FWCP
Fish & Wildlife
COMPENSATION PROGRAM

Annual Report

FWCP Coastal Region
2018–2019

fwcp.ca

BC Hydro

British Columbia

Fisheries and Oceans Canada | Pêches et Océans Canada

The FWCP is a partnership of BC Hydro, the Province of B.C., Fisheries and Oceans Canada, First Nations and Public Stakeholders, to conserve and enhance fish and wildlife in watersheds impacted by BC Hydro dams.

Message from the Board Chair

Welcome to our annual report for 2018—19. It is designed to be a plain language document covering key highlights, decisions, and expenditures for fiscal year 2019 (F19), covering the period April 1, 2018 to March 31, 2019, in our Coastal Region. Annual reports for our other two regions, Columbia and Peace, which make up the Fish & Wildlife Compensation Program (FWCP), are also available at **fwcp.ca**.

Our Coastal Region includes watersheds on Vancouver Island, in the Lower Mainland, Southern Interior, and Central Coast, where BC Hydro dams exist. In total, 14 watersheds in some of the most densely populated portions of B.C. comprise our Coastal Region. Our work in this region is voluntarily funded by BC Hydro in recognition of the dam impacts.

Our work in this region is guided by a nine-member Board that includes our partners: First Nations, the Province of B.C., Fisheries and Oceans Canada, Public Stakeholders, and BC Hydro. Together, we work to conserve and enhance fish and wildlife in watersheds impacted by BC Hydro dams.

In F19, a focus of the FWCP's Coastal Region Board was to develop a strategy for salmon-spawning habitat restoration in the lower Campbell River. This directed project was led by Laich-Kwil-Tach Environmental Assessments and was a collective effort from the FWCP's Vancouver Island technical committee and Coastal Board, with input from local First Nations, stakeholders and agencies. The strategy, which is intended to maintain and improve the Chinook spawning habitat in the watershed, provides a priority list of spawning sites, target levels for spawning areas (i.e. gravel and stream bed condition) and suggested triggers for assessment and evaluation.

The year also saw delivery of 33 fish and wildlife grant-based projects approved by our Coastal Region Board. The 13 wildlife and 20 fish projects represent a total project investment this fiscal year of over $1.8 million. Species- and habitat-based actions are the focus for the majority of projects approved by the Board, most of which are delivered by First Nations or non-government organizations across the Coastal Region watersheds.

In addition, the FWCP offers Community Engagement Grants, which provide an opportunity for our stakeholders (e.g. environmental groups, non-profits, stewardship organizations, government, and First Nations) to apply for funding (up to $1,000) to support their conservation and enhancement work. In F19, we were able to support nine projects for $7,500. These included Ridge Meadows River Day (Alouette River Management Society); distributing Chum Salmon carcasses in the Puntledge River watershed (Steelhead Society of B.C.); and building conservation connections for salmon in the Coquitlam River Watershed (City of Coquitlam).

Thanks to all members of the Board, Fish and Wildlife Technical Committees, and staff for contributions to the FWCP Coastal Region during this past year, and for helping to make FWCP a success.

Sincerely,

Todd Manning
FWCP Coastal Region Chair

Front cover: The FWCP Coastal Region Board has funded projects to restore rearing and spawning habitat for several salmon species, including Coho, in 2018—2019. Photo: iStock, Hailshadow

1. Organizational Overview

INTRODUCTION

The Fish & Wildlife Compensation Program (FWCP) was established to compensate for the impacts resulting from the construction of BC Hydro dams by conserving and enhancing fish and wildlife in the Coastal, Columbia, and Peace regions of British Columbia. The FWCP operates as a partnership between BC Hydro, the Province of B.C., Fisheries and Oceans Canada (DFO), First Nations, and Public Stakeholders.

BC Hydro has invested over $168 million into the work of the FWCP and funded nearly 2,000 projects since 1988 that increase understanding, and conserve and enhance fish, wildlife and their supporting habitats impacted by existing BC Hydro dams. Our three regional Boards approved approximately $10 million for 118 fish and wildlife projects to be implemented in F19.

The FWCP's Coastal Region was established in 1999 as a voluntary initiative by BC Hydro in response to First Nations and stakeholder interests in addressing the impacts of BC Hydro dams.

The FWCP's Coastal Region includes 14 watersheds on Vancouver Island, in the Lower Mainland, the Central and Sunshine Coasts, and watersheds in the Southern Interior (e.g. Bridge-Seton and Shuswap River watersheds) where BC Hydro dams are located.

This annual report provides an overview of FWCP's activities in the Coastal Region for fiscal year 2019 (F19), covering the period April 1, 2018 to March 31, 2019. It includes an overview of financial performance, budget allocation, and information about the projects funded in F19.

