



Fisheries and Oceans  
Canada

Pêches et Océans  
Canada

© His Majesty the King in Right of Canada, as represented by the  
Minister of the Department of Fisheries and Oceans, 2023.

Cat No. Fs141-6E-PDF

ISSN: 2816-8402

ISBN: 978-0-660-48147-0

# British Columbia Salmon Restoration and Innovation Fund: Annual Results Summary (2021-22) Year 3 Report



BRITISH  
COLUMBIA

COLOMBIE-  
BRITANNIQUE



Canada

# Table of Contents

<b>Executive Summary</b>	<b>1</b>
<b>Section 1: Report Purpose</b>	<b>3</b>
<b>Section 2: Linkages to DFO Mandate and Departmental Framework</b>	<b>4</b>
<b>Section 3: Program Operations at a Glance</b>	<b>6</b>
<b>Section 4: Engagement</b>	<b>7</b>
<b>Section 5: BCSRIF Program Pillars, Themes and Priorities</b>	
Program Pillars	8
Themes and Priorities	11
Full List of BCSRIF Projects	14
<b>Section 6: Measuring Success</b>	<b>15</b>
Measuring Success: Geographic Scope and Scale	15
Measuring Success: Employment, Training and Economic Outcomes	16
Measuring Success: Diversity and Inclusion through Gender-Based Analysis Plus (GBA+)	17
Measuring Success: Partnerships and Public Participation	18
Measuring Success: Ecological outcomes	19
Measuring Success: Scientific Research	20
Measuring Success: Indigenous Leadership and Involvement	21
Measuring Success: Recipient Public Outreach and Media Communications	22
<b>Section 7: Beyond Expectations</b>	<b>23</b>
<b>Section 8: Project Impacts &amp; Challenges</b>	<b>25</b>
<b>Section 9: Looking Forward (BCSRIF Year 4, 2022-23)</b>	<b>26</b>
Pacific Salmon Strategy Initiative (PSSI)	26
<b>Appendix 1: Projects funded in 2021-22 (Year 3)</b>	<b>27</b>
<b>Appendix 2: Program Overview</b>	<b>42</b>
Projects Approved in 2021-22	43
Ongoing Projects Approved in 2019-20 and 2020-21 (Batches 1-3)	45
Completed Projects	47
<b>Appendix 3: List of BCSRIF Funded Projects</b>	<b>43</b>

# Executive Summary

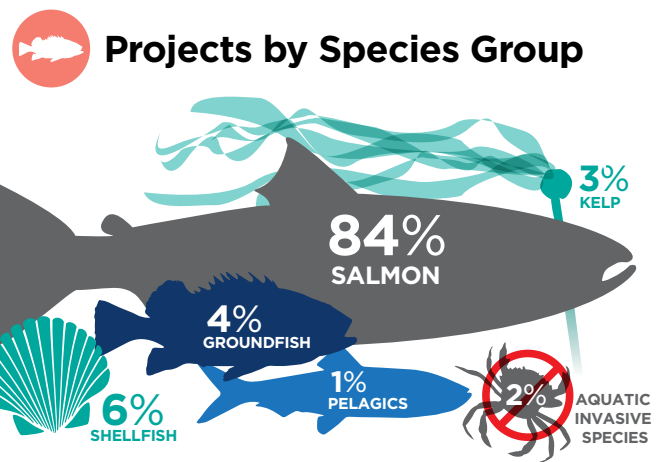
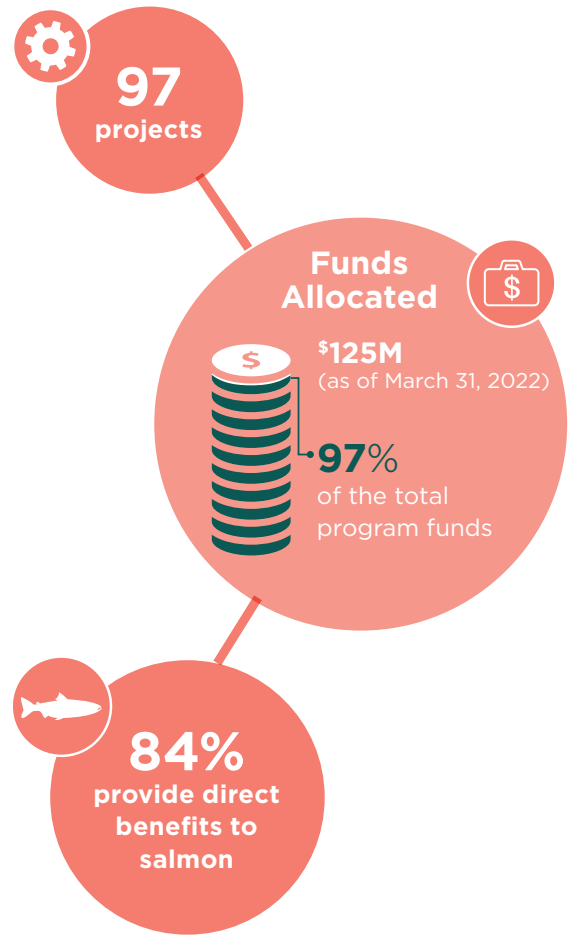
The [British Columbia Salmon Restoration and Innovation Fund](#) (BCSRIF) is a contribution program funded jointly by the federal and provincial governments, with 70% of the funding provided by the Government of Canada and 30% by the Province of British Columbia. At its outset, the program was funded through the Integrated Fish and Seafood Sector Contribution Management Framework (IFSSCMF) with an investment of up to \$142.85 million over 5 years, from 2019 to 2024. After two successful intakes, 97 projects were funded<sup>1</sup> expending 125M, or 97%, of the total program funding, providing opportunities for commercial and recreational fishers, non-governmental organizations and Indigenous communities to undertake projects aimed to enhance the sustainability of BC's fish and seafood sector by improving the resiliency of Pacific salmon and other wild fish stocks and support the modernization and improved sustainability of regional fisheries.

Announcement of the \$647 million Pacific Salmon Strategy Initiative (PSSI) by the Minister of Fisheries, Oceans and the Canadian Coast Guard on June 8, 2021 resulted in a doubling of funding contributions for BCSRIF and extension of the funding to 2026, bringing Canada's total contribution to \$200 million over seven years. The Province of BC continued this collaborative partnership by doubling their funding contribution to a total of \$85.7 million throughout the program. Approval of investments under this initiative is expected in the spring of 2023.

BCSRIF has experienced high demand for salmon restoration funding. To date, BCSRIF projects have shown significant progress in addressing BC's declining salmon stocks with measurable on-the-ground results across BC's landscape that are providing social, economic and environmental benefits.

In BCSRIF's first year, several project recipients commenced work and reported early on-the-ground results. These early results were reported in the [Annual Results Summary \(2019-2020\) Report - Year 1](#). By the end of the program's second year, all project recipients were able to report project results that will benefit BC's fish and seafood sector and contribute to the sustainability of BC fish stocks, including wild Pacific salmon. This [Annual Results Summary \(2020-21\) - Year 2](#) Report provides information on recipient project results and outcomes to date, and highlights recent accomplishments reported by BCSRIF recipients.

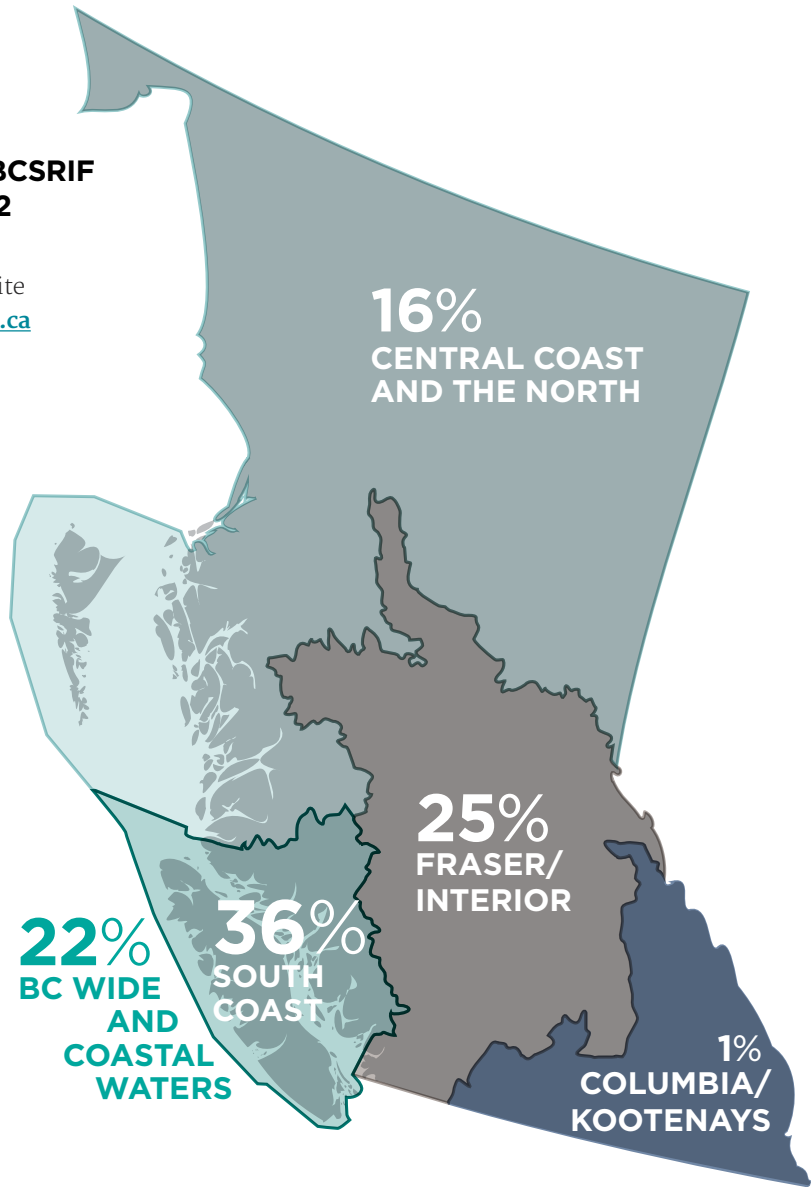
<sup>1</sup> 97 projects were initially funded; one project was withdrawn at the request of the recipient organization.





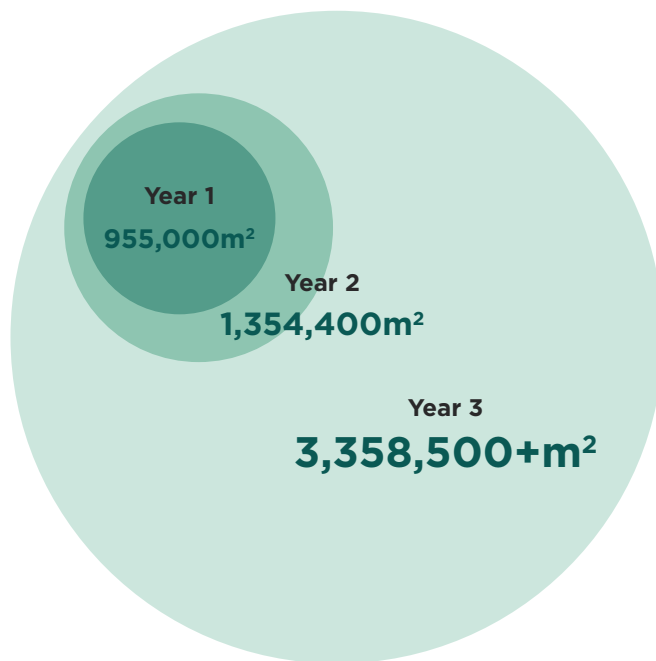
### Geographic Distribution of BCSRIF Projects as of March 31, 2022

Additional information on the full suite of projects is available at [www.bcsrif.ca](http://www.bcsrif.ca)



### Total Fish Habitat Restored

Recipient's report having physically restored, or provided access to, over 3,358,500 square meters of fish habitat. In addition, over 6,087,500 square meters of aquatic invasive species control was undertaken.



# 1 Report Purpose

The *British Columbia Salmon Restoration and Innovation Fund: Annual Results Summary (2021-22) – Year 3 Report*, provides the annual results for the third year of the program, and showcases funded recipient organization efforts and progress toward outcomes that have been realized since the program launch in 2019.

This report focuses on the third year of the program operations and has a tri-fold objective:

- to inform Canadians of the accomplishments of the BCSRIF Program in improving the sustainability of fisheries and BC's fish and seafood sector, and contributing to the restoration of wild Pacific salmon through project funding;
- to highlight how BCSRIF supports the Department's and BC's mandates and priorities, and contributes to the annual [Department Results Report](#), and
- to provide the cumulative results stemmed from BCSRIF projects in year 3, including measures that reflect key socio-economic and ecological outcomes resulting from program investments.

Information for this report was obtained through BCSRIF's internal analysis of its year 3 project results and outcomes, supplemented by information obtained through project-based annual recipient reporting on project achievements, and socioeconomic and ecological benefits and outcomes, which are collected by the program on an annual basis. The quantitative and qualitative metrics and report narratives provided by recipients contribute to performance measurement at a program level, and more broadly to the results of [Canada's Fisheries Funds](#) at a national level. This report will help ensure that governments and the Canadian public are informed of how public monies are being spent, and of the significant benefits the BCSRIF contribution program provides.

# 2

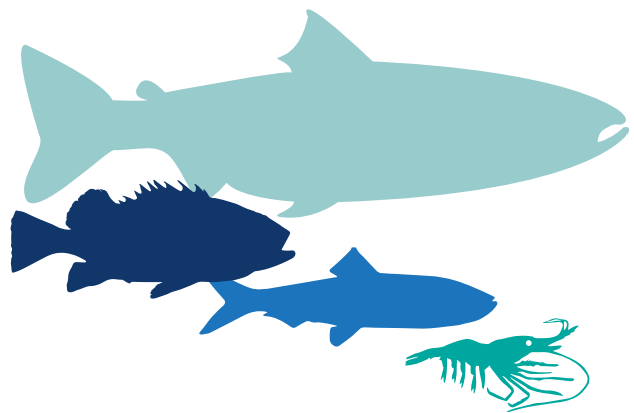
## Linkages to DFO Mandate and Departmental Framework

BCSRIF provides broad-based contributions in support of the Government of Canada's and Province of BC's priorities, both Minister's mandate commitments, the Department's core responsibilities and planned results, commitments to Canadians and top issues. The program funds external organizations, such as Indigenous organizations, non-government organizations, commercial enterprises and industry associations, and scientific and academic communities to undertake projects in support of protection and restoration activities for Pacific salmon and other priority wild fish stocks, and projects that will ensure the fish and seafood sector in BC is positioned for long-term environmental and economic sustainability.










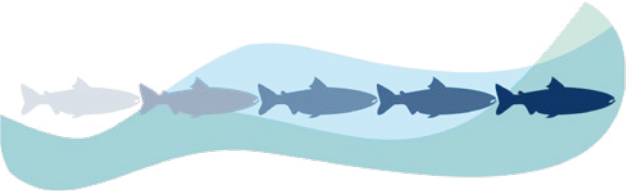
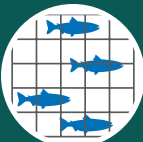







Operating under the Integrated Fish and Seafood Sector Contribution Management Framework Terms and Conditions, BCSRIF's objectives are aligned with DFO's core responsibility of fisheries, as highlighted in the [Departmental Results Framework](#) and contributes to the following departmental results:

- 1.1 Canadian fisheries are sustainably managed
- 1.2 Canadian aquaculture is sustainably managed

The [Departmental Plan](#) describes the key initiatives the Department continued to advance in 2021-22. BCSRIF's broad scope of funding investment categories enables the program to be nimble and able to pivot quickly to respond to serious issues in the Pacific Region, such as the Big Bar landslide, catastrophic wildfires, Fraser River flooding, and serious declines in some wild Pacific salmon stocks (e.g. Southern BC Chinook). BCSRIF investments also contribute to meeting the Department's national and regional objectives under the [Canada's Oceans Agenda](#) and [Wild Salmon Policy](#).



