North Pacific Steering Committee (NPSC). Significant progress was made toward collaborative science partnerships, to facilitate exchanges of information and experiences, and to efficiently and effectively address knowledge gaps in our understanding of the impacts of rapidly changing climate/ocean processes to salmon. The group is working to support international efforts toward a common standard for sharing data across databases globally, including the data collected by the IYS high seas research expeditions in the North Pacific. The goal is to have data centrally accessible in an International Year of the Salmon Ocean Observation System, a node of the Global Ocean Observing System, created by the UN.

CITIZEN SCIENCE

- A citizen science forage fish monitoring network was established as part of the Comox Valley Project Watershed Society project. It involves coordinated surveying of a broad geographic area to take samples of forage fish beach spawning areas used by Pacific sand lance and surf smelt; species that Chinook salmon prey upon. In 2019–20, the study detected six new beach locations that support forage fish eggs. This work is supported by a large number of volunteers, as well as North Island College and the K’ómoks First Nation as project partners. Final project results are expected in March 2022.
- In 2019–20, UBC’s study on the sustainability of capture and release on marine recreational Pacific salmonid fisheries launched a citizen-science data collection platform off the Sports Fishing Institute’s fishing App. The added platform aims to gather information from anglers on aspects of fish capture and release in order to inform the project’s experimental design in improving catch and release approaches, which will lead to new best practices and operational guidance. Project results will be available in 2023, and best practices guidance for commercial and recreational fisheries will be completed by March 2024.
- The University of Victoria (UVIC), School of Environmental Studies, is working to enhance rockfish recovery through citizen science, outreach and field experiments. UVIC has expanded the free MyCatch App to include a new map overlay that highlights the Rockfish Conservation Areas (RCA) across the coast. This will enable anglers to quickly identify spatial boundaries for RCA’s and Marine Protected Area’s (MPA), improving compliance and conservation efforts. Monitoring programs have been developed to assess data on compliance rates and the effectiveness of return of rockfish using “descending devices”, which will provide information essential to producing accurate stock assessments to inform commercial and recreational fisheries. The new app has had excellent in-person response. The recipient reports that over 50% of saltwater anglers downloaded the app on the spot at the Victoria Boat Show in February 2020.

INDIGENOUS ENGAGEMENT & INDIGENOUS KNOWLEDGE (IK)

- To help address knowledge gaps on the status of forage fish in the northern Salish Sea, several First Nations are providing Indigenous Knowledge on the local area ecology and both historical and present forage fish habitat in support of the Comox Valley Project Watershed Society's project. The CSPWS has and is seeking future partnerships and collaboration with other First Nations. CSPWS, in partnership with the K'ómoks First Nation, and in collaboration with North Island College, other First Nations, and citizen science volunteers, has already discovered new forage fish spawning beaches on Vancouver Islands east coast. Final project results are expected in March 2022.
- During fiscal year 2019-20, BCSRIF provided support to the National Indigenous Fisheries Institute in partnership with the First Nations Fisheries Council to engage with other BC Indigenous organizations and identify large-scale, multi-nation initiatives for potential future funding by BCSRIF or other G&C programs. The initiative aimed to increase Indigenous involvement in science partnerships, innovation, and infrastructure investments that would lead to improved productivity, sustainability, and safety across the fisheries resource sector.
- The Secwepemcúl'ecw Restoration and Stewardship Society is addressing the impacts from the Elephant Hill fire through riparian restoration aimed at watershed recovery through the stabilization of eroding hillslopes. Collaboration across a wide range of project partners, including eight First Nations and private landowners is a strength of the project. This project is providing training and employment for several field crews (20 persons) and is expected to result in restored lands for First Nations traditional land uses. Final project results are expected in March 2024.
- Thirteen First Nations are partnering and collaborating with Nature Trust BC and the Hakai Institute in studying estuarine resiliency on BC's coast. The sharing of Indigenous Knowledge by First Nations is helping inform baseline research on climate change. This information will be strongly considered in the implementation of restoration projects that will be undertaken to restore core natural estuarine processes to ensure they remain resilient in the face of climate change. Several coastal First Nations are undertaking the installation and operation of critical technology and equipment being used in data collection. The project has already provided direct employment for over 20 First Nation persons and

is utilizing community owned First Nations businesses in the nearby communities to deliver core project activities. Final results will be realized in March 2024.