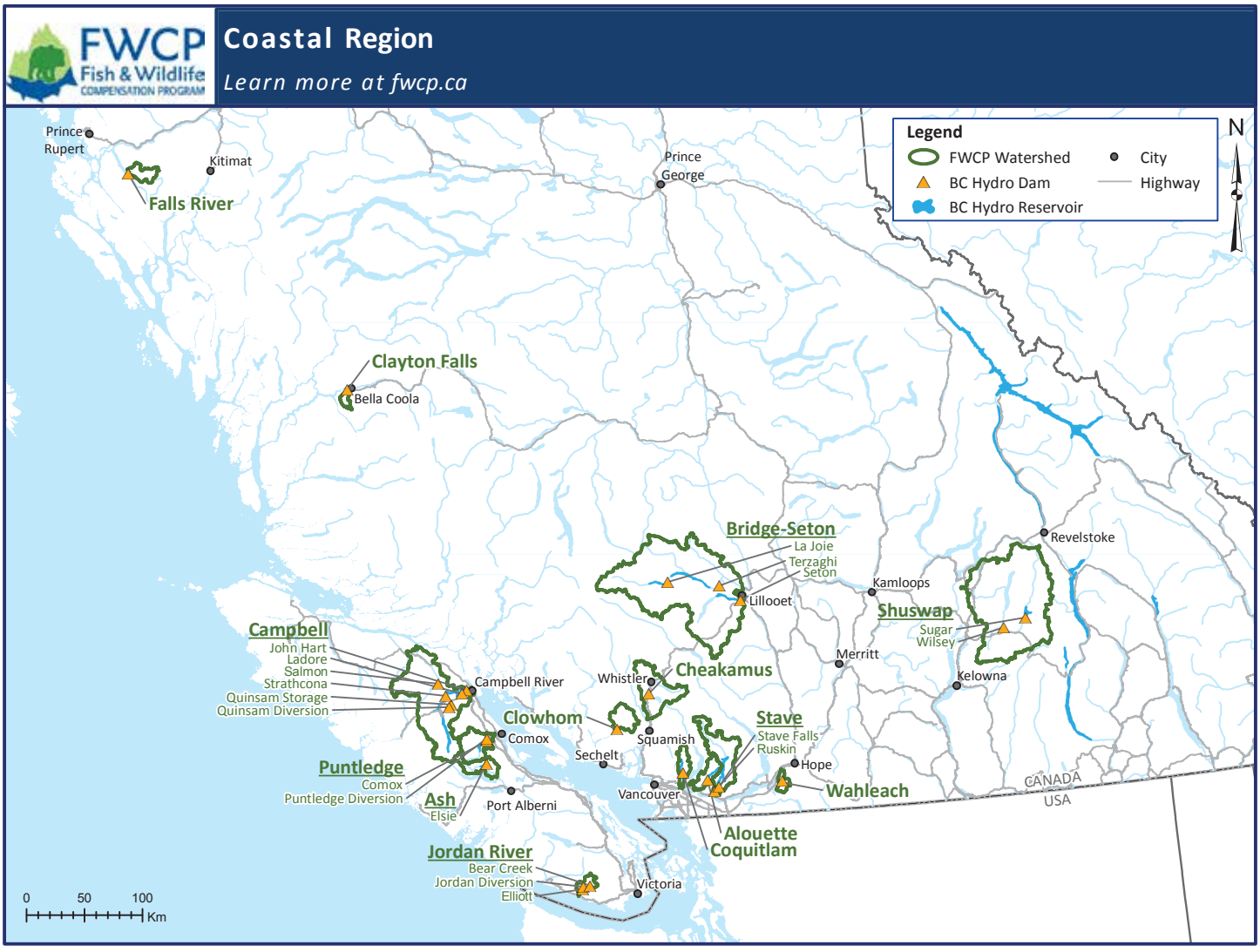

Figure 1.1: Map of the FWCP Coastal Region.

GOVERNANCE

The FWCP is governed through a framework that recognizes the regulatory accountabilities of agency partners (BC Hydro, the Province of B.C., and DFO), and ensures active participation and input from First Nations and Public Stakeholders. Specifically, each region has a Board to provide local oversight to the planning and implementation of the FWCP at the regional level, and to make local decisions on strategic priorities and on FWCP annual expenditures and investments. The FWCP Governance Manual can be found on our website at **fwcp.ca**.

In the past year, the Coastal Region Board consisted of nine members representing First Nations, Public Stakeholders, the Province of B.C., Fisheries and Oceans Canada, and BC Hydro.

The F19 Board Members were:

First Nation Representatives:

Brian Assu, We Wai Kai Nation
Larry Casper, Seton Lake Indian Band
Mark Peters, Peters Band

Public Representatives:

Todd Manning, (Board Chair)
Jack Minard
Laurie Kremsater

Agency Representatives:

Adam Silverstein, Fisheries and Oceans Canada
Laurel Stevens, BC Hydro
Scott Barrett, B.C. Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNR)

The Board reports to the Policy Committee, representing the federal and provincial government regulators (DFO and the Province), as well as BC Hydro. The Policy Committee exists to allow the agencies to provide oversight on a range of fish and wildlife-related issues relevant to BC Hydro including, but not limited to, the FWCP.

The F19 Policy Committee Members were:

Cheryl Webb, Regional Director Pacific Region, Fisheries and Oceans Canada
Jennifer McGuire, Assistant Deputy Minister, B.C. Ministry of Environment & Climate Change Strategy
Karen Popoff, Director, Environment, BC Hydro

Our Board is supported by four Technical Committees—one for wildlife projects, and three for fish projects (Lower Mainland, Southern Interior, and Vancouver Island). Their primary roles are to support the development of strategic plans; provide advice on the effective implementation of Action Plans; and provide fair and objective technical review, evaluation, and ranking of fish and wildlife project proposals for the Annual Operating Plan.