## Project categories/types that are within BCSRIF's scope of funding

 <p><b>Conservation and stewardship</b></p>	 <p><b>Salmon enhancement</b></p>	 <p><b>Collaboration and partnerships</b></p>	 <p><b>Selective fishing and harvesting pilot projects</b></p>
 <p><b>Sustainable ocean economy (blue economy)</b></p>	 <p><b>Scientific evidence and improved decision-making</b></p>	 <p><b>Community hatcheries and infrastructure</b></p>	 <p><b>Climate change and adaptation</b></p>
 <p><b>Healthy fish populations and habitats</b></p>	 <p><b>BC Salmon Restoration and Innovation Fund</b> Fonds de restauration et d'innovation pour le saumon de la C-B</p>		 <p><b>Aquaculture</b></p>
 <p><b>Fisheries and seafood innovation</b></p>			 <p><b>Aquatic Invasive Species</b></p>
 <p><b>Beach to plate traceability</b></p>	 <p><b>Indigenous Knowledge</b></p>	 <p><b>Reconciliation</b></p>	 <p><b>Scientific research</b></p>
 <p><b>Watershed planning</b></p>	 <p><b>Species at risk rebuilding</b></p>	 <p><b>New technology</b></p>	 <p><b>Ecosystem resiliency</b></p>



# 3

## Program Operations at a Glance

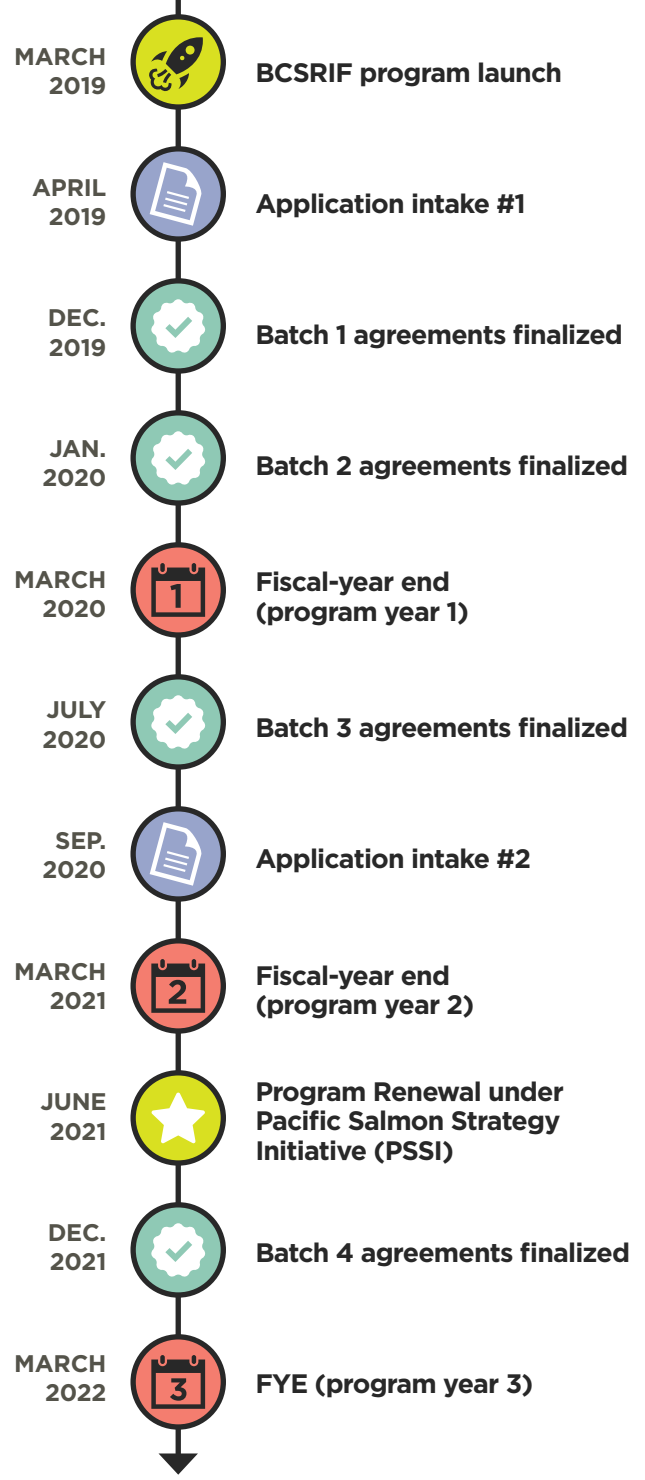
In 2019, BCSRIF completed the program’s first proposal intake and received 192 Expressions of Interest (EOIs) requesting more than \$327M. Ministerial approval of an initial 42 projects resulted in a total investment of \$71.3M, approved as “Batches 1-3”.

In September 2020, under the program’s second intake, BCSRIF received 126 expressions of interest requesting over \$197M, which represented over 343% of the program’s available funds. Full proposals were reviewed during the winter and spring of 2020-21 and culminated in Ministerial approval of an additional 57 projects in the spring of 2021. Negotiations for these projects continued through fall, with most of the project Contribution Agreements ratified by winter of 2021-22. Concurrently, BCSRIF program staff continued to work with the recipient organizations that received funding under the first intake to manage the full suite of requirements of Contribution Agreement funding.

Descriptions of the projects funded under BCSRIF’s second intake, approved as “Batch 4”, are referenced in Appendix 1.

For more information on the BCSRIF program lifecycle, refer to the [British Columbia Salmon Restoration and Innovation Fund- Annual Results Summary \(2021-22\) - Year 2 Report](#).

### Timeline | Program Snapshot

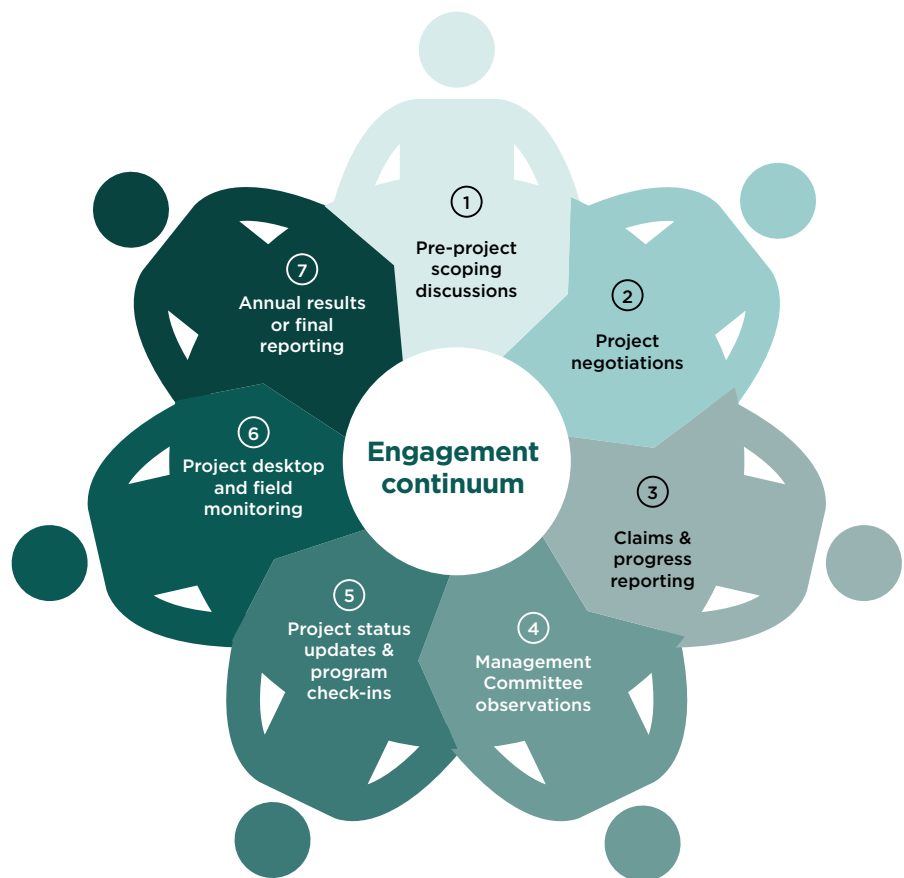




# 4 Engagement

Early engagement with applicants on prospective projects has helped in the development of robust project proposals and has increased applicant success in approval potential. In 2021-22, BCSRIF onboarded to Jambo, an electronic-based stakeholder relationship management platform. Jambo is a Canadian built platform that enables BCSRIF to log, track, manage and report on its engagement and consultation efforts. The majority of applicant engagement activities were completed in advance of, and during, the 2020 second intake of proposals (i.e. just prior to this fiscal reporting year), hence there were only 19 internal and 5 external formal, but preliminary, pre-project discussion sessions held during the 2021-22 fiscal period.

Engagement with recipient organizations, however, occurs on a continuum. From receipt of the initial application BCSRIF program staff have ongoing interactive engagement with funded recipient organizations; from negotiation and ratification of contribution agreements through to monitoring project progress and completion. This open dialogue continues on a quarterly or biannual cycle whereby project updates, budgets, workplans, and project deliverables are discussed. During the project lifecycle, recipient organizations are often provided significant guidance and expertise from internal (DFO/BC) and external subject matter



experts, governments, Indigenous organizations, other ENGOs and key public stakeholders through formalized project management committees, partner and stakeholder workshops, as well as through other outreach events and surveys. 29 (30%) recipient organizations have established project management committees (MC's) that play a key role in project development, management and implementation.

Across all recipients, a total of 333 MC meetings have been held in year 3; since 2019 the total number of MC's yields 514. BCSRIF's technical experts participate as observers at the MC's (i.e. in a supporting, but non-decision-making role) to support project implementation by recipient organizations.

# 5

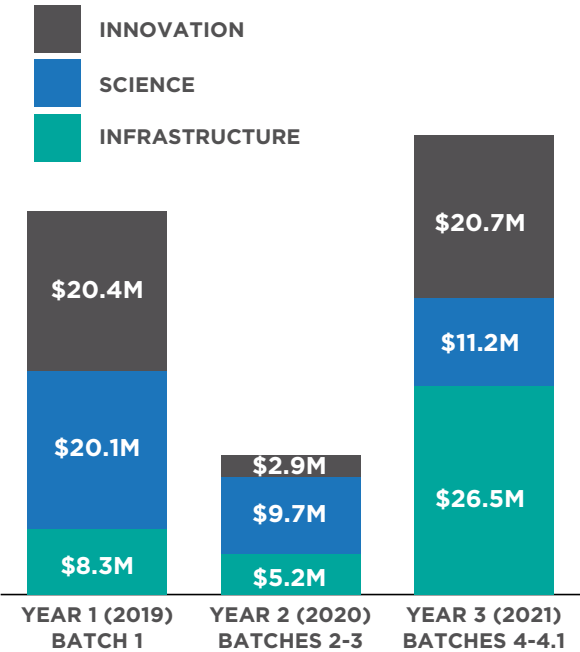
# BCSRIF Program Pillars, Themes and Priorities

## Program Pillars

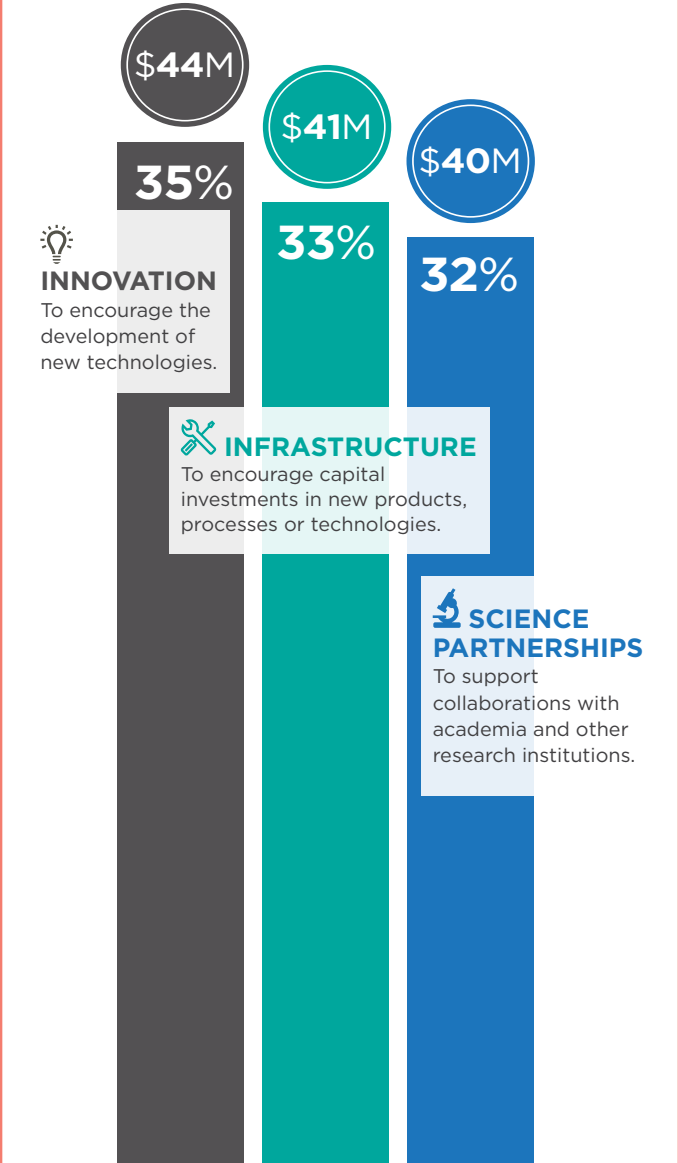
Infrastructure, Science Partnerships and Innovation are the three program pillars (i.e. investment categories) under BCSRIF. These pillars support the management, protection and restoration activities that will safeguard the future of our Pacific salmon and other priority wild fish stocks, ultimately ensuring that there is a thriving and sustainable fish and seafood sector in BC.

Many projects selected for funding align with multiple pillars. The majority of funded projects support innovation in some capacity, either as a direct linkage through the development of new products or technology, or more indirectly with novel or innovative processes, or partner collaboration in the pursuit of common objectives.

## BCSRIF PILLARS THROUGH THE YEARS



## Funding by Program Pillar



## INFRASTRUCTURE



Investments in infrastructure encourages the development of new products, technologies and processes that improve the effectiveness, quality and sustainability of the fish and seafood sector and support the advancement of sustainable fishing practices.

As an example, Make-Way Charitable Society’s, “Resilient Waters Phase 2 – Restoring Connection to Off-channel Salmonid Habitat in the Lower Fraser River Watershed” project builds upon its phase 1 BCSRIF-funded project, which focused on identifying, prioritizing, and the preliminary scoping of opportunities to upgrade flood control structures in the Lower Fraser River. In phase 2, connections to off-channel salmon habitat in the Lower Fraser River will be restored using fish-friendly infrastructure solutions. In tandem, the development of best practices for flood control initiatives are being developed in collaboration with several partners.

## SCIENCE PARTNERSHIPS



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 and impacts to wild stocks, as well as other science activities that protect and restore priority wild fish stocks in BC. With a focus on wild Pacific salmon species, BCSRIF has made investments in projects that develop frameworks or other processes that will enable future evidence-based decision-making.

For example, through their project Landslide Impact on Flow Dynamics, Fish Migration and Genetics of Fraser River Salmon, Simon Fraser University is investigating the risks posed by natural geological processes, such as landslides and hydraulic barriers, on Fraser River salmon. SFU will apply and integrate their diverse expertise in natural hazards, geomorphology, remote sensing, salmon migration, and population genetics and incorporate traditional Indigenous perspectives in order to examine past, present, and future impacts of landslides. The goal is to gain a better understanding of the infrastructure needed to enable successful fish migration across hydraulic barriers, such as at the Big Bar landslide.

A project Monitoring the Lipid Content of Fraser-bound Chinook at Albion, being undertaken by the University of British Columbia’s Pelagic Ecosystems Lab, examines the primary form of energy storage in Chinook salmon using a fat meter. The meter uses low energy microwave sensors to measure water content in the salmon tissue, and regression is used to relate this measurement back to whole-body lipid content. The combined measurements will enhance UBC’s ability to address the vulnerability of these stocks to changing ocean dynamics, prioritize conservation, and further the protection and restoration of wild BC stocks and resident orcas.



## INNOVATION

BCSRIF supports the research and development of new products and technologies that increase productivity, and advance methodologies that support Canada's fish and seafood sector markets to meet conservation and sustainability objectives, create partnerships and networks, and support the protection and restoration of wild fish stocks.



Innovation is broadly interpreted by BCSRIF. Projects supporting the adoption or adaptation of new or innovative products, processes, technologies or equipment, or project/ program delivery arrangements with important environmental implications (e.g. partnerships) fall under this pillar. The category includes, for example, new hatchery methodologies and/or production equipment, innovative research methods, the use of information technology to gather data and communicate results across partners and/or the public, new mechanisms to support fish production, fish escapement monitoring and fish management, and new or improved methodologies for habitat restoration and enhancement (e.g. stream sediment control through forest fire recovery efforts).

Exemplifying innovation, the First Nations Fisheries Legacy Fund Society, partnering with the Okanagan Nation Alliance and the Skeena Fisheries Commission, is conducting Unmanned Ariel Vehicle (UAV) Habitat Mapping to Inform Wild Salmon Stewardship to increase the local community's ability to monitor and manage wild salmon habitat in First Nations territories. By integrating community mapping that incorporates Indigenous Knowledge coupled with geospatial technology, the UAV will be used to document fish habitat in a manner that will inform long-term water management and salmon stewardship.



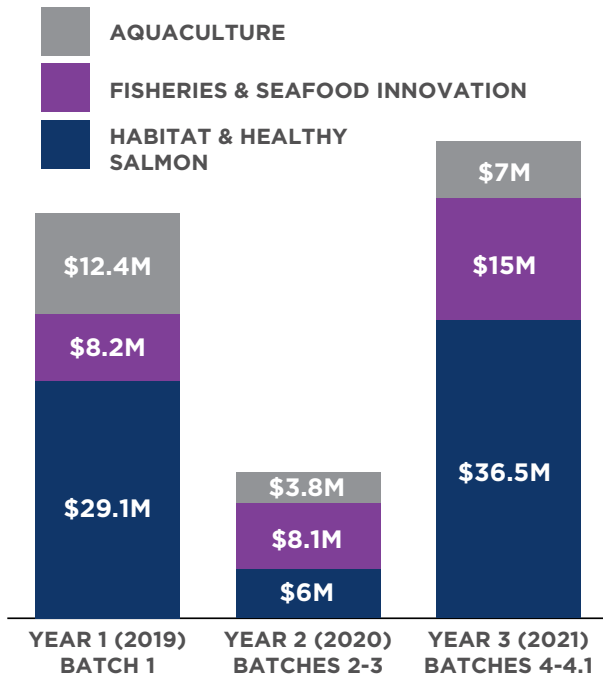
## Did you know?