HATCHERY INFRASTRUCTURE AND OPERATIONS

- BCSRIF has provided support to the Juan de Fuca Salmon Restoration Society to upgrade the Sooke River Jack Brooks hatchery facility and interpretive center. The facility will be modernized to meet green building codes and will include effluent treatment, a chiller unit to support the recommended otolith marking for salmon management and restoration data, as well as hatchery aeration. The new infrastructure will optimize hatchery production by regulating the oxygen-nitrogen content in the water resulting in the production of a healthier fish stock and will also ensure the quality of water leaving the hatchery complies with the BC Ministry of Environment standards. Final results are expected in March 2021.
- The Pacific Salmon Foundation is undertaking a science-based review of hatchery results in the Pacific Region. The project is to evaluate the performance and effectiveness of current genetic and genomic tools to optimize salmon production in BC and assess the effectiveness of hatchery release strategies to maximize salmonid survival. Assessment of DFO-run and community-based hatchery operations will be complete in March 2021; peer-reviewed final results will be reported in March 2022.

TECHNOLOGICAL INNOVATION

- The Lower Fraser Fisheries Alliance was awarded funding to contribute to an improved understanding of stock status and trends through the development and demonstration of PIT tag mark-recapture techniques for hatchery Coho Salmon in the Chilliwack River using large PIT arrays to enumerate annual hatchery returning fish during spawning migration. The infrastructure developed for this project will be used to inform future work on stock level PIT tagging enumeration studies of Fraser salmon and forms part of the larger Lower Fraser Coho Escapement Assessment Program that produces annual estimates for resource management considerations. The program will be funded until March 2024.



CLIMATE CHANGE ADAPTATION

- Nature Trust British Columbia and their partners aim to enhance estuary resiliency through innovative approaches to sustain fish and fish habitat in a changing climate. To evaluate resiliency of 15 coastal estuaries, the project is using an innovative ranking tool developed by the US National Estuary Research Reserve and applying it in a Canadian context. The tool will help rank limiting factors that impact an estuary's ability to adapt to climate change; this information is being shared amongst international researchers. To date, updated habitat maps have been produced, baseline resilience metrics are being collected and work is underway to identify and prioritize coastal estuary restoration opportunities. The monitoring and assessment program will extend to March 2024.
- Pacific Climate Impacts Consortium (University of Victoria) is conducting research in collaboration with experts from the Pacific Biological Station to consider place-based risk of climate change to the sustainability of Pacific salmonids and their habitats. The project is aimed at improving knowledge and understanding of potential threats to Pacific salmonids posed by climate change, which will assist stakeholders with developing plans to reduce the risks associated with climate variability and change, and includes the development of tools to support adaptive management measures. The research will be complete by March 2024.

CANADIAN FISH AND SEAFOOD PRODUCTS/ MARKETS

- Nuu-chah-nulth Tribal Council and partners will build on DFO's 2018 Pacific Herring Integrated Fisheries Management Plan to undertake an evaluation of the impacts of predation to West Coast Vancouver Island Herring stock and develop a new framework considering spatial and in-season management options for associated food, social and ceremonial (FSC), and commercial Herring fisheries to ensure the sustainability of these fisheries on the West Coast of Vancouver Island. The project provides for shared ownership of the Herring Renewal science process with Nuu-chah-nulth Nations to ensure their unique cultural and scientific perspectives are formally included in the management of Herring fisheries on the West Coast of Vancouver Island. The project will be finalized in 2024.

- New management procedures developed by the Pacific Prawn Fishermen's Association and their partners will improve the sustainability of BC's Spot Prawn fishery, while ensuring that conservation objectives are being met. The group will assess biological reference points in consideration of how climate change may affect Spot Prawn stock productivity and potential future commercial catch and is aiming to achieve eco-certification for sustainable fisheries, which is important for access to Canadian and international seafood markets. Final project results are expected in March 2022.

RESTORING FISH ACCESS

- MakeWay Charitable Society (formerly Tides Canada) is progressing on implementation of their "Resilient Waters" project. The project aims to address fish habitat fragmentation from flood-control infrastructure in the Lower Fraser River Watershed to support the restoration of vital estuarine habitat for BC's wild salmon. Along with engagement with international experts, stakeholders and First Nations, early phases of assessment and prioritization of sites has been undertaken. Project results are expected in March 2022.
- A project on Millstream Creek is being undertaken by the Peninsula Streams Society and its partners to improve fish passage to upstream fish habitat by construction of a fishway. The project will provide resident trout and Coho salmon access to over 8 kilometers of fish habitat. The physical restoration works were planned for summer of 2020; final results are expected in March 2021.