The F19 Technical Review Committees were:

Lower Mainland and Coast Fish Technical Review Committee:

Brent Wilson, BC Hydro
Dave Nanson, (Chair), Fisheries and Oceans Canada
Mike Willcox, FLNR
Randall Lewis, Squamish First Nation
Veronica Woodruff, Public Representative

Southern Interior Fish Technical Review Committee:

Andy Morris, FLNR
Arne Langston, (Chair), BC Hydro
Brian Heise, Public Representative
Elinor McGrath, Okanagan Nation Alliance
Sean Bennett, Fisheries and Oceans Canada

Vancouver Island Fish Technical Review Committee:

Eva Wichmann, (Chair), BC Hydro
Jim Lane, Nuu-chah-nulth Tribal Council
Mike McCulloch, FLNR
Shannon Anderson, Fisheries and Oceans Canada

Wildlife Technical Review Committee:

Cliff Nietvelt, FLNR
Fraser Corbould, (Chair) BC Hydro
Paul Chytyk, Public Representative

In each region, program management and operations are implemented by a full-time Region Manager, Julie Fournier, who administers all aspects of program delivery. All three regions are supported by Trevor Oussoren, FWCP Program Manager, and Business Coordinator, Lorraine Ens.

Coastal Region Board. (L-R) Mark Peters, Laurel Stevens, Laurie Kremsater, Scott Barret, Adam Silverstein, Jack Minard, Todd Manning, and Larry Casper. Missing: Brian Assu.

2.0 FWCP's Strategic Framework

We use a strategic framework to guide overall planning for our investments. The framework (Figure 2.1) has guided the development of strategic plans (Section 3.0) for each basin or watershed within the FWCP program area, which in turn inform Action Plans that focus on specific priority actions.

VISION

Thriving fish and wildlife populations in watersheds that are functioning and sustainable. An effective program will support the maintenance of healthy fish and wildlife populations in basins significantly altered by hydroelectric development. Actions taken should satisfy both the conservation and sustainable use objectives and, where possible, restore ecosystem function, making species more resilient to emerging pressures, such as climate change.

MISSION

The FWCP compensates for the impacts to fish, wildlife and their supporting habitats affected by BC Hydro-owned and operated generation facilities.

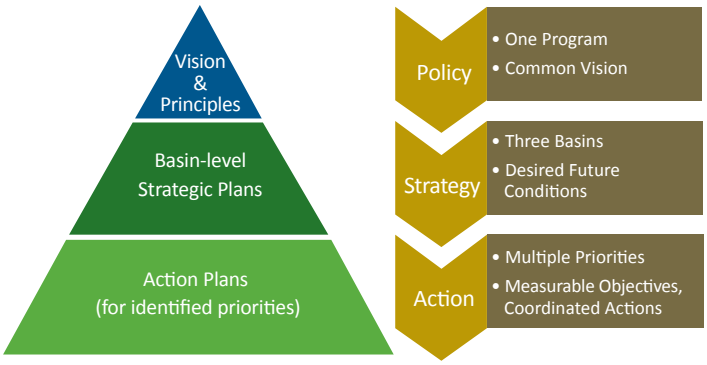

Figure 2.1
Relationship between FWCP's Strategic Framework, Basin-level Strategic Plans and Action Plans.

A-Tlegay Fisheries Society led a project to restore 12,000 m² of salmon habitat at Second Island in Campbell River. COA-F19-F-2765. Photos: C. McGregor

3.0 FWCP Strategic Objectives and Strategic Plans

3.1 STRATEGIC OBJECTIVES

The strategic objectives for the Fish & Wildlife Compensation Program reflect a synthesis of the core objectives and mandates of partner agencies, as they relate to mitigating impacts associated with hydro-power generation in British Columbia:

Conservation

- Maintain or improve the status of species or ecosystems of concern.
- Maintain or improve the integrity and productivity of ecosystems and habitats. This addresses the concept of ecosystem integrity, resiliency, and the functional elements of ecosystems, including efforts to optimize productive capacity.

Sustainable Use

Maintain or improve opportunities for sustainable use, including harvesting and other uses. This objective focuses on our role in restoring or enhancing the abundance of priority species, and in providing information to resource management decision-makers, related to providing opportunities for harvesting and other uses. Harvesting includes First Nations, recreational, and commercial harvests. Other uses may include cultural, medicinal, or non-consumptive uses, such as wildlife-viewing.

Community Engagement

Build and maintain relationships with stakeholders and Indigenous communities. This objective stems from BC Hydro's social responsibility policy, the provincial Ministry of Environment & Climate Change Strategy's shared stewardship goal, and the approach of Fisheries and Oceans Canada's Stewardship and Community Involvement Program. This recognizes the importance of engaging with Indigenous communities, local stakeholders, and other interest groups, to contribute toward making good decisions and delivering effective projects.