**Nova Harvest Ltd. has developed an innovative solar powered, ocean-based nursery known as a Floating Upwelling System (FLUPSY). Its objective is to improve oyster seed size and quality while significantly reducing reliance on fossil fuels to operate oyster nurseries.**

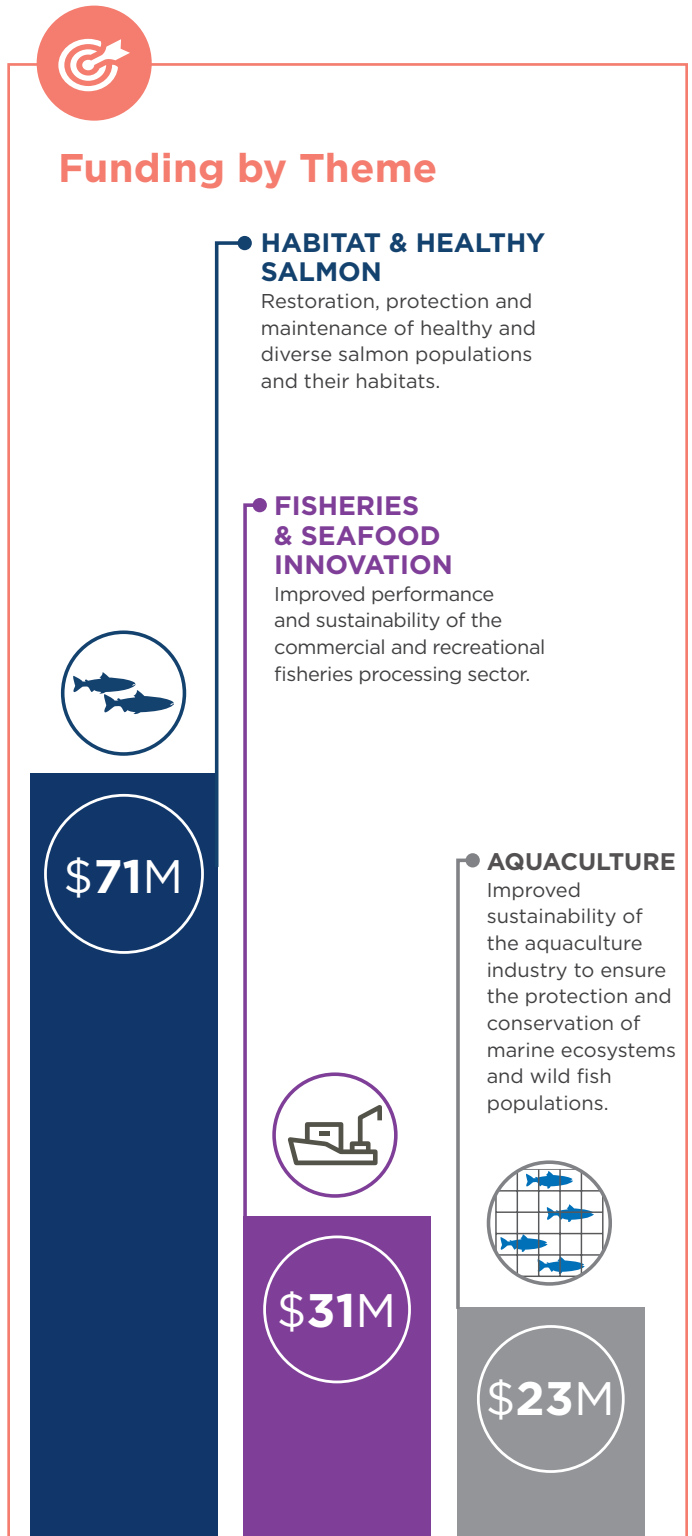


## Themes and Priorities

To further refine the basic criteria outlined in the program’s terms and conditions, provide scope to the application process, and guide BCSRIF’s strategic investments under each Program Pillar, BC and DFO identified several joint priority investment areas for project funding under each proposal intake. These priorities were informed by engagement with Indigenous organizations, regional stakeholders, government experts (e.g. fisheries managers) and academia. The joint priority investment areas reflect key provincial and federal areas of interest, including mandate commitments and current policy initiatives. In advance of the program’s second project intake in 2020, BCSRIF updated these priority investment areas to include *three* broad themes and six program priorities that focus on revised strategic government priorities, including addressing significant declines in some salmon stocks.



Under the three broad themes of Aquaculture, Habitat and Healthy Salmon, and Fisheries and Seafood Innovation, BCSRIF’s funded projects align with the following six program priorities. These priorities are collaboratively developed by DFO and BC and reflect a joint government response to concerns and issues of importance in BC.



# 1

## Aquaculture and the Changing Environment/ Mariculture (marine-based aquaculture)

Priority funding for aquaculture focuses on new aquaculture technologies to improve environmental performance and increase supply chain transparency, including strategies for chemical use reduction, alternative fish culture technology or infrastructure, improved fish health management practices, boat-to-plate traceability of seafood products, improvements within the aquaculture industry (e.g. improved seed production for shellfish), and alternative species production (e.g. kelp). BCSRIF's investments in aquaculture and the changing environment totaled \$23M. BCSRIF funded 11 projects supporting commercial aquaculture, and 16 projects making improvements in air or water quality (e.g. through the reduction of chemical usage, improvements in fuel efficiency, or greening of infrastructure). In addition, 7 recipient organizations report their project will lead to improved product traceability, Eco-Certification or other internationally accepted standards to support increased quality or access to fish and seafood markets.

**For example,** We Wai Kai First Nation (Cape Mudge) is assessing the environmental and commercial feasibility of raising sable fish in Hoskyn Channel, and the Gwabal Fisheries Society have been conducting a comprehensive review of aquaculture activities, opportunities and challenges in the North Island.

# 2

## Species of concern rebuilding through Scientific research

Priority funding for species of concern through scientific research focuses on projects that improve the scientific understanding of targeted at-risk and other wild Pacific salmon species, and the rebuilding of fish stocks in BC. Factors also considered under this priority include science collaborations and the incorporation of Indigenous Knowledge, watershed-scale projects, and projects that aim to address limiting factors of productivity, critical habitats, and causes of, or reductions in, fish mortality such as pathogens, disease, overharvesting, or aquatic invasive species or predation impacts. Under the science partnership pillar, BCSRIF has invested \$40M. 43 recipient organizations report their project activities support scientific research, 33 support stock enumeration or enhancement, 49 support stock simulation modelling, scientific monitoring or data collection activities that inform fisheries management approaches, systems or frameworks for improved assessment and management of fisheries resources, and 24 projects address fish genetics, virology, and/or pathogens. Recipient organizations reported a total of 25 scientific publications or datasets were produced in the 2021-22 fiscal year.

**For example,** the University of British Columbia is developing a *Cumulative Effects Modelling Framework for the Recovery of Aquatic Salmonid Populations*. This framework focuses on the Nicola River by examining the stress response and recovery of salmon and identifying cumulative impacts which will be linked back to Indigenous Knowledge.



### 3

## Species of concern rebuilding through Selective Fishing

Priority funding for species of concern rebuilding through selective fishing focuses on projects that aim to minimize bycatch of species of concern, or that aim to improve selective fishing practices and projects that target Fraser River chinook, steelhead and coho, and/or other wild Pacific salmon species or stocks of concern. BCSRIF invested \$3.3M under species of concern rebuilding through selective fishing activities. Factors considered include innovation in commercial, recreational or food, social, ceremonial fishing gear types and other pilot projects (e.g. selective fishing using modified fish wheel or fish traps). 28 recipient organizations report their project activities contribute to the improved sustainability of fishing practices.

**For example,** the Lower Fraser Fisheries Alliance Society's *Selective Fishing Gear Pilot Project in the Lower Fraser River* seeks to demonstrate the effectiveness of selective fishing practices for 8 Lower Fraser area First Nations that are founded on traditional Indigenous practices with some modernization; the project aims to achieve economically sustainable and culturally sensitive outcomes while ensuring species of concern are protected. Tsawwassen First Nation is undertaking a project to design and operate a *Selective Fishing Using a Salmon Trap in the Lower Fraser River*, near Tsawwassen, BC

### 4

## Species of concern rebuilding through Habitat Restoration

Priority funding for species of concern rebuilding through habitat restoration focuses on projects that are part of a watershed-scale restoration plan or restoration prioritization efforts (or propose to develop those tools) as well as projects that build on successful previous restoration efforts, or focus on critical habitat and/or the rehabilitation of natural ecosystem processes. BCSRIF's investments under the theme of habitat and healthy salmon total \$71M. Key factors considered include: salmon habitat connectivity, floodplain, estuary and major tributary restoration, collaborative management planning having tangible and long-term strategic objectives, and projects that are linked to endorsed strategies, policies or plans (e.g. Canada's Ocean Strategy, SAR recovery plans, Wild Salmon Policy, or others). 82 recipient organizations (84%) report their project supports the protection and conservation of wild Pacific salmon, 29 recipient organizations (30%) report their project activities restore habitat for wild Pacific salmon and other aquatic species and a total of 47 projects are reported to address ecosystem shifts and climate change.

**For example,** in the Skeena watershed, Kitsumkalum Indian Band's *Highway 16 Corridor Fish Stranding* project aims to identify and prioritize sites where fish stranding occurs, and to develop solutions to maximize the survival of local Pacific salmon populations. The project team located 25 sites that they classified as 'fish death traps' along this corridor. The development of engineered solutions is expected to address juvenile salmonid mortality and create access to critical habitat for both spawning and rearing within the Skeena Watershed.

The Secwepemc Fisheries Commission's project to undertake *Collaborative Freshwater Research and Restoration Initiatives in the Thompson Watershed* is addressing declines in Thompson-Shuswap salmon. Mesohabitat studies in 2 areas on the Deadman River were undertaken, including hydrometric monitoring, which will be used to inform environmental flow needs and address future extreme temperatures and drought conditions.





## 5

### Community Hatchery Upgrades

Priority funding for species of concern rebuilding through community hatchery upgrades focuses on improvements or upgrades of existing hatchery infrastructure, in particular for coastal communities with a long history of hatchery operations tied to significant importance in the community. Investments by BCSRIF in community hatchery upgrades total \$4.4M. Key considerations include projects that incorporate innovative infrastructure or technology, and that demonstrate applicability for other facilities. Infrastructure upgrades resulting in improved fish health practices, safety and/or bio-security, advanced new technologies, or that also contribute to scientific research or promote public education and stewardship are key factors under this funding category. 20 recipient organizations (i.e. 21%) report their project activities support hatchery infrastructure improvements.

**For example,** the Great Bear Initiative Society's *Coastal First Nations Salmon Enhancement and Restoration Initiative* will upgrade existing infrastructure located at six community hatcheries in north and central BC, as well as Haida Gwaii. Hatchery upgrades at these sites will replace infrastructure and install new technology that is required to enhance BC's wild Salmonid stocks.

The Spruce City Wildlife Association's *Upper Fraser Chinook Strategic Enhancement Project* undertook hatchery upgrades that included the replacement of chillers for water cooling, and the Sunshine Coast Salmonid Enhancement Society drilled several test wells to secure a water source for the *Chapman Creek Hatchery Water Supply and Capacity Upgrades*.

## 6

### Increasing Innovation to Support the Sustainability and Economic Stability of BC Fisheries

Priority funding for projects that increase innovation and support the sustainability and economic stability of BC fisheries focuses on innovative processes and technologies that increase the quality and value of BC fish and seafood products and that optimize fishing operations by including strategies that expand value-added fish processing and products to BC markets; contribute to stock assessments, management strategies, evaluations and management procedures; improved catch monitoring; and support precision fishing in BC's coastal waters by minimizing by-catch and incidental mortality. Since 2019, a total of 49 (51%) of BCSRIF's recipient organizations report having adopted or adapted new innovative products, processes, technologies or equipment (i.e., a new process, technology, or delivery arrangement) with important environmental implications. In the 2021-22 fiscal year, recipients report a total of 43 innovative products, processes, technologies, or equipment were produced or acquired.

**For example,** T-Buck Suzuki Environmental Foundation has partnered with three different commercial fishers for their *Technology for More Sustainable Fisheries in BC* project to reduce the by-catch of Eulachon in the shrimp trawl fishery using LED light technology. They are also building knotless webs in the bunts of seine nets in the herring and salmon test fisheries, with the goal of reduced mortality of non-targeted species.

## Full List of BCSRIF Projects

It should be noted that many BCSRIF funded projects align with more than one pillar, theme and/or priority; selection of each project under these categories was based on how recipient projects were most closely aligned.

Summaries of BCSRIF projects approved for funding in the 2020-21 fiscal year and Contribution Agreements ratified in the 2021-22 fiscal year (i.e. Batch 4) are presented in [Appendix 1](#).

The full list of BCSRIF funded projects is presented in [Appendix 3](#).





# 6

# Measuring Success

The extent to which projects generate tangible and sustainable environmental and economic benefits to the fish and seafood sector can, in part, be measured by several key performance indicators. The following sections provide a cumulative “snapshot” of BCSRIF’s program performance as of March 31, 2022.

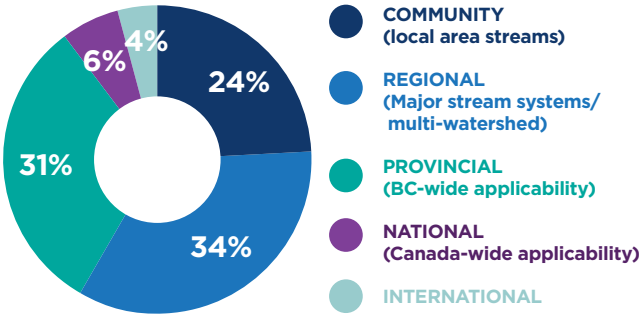
Recipient organizations provide BCSRIF with yearly and multi-year (i.e. fiscal year and cumulative) metrics and data on their project(s) to support BCSRIF in reporting annually to its government partners, funding recipients, and the public on individual project achievements and overall program outcomes. This data, collected through year-end reporting, compliments other information provided by recipients in their application documents, Contribution Agreement, progress and claims documents, as well as project check-in’s and site visits undertaken with BCSRIF.


Several key metrics highlight BCSRIF’s contribution towards diversity and inclusion, economic and socio-economic prosperity, partnership engagement and collaboration, and ecological benefits of the projects. These metrics demonstrate the wide range of benefits generated through BCSRIF investments across various sectors.

## Measuring Success: Geographic Scope and Scale


The scope and scale of a project’s influence is a broad indicator of the program’s support toward improved productivity and sustainability of regional fisheries, and signifies the increased knowledge being shared amongst BCSRIF’s recipients, science researchers, academia and the public. Local area restoration efforts often have significant positive impacts on local fish populations, but many BCSRIF funded projects have far-reaching influence. The rebuilding of fish populations through scientific research, selective fishing, and habitat building are key priorities under BCSRIF. Overall, 71% of BCSRIF’s recipients report having a scale of influence at the provincial, national or international levels.

### SCALE OF INFLUENCE





Additional information on the full suite of projects is available at [www.bcsrif.ca](http://www.bcsrif.ca).



## Measuring Success: Employment, Training and Economic Outcomes

One indicator of BCSRIF’s success is the economic benefit to individuals and communities provided by employment and training opportunities tied to funded projects. An understanding of the number of people paid directly through BCSRIF funds provides a measure of the program’s generated employment opportunities and though not assessed, BCSRIF funding also contributes to many indirect economic benefits to related sectors, including materials and equipment manufacturers.

During the fiscal year 2021-22, BCSRIF recipients reported having directly employed 950 persons across the 97 funded projects; and cumulatively over the three fiscal years, 1,048 persons. Of these jobs, recipients reported that 260 positions, or just over 27%, are full-time with projected long-term employment. Just over 20% of the employment opportunities are based in rural or remote communities (i.e. areas with less than 1000 persons per capita\*).

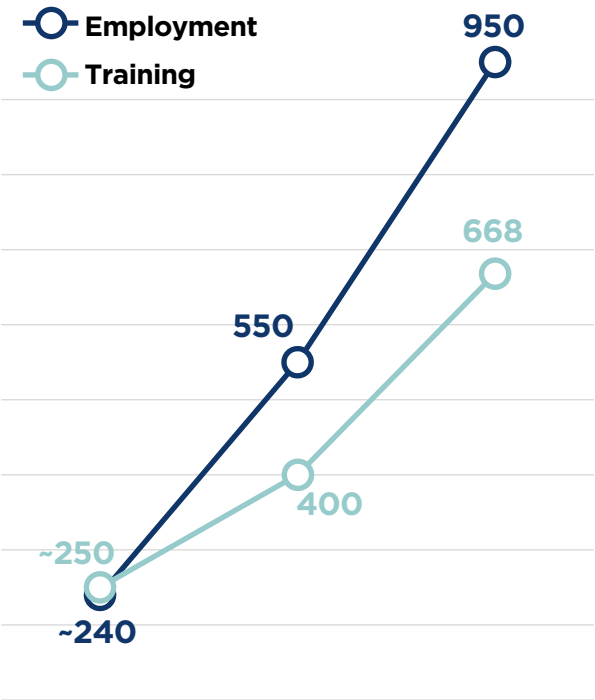
Training opportunities also represent a significant contribution to the economy; combining the benefits of education with attaining employable skills is an investment in human capital that benefits future labour-markets. Capacity building through employment and training is particularly important to Indigenous 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.

Training and skills development is a strong priority for BCSRIF’s strategic outcomes. During the 2021-22 fiscal year, 69 of the recipient organizations (73%) implemented training as part of their project work activities. In year 3, BCSRIF recipient organizations report that 668 people received training, with over 40% of those identifying as Indigenous persons. Over the 3 years of program operations, BCSRIF recipient organizations report, that a cumulative total of 842 persons have received training as part of the project activities; overall 36% of those persons identify as Indigenous. Over 212 specific training events to facilitate project implementation were also reported in the fiscal year. Areas of training and skills delivery include GIS, mapping, information and drone technology; fisheries assessment and fish habitat restoration; fish and fish habitat monitoring; facility operations; other licensing; or, health and safety.