3.2 STRATEGIC PLANS

Fish and wildlife investments in each FWCP region are guided by Action Plans that were developed with local input and provide strategic guidance. FWCP's Coastal Region Watershed Action Plans exist for each of the 14 watersheds where BC Hydro operates. High-level watershed plans for the Coastal Region describe the specific watershed settings and general impacts that the creation of the generation facilities (i.e. construction of the dams, the creation of reservoirs, and the development of hydro-power) had on ecosystems, fish, and wildlife habitat.

Each year, as the FWCP Coastal Board reviews and approves its Annual Operating Plan, alignment with the priority actions identified in the Action Plans are a key consideration.

All projects approved for F19 align with the Action Plans. The Action Plans are posted on **fwcp.ca**, and each year grant applicants are asked to review the Action Plans to identify how their proposed project aligns with, and supports, Action Plan objectives.

Our Coastal Region Watershed Action Plans were updated in 2017.

4.0 Report on performance

4.1 PROVINCIAL ROUND-UP OF F19 FUNDING

The FWCP operates in three regions across British Columbia, with annual funding provided by BC Hydro. In the Columbia and Peace Regions, the FWCP operates to meet applicable fish and wildlife conditions in BC Hydro's water licences. In the Coastal Region, the FWCP's work is a voluntary initiative.

For F19, the total number of grant applications received across all three regions was 169, with 118 approved, for a total FWCP contribution of approximately $10 million. The total project value of these projects (including other supporting funders), which will help fish and wildlife, was $17.1 million.

4.2 2018–19 COASTAL PROJECT SUMMARY

FWCP's annual grant intake opens each summer and closes in late fall. The grant applications are submitted and managed online through our grant management system (GMS). The GMS has improved administrative efficiency, enhanced data-collection and reporting, and has helped streamline the application review process. All grant applications go through a three-stage review process that ends with a final decision by each Regional Board.

This consists of reviews by the:

- Regional Manager to ensure they are complete and in alignment with a priority action in one of the FWCP Coastal Action Plans;
- Fish or Wildlife Technical Committees to determine technical merit; and
- FWCP Coastal Board to consider each grant application relative to the FWCP's strategic objectives: conservation, sustainable use, and community engagement.

The FWCP Coastal Region received 57 grant applications for fish (34) and wildlife (23) for implementation of projects in 2018–2019. Requests for funding totaled more than $3.3 million for the region. Applications came from 12 of the Region's 14 watersheds, including 12 from the Lower Mainland, 18 from Vancouver Island, and 27 from the Southern Interior. Following the three-stage review process, the Coastal Board approved $1.8 million in funding for 33 projects through the open grant application process.

An additional $477,798 was approved for directed projects. Funds supported Puntledge River Hatchery's Summer Chinook program, development of methods for habitat assessment mapping, urgent restoration of a side channel for Chum Salmon in the Stave River, and an annual amount set aside for future land acquisition requests for conservation purposes.

Our Coastal Region also received and approved nine Community Engagement Grant applications in 2018–2019, fully allocating the $7,500 available. Projects ranged from supporting stakeholder outreach events, festivals, and stewardship initiatives, to habitat- and species-based actions, such as distributing salmon carcasses to add nutrients to an ecosystem.

4.3 FINANCIAL REPORT

The FWCP is funded annually by BC Hydro. These funds — indexed to the Consumer Price Index (CPI) — are directed by the FWCP towards its priority actions to help meet its vision of thriving fish and wildlife populations in watersheds that are functioning and sustainable. BC Hydro provided $2.121 million in F19 to the FWCP Coastal Region. An unspent surplus budget at the end of F18, of 109 thousand, resulted in a total of up to $2.231 million available to be utilized in the Coastal Region in F19.

Each year, annual funding is allocated by our Coastal Board toward fish and wildlife projects and other program costs. In F19, these other costs included administrative costs (e.g. salaries, safety, Board and Technical Review Committee expenses), project support, and communication costs (e.g. communications support, advertising). These allocations form the Annual Operating Plan. Any unallocated funds are carried forward ("unspent surplus dollars"), and are available for future spending.

As of April 1, 2018, the FWCP Coastal Board approved an F19 budget of $2.187 million and utilized 100% of the annual funding provided by BC Hydro. An unspent surplus budget of $43,348 remained from the F18 uncommitted surplus. In addition, there were prior year funding commitments of $989,274 from F18, $271,954 from F17, and $150,464 from F16.

For F19, the Coastal Board approved a budget of $2,187,202, primarily toward fish and wildlife projects. Figure 4.1 illustrates the approved F19 budget at the start of the fiscal year. A complete F19 Coastal Region project list starts on page 12 of this report. Administrative costs made up approximately 13% of the total budget, including Regional Manager salary and expenses, office-related expenditures (support staff, Board, and Technical Committee costs), fees associated with uploading reports to the Provincial Data Warehouses, and maintenance, support, and refinements to our Grant Management System. The remaining allocations included wildlife projects (20%), fish projects (50%), land securement projects (15%), and communications (3%).

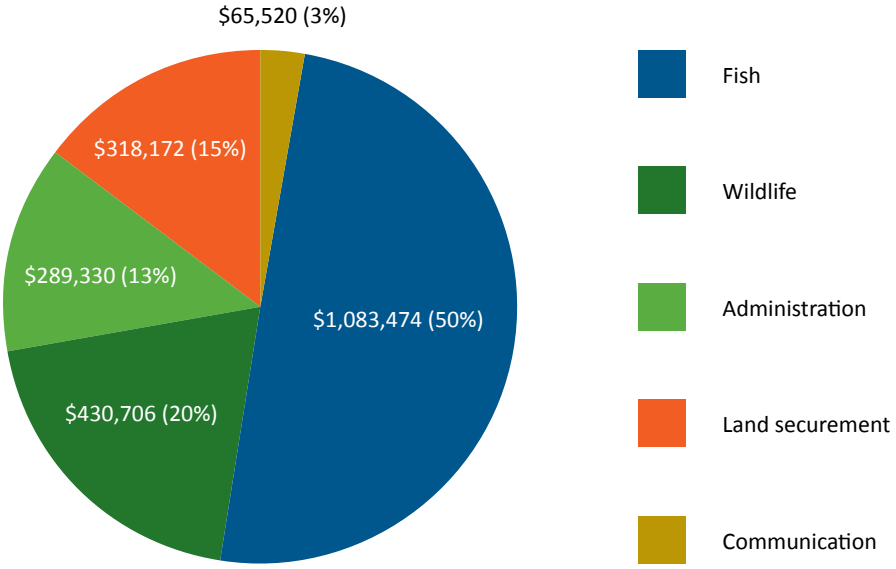

Figure 4.1: Breakdown of approved Coastal Region $2.187 million budget at April 1, 2018.

The pie chart below provides a breakdown of the approved Coastal Region projects by type for F19. More than 60% funded were either habitat- or species-based projects.

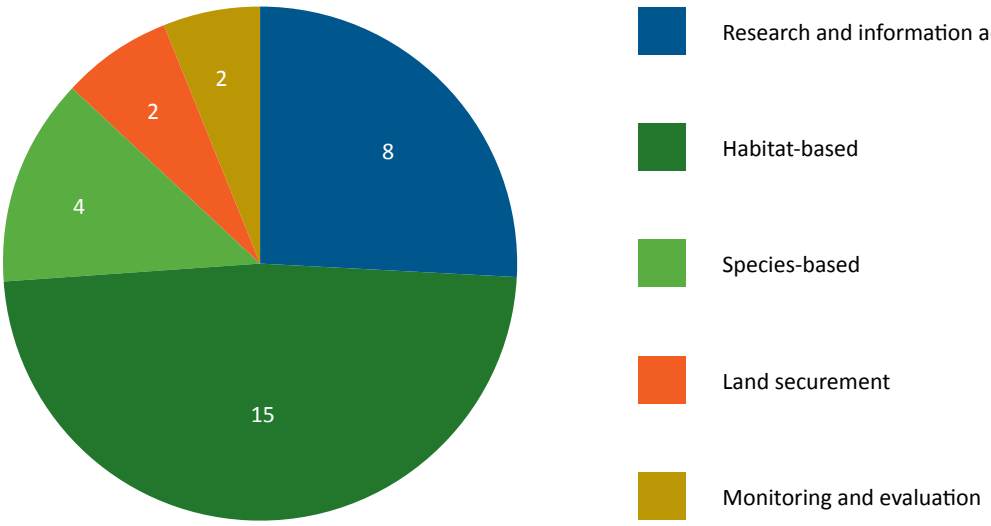

Figure 4.2: Breakdown of approved F19 Coastal Region budget by project type.

Program expenditures up to fiscal year-end March 31, 2019 are shown in Table 4.1. It should be noted that this reflects a “snapshot” in time of actual and planned payments made related to F19 projects. As noted above, allocated project funding each year may not be fully allocated by year-end. Fiscal year 19 allocated funds not yet expended by March 31, 2019 are labelled “Committed Spend” in Table 4.1.

On occasion, projects come in under budget (“Unspent funds” in Table 4.1). Any funds not spent during the fiscal year will be carried forward as unspent surplus budget and made available for new project spending in future fiscal years.

Table 4.1: F19 budget status as of March 31, 2019.

Fund category	F19 approved budget	Paid up to March 31, 2019	Committed spend [1]	Unspent funds[2]
Fish	$1,083,474	$491,449	$497,362	$94,663
Wildlife	$430,706	$206,633	$214,773	$9,300
Administration	$289,330	$215,825	$44,804	$28,701
Land securement	$318,172	$0	$318,172	$0
Communications	$65,520	$44,613	$21,577	-$670
X-plan		$18,000	$27,000	-$45,000
TOTAL	$2,187,202	$976,520	$1,123,688	$86,994

Note[1]: "Committed spend" represents expected invoices for approved, ongoing projects that have not yet submitted final reports by March 31.
Note[2]: Unspent Funds are carried forward and available for the next fiscal year.

At the end of F19 (Table 4.1, March 31, 2019), $976,520 of the F19 budget had been spent, while $1,124 million remained as an F19 commitment to spend in F20 (Table 4.1, Figure 4.3). In addition, the balance of prior year funding commitments anticipated to be spent in F20 was $389,716 from F18, resulting in an unspent surplus of $180,402 (Figure 4.3).