\*As defined by Statistics Canada



### NUMBER OF PERSONS PAID OR TRAINED THROUGH BCSRIF FUNDED PROJECTS



Year 1 2019-20	Year 2 2020-21	Year 3 2021-22
Directly employed up to 240 persons for 20 projects	Directly employed over 550 persons across 42 funded projects	Directly employed 950 persons across 97 funded projects

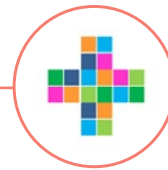


## Measuring Success: Diversity and Inclusion through Gender-Based Analysis Plus (GBA+)

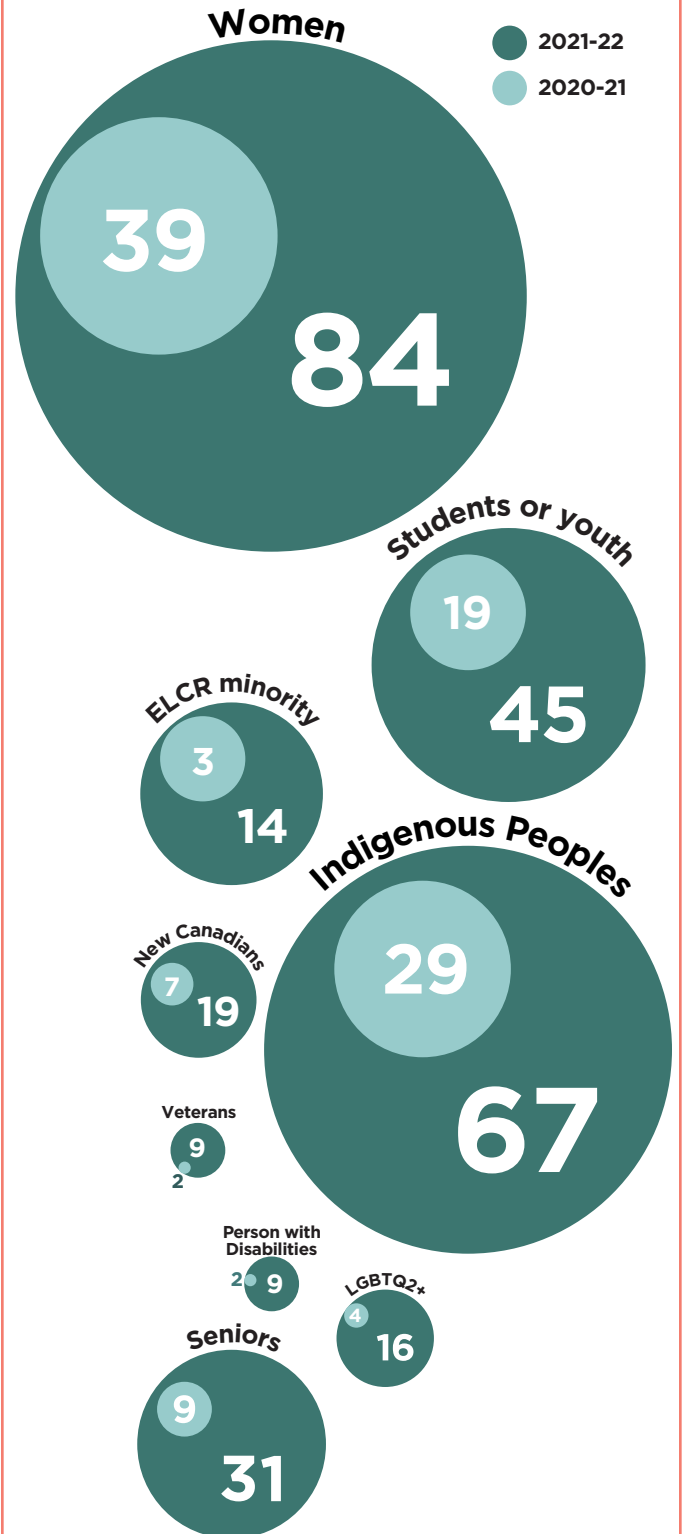
Gender-Based Analysis Plus (GBA+) is an analytical tool to support the development of responsive and inclusive initiatives. GBA+ is about how all elements of a person’s lived reality – including ethnicity, age, geography and other factors – may intersect to create visible or invisible barriers to accessing a project or initiative.

In year 2, BCSRIF offered recipient organizations the opportunity to provide details on the demographic make-up of their project teams as well as other details on their organizations efforts towards ensuring a diverse and inclusive work environment. This information helps support the Government of Canada’s efforts and commitment to promote diversity and inclusivity and foster programs that provide opportunity for all Canadians to participate in the fish and seafood, fish management and environmental sectors, including women, Indigenous Peoples, members of the LGBTQ2+ community, people of ethnic, linguistic, cultural or religious (ELCR) minority, seniors, veterans, students or youth, people with disabilities and new Canadians.

BCSRIF is utilizing evaluative tools to consider the inclusivity of its funded projects. Expectedly, as the number of funded projects jumped from 42 to 97 projects, recipient organizations also showed an increase in their core project staff that identify under one of the key GBA+ categories.



### DEMOGRAPHICS



## Measuring Success: Partnerships and Public Participation

Many BCSRIF recipient organizations report having partnerships with other organizations and receive financial or in-kind project support to enable their projects. Partnerships are often critical to the success of BCSRIF projects. They aid in the pooling and sharing of resources, help increase shared scientific 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 also helps minimize the risk of project failure.

Collectively, three metrics are assessed as success indicators regarding the level of collaboration 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 valuable measure of the partnerships made possible through BCSRIF funded projects. Garnering information on the level of partnerships and volunteer participation highlights the far-reaching influence that BCSRIF funding has in providing benefits to multiple communities and stakeholders.

Over 90% of BCSRIF's recipient organizations report having established over 580 formal partnerships with others. Projects that do not have partnerships are predominantly scientific research studies or are web-application development oriented. Indigenous organizations are partners in over 36% of BCSRIF projects, accounting for 211 of these collaborative relationships.

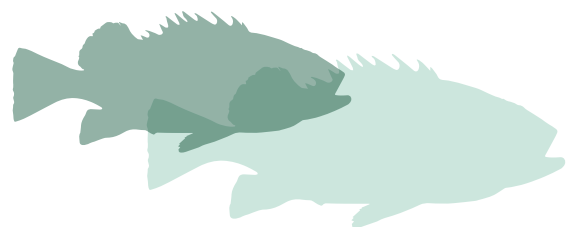
Also strengthening the BCSRIF program outcomes, is the contributions from volunteers. Public participation is a powerful means of implementation which crosscuts most BCSRIF projects and without which outcomes could not be realized. Close to 1,800 people have dedicated their time as volunteers in the implementation of BCSRIF projects. The main volunteer activities reported by recipient organizations include citizen science, monitoring, habitat restoration and communications.

Further to these outcomes, the Sport Fishing Institute has developed a web-based application the "Fishing BC" App, which provides information about recreational fishing opportunities, regulations and species to the angling public, is meant to improve and enhance catch data collection quality and quantity for all species harvested using a tidal license. Currently, the Fishing BC App has over 40,000 users (based on downloads). Another web-based application, MyCatch App, developed by University of Victoria, has an automated notification system alerting anglers as they move into a Rockfish Conservation Area and provides real time updates on fisheries regulations. It explains the importance of using a descending device and how to ID Rockfish species.



**"It is literally true that you can succeed best and quickest by helping others to succeed."**

**~ Napoleon Hill**



## Measuring Success: Ecological outcomes

It is challenging to truly measure the ecological outcomes of BCSRIF projects. Many BCSRIF-funded projects cover a wide-range of government priorities across sectors, are multi-disciplinary, and have cumulative or intangible benefits that are difficult to capture or quantify.

Recipient organizations are asked to provide information on project outcomes that support fisheries rebuilding, species at risk or other targeted wild salmon stocks, fish habitat restoration, and the limiting factors being addressed by their project. These are the metrics used to assess BCSRIF's ecological outcomes, and are considered indicators of program performance. When considering specific program results it should be recognized that recipients might not report metrics and data using the exact same standards or methodologies.

Taking the above into consideration, BCSRIF measures its ecological program performance through recipient project outcomes that provide benefits to aquatic species, and BC's wild salmon stocks. BCSRIF habitat related projects are wide-ranging in scope - from landslide assessment potential, to watershed planning and assessment, to physical habitat restoration activities. 82 (84%) of BCSRIF projects directly support the protection and conservation of wild Pacific salmon, and 41 (44%) target benefits to COSEWIC-assessed species at risk populations. BCSRIF has provided funds to 34 projects that focus on the restoration of threatened or endangered Southern BC chinook salmon populations. A further 16 projects focus on Interior-Fraser coho; 15 on Fraser Sockeye; 9 on Thompson-Chilcotin Steelhead, and 15 projects on other SAR populations. Benefits to species at risk are mainly provided through fish habitat restoration and enhancement efforts, as well as projects considering selective fishing methodologies.

Also key to rebuilding fish populations is the development of watershed or area recovery plans, coupled with the identification and prioritization of fish habitat restoration projects. To date, recipients report having developed 27 watershed recovery plans and undertaken 299 fish habitat restoration sub-projects at 114 locations. These restoration projects are supported by over 30 prescription-based engineering plans for fish habitat restoration, which are funded by BCSRIF.

Habitat restoration for salmon and aquatic species is a high priority under BCSRIF. Recipient organizations aim to address anthropogenic (human-caused) and natural alterations to the environment through restoration of the limiting factors in watersheds. 45% of the funded projects address changes to the environment, ecosystem sustainability, or habitat recovery. Of those, 84% of the projects' target degraded stream channel, estuarine or floodplain habitats. In tandem, 55% are aimed at addressing hydrological (i.e. stream flow) issues that adversely affect fish and fish habitat. Over 50% aim to restore riparian areas, 55% restore floodplain connections, 50% address stream substrate erosion or sedimentation, 32% evaluate impacts on fish related to predation, competition, disease, and 27% address the proliferation of invasive species in BC through various control and eradication methods.

55 projects restore fish passage where there are migration barriers to fish. Recipients report that 660,000 square meters of accessible habitat has been opened up as fish habitat since 2019. At the end of the program's third year, recipient organizations reported that a cumulative total of 4,856,106 square meters of fish habitat had been restored through BCSRIF funding; equating to 3,618,127 square meters of restored aquatic habitat and 1,237,979 square meters of riparian habitat. In addition, aquatic invasive species control for European Green Crab (EGC) has targeted over 6,087,500 square meters of BC's coastal estuaries, and these depletion efforts are expected to continue and expand. In Haida Gwaii, EGC trapping to detect presence of this aquatic invasive species spanned a 75M square meter area. In total, BCSRIF has funded 12 projects that have work activities related to the control of aquatic invasive species in British Columbia.



## Measuring Success: Scientific Research

Science and research are strong components of many of the projects that BCSRIF supports. 44 (45%) of BCSRIF's funded projects have project components oriented toward academic study and scientific research. In the third year of the program, BCSRIF recipients report that 25 scientific publications or datasets have been released this in fiscal year 2021–22, through published peer-reviewed papers, presentations at scientific conferences, or reports posted on their websites. Since 2019, a cumulative total of 43 publications or datasets have been produced.

BCSRIF also supports project recipients undertaking stock simulation modelling, scientific monitoring or other data collection activities that inform fisheries management approaches, systems or frameworks for assessment and management of fisheries resources. Over 50% of BCSRIF's projects support activities under these categories, including, for example, stock assessment and recovery planning, assessment of salmon fitness, eDNA/ DNA testing, and many other studies.



**43** publications or datasets produced

**33** projects enumerate salmon stocks

**49** projects provide innovative fish stock modelling

**24** projects address fish genetics, virology, and pathogens

**47** projects address ecosystem shifts and climate change



## Why invest in Scientific Research?

**Understanding Canada's waters means we can better protect the aquatic life and ecosystems that our livelihood, safety, and culture depend on. As a coastal province, our oceans, lakes and rivers define us. Research produces the evidence base to inform management decisions.**



## Measuring Success: Indigenous Leadership and Involvement

BCSRIF continues to provide support for Indigenous-led projects and projects that have Indigenous involvement. BCSRIF strives to ensure that program policies and processes are designed to be inclusive and enable opportunities for Indigenous organizations and to build capacity. Projects that incorporate Indigenous Knowledge (IK) or are undertaken as collaborative projects with local nations, are considered a funding priority. Over 50% of the recipients are incorporating Indigenous Knowledge (IK) in the planning and implementation of their projects. Building on early program experience and feedback, BCSRIF has refined its process for documenting how Indigenous Knowledge is being obtained and used in project implementation, which ensures that appropriate consent is obtained from knowledge providers.

Of the 97 funded projects, 41 are led by Indigenous organizations and a further 21 projects had secured early collaborative partnerships with Indigenous organizations (i.e. at project outset). As a cumulative total, 211 Indigenous partners have provided leveraged support – either financial or in-kind – to BCSRIF funded projects. Project recipient organizations also report that almost 70% have Indigenous persons on their project implementation team.

BCSRIF provides employment and capacity building opportunities for Indigenous communities. As of March 31, 2022, BCSRIF projects have employed 254 Indigenous persons (approximately 25% of the total BCSRIF-funded employment opportunities) and just over 302 Indigenous persons have received training as part of the project activities (representing 36% of the BCSRIF-funded training opportunities). Building capacity within Indigenous organizations will enable these organizations, and others, to lead projects and guide future initiatives that enhance the sustainability of BC's fish and seafood sector, improve the resiliency of Pacific salmon and other wild fish stocks, and support the modernization and improved sustainability of regional fisheries.



### EXAMPLES OF INDIGENOUS-LED PROJECTS FUNDED IN 2021-22:

The *Chemainus/ Koksilah Twinned Watershed Sustainability Project*, led by Cowichan Tribes, focuses on understanding and restoring impacts of low river flows on critical salmon habitats. This project also supports the ongoing partnership between the Cowichan Tribes and the Province of BC to develop the Province's first Water Sustainability Plan for the Koksilah River Watershed. The plan aims to address interlinked watershed concerns related to water availability, low flows, critical fish habitat, Indigenous cultural resources, and other identified priorities.

The North Coast Skeena First Nations Stewardship Society *Skeena Estuary Habitat Management and Protection Planning* project aims to inform and engage its partners in the collaborative development of an effective monitoring, assessment and habitat management plan for the Skeena Estuary, as well as protect and restore of key fish habitats focusing on salmon. The Skeena estuary is home to ancient and modern First Nation village sites, sacred places, and is considered part of the First Nations 'breadbasket', providing sources of food, medicine, and raw material. Effective management of competing interests and cumulative effects is key to protecting the marine and coastal ecosystems within the Skeena estuary.





## Measuring Success: Recipient Public Outreach and Media Communications

Stakeholder engagement, outreach and public education are core components of 90% of BCSRIF projects. In year 3 (2021-22), recipients reported facilitating over 295 outreach events by way of scientific conference presentations, workshops, seminars and other public presentations, or educational sessions or stakeholder forums, which reached 5,479 participants. As a cumulative metric from program initiation, this equates to over 485 outreach events with 7,051 recorded participants.

BCSRIF recipients communicate project results through a reported 551 public media products in year 3 (i.e., journal article, report, web-based publication, newsletter, video, website, social media blog or other social media post), and most have developed project-specific websites as their main mechanism for information dissemination and exchange. Thus far, over 845 communications products have been publicly released by recipient organizations to inform their broader membership and interested public of their project activities.



### Did you know?

**The European Green Crab arrived in North America around the 1800's where they've evolved to survive the Pacific Coast climates. These crab invaders feed on local marine life, disrupt eelgrass beds and out-compete native crabs for food. They can significantly impact marine ecosystems because they have no known predators, and eradication is nearly impossible. This is why BCSRIF provides funds to help limit the spread of ECG in BC's coastal areas.**





# 7

## Beyond Expectations

Project performance beyond the quantitative data reported on in this report is generally reported to BCSRIF in qualitative narratives. While somewhat less tangible than measured results and outcomes, recipients are increasingly reporting multiple project benefits that go beyond the original project expectations, or their singular project scope. Several projects have created additional spin-off projects (e.g. watershed prioritization plans leading to fish passage improvement projects undertaken by others), the production of value-added products (e.g. kelp lasagna, kelp protein powders), as well as interconnections amongst recipient organizations (i.e. synergistic opportunities). These benefits emerge through recipient collaborations in pursuit of common objectives, the sharing of scientific knowledge, experience, and the development of innovative practices (e.g. best practices or guidelines).

### **Beyond sustainable aquaculture: climate change mitigation & habitat and human benefits**

BCSRIF has funded several emerging-industry mariculture science projects related to kelp production and research. Kelp and other macroalgae species sequester carbon, and provide a contribution to mitigating climate change. Kelp projects funded by BCSRIF have research components related to how kelp species provide ecosystem functions as a food source and refuge habitat for wild fish species, including wild Pacific salmon. There is a growth trend in the kelp industry on the BC Coast and increasingly, kelp is being incorporated into food products; it is known for its high source of B vitamins, micronutrients, antioxidants, iron, iodine and dietary fiber for humans.

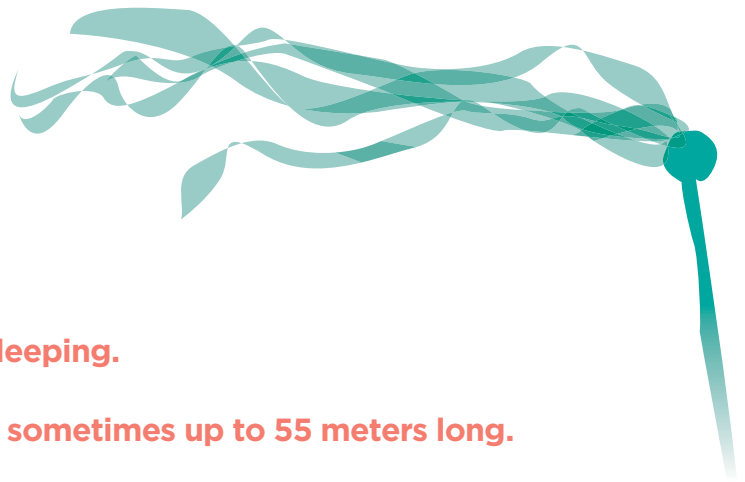


### **Did you know?**

**Seaweed forests formed by kelp sequester large amounts of atmospheric carbon, and may help to address climate change.**

**Sea otters wrap themselves in the floating canopies of kelp beds to keep them from floating away while sleeping.**

**Giant kelp grows faster than bamboo, sometimes up to 55 meters long.**



## Beyond sustainable aquaculture: project interconnections

BCSRIF's shellfish projects are interconnected. Project activities support varying life cycle components and include: improvements in microalgae growth as food supply for shellfish; development and operation of a solar powered shellfish nursery to increase production of high-quality oyster seed; innovative oyster tray design that improves product quality and shellfish survival; methodologies to improve the traceability of shellfish products (beach to plate traceability). Mitigating climate change (use of solar power) and reduction of marine plastics (oyster tray innovation) are added benefits.

## Beyond Expectations: Citizen Science

Recipient-led interconnections amongst partners and volunteers has created opportunities in citizen science. The early-funded project undertaken by the Comox Valley Project Watershed Society established a citizen science forage fish monitoring network as part of project to identify forage fish beach spawning areas for Pacific sand lance and surf smelt. In Haida Gwaii, a project to identify European Green Crab presence is being undertaken by the Council of Haida Nation. The Nation has provided extensive training and community engagement opportunities and as a result, citizen science efforts have been launched, which are aimed at eradication of the species.

## Beyond Expectations: Partnerships

Impacts of climate change is being assessed by a number of recipients, including Nature Trust of British Columbia. Interest in their project Enhancing Estuary Resiliency: An Innovative Approach to Sustaining Fish and Fish Habitat in a Changing Climate, from First Nations, academia, government and other ENGOs is reported to be significant; it is enabling unexpected partnerships and collaborative relationships to form to a much greater extent than originally anticipated. In turn, this project has also garnered increased media attention.

## Beyond Expectations: Complementary projects in Selective Fisheries

The Lower Fraser Fisheries Alliance's selective fishing project complements 2 other funded project's being undertaken by the Harrison Salmon Producers (HSP) and Tsawwassen First Nation (TFN). All these selective fishing projects aim to garner information on the efficacy and operational potential of various fishing gear types and methods that are based on Indigenous Knowledge.



## Did you know?

**Forage fish are small, energy-rich fish that serve a key ecosystem role as prey for larger species such as Chinook, squid, seabirds, and marine mammals. Forage fish spawn throughout Coastal BC on portions of the beach just below the high tide line. This important habitat is highly vulnerable to shoreline alterations and some species of forage fish require specific sized sediments for spawning. Overhanging vegetation and beach wrack such as algae, sea grasses, invertebrates and other ocean debris that form the shoreline tidemark, help keep these forage fish eggs protected.**



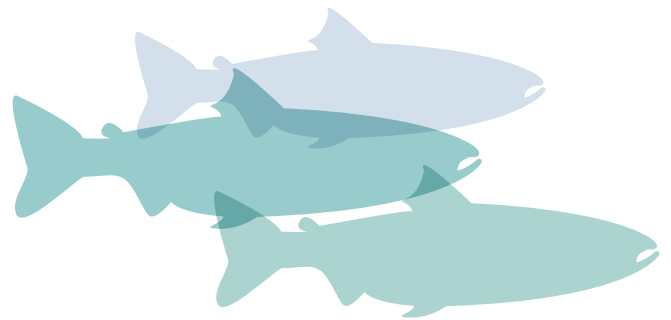
# 8

## Project Impacts & Challenges

Fiscal year 2021-2022 was challenging for all Canadians, but particularly for BCSRIF recipient organizations. Covid-19 continued to have impacts to projects due to travel restrictions, increased project expenses, employment shortages and delays due to supply chain issues. During the summer of 2021, BC battled numerous wildfires that bore impacts to fish and fish habitat and some BCSRIF-funded replanted riparian areas were damaged or destroyed. In November of 2021, BC experienced equally harsh weather-related impacts due to the atmospheric river that caused severe flooding and mass wasting events in the Lower Fraser area, which significantly affected fish and fish habitat.

Tragically, in the fall of 2021, First Nations, Inuit and Métis Nation communities were impacted by the devastating discovery of unmarked graves on the grounds of a number of former residential school sites within BC, and elsewhere in Canada.

In response to these challenges and impacts, BCSRIF worked with project recipients to consider and implement potential response measures, including the reallocation of project resources, extensions to timelines, and connecting recipients to needed resources or expertise in order to minimize impacts and ensure projects were able to meet their goals and deliverables. BCSRIF recognizes our on-the-ground project partner's adaptability, resiliency, and dedication to cope with, or overcome, these challenging circumstances and will continue to work with our partners as adverse conditions or situations arise.



# 9

## Looking Forward (BCSRIF Year 4, 2022-23)

### Pacific Salmon Strategy Initiative (PSSI)

On June 8, 2021, the Minister of Fisheries, Oceans and the Canadian Coast Guard, the Honorable Bernadette Jordan, announced the launch of the [Pacific Salmon Strategy Initiative](#) (PSSI), the federal government’s largest-ever investment in efforts to save wild Pacific salmon. Budget 2021 included a commitment to double the federal component of the British Columbia Salmon Restoration and Innovation Fund (BCSRIF), the Province of BC also committed to doubling its funding. Developed in response to population declines of the iconic Pacific wild salmon due to climate change, habitat destruction and harvesting pressures, the key objective of this new funding is to support projects that contribute to the recovery and restoration of priority Pacific salmon populations and their ecosystems.

Working in partnership with Indigenous communities, commercial enterprises, universities and academics, industry associations and other organizations (e.g. research institutions and stewardship groups), the PSSI will guide investments and action in four key areas: conservation and stewardship, enhanced hatchery production, harvest transformation, and integrated management and collaboration.

In the 2022-23 fiscal year, BCSRIF continued to provide opportunities for commercial and recreational fishers, non-governmental organizations and Indigenous communities to undertake projects that support the protection and conservation of Pacific wild salmon and ensure the fish and seafood sector in BC is positioned for long-term environmental and economic sustainability through a 3rd intake of proposal applications, open from mid-September to mid-November of 2022. Ministerial approval of projects selected for funding is expected in spring of 2023.

Further information on projects approved by the Minister will be published on the BCSRIF website as funding details are confirmed, and results from these projects will be included in future Annual Results Summary Reports.



**Conservation and stewardship**



**Salmon enhancement**



**Integration and collaboration**



**Harvest transformation**



## Appendix 1: Projects funded in 2021-22 (Year 3)

**AQUACULTURE AND  
THE CHANGING  
ENVIRONMENT/  
MARICULTURE  
(i.e. marine-based  
aquaculture)**

### **Seed Science Ltd.: *A Proposal for the Fermentative Production of Microalgae as Food for Juvenile Bivalves in BC.* (BC BCSRIF\_2020\_198)**

This project by Seed Science Ltd will investigate a more energy-efficient method to produce higher-quality algae as food for cultured bivalves. This project is expected to benefit the shellfish culture and harvesting community through enabling the production of larger seed for delivery to shellfish farmers, which can better tolerate the changing ocean conditions (acidification). In year 1, they purified 7 different species of microalgae and are growing them heterotrophically\*. They have identified increased growth rates and have developed a statistical model for identifying the proper parameters required for optimal growth of the microalgae.

### **BC Shellfish Growers Association: *Shellfish Aquaculture Strategic Renewal Program.* (BCSRIF\_2020\_200)**

The BC Shellfish Growers Association (BCSFG) is working to ensure the survival of shellfish aquaculture, an important industry and a mainstay of many BC coastal communities. Within the first year, the BCSFG has made strides toward improved traceability of shellfish products; application of innovative handling and processing technology; providing shellfish gear identification equipment for the industry's growers; and inclusive education on the importance of traceability, tagging, and record-keeping with all educational materials being translated to Chinese and Vietnamese. After multiple stakeholder and expert consultations, the BCSGA presented the best technological options to advance BC's shared traceability goals in a sector-wide workshop held on October 13, 2021.

### **Cascadia Seaweed Corporation: *Evaluation of Coastal Kelp Farms as Novel Habitat for Migrating Salmonids and their Prey.* (BCSRIF\_2020\_201)**

In the first year Cascadia Seaweed, in partnership with Ahousaht and Uchucklesaht Nations, installed two new kelp farms in Clayoquot Sound and Barkley Sound which included the nursery rearing and out-planting of two novel kelp crop species. In addition, they developed and tested equipment and protocols for biological, environmental, and oceanographic sampling. In collaboration with Ocean Networks Canada and AML Oceanographics, they designed, built, and deployed four high-end oceanographic monitoring arrays and developed adaptations to an existing programmable underwater video camera (a "FishCam") and garnered preliminary results showing fish use of the kelp cover with seasonal and habitat quantity-driven use.

### **Nova Harvest Ltd.: *Supporting West Coast Oyster Industry Development through Expansion of Nursery Seed Supply.* (BCSRIF\_2020\_223)**

Through this project, Nova Harvest Ltd has developed a solar powered, ocean-based nursery known as a Floating Upwelling System (FLUPSY). The objective is to increase capacity for large high-quality oyster seed for the T'Sou-ke Nation's oyster program and other West Coast farmers as well as reduce reliance on fossil fuels to operate the nursery. Over the past year, they have grown and deployed 5 million oyster seeds across the West Coast and through FLUPSY's alternative off-grid power supply, they have reduced fuel consumption by 95%. In addition, they have established continued water quality monitoring infrastructure in the Barkley Sound, providing local environmental monitoring data to local oyster growers and their academic partner, Bamfield Marine Science Centre.

**AQUACULTURE AND  
THE CHANGING  
ENVIRONMENT/  
MARICULTURE  
(i.e. marine-based  
aquaculture)**

**Mariculture LP: *Applying innovation and collaboration to improve productivity, economic stability and environmental performance of Oyster Culture.* (BCSRIF\_2020\_253)**

The overall goal of this project is for members of the Mariculture LP: Huu-ay-aht Group of Businesses (HGB), Nova Harvest Ltd. (NHL), and Bamfield Marine Science Center (BMSC) to work in collaboration to develop innovative technologies, thereby creating measurable improvements in the operational efficiency and environmental performance of oyster farming. Within the first year of this project, they developed an innovative oyster tray design that is expected to help decrease handling time by 75% and increase product quality and survival, while decreasing risk of marine plastic debris from the shellfish farm. In addition, a system for solar power technology was designed along with plans for using new building material composed of recycled plastic bottles; all with the intention to reduce reliance on fossil fuels and increase environmental performance.

**Gwabalís Fisheries Society: *Gwabalís Aquaculture Opportunity & Sustainability Survey.* (BCSRIF\_2020\_254)**

Through this project, the Gwabalís Fisheries Society (GFS) assessed and reported on sustainable aquaculture opportunities within the Nations' respective traditional territories. The GFS completed survey work, assessing 20 sites and 12 fish farm sites, primarily in Mamalilikulla and Quatsino Territories. Recommendations for shellfish, sea cucumber, seaweed and sablefish pilot projects were provided, as well as relevant business models. A comprehensive review of aquaculture activities, opportunities and challenges in the North Island, including a review of Gwabalís Nations' stewardship, monitoring and aquaculture, was also completed which provided recommendations for Gwabalís' entry into aquaculture, including developing ancillary activities around data collection, field monitoring, and seafood commodity chain infrastructure. This project provides a strong basis for moving forward with Gwabalís aquaculture development with confirmed leadership and community support.

**We Wai Kai First Nation: *Finfish Environmental Assessment - Sablefish Aquaculture.* (BCSRIF\_2020\_305)**

This single year project, conducted by the We Wai Kai First Nation, assessed the environmental and commercial feasibility of conducting sable fish aquaculture in open net-pens in Hoskyn Channel at two previously licensed fin fish aquaculture tenures held by the We Wai Kai First Nation. This was done through a comprehensive fish & fish habitat survey as well as DEPOMOD assessment, which predicts the depositional field of solid waste from aquaculture farms. The project deliverables include mentorship in environmental survey work for fin fish aquaculture and community engagement sessions around sable fish aquaculture. The project results showed that these two sites would qualify for sable fish culture licensing and would be a positive economic driver for the Nation creating long term employment and service contract opportunities for We Wai Kai First Nation.

**SPECIES OF  
CONCERN  
REBUILDING  
THROUGH  
SCIENTIFIC  
RESEARCH**

**University of British Columbia: *Developing a Cumulative Effects Modeling Framework for the Recovery of Aquatic Salmonid Populations.* (BCSRIF\_2020\_217)**

University of BC researchers and partners are developing a framework to model the cumulative impacts on salmonid populations. These impacts affect other organisms, habitats and ecosystems. The framework will track the cumulative impacts on salmonid populations allowing a watershed scale assessment. A library of the various stressors and response functions will be developed. These parameters will be modeled on the Nicola River, with a focus on the COSEWIC-listed chinook, coho, and steelhead stocks. A user manual will be created and a workshop will be delivered to all stakeholders.

**Island Marine Aquatic Working Group: *Development and Establishment of Vancouver Island Chinook Committee.* (BCSRIF\_2020\_232)**

The overall goal of the Island Marine Aquatic Working Group in establishing the Vancouver Island Chinook Committee (VISC), is to develop strategies to rebuild all southern BC stocks of concern and identify strategies to help determine stock status where data is insufficient. To date they have completed the initial phase of this 3-year project by establishing operating processes, objectives and securing representation for the VISC, supported by a Technical Working Group.

**Pacific Salmon Foundation: *Assessment of sampling methodologies, March 2022 Gulf of Alaska.* (BCSRIF\_2020\_318)**

This expedition was the largest ever multinational survey to study salmon in the North Pacific Ocean during the winter. This survey was part of the North Pacific Anadromous Fish Commission (NPAFC) Pan-Pacific survey series, which collected data on the abundance and diversity of Pacific salmon in high seas. The goal is to identify rationale for the recent collapse of the salmon fisheries in BC and provide information about the abundance of Pacific salmon returning to BC rivers. They seek to identify Pacific salmon stocks, age determination, growth rates, condition and diet as well as types and numbers of predators within the distribution of Pacific salmon. Other goals of the expedition are to understand the trends for capture of salmon in various gear types including gillnets, longlines and trawl gear and to gain a better understanding of the impacts of climate change.

**University of Victoria: *Causes and consequences of vateritic otoliths in hatchery-reared Coho salmon.* (BCSRIF\_2020\_239)**

The goal of this project, led by the University of Victoria, is to determine the causes of vateritic otolith\* development in hatchery-reared Strait of Georgia (SoG) Coho Salmon. It is investigating the consequences that these vateritic otoliths have for Coho Salmon survival and in turn, population recovery. Although there have been some challenges at the start of the project, including researchers being unable to make it to Chehalis hatchery in 2021 due to flooding in the Fraser Valley, to date they have collected and analyzed the otolith pairs of 692 Coho Salmon smolts and 700 adults from multiple stocks over six different Strait of Georgia (SoG) salmonid enhancement hatcheries. They have also completed a full year of experimental trials at Goldstream hatchery, collecting and analyzing over 900 Coho Salmon otolith pairs from these trials for vaterite, and pit-tagging 7,500 smolts for future survival assessments and monitoring.



**SPECIES OF  
CONCERN  
REBUILDING  
THROUGH  
SCIENTIFIC  
RESEARCH**

**Pacific Salmon Foundation: *Climate Action Priorities for Salmon.* (BCSRIF\_2020\_241)**

The effects of climate change are altering conditions on which salmon populations depend. The objective of this project is to create a Climate Action Plan for BC salmon through three initial project components. First is to assess migration impediments in the Fraser River and determine methods to improve access. This will include existing fishways and other areas of concern. Second, will be the development of a “Playbook” to guide landscape recovery strategies and identify priorities for salmon following major fires. The focus will be on the aquatic ecosystem, forest activities, silviculture and landscape management post-fire. Thirdly, will be the development of improved genetic baseline information that will define genetic differences at a scale finer than Conservation Units. This detailed baseline will inform elements of biodiversity, identify appropriate conservation measures such as enhancement, habitat protection and restoration priorities, as well as fishery management priorities.