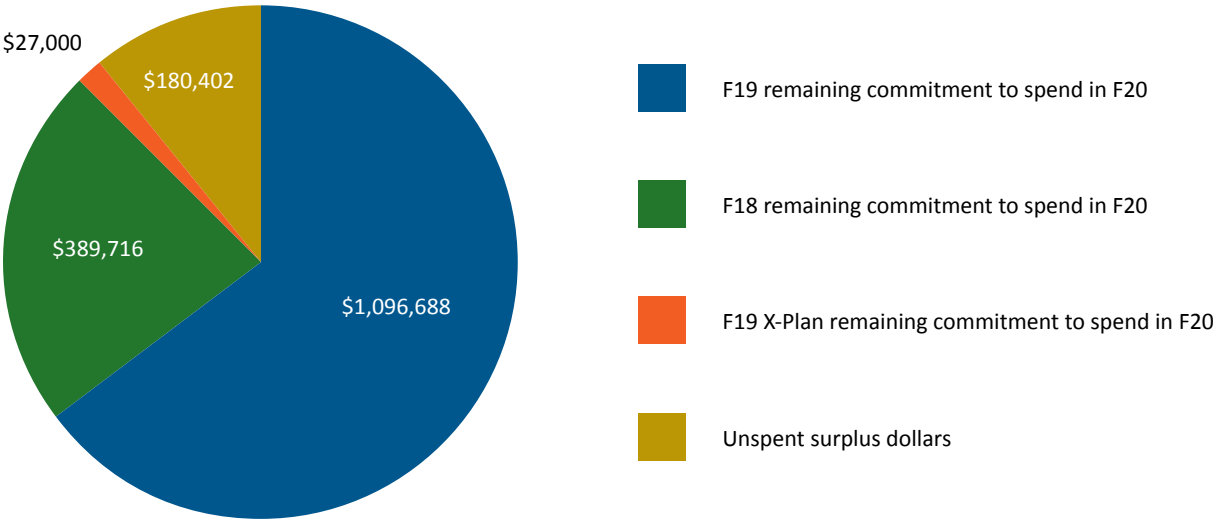

Figure 4.3: Financial Summary of FWCP Coastal Region, as of March 31. 2019 (end of fiscal year).

4.4 APPROVED BUDGET ALLOCATION BY WATERSHED

The approved F19 budget for our Coastal Region included $1.08 million on fish projects, $430,706 on wildlife projects, and $318,172 for land securement initiatives, for a total of $1.83 million (84%) on project funding. These projects were distributed across the watersheds in which we operate, as shown in Figure 4.4. During 2018–19, the FWCP supported projects in 11 of the 14 Coastal Region watersheds.

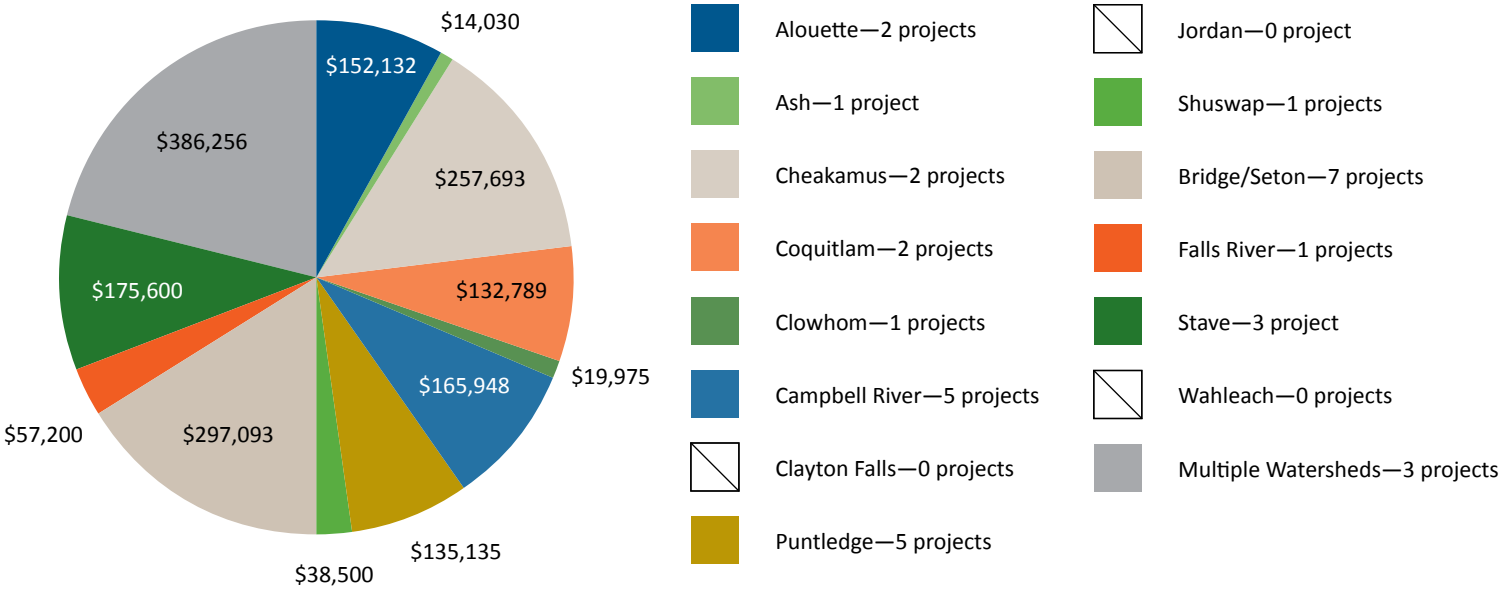

Figure 4.4: Approved F19 budget allocation by watershed at April 1, 2018.