**Ha’oom Fisheries Society: *Exploring Spatial Management Opportunities for Rockfish using Indigenous Knowledge and Subtidal Surveys.* (BCSRIF\_2020\_256)**

The Ha’oom Fisheries Society is utilizing Indigenous Knowledge and the Department of Fisheries and Oceans Canada’s rockfish habitat model to identify survey sites and record the presence and absence for three rockfish species listed under COSEWIC; Canary (Threatened), Quillback (Threatened) and Yelloweye Rockfish (Special Concern (COSEWIC and SARA)) and other nearshore rockfish species within the Court-Defined Area (CDA) for fishing. The Five Nations’ groundfish access is restricted to the CDA creating an increase in fishing effort in a small area with historically high rockfish bycatch proportions. The results of this study will be the basis of recommended spatial measures to prevent local rockfish depletions in the CDA and inform the DFO Rockfish Conservation Area renewal process. This first year consisted of trialing technological methods such as a Biosonic Echosounder, a Baited Remote Underwater Video (BRUV) system and others to survey rockfish populations in Clayoquot Sound and beyond.

**BC Centre for Aquatic Health Sciences Society: *The application of Nanopore technology for the rapid detection and characterization of pathogenic organisms in enhancement hatcheries.* (BCSRIF\_2020\_311)**

BC salmon that are reared in a hatchery setting are exposed to physical, chemical and biological stressors that are increasingly associated with climate change. This creates a breeding ground for endemic pathogens and increases the risk of infection and subsequent compromised health. Accurate detection and identification of infectious agents are essential for informed health management and treatment decisions. Oxford Nanopore Technologies, Oxford, UK, produces low cost, portable real-time sequencing devices which are suitable for use in small laboratory and field settings. The Centre for Aquatic Health Sciences Society already has a study underway and will work over the next two years to apply and validate Nanopore technology as a rapid and broad-range tool for the detection and identification of salmon pathogens from biological (body fluids and organs) and environmental samples from hatcheries. In consultation with SEP partners, fish health biologists and veterinarians, they will determine which agents and questions should be addressed with the goal of generating knowledge to support the refinement of hatchery and fish health management practices.



**SPECIES OF  
CONCERN  
REBUILDING  
THROUGH  
SCIENTIFIC  
RESEARCH**

**University of British Columbia: *Monitoring the Lipid Content of Fraser-bound Chinook at Albion.* (BCSRIF\_2020\_313)**

UBC researchers are undertaking measurements of Albion Test fishery Chinook salmon lipid content in order to better understand how lipid levels may relate to salmon successfully reaching their spawning grounds. At the end of the first field season, the project has achieved multiple milestones. They have established an effective calibration that allows a Distell fat meter to measure total Chinook lipid content, developed an effective protocol for deployment of this fat meter device at the Albion test fishery, and during the 2021 season they were able to derive measurements from 1450 Chinook. The result is a rapidly growing and unique dataset of run-specific Chinook lipid content that will enhance UBC's ability to address the vulnerability of these stocks to changing ocean dynamics, prioritize conservation, and will further the protection and restoration of wild BC stocks and resident orcas.

**Office of the Wet'suwet'en Rebuilding: *Wet'suwet'en sockeye abundance and diversity.* (BCSRIF\_2020\_316)**

Since 1913, the sockeye salmon population in the Morice/Bulkey system of the Skeena River has been on a continuous decline. This has forced the Wet'suwet'en communities to forego the harvest of salmon in their territory for decades. Since 2021, the Wet'suwet'en Treaty Office Society has successfully tagged salmon for later data analysis, set up five receiver stations and assessed the spawning location in the Nanika River. Throughout the life of the project, they will continue to collect and analysis data that will aid in the vital restoration of the sockeye salmon population.

**SPECIES OF  
CONCERN  
REBUILDING  
THROUGH  
SELECTIVE FISHING**

**Tsawwassen First Nation: *Selective Fishing Using a Salmon Trap in the Lower Fraser River.* (BCSRIF\_2020\_224)**

The Tsawwassen First Nation (TFN) are working toward the design and operation of a tidal waters salmon trap close to their traditional fishing sites near the mouth of the Fraser River. The project objectives include identification and assessment of a suitable trap site, building, operating, and maintenance of the trap and monitoring of fish health.

**Harrison Salmon Producers LP: *Conservation Fishing - A First Nations Demonstration Selective Fishing in the Lower Fraser River.* (BCSRIF\_2020\_269)**

This project aims to demonstrate the effectiveness of community-led selective fishing through the use of hybrid river seine-to-trap sites, as well as river purse seining where non-selective gear is restricted. The project will cover 3 seasons of selective fishing experimentation in the Harrison and adjacent Lower Fraser Rivers. Year one research efforts have successfully focused on design and testing of selective seine-to-trap technology in gill nets sites/non-traditional seine sites. They have also trained and employed a Sts'ailes fishing crew. Stock assessment collaborations are expected to grow over 3 years, along with increased tagging, recovery and sampling capacities. This project will continue the important work of positioning the First Nations salmon fishery to protect fisheries and manage its modern terminal commercial fishing opportunities, while fostering long-term environmental, cultural, and economic sustainability.

**SPECIES OF  
CONCERN  
REBUILDING  
THROUGH  
SELECTIVE FISHING**

**Lower Fraser Fisheries Alliance: *Selective Fishing Gear Pilot in the Fraser River.* (BSCRIF\_2020\_282)**

The goal of this project is to pilot selective fishing gear in the Fraser River and its tributaries through applying traditional First Nations methods in modern ways to achieve economically sustainable and culturally sensitive outcomes. Through these methods the Lower Fraser Fisheries Alliance Society aims to improve First Nations access to their food, social, and ceremonial (FSC) salmon fisheries. In the first year of the project they created a project management committee, conducted research, developed four Selective Fishing Plans alongside partner communities, and constructed a mobile fish weir for piloting in the 2022–23 fiscal year.

**T Buck Suzuki Environmental Foundation: *Technology for more sustainable fisheries in BC.* (BSCRIF\_2020\_284)**

This project is focusing on the improvement and expansion of the Pacific Salmon Explorer website. This interactive website tracks and reports on the Pacific salmon conservation units along with their freshwater habitats in BC. With current updates being made it will soon provide the most current numbers of conservation units and their habitats in the province while also providing crucial information on climate change and the steelhead conservation population. This project aims to enable access to more readily available data about Pacific salmonids and their habitats so users can compare trends across every conservation unit in BC. This new expansion will also help understand and mitigate present and future impacts that climate change is having on the salmon and steelhead population in BC.

**SPECIES OF  
CONCERN  
REBUILDING  
THROUGH  
HABITAT  
RESTORATION**

**Cowichan Tribes: *Chemainus/Koksilah Twinned Watershed Sustainability Project.* (BCSRIF\_2020\_216)**

The Twinned Watershed Sustainability Project to develop a Water Sustainability Plan (WSP) for the Koksilah River watershed is a partnership project between the Cowichan Tribes and the Province of BC. In the Chemainus River watershed, the Halalt First Nation, Province of BC, and local government are exploring groundwater–surface water interactions and current water management regimes in relation to Halalt’s Aboriginal rights to water, water resources, and water for fish. It is hoped that these projects will foster critical links between First Nations rights and title, federally–managed anadromous salmon stocks and provincially–managed land use and can be used as a roadmap for other regions of the Province where WSP’s are needed. These projects took strides in achieving their planned goals this past year under the guidance of the newly formed technical team paired with a technical working group including: training and employment for Cowichan Tribes and Halalt fisheries technicians; environmental flow and habitat inventories for both the Chemainus and Koksilah Rivers; and large–scale stock assessment using an ARIS sonar unit paired with video cameras.

**SPECIES OF  
CONCERN  
REBUILDING  
THROUGH  
HABITAT  
RESTORATION**

**First Nations Fisheries Legacy Fund Society: *UAV Habitat Mapping to Inform Wild Salmon Stewardship.* (BCSRIF\_2020\_218)**

The Unmanned Aerial Vehicle (UAV) Habitat Mapping to Inform Wild Salmon Stewardship project is a strategic collaboration between three key stakeholders: the First Nations Fisheries Legacy Fund (FNLF), Okanagan Nation Alliance (ONA), and Skeena Fisheries Commission (SFC). The project's goal is to enhance capacity for monitoring and management of wild salmon habitat in First Nations through the integration of community mapping and geospatial technologies. In a productive first year, the project partners have signed a Letter of Understanding, purchased all UAV equipment, and trained and certified partners in UAV operation and data collection. Community mapping sessions have been conducted and flights have been performed to begin collecting data on the sites of interest to the partners.

**North Coast-Skeena First Nations Stewardship Society: *Skeena Estuary Habitat Management and Protection Planning.* (BCSRIF\_2020\_219)**

The North Coast-Skeena First Nations Stewardship Society (NCSFNSS) has been building a valuable foundation during phase 1 of their Skeena Estuary Habitat Management and Protection Planning (SEHMPP) project. They are working collaboratively to develop a monitoring, assessment and management plan for the Skeena Estuary. To date, they have completed a literature review, identified key stakeholders, secured facilitators, gathered spatial salmon data, and have identified a suite of initial priority areas and potentially impacted sites. Expected outcomes include the establishment of clear and consistent environmental management tools; enhanced watershed collaboration; and implementation of community supported and community-driven priorities for the protection and restoration of key salmon habitat.

**Kitsumkalum Indian Band: *Highway 16 Corridor Fish Stranding.* (BCSRIF\_2020\_225)**

This project focuses on fish habitat within the traditional territory of the Kitsumkalum Indian Band. Pre-project (in 2018-19), the Band identified 25 sites of concern with 16 of those being potential mortality traps for juvenile fish due to varying water levels or improperly installed culverts. In their 1st year, planning and engineering designs were completed and permanent solutions were realized at the project's highest priority fish restoration sites.

**Simon Fraser University: *Landslide impact on the flow dynamics, fish migration and genetics of Fraser River Salmon.* (BCSRIF\_2020\_233)**

On November 1, 2018 the Big Bar landslide partially blocked the Fraser River, approximately 64km north of Lillooet, causing river flow conditions detrimental to salmon migration into the Upper Fraser Basin. Simon Fraser University plans to examine the impact that the landslide has had on the salmon migration and identify potential future impacts on various sites using sonar surveys and LiDAR mapping. Since 2021, SFU has manually identified 10 -15 landslide sites in the Fraser River that may impact salmon migrating upstream at Yale Rapids, Big Bar, and Chrisholm Canyon. Using airborne LiDAR and hyperspectral imagery, they can identify landslide features as well as map riverbed topography and characterize flow structures using multi-beam echo-sounders and acoustic Doppler current profilers to determine river velocities. This project has also radio-tagged a combined total of 1,787 Chinook, Sockeye, Coho, and Pink Salmon to assess the passage rate across the hydraulic barriers.

**SPECIES OF  
CONCERN  
REBUILDING  
THROUGH  
HABITAT  
RESTORATION**

**Redd Fish Restoration Society: *Clayoquot Wild Chinook Salmon Initiative.* (BCSRIF\_2020\_242)**

The project's objective is to restore critical spawning and rearing habitat in Clayoquot Sound for Wild Chinook Salmon, which are a conservation concern across three watersheds, Bedwell, Atleo and Tranquil, within the traditional territory of the Ahosuht and Tla-o-qui-aht Nations. The lack of adequate spawning and rearing habitat in these coastal rivers is the result of a legacy of habitat degradation from forest harvesting. This project employs innovative ecological engineering technologies to restore fish habitat and revitalize drastically declining stocks. Engineered log jam structures will be used to restore 2 km of critical Chinook spawning habitat. These designs are the first of their kind in BC and offer a new and advanced approach to restoring fish habitat and revitalizing drastically declining stocks. In the first year, Redd Fish Restoration Society has done watershed level assessments including air photo analysis, fisheries habitat assessment, riparian assessment, and terrain stability assessments. They have developed a comprehensive risk assessment process to determine risks of the project and outline areas of mitigation.

**Central Coast Indigenous Resource Alliance: *First Nations-led Freshwater Salmon Habitat Assessment & Restoration Planning in the Central Coast.* (BCSRIF\_2020\_247)**

Through this collaborative project, the Central Coast Indigenous Resource Alliance will utilize previous strategic plans to prioritize areas and actions to restore hydrological function in targeted watersheds in the Central Coast sub-region of BC, develop watershed-scale (or finer scale) habitat assessment approaches, and implement initial restoration activities in priority watersheds as informed by monitoring and Indigenous Knowledge. They aim to develop a habitat assessment and restoration prioritization methodology that is actionable and can serve as a broadly applicable, scalable model for other First Nations wishing to lead detailed habitat assessments in their traditional territories.

**Kitselas First Nation: *Kleanza Creek Salmon Habitat Enhancement and Restoration Project.* (BCSRIF\_2020\_251)**

Within year one of the Kleanza Creek Salmon Habitat Enhancement and Restoration Project, Kitselas Lands and Resources Department (KLRD) along with Ecofish Research Ltd (Ecofish), created a habitat enhancement plan for the Kleanza Creek watershed. This groundwork will guide the project through its next phases of restoration, enhancement and monitoring. The end goal is to restore the structural and functional connectivity of previously important salmon habitat that has been heavily impacted.

**Ducks Unlimited Canada: *Fraser River Estuary Salmon Habitat (FRESH) Restoration Projects.* (BCSRIF\_2020\_268)**

To restore key Fraser River estuary tidal marsh habitat and access to these critical habitats for the benefit of COSEWIC-listed salmon and other wild BC fish stocks, Ducks Unlimited Canada (DUC) is working closely with Raincoast Conservation Foundation (RCF), Lower Fraser Fisheries Alliance (LFFA), and Tsawwassen First Nation (TFN) to implement three large-scale projects. These projects include: 1. Alaksen National Wildlife Area Field 8 Tidal Marsh Restoration, 2. North Arm Jetty Breaches, and 3. Sturgeon Bank Sediment Enhancement Pilot Project. The partnership was able to significantly advance their North Arm Breaches project with the construction of the first breach in the North Arm Jetty in February, 2022 and begin the necessary work of baseline sampling of juvenile salmon and obtaining the needed approvals to ensure all three projects can move forward over the next two years.

**SPECIES OF  
CONCERN  
REBUILDING  
THROUGH  
HABITAT  
RESTORATION**

**Yucwmenlucwu (Caretakers of the Land) 2007 LLP: *Salmon River Collaborative Salmonid Habitat Enhancement and Restoration Initiative.* (BCSRIF\_2020\_273)**

The Yucwmenlucwu (Caretakers of the Land) and their partners are undertaking comprehensive research and developing recommendations to enhance ecological function of the Salmon River watershed through the application of Indigenous Knowledge, science-based data and a more holistic approach to better manage and restore ecological flows for a healthy watershed and foster an increase in local salmonid populations. This past year they completed their first major project milestone and win for salmon – the completion of Sensitive Habitat Inventory Mapping (SHIM) and developing an Aquatic Habitat Index (AHI) for the Salmon River.

**MakeWay Charitable Society: *Resilient Waters Phase 2 - Restoring Connection to Off-channel Salmonid Habitat in the Lower Fraser River Watershed.* (BCSRIF\_2020\_276)**

MakeWay's Resilient Waters initiative is working to restore connections to wild salmon habitat that has historically been alienated by flood control infrastructure (FCI) installed adjacent to the Lower Fraser River. Working with cross-sector partnerships, this project is implementing fish-friendly flood control solutions and advancing research and best practices for fish-friendly flood practices. Under Phase 1, the Resilient Waters initiative focused on identifying, prioritizing, and scoping opportunities for FCI upgrades and fish habitat restoration opportunities, as well as building cross-sector relationships with local governments, First Nations, NGOs and Academia. Phase 2 is now underway with 26 priority sites having been identified and assessed, and priority projects to resolve FCI issues will be undertaken. The Colony Farm flood gate effectiveness study and the wetland evolution modeling study are both underway and innovative animations are being created to communicate best practices for fish-friendly infrastructure.

**Wuikinuxv Nation: *Wuikinuxv Assessment and Restoration of Rivers Inlet Salmon.* (BCSRIF\_2020\_278)**

The Wuikinuxv Nation has made strides in year one of this two-year project, which addresses priorities as identified by Wuikinuxv Nation, DFO, PSF and the Rivers Inlet Salmon initiative. These priorities include assessing the productivity of Owikeno Lake and carrying capacity for juvenile Sockeye Salmon using methods developed by DFO and Skeena Fisheries Commission scientists; purchasing the sonar equipment needed to enumerate adult salmon returns to the Waanukv River using ARIS sonar technology, as conducted in recent years; and capacity building related to equipment needed to support local salmon projects including: maintenance of sonar stations, test fishing, broodstock collection and stream surveys.

**Pacific Salmon Foundation: *Supporting the Ongoing Use and Development of the Pacific Salmon Explorer.* (BCSRIF\_2020\_279)**

This project is focusing on the improvement and expansion of the Pacific Salmon Explorer website. This interactive website tracks and reports on the Pacific salmon conservation units along with their freshwater habitats in BC. With current updates being made it will soon provide the most current numbers of conservation units and their habitats in the province while also providing crucial information on climate change and the steelhead conservation population. The aim of this project is to allow for more readily available data about Pacific salmonids and their habitats so users can compare trends across every conservation unit in BC. This new expansion will also help understand and mitigate present and future impacts that climate change is having on the salmon and steelhead population in BC.

**SPECIES OF  
CONCERN  
REBUILDING  
THROUGH  
HABITAT  
RESTORATION**

**Secwepemc Fisheries Commission for and behalf of Shushwap Nation Tribal Council Society: *Collaborative Freshwater Research and Restoration Initiative in the Thompson Watershed.* (BCSRIF\_2020\_294)**

Steep declines in many Southern Interior stream-type salmon, particularly in the Thompson-Shuswap, are hindering BC's fishing economy. This project aims to fill data gaps related to Fraser Coho and Endangered Interior Fraser Summer Steelhead, and Southern BC Chinook, which will be used to inform fisheries recovery and rebuilding plans. The study design for this project was developed in conjunction with Instream Fisheries and was finalized this year. In addition, the installation of a PIT array system, prior to applying PIT tags in 196 adult coho salmon in the Deadman River, was done to test the PIT array efficiency, with initial results being very positive – a 96% detection rate. The results will apply to stream-type species in other semi-arid regions of the Thompson watershed and will be essential to develop effective recovery strategies and inform science assessments.

**Nootka Sound Watershed Society: *Watershed Restoration Prioritization Tool/Solutions for Gold River Steelhead.* (BCSRIF\_2020\_301)**

With the Gold River steelhead salmon on the brink of extinction, this project has designed a spatial modeling tool to help develop a plan to monitor and improve the steelhead's habitat as well as other Pacific salmon species. Since its completion, it has been shown to be a valuable tool that helps assess the challenges faced at a stream and watershed level in Nootka Sound. It has been shared with multiple partners and has been part of discussions between the government, First Nations and industry when planning restoration activities. Nootka Sound Society also plans to launch an improvement project in the Muchalat River watershed for at-risk Steelhead.

**K'ómoks First Nation: *Kus-kus-sum - Restoration of key habitat in the K'ómoks Estuary to re-establish ecosystem services that will support BC Salmon.* (BCSRIF\_2020\_318)**

The Komoks First Nation, in collaboration with the City of Courtenay and the Comox Valley Project Watershed Society (CVPWS), have begun the Kus-kus-sum project. This involves the acquisition and re-naturalization of a former industrial sawmill site in the heart of the salmon migration corridor for the watersheds of two major rivers, the Puntledge and the Tsolum. The process includes land acquisition, baseline monitoring, restoration planning, and a commitment to KFN full ownership of the site in the long-term. The restoration of this site will improve access to food, social and ceremonial uses of salmon, provide increased recreational fishing opportunities, and support the recovery of Southern Resident Orca populations. The first phase of the restoration involved the removal of all the hard surfacing – concrete and asphalt – that covered the entire 8.39-acre site, as well as the underground utilities. More than twice as much concrete as was originally estimated was found on the site but through an extended timeline and diversified funding proposals, the initial phase of restoration work has been completed. The project can now move forward to complete the restoration of the site by 2023 in order to re-establish ecosystem services at this important site for BC salmon.





**COMMUNITY  
HATCHERY  
UPGRADES**

**Kingfisher Interpretive Centre Society: *Intake Restoration.* (BCSRIF\_2020\_208)**

The Kingfisher Interpretive Centre Society (KICS) has been raising Chinook salmon and educating the public for close to 40 years. A key component of this facility has been raising Chinook as fed fry, which can increase the survival rates. Unfortunately, in 2014 the hatchery suffered major damage due to a debris torrent to its intake in Cooke Creek. Since then, the KICS have been unable to feed the fry as per the DFO Regional Production Plan. BCSRIF funding is allowing for repairs to the intake to enable the KICS to be able to feed the Chinook fry in their care increasing survival and adding to the public education at the center. The project had setbacks during the year due to high fire risk in the summer and high water in the fall of 2021.

**Sunshine Coast Salmonid Enhancement Society: *Chapman Creek Hatchery Water Supply and Capacity Upgrades.* (BCSRIF\_2020\_209)**

To obtain a reliable water source, the Sunshine Coast Salmonid Enhancement Society (SCSES), arranged the drilling of 3 test wells to support the salmon rearing and enhancement program at the community-based Chapman Creek Hatchery. During the summer months, Chapman Creek has experienced low flow rates and high water temperatures, which poses a danger for salmon. Through their work, it was confirmed that the aquifer on the site is not connected to the creek and as a result, the hatchery now has a flow of cool water from a source that does not impact the SCR D water supply. This allows for the mixing of creek water with well water in attempt to maintain moderate water temperatures for the coho in rearing ponds benefiting the partners and communities who rely on salmon for food or recreation.

**Seymour Salmonid Society: *Seymour Hatchery Infrastructure Renewal Project.* (BCSRIF\_2020\_210)**

The Seymour Salmonid Society is undertaking maintenance to the community hatchery that has been enhancing salmon and steelhead, restoring habitat, educating the public in conservation of salmonid populations since 1977. The work plan for the next 3 years includes a new feed & storage container, a sewage storage tank, and upgrades to the perimeter fencing and a roof over the pond. This will assist the Seymour hatchery and education center in the restoration and conservation of the salmonid populations in the Seymour watershed.

**Nanaimo River Stewardship Society: *Nanaimo Hatchery Upgrades to Improve Hatchery Performance and Assessment and Monitoring Capabilities.* (BCSRIF\_2020\_298)**

The Nanaimo River Hatchery works to restore Nanaimo and Chemainus salmon populations and provides opportunities for harvest to the anglers and First Nations in the area. Due to the wear and tear on the facility since 1978, upgrades were needed. The Nanaimo River Society have completed the refurbishing of the raceways (flow-through system) in the hatchery, replaced heath trays and obtained a fish pump to help move fry around with minimal harm. With the project set to be completed by 2024, there are still multiple upgrades in the project's future.



**COMMUNITY  
HATCHERY  
UPGRADES**

**Great Bear Initiative Society (Coastal First Nations or CFN-GBI):  
*Coastal First Nations Salmon Enhancement and Restoration Initiative.*  
(BCSRIF\_2020\_300)**

Coastal First Nations–Great Bear Initiative (CFN–GBI) is the lead organization for this project, which involves four of its member Nations: Old Massett, Gitga’at, Heiltsuk and Kitasoo/Xai’xais First Nations. Activities consist of upgrading existing infrastructure at six community hatcheries to incorporate more sustainable technology and enable restoration of wild BC stocks that are of red-listed concern in the region. Condition assessments have been conducted for all 6 sites, immediate and critical equipment purchases have been made by two sub-projects and the Kitasoo facilities have completed most of their planned infrastructure. As such, the project partners have created a solid base to continue their work over the next 2 years to help rebuild vulnerable salmon stocks, provide harvest opportunities, and provide collaboration opportunities between First Nations, DFO, and other partners on salmon enhancement initiatives.

**Gitanyow Huwilp Society: *Kitwanga River Sockeye Salmon Enhancement Project* (BCSRIF\_2020\_304)**

Kitwanga sockeye are considered a distinct conservation unit as described under Canada’s Wild Salmon Policy. This project supports a renewed interest in raising Kitwanga sockeye in a hatchery setting in order to rebuild the genetically unique stock in an attempt prevent any further decline and loss of important genetic diversity. Activities within this project include research and infrastructure preparation for a potential future enhancement facility; site survey and design; biological strategy; water volume/water quality and wells; discharge treatment; and site development and building/site construction planning. Beyond the analysis and water quality testing, the Gitanyow Fisheries Authority have focused the first year of the project on gaining support and guidance from the Gitanyow Hereditary Chiefs as well as having important community conversations around hatchery employment.

**Skeetchestn Indian Band: *Deadman River Hatchery Infrastructure Upgrade.* (BCSRIF\_2020\_314)**

The Deadman River Hatchery is overseen by the Skeetchestn Indian Band’s Natural Resources Department. The hatchery has been operational for 34 years. Given its age, and having undergone a number of flooding events, the Deadman River Hatchery is in dire need of infrastructural upgrades in order to spawn, incubate, and rear Deadman River coho on-site. Skeetchestn have identified three priorities: water supply, health and safety, and infrastructure upgrades. They have been laying the ground work for year 2 and beginning development on these key infrastructure projects that will ensure the meeting of health and safety standards for personnel and make the Deadman River Hatchery fully operational for all coho development stages.



**INCREASING  
INNOVATION TO  
SUPPORT THE  
SUSTAINABILITY AND  
ECONOMIC STABILITY  
OF BC FISHERIES**

**Archipelago Marine Research Ltd.: *Modernizing Catch Reporting in Canada's Pacific Region Salmon Fisheries.* (BCSRIF\_2020\_212)**

Archipelago Marine Research Ltd. works with the fishing industry, NGOs, and regulators to implement sustainable practices through at-sea and dockside observer programs, electronic monitoring technology, and marine environmental services. Through this project, they have created a multi-stakeholder Advisory Committee and secured support from commercial salmon fishery representatives to work toward the development of an easy to use mobile application for fishers to record their fishing logbook data and submit daily catch reports and hauls. The intention is to provide improvement to the timeliness and accuracy of the data that is produced to support the in-season management of the fishery.

**A-Tlegay Fisheries Society: *A-Tlegay Kelp Production and Restoration.* (BCSRIF\_2020\_214)**

With the continuous decline of kelp forests in British Columbia, the A-Tlegay Fisheries Society aim to restore and enhance the kelp beds in the A-Tlegay territory. Since launching the project in 2021, they have obtained monitoring equipment, reviewed existing monitoring data and developed a monitoring plan to track growth of the kelp beds. Currently the A-Tlegay Fisheries Society is in process for obtaining land permits and aquatic plant/harvest licenses. Once the permits/licenses are approved, they can start the important work of restoring and harvesting kelp beds.

**Secretariat of the Haida Nation: *Understanding the extent of the European Green Crab Invasion on Haida Gwaii and mitigating its impacts.* (BCSRIF\_2020\_215)**

The Twinned Watershed Sustainability Project is multifaceted with Cowichan Tribes and the Province of BC partnering to develop a Water Sustainability Plan (WSP) for the Koksilah River watershed. In the Chemainus River watershed, the Province of BC, local government, and Halalt First Nation are exploring groundwater/surface water interactions and current water management regimes in relation to Halalt's Aboriginal rights to water, water resources, and water for fish. A WSP, under the Water Sustainability Act, could be viewed as a critical link between First Nations rights and title, federally-managed anadromous salmon stocks and provincially-managed land use. This can be used as a roadmap in other regions of the Province where WSP development is needed. This project took strides in achieving its planned goals this past year under the guidance of the newly formed technical team paired with a technical working group. They have trained and employed Cowichan Tribes and Halalt fisheries technicians; generated environmental flow and habitat inventories for both the Chemainus and Koksilah Rivers; and completed the first stock assessment of its scale using an ARIS sonar unit paired with video cameras.

**North Pacific Kelp Wild Foods Inc.: *Ecosystem Management of Kelp Forest.* (BCSRIF\_2020\_220)**

Through this project, North Pacific Kelp Wild Foods Inc. aims to improve monitoring and sustainable harvesting methods of wild *Macrocystis integrifolia* (giant kelp) on Graham Island, Haida Gwaii, BC. They have begun collecting data through multiparameter sonde\* including various sensors, digitized imagery and ocean water information using scuba divers, and an aerial drone. This work is being conducted to identify environmental stressors of the kelp forest and assess conditions as they relate to the economics of both fin fisheries and invertebrate fisheries.

**INCREASING  
INNOVATION TO  
SUPPORT THE  
SUSTAINABILITY AND  
ECONOMIC STABILITY  
OF BC FISHERIES**

**Coastal Restoration Society: *South Coast European Green Crab Control Project.* (BCSRIF\_2020\_221)**

Since 2021, the Coastal Restoration Society have been working on controlling the European Green Crab population in both Clayoquot Sound and the Sooke Basin. Through the modifications of shellfish traps, eelgrass monitoring and consulting with Tla-o-qui-aht, Ahousaht, Hesquiaht and T'sou-ke First Nations to gain Indigenous Knowledge of the local trapping sites, they have surpassed their initial trapping expectation. In this coming year, Coastal Restoration Society will continue its work to decrease the population of ECG in both locations as well as experiment on different trapping techniques and investigate other potential trapping locations.

**Lake Babine Nation Fisheries: *Babine Lake Creel Survey in the vicinity of the Fulton River, 2021 - 2024.* (BCSRIF\_2020\_226)**

The Lake Babine Nation will undertake a creel survey each year from 2021-2024 to determine the harvest levels of sockeye salmon from the vicinity of Fulton River, which will support the collection of baseline data on the increasingly popular sockeye sports fishery on Babine Lake. They began this year, collecting information on the total number of sockeyes harvested by sport fishermen, harvest per unit effort, and angler origins. The creel surveys will provide valuable data on the catch and effort of the recreational Sockeye fishery in the area, supporting in-season fisheries management decisions.

**Sport Fishing Institute of BC: *Understanding FRIM in the Angling Community.* (BCSRIF\_2020\_259)**

This project aims to establish a BC-based program to raise awareness, understanding and appreciation of the importance of selective fisheries and minimizing Fishing-Related Incidental Mortality (FRIM) amongst local salmon anglers. This increased awareness and understanding of selective fishing methods through workshops, 2 full TV episodes, a comprehensive communications campaign and the creation of a best practice app on FishingBC, will encourage anglers to adopt tools and best practices, enabling fishers to support the salmon recovery process.

**Sport Fishing Institute of BC: *Modernizing Recreational Catch Monitoring, Data Collection and Communication.* (BCSRIF\_2020\_260)**

The first year of this Sport Fishing Institute of BC project, has realized the successful development of the FishingBC app. The purpose is to enhance and modernize catch log expansion and improve the quality of data collection, along with public education and outreach to promote awareness of the app and the importance of collecting accurate recreational fishery data to aid in sustainable management. The launch of the FishingBC app is awaiting alignment with DFO systems and it is hopeful that within a short timeframe, integration can be managed to maximize the potential of the enhancements and tools developed.

**INCREASING  
INNOVATION TO  
SUPPORT THE  
SUSTAINABILITY  
AND ECONOMIC  
STABILITY OF BC  
FISHERIES**

**Sport Fishing Institute of BC: *Fishing Related Incidental Mortality (FRIM) - Short term mortality holding studies.* (BCSRIF\_2020\_261)**

Year one of this collaborative project has laid the ground work for the staff, partners, and advisors to gain a greater understanding of both the rate of, and the mechanisms behind, short term Fishing Related Incidental Mortality (FRIM) for Chinook salmon in the BC public fishery. A more complete understanding of the impact and root causes of FRIM will enable fishery managers to better implement and adapt management measures to account for, and potentially mitigate, the impact of selective fishing activity. An accompanying Best Practices Guidebook along with a communications and outreach program, will provide the information needed for anglers to modify their angling behavior and gear choice in order to minimize FRIM.

**Fraser Salmon Management Council (FSMC): *Fraser Salmon Management Program.* (BCSRIF\_2020\_262)**

This project brings together Indigenous biologists and technologists along with experts from DFO and other organizations to create a technical working group. This group will provide information and advice to support Indigenous leadership in decisions to ensure the protection and restoration of Fraser River chinook and other salmonid stocks. The group will support sound collaborative decision making in regards to fisheries management, conservation, enhancement and restoration plans within the Fraser River. The technical group will also develop annual fishing plans and a suite of adaptive and innovative tools and techniques for modeling outcomes and informing future decisions.

**Sport Fishing Institute of BC: *SFAB Vision - Phased Implementation.* (BCSRIF\_2020\_270)**

In order to ensure that the interests of the recreational fishery are represented to regulators and decision-makers, this project will be focused on modernizing the Sport Fishing Advisory Board by establishing the governance and financial management structure, and confirming the long-term funding and operating process for the Board.

**Central Coast Indigenous Resource Alliance: *First Nations-led catch monitoring to inform sustainable mixed-stock fisheries management on the Central Coast.* (BCSRIF\_2020\_292)**

The Central Coast Indigenous Resource Alliance (CCIRA) are designing and implementing a strategy to evaluate catches in recreational and Food, Social, Ceremonial Fisheries (FSC). In addition, they are estimating rates of exploitation for two of the coho stocks on the Central Coast while looking at mixed-stock sampling in Fisheries Management Areas 6-9. In 2021, the CCIRA held training and provided sampling/logging kits for partners; together they were able to collect a total of 1,200 DNA samples. CCIRA will continue to collect data and input from communities to assist in filling the data gaps around the Central Coast's salmon population while also promoting sustainable opportunities for marine and FSC fisheries.

## Appendix 2: Program Overview

As part of the provincial and federal governments' 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, to provide opportunities to maximize the value of Canada's fish and seafood sector and, in BC, to help to rebuild salmon stocks.

BCSRIF 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 at [www.bcsrif.ca](http://www.bcsrif.ca)

# Appendix 3: List of BCSRIF Funded Projects

## Projects Approved in 2021-22

Note: The ongoing full scope of projects and closed projects are listed separately.