Inventory work in the Clayton Falls Watershed led to the establishment of a new Wildlife Habitat Area in 2018 to help Northern Goshawks. 14.W.CLA.01. Photo: iStock, Tobyphotos.

F19 PROJECTS

Table 4.2 provides a listing of 2018–2019 Coastal Region fish and wildlife projects approved for funding in F19, including alignment with Action Plan priorities. Funding identified in the following table may vary from the approved budget as of April 1, 2018, due to project budget increases or decreases, as projects progressed throughout the fiscal year. Final reports for all projects are posted to the appropriate Provincial databases once available. Visit fwcp.ca/results for an updated list of all available final reports.

Table 4.2: 2018–2019 Projects

Project ID	2018—2019 Grant-Based Fish Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
COA-F19-F-2603	**Improving fish passage in the Squamish River** *Squamish Estuary Salmon habitat recovery project* This project is a follow-up to the 2017 feasibility study to examine how the Squamish Training Dike is impacting fish passage for juvenile Chinook salmon and other salmonids from the Squamish River into the Central Estuary. The results of the 2017 feasibility study concluded that the culverts should be replaced either with clear span bridges or lower invert and larger culverts to improve fish accessibility between the river and the estuary. The proposal is to replace Culverts #1 and #4, and improve the intake channels to prevent the build up of sedimentation.	Squamish River Watershed Society	$183,075	Habitat-Based Actions	Rivers, Lakes and Reservoirs	Cheakamus	**Culverts replaced in Year 2** The Squamish Estuary Salmon Habitat Recovery Project is a multi-year project to improve salmon habitat. The project addresses the Cheakamus River Watershed Action Plan priority (CMS.RLR.HB.18.01) to improve fish passage between the Squamish River and the Squamish River estuary. This multi-phase project includes: replacement of culverts for out-migrating juvenile salmonids; realignment of the Spit to open up 77 hectares of estuarine habitat to salmonids; and installation of a flow control structure to improve water quality. Year 2 replaced the culverts with a new box culvert to span the berm. A robust fishery and water quality monitoring program was also developed.
COA-F19-F-2680	**Studying Eulachon in the Falls River Watershed** *Eulachon status in the Ecstalls and lower Falls River* This project will evaluate Eulachon adults, eggs and environmental conditions in the Ecstall and Lower Falls River, to determine and compare population status and habitat use in these two water bodies. Our objectives are to determine that the rivers are Eulachon productive and the habitat has sufficient spawning habitat. A monitoring program for Eulachon in the Ecstall and Lower Falls River will be developed. Should the data collected suggest that the region could benefit from a habitat restoration program, one will be developed to sustain and increase the population of Eulachon.	Lax Kw'alaams Fisheries Society	$57,200	Research & Information Acquisition	Rivers, Lakes and Reservoirs	Falls River	**Study identifies future habitat-based actions** Eulachon are using the Falls River during their freshwater migration, however may only be spawning at the study locations in very low densities. Available spawning substrate was mainly comprised of fine sediment. A potential restoration project could introduce additional coarse substrates (sand and gravel), which represents higher value habitat for spawning eulachon. The results of this study recommend follow-up monitoring of gravels added to the tail pond from earlier enhancement efforts, installation of temperature loggers to determine if incubation temperature regimes remain suitable. A hydrology/ geomorphology expert should be consulted to assess the flow regime and available habitat, to determine the feasibility of potential restoration activities. This project addresses the FLS.RLR.RI.08.01 Priority Action of the FWCP Falls River Watershed Action Plan.

Project ID	2018—2019 Grant-Based Fish Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
COA-F19-F-2683	**Improving fish passage in the Alouette River Watershed** *Alouette watershed Sockeye - fish passage feasibility - year 2* The Alouette River Sockeye re-anadromization program is a joint initiative between various stakeholders, which works to promote the re-establishment of anadromous Alouette Sockeye (Oncorhynchus nerka) and investigate fish passage feasibility at Alouette Dam. This project is Year 2 of a multi-year plan to address remaining uncertainties in the feasibility of Alouette Sockeye restoration. This project will: 1) initiate a formal Canadian Scientific Advisory Secretariat (CSAS) review of the ARSRP program and Nerkid Model to determine risks of re-establishment of Alouette sockeye and other salmon; and 2) monitor adult Sockeye returns and juvenile outmigration necessary for the evaluation of heritability, long-term Sockeye projections and for eventual FWCP endorsement.	Alouette River Management Society	$87,932	Species-Based Actions	Rivers, Lakes and Reservoirs	Alouette	**Monitoring of Sockeye returns continues** The 2018 Alouette Sockeye Salmon run saw 15 adults returning between July 17 and October 25, 2018. All 15 Sockeye were sampled at the Allco trap location and transported to Alouette Reservoir. The Mud Creek rotary screw trap (RST) captured 7,071 O. nerka smolts, estimating outmigration of 31,643 smolts from the Alouette Reservoir between 13 April and 19 May. This was the second highest estimate in all thirteen years of studies. This project aligns with the Alouette River Watershed Action Plan ALU. RLR.SB.18.01.
COA-F19-F-2697	**Studying summer-run Chinook in the Puntledge River Watershed** *Puntledge summer Chinook parentage-based tagging study - year 5* Genetic methods, known as parentage-based tagging, will be used to identify individual summer-run Chinook Salmon back to parental crosses (both in the hatchery and in the wild) to study the effects of parental Chinook return migration time and bacterial kidney disease (BKD) status on their progeny. The identification of individual fish to parents will enable an examination of the influences of both parental characteristics (migration timing, BKD infection load) and release group/ strategy on survival in those programs and provide Fisheries and Oceans Canada (DFO) guidance for the development of appropriate management actions focused on improving wild and hatchery summer Chinook productivity, and preserving the genetic integrity of the stock.	K'omoks First Nation	$38,471	Research & Information Acquisition	Rivers, Lakes and Reservoirs	Puntledge	**2,889 summer-run Chinook samples genotyped** Tissue sampling for this study began in 2013. In total, 2,889 samples were successfully genotyped. There was no significant effect ($p > 0.05$) of parental return time on progeny return time. The retention of eggs from Bacterial Kidney Disease (BKD) positive females for rearing will be an important factor contributing to the maintenance of genetic diversity in the hatchery population. Additional DNA sampling on 2019 returns may provide a more complete analysis for assessing heritability of run-timing, and improve understanding of the effects of parental Chinook return migration time and BKD status on their progeny. Aligns with the Puntledge River Watershed Action Plan as a Level 1 priority — "Research & Information Acquisition" action.

Project ID	2018—2019 Grant-Based Fish Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
COA-F19-F-2705	**Helping rebuild Chinook stocks in the Bridge-Seton Watershed** *Portage Creek Chinook conservation and enhancement* Portage Creek Chinook are classified under the Government of Canada's Wild Salmon Policy as a vulnerable single site Conservation Unit. This stock has had diminishing returns for almost 10 years. Fisheries and Oceans Canada (DFO) proposes strategic enhancement of a minimum of one generation (five years) to support preservation and rebuilding of this population and its unique genetic component, while further investigating the limiting factors contributing to the population decline. The funds secured for this project will pay for the materials required to support enhancement and Coded Wire Tagging (CWT) activities of 50,000 yearling smolts. This enhancement will provide the population with a higher juvenile survival rate, while the tags will provide much-needed assessment information.	Department of Fisheries and Oceans Canada	$18,545	Species-Based Actions	Wetland and Riparian Areas / Upland and Dryland / Rivers, Lakes and Reservoirs	Bridge-Seton	**Brood collection plans revised for 2019** Fisheries and Oceans Canada (DFO) in collaboration with St'at'imc Eco-Resources Ltd., attempted brood collection in October 2018. Unfortunately, no eggs were collected during the three visits. New strategies for 2019 collection include a consistent presence for the two weeks around the spawning period. This will allow for immediate action once the Chinook are observed on the spawning grounds and will increase the likelihood of successful capture. This project aligns with the Bridge-Seton Watershed Action Plan priority action BRG.ALL.SB.04.02.
COA-F19-F-2708	**Assessing spawning channel function in the Seton River watershed** *Seton River spawning channel fish productivity survey* The Seton River spawning channel fish productivity survey is intended to gather critical data needed to evaluate the functionality of the spawning channels post-complexing in relation to the egg-to-fry survival rate. This data will provide the Spawning Channel Committee, established in 2015, with information needed to develop a sustainable management plan for the channels and provide a baseline on which to gauge the long-term productivity of the channels into the future	Splitrock Environmental Sekw'el'was LP	$98,015	Research & Information Acquisition	Rivers, Lakes and Reservoirs	Bridge-Seton	Report in progress.
COA-F19-F-2716	**Improving spawning habitat at Elk Falls Canyon in Campbell River Watershed** *Elk Falls Canyon spawning gravel bulk delivery - year 3* With the bulk gravel delivery system completed in Elk Falls Provincial Park, this proposal aims to provide funding for the third year of major gravel additions to the Upper Canyon Reach of Campbell River. Using the new delivery system, approximately 300 m^3 of gravel will be added to the first pool tail-out. Based on the 2017 project, costs per-unit of gravel is about 30 per cent of the helicopter method. This gravel will provide valuable spawning habitat for all species of salmon and trout. Also, over time as more gravel is added the canyon, habitat will become more gravel-rich, increasing the spawning capacity further. Given the infrastructure investment by FWCP and others, this is a logical step forward in mitigating the gravel recruitment issue in this system.	British Columbia Conservation Foundation	$51,528	Habitat-Based Actions	Rivers, Lakes and Reservoirs	Campbell	**Salmon habitat restoration continues to improve spawning** In 2018, from July 23 - 27, 2018, approximately 220 m^3 (375 tonnes) of gravel was added to the canyon. Annual monitoring, up to fall 2018, has shown the gravel pads produced are being utilized by dozens of adult Chinook, Pink, Chum, and Coho Salmon. Over time, as more gravel is added, the natural hydraulic process will distribute the gravel throughout the upper reaches of the canyon, boosting