Project Title	Recipient Organization	Allocation
<b>Projects Funded in Fiscal Year 2021-22 (Batch 4)</b>		
A Proposal for the Fermentative Production of Microalgae as Food for Juveniles Bivalves in BC	Seed Science Ltd	\$ 475K
Shellfish Aquaculture Strategic Renewal Program	BC Shellfish Growers Association	\$3.5M
Evaluation of coastal kelp farms as novel habitat for migrating salmonids and their prey	Cascadia Seaweed Corp.	\$ 1.8M
Intake Restoration	Kingfisher Interpretive Centre Society	\$43K
Chapman Creek Hatchery Water Supply and Capacity Upgrades	Sunshine Coast Salmonid Enhancement Society	\$70K
Seymour Hatchery Infrastructure Renewal Project	Seymour Salmonid Society	\$ 80K
Modernizing Catch Reporting in Canada's Pacific Region Salmon Fisheries	Archipelago Marine Research Ltd.	\$318K
A-Tlegay Kelp Production and Restoration	A-Tlegay Fisheries Society	\$487K
Understanding the extent of the European Green Crab Invasion on Haida Gwaii and mitigating its impacts	Secretariat of the Haida Nation	\$1.2M
Chemainus/Koksilah Twinned Watershed Sustainability Project	Cowichan Tribes	\$1.1M
Developing a Cumulative Effects Modeling Framework for the Recovery of Aquatic Salmonid Populations	University of British Columbia	\$254K
UAV Habitat Mapping to Inform Wild Salmon Stewardship	First Nations Fisheries Legacy Fund Society	\$2.4M
Skeena Estuary Habitat Management and Protection Planning	North Coast-Skeena First Nations Stewardship Society	\$2.3M
Ecosystem Management of Kelp Forest	North Pacific Kelp Wild Foods Inc.	\$99K
South Coast European Green Crab Control Project	Coastal Restoration Society	\$1.9M
Supporting West Coast Oyster Industry Development through Expansion of Nursery Seed Supply	Nova Harvest Ltd.	\$210K
Selective Fishing Using a Salmon Trap in the Lower Fraser River	Tsawwassen First Nation	\$875K
Highway 16 Corridor Fish Stranding	Kitsumkalum Indian Band	\$175K
Babine Lake Creel Survey in the vicinity of the Fulton River, 2021 - 2024	Lake Babine Nation Fisheries	\$373K
Development and Establishment of Vancouver Island Chinook Committee	Island Marine Aquatic Working Group	\$397K
Landslide impact on the flow dynamics, fish migration and genetics of Fraser River Salmon	SFU	\$3.5M
Assessment of sampling methodologies, March 2022 Gulf of Alaska	Pacific Salmon Foundation	\$ 308K
Causes and consequences of vateritic otoliths in hatchery-reared Coho salmon	University of Victoria	\$ 512K
Climate Action Priorities for Salmon	Pacific Salmon Foundation	\$ 3.2M
Clayoquot Wild Chinook Salmon Initiative	Redd Fish Restoration Society (formerly Central Westcoast Forest Society)	\$500K
First Nations-led Freshwater Salmon Habitat Assessment & Restoration Planning in the Central Coast	Central Coast Indigenous Resource Alliance	\$2.7M
Kleanza Creek Salmon Habitat Enhancement and Restoration Project	Kitselas First Nation	\$561K
Applying innovation and collaboration to improve productivity, economic stability and environmental performance of oyster culture	Mariculture LP (formerly Huu-ay-aht First Nation Fisheries Limited Partnership)	\$558K
Gwabal's Aquaculture Opportunity & Sustainability Survey	Gwabal's Fisheries Society	\$107K
Exploring Spatial Management Opportunities for Rockfish using Indigenous Knowledge and Subtidal Surveys	Ha'oom Fisheries Society	\$202K
Understanding FRIM in the Angling Community	Sport Fishing Institute of BC	\$206K
Modernizing Recreational Catch Monitoring, Data Collection and Communication	Sport Fishing Institute of BC	\$344K
Fishing Related Incidental Mortality (FRIM) - Short term mortality holding studies	Sport Fishing Institute of BC	\$833K

Project Title	Recipient Organization	Allocation
Fraser Salmon Management Program	Fraser Salmon Management Council (FSMC)	\$400K
Fraser River Estuary Salmon Habitat (FRESH) Restoration Projects	Ducks Unlimited Canada	\$5M
Conservation Fishing - A First Nations Demonstration Selective Fishing in the Lower Fraser River	Harrison Salmon Producers LP	\$789K
SFAB Vision - Phased Implementation	Sport Fishing Institute of BC	\$453K
Salmon River Collaborative Salmonid Habitat Enhancement and Restoration Initiative	Yucwmenlucwu (Caretakers of the Land) 2007 LLP	\$208K
Resilient Waters Phase 2: Restoring Connection to Off-channel Salmonid Habitat in the Lower Fraser River Watershed	MakeWay Charitable Society - Resilient Waters	\$2.6M
Wuikinuxv Assessment and Restoration of Rivers Inlet Salmon	Wuikinuxv Nation	\$543K
Supporting the Ongoing Use and Development of the Pacific Salmon Explorer	Pacific Salmon Foundation	\$3.7M
Selective Fishing Gear Pilot in the Fraser River	Lower Fraser Fisheries Alliance	\$1.5M
Technology for more sustainable fisheries in BC	T Buck Suzuki Environmental Foundation	\$ 321K
First Nations-led catch monitoring to inform sustainable mixed-stock fisheries management on the Central Coast	Central Coast Indigenous Resource Alliance	\$1.5M
Collaborative Freshwater Research and Restoration Initiative in the Thompson Watershed	Secwepemc Fisheries Commission for and behalf of Shushwap Nation Tribal Council Society	\$789K
Nanaimo Hatchery Upgrades to Improve Hatchery Performance and Assessment and Monitoring Capabilities	Nanaimo River Stewardship Society	\$1M
Coastal First Nations Salmon Enhancement and Restoration Initiative	Great Bear Initiative Society (Coastal First Nations or CFN-GBI)	\$2.9M
Watershed Restoration Prioritization Tool/Solutions for Gold River Steelhead	Nootka Sound Watershed Society	\$325K
Kitwanga River Sockeye Salmon Enhancement Project	Gitanyow Huwilp Society - DBA as GFA	\$950K
Finfish Environmental Assessment - Sablefish Aquaculture	We Wai Kai First Nation (Cape Mudge)	\$144K
The application of Nanopore technology for the rapid detection and characterization of pathogenic organisms in enhancement hatcheries	BC Centre for Aquatic Health Sciences Society	\$306K
Monitoring the Lipid Content of Fraser-bound Chinook at Albion	University of British Columbia	\$ 37K
Deadman River Hatchery Infrastructure Upgrade	Skeetchestn Indian Band	\$ 385K
Rebuilding Wet'suwet'en sockeye abundance and diversity	Office of the Wet'suwet'en	\$848K
Kus-kus-sum - Restoration of key habitat in the K'ómoks Estuary to re-establish ecosystem services that will support BC Salmon	K'ómoks First Nation (KFN)	\$1.4M

## Ongoing Projects Approved from 2019-2022 (Batches 1-4)

Project Title	Recipient Organization	Allocation
<b>Ongoing Projects in Year 3 (Batches 1-4)</b>		
Electronic application for enhanced selective fishing and bycatch avoidance	Canadian Groundfish Research and Conservation Society	\$ 600K
Enhancing rockfish recovery through citizen science, outreach & field experiments	University of Victoria (School of Environmental Studies)	\$ 759K
Innovative habitat restoration demonstration	British Columbia Conservation Foundation	\$ 4.9M
Rehabilitation of critical infrastructure to improve survival of Thompson Steelhead & Chinook	Scw'exmx Tribal Council	\$ 1.3M
Enhancing estuary resiliency: An innovative approach to sustaining fish and fish habitat in a changing climate	The Nature Trust of BC	\$ 8.6M
Enhancing sustainability of capture & release marine recreational Pacific salmon fisheries using new tools/technology	University of British Columbia (Department of Forest and Conservation Sciences)	\$ 1.9M
Elephant Hill fire riparian restoration project	Secwepemcul'ecw Restoration and Stewardship Society	\$ 2.6M
Plateau Fire Recovery - Riparian plant collection and planting for restoration of Chinook and coho salmon habitat in the Nazko area	Baker Creek Enhancement Society	\$ 750K
Place-based risk of climate change to sustainability of BC wild and hatchery-origin salmon	Pacific Climate Impacts Consortium (University of Victoria)	\$ 1.03M
Broughton wild salmon restoration project	'Namgis First Nation	\$ 4.2M
Implementation of the Broughton First Nations Indigenous monitoring and inspection Plan	'Namgis First Nation	\$ 7.3M
Independent First Nations' Genomic Lab for BC	'Namgis First Nation	\$1.9M
Cowichan River salmon restoration program - sustainable water supply - Engineering	Cowichan Valley Regional District	\$ 3M
Science-based review of hatchery results in the Pacific Region	Pacific Salmon Foundation	\$ 1.1M
BC Fish Passage Restoration Initiative	Canadian Wildlife Federation	\$ 4M
Promotion of habitat restoration and stewardship on agricultural lands in the BC Interior	British Columbia Cattlemen's Association	\$ 550K
International Pan-Pacific Salmon Expedition	North Pacific Anadromous Fish Commission	\$ 3M
Vision 2021	Sport Fishing Institute of BC	\$ 701K
Kitwanga River sockeye salmon recovery plan implementation	Gitanyow Huwlip Society as Gitanyow Fisheries Authority	\$ 867K
Optimizing recirculating aquaculture systems for sustainable salmon production	University of British Columbia (Department of Zoology)	\$ 1.8M
Drivers of inter-annual variability in Zooplankton feeding in the Strait of Georgia: A combined model-observation approach	University of British Columbia (Department of Earth and Ocean Sciences)	\$ 165K
Creation of salmon conservation facility	Juan de Fuca Salmon Restoration Society	\$ 920K
Seymour Watershed Restoration Project	Seymour Salmonid Society	\$ 619K
Upper Adams Salmon Restoration Program	Adams Lake Indian Band	\$ 2.5M
Inkaneep Creek Restoration	Osoyoos Indian Band	\$ 360K
Determination of bottlenecks limiting wild and enhanced juvenile salmon and steelhead production in BC using PIT tags and spatially comprehensive arrays	Pacific Salmon Foundation	\$ 4.6M
Empowering Indigenous community fisheries with deep learning - computer vision for adaptive management of terminal salmon fisheries	Pacific Salmon Foundation	\$ 410K
Chilliwack Coho PIT tag escapement project	Lower Fraser Fisheries Alliance Society	\$ 680K
Partnership for a novel framework for assessing and managing Pacific Herring fisheries on the West Coast of Vancouver Island	Nuu-chah-nulth Tribal Council	\$ 391K
Bear River Autonomous Salmon Enumeration	Skeena Fisheries Commission	\$ 402K
A Proposal for the Fermentative Production of Microalgae as Food for Juvenile Bivalves in BC	Seed Science Ltd	\$475K
Shellfish Aquaculture Strategic Renewal Program	BC Shellfish Growers Association	\$3.5M



Project Title	Recipient Organization	Allocation
Evaluation of coastal kelp farms as novel habitat for migrating salmonids and their prey	Cascadia Seaweed Corp.	\$1.8M
Intake Restoration	Kingfisher Interpretive Centre Society	\$43K
Seymour Hatchery Infrastructure Renewal Project	Seymour Salmonid Society	\$80K
Modernizing Catch Reporting in Canada's Pacific Region Salmon Fisheries	Archipelago Marine Research Ltd.	\$317K
A-Tlegay Kelp Production and Restoration	A-Tlegay Fisheries Society	\$487K
Understanding the extent of the European Green Crab Invasion on Haida Gwaii and mitigating its impacts	Secretariat of the Haida Nation	\$1.2M
Chemainus/Koksilah Twinned Watershed Sustainability Project	Cowichan Tribes	\$1.1M
Developing a Cumulative Effects Modeling Framework for the Recovery of Aquatic Salmonid Populations	University of British Columbia	\$254K
UAV Habitat Mapping to Inform Wild Salmon Stewardship	First Nations Fisheries Legacy Fund Society	\$ 2.4M
Skeena Estuary Habitat Management and Protection Planning	North Coast-Skeena First Nations Stewardship Society	\$2.3M
Ecosystem Management of Kelp Forest	North Pacific Kelp Wild Foods Inc.	\$100K
South Coast European Green Crab Control Project	Coastal Restoration Society	\$1.9M
Selective Fishing Using a Salmon Trap in the Lower Fraser River	Tsawwassen First Nation	\$875K
Highway 16 Corridor Fish Stranding	Kitsumkalum Indian Band	\$175K
Babine Lake Creel Survey in the vicinity of the Fulton River, 2021 - 2024	Lake Babine Nation Fisheries	\$373K
Development and Establishment of Vancouver Island Chinook Committee	Island Marine Aquatic Working Group	\$ 397K
Landslide impact on the flow dynamics, fish migration and genetics of Fraser River Salmon	SFU	\$3.5M
Causes and consequences of vateritic otoliths in hatchery-reared Coho salmon	University of Victoria	\$512K
Climate Action Priorities for Salmon	Pacific Salmon Foundation	\$3.2M
Clayoquot Wild Chinook Salmon Initiative	Redd Fish Restoration Society	\$500K
First Nations-led Freshwater Salmon Habitat Assessment & Restoration Planning in the Central Coast	Central Coast Indigenous Resource Alliance	\$2.7M
Kleanza Creek Salmon Habitat Enhancement and Restoration Project	Kitselas First Nation	\$561K
Applying innovation and collaboration to improve productivity, economic stability and environmental performance of oyster culture	Mariculture LP	\$ 558K
Exploring Spatial Management Opportunities for Rockfish using Indigenous Knowledge and Subtidal Surveys	Ha'oom Fisheries Society	\$202K
Understanding FRIM in the Angling Community	Sport Fishing Institute of BC	\$206K
Fishing Related Incidental Mortality (FRIM) - Short term mortality holding studies	Sport Fishing Institute of BC	\$833K
Fraser River Estuary Salmon Habitat (FRESH) Restoration Projects	Ducks Unlimited Canada	\$5M
Conservation Fishing - A First Nations Demonstration Selective Fishing in the Lower Fraser River	Harrison Salmon Producers LP	\$789K
SFAB Vision - Phased Implementation	Sport Fishing Institute of BC	\$453K
Salmon River Collaborative Salmonid Habitat Enhancement and Restoration Initiative	Yucwmenlucwu (Caretakers of the Land) 2007 LLP	\$208K
Resilient Waters Phase 2: Restoring Connection to Off-channel Salmonid Habitat in the Lower Fraser River Watershed	MakeWay Charitable Society - Resilient Waters	\$2.6M
Wuikinuxv Assessment and Restoration of Rivers Inlet Salmon	Wuikinuxv Nation	\$543K
Supporting the Ongoing Use and Development of the Pacific Salmon Explorer	Pacific Salmon Foundation	\$3.7M
Selective Fishing Gear Pilot in the Fraser River	Lower Fraser Fisheries Alliance	\$1.5M
Technology for more sustainable fisheries in BC	T Buck Suzuki Environmental Foundation	\$321K
First Nations-led catch monitoring to inform sustainable mixed-stock fisheries management on the Central Coast	Central Coast Indigenous Resource Alliance	\$1.5M
Collaborative Freshwater Research and Restoration Initiative in the Thompson Watershed	Secwepemc Fisheries Commission for and behalf of Shushwap Nation Tribal Council Society	\$789K
Nanaimo Hatchery Upgrades to Improve Hatchery Performance and Assessment and Monitoring Capabilities	Nanaimo River Stewardship Society	\$1M

Project Title	Recipient Organization	Allocation
Coastal First Nations Salmon Enhancement and Restoration Initiative	Great Bear Initiative Society (Coastal First Nations or CFN-GBI)	\$2.8M
Watershed Restoration Prioritization Tool/Solutions for Gold River Steelhead	Nootka Sound Watershed Society	\$325K
The application of Nanopore technology for the rapid detection and characterization of pathogenic organisms in enhancement hatcheries	BC Centre for Aquatic Health Sciences Society	\$306K
Monitoring the Lipid Content of Fraser-bound Chinook at Albion	University of British Columbia	\$37K
Deadman River Hatchery Infrastructure Upgrade	Skeetchestn Indian Band	\$385K
Rebuilding Wet'suwet'en sockeye abundance and diversity	Office of the Wet'suwet'en	\$848K
Kus-kus-sum - Restoration of key habitat in the K'ómoks Estuary to re-establish ecosystem services that will support BC Salmon	K'ómoks First Nation (KFN)	\$1.4M
Assessment of sampling methodologies, March 2022 Gulf of Alaska	Pacific Salmon Foundation	\$308K
Fraser Salmon Management Program	Fraser Salmon Management Council (FSMC)	\$400K
Kitwanga River Sockeye Salmon Enhancement Project	Gitanyow Fisheries Authority	\$950K
<b>Total</b>		<b>\$120M</b>

## Completed Projects

Project Title	Recipient Organization	Allocation
<b>Completed Projects (Batches 1-4)</b>		
Independent BC First Nations' Genomic Lab Project - Phase 1	Namgis First Nation	\$ 51K
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	Comox Valley Project Watershed Society	\$ 321K
BC Fishing App	Sport Fishing Institute of BC	\$ 911K
Millstream Fishway project	Peninsula Streams Society	\$ 300K
Winter salmon survey in Gulf of Alaska	Pacific Salmon Foundation	\$ 650K
Squamish River Watershed Society	Elaho River Chinook salmon restoration project	\$ 522K
Improving sustainability of British Columbia's commercial spot prawn (Pandalus platyceros) fishery and prawn stocks	Pacific Prawn Fishermen's Association	\$ 118K
Upper Fraser Chinook strategic enhancement project	Spruce City Wildlife Association	\$ 240K
Percy Walkus Hatchery upgrade	Pacific Salmon Foundation	\$ 337K
Chapman Creek Hatchery Water Supply and Capacity Upgrades	Sunshine Coast Salmonid Enhancement Society	\$70K
Supporting West Coast Oyster Industry Development through Expansion of Nursery Seed Supply - Completed	Nova Harvest Ltd.	\$210K
Gwabalís Aquaculture Opportunity & Sustainability Survey	Gwabalís Fisheries Society	\$107K
Modernizing Recreational Catch Monitoring, Data Collection and Communication	Sport Fishing Institute of BC	\$344K
Finfish Environmental Assessment - Sablefish Aquaculture	We Wai Kai First Nation (Cape Mudge)	\$144K
Historical Review and Indigenous Engagement to Increase Efficacy of, and Indigenous Participation in, the British Columbia Salmon Restoration and Innovation Fund	National Indigenous Fisheries Institute	\$355K
Resilient Waters: Phase 1	MakeWay (formerly Tides Canada Foundation)	\$599K
<b>Total</b>		<b>\$5.2M</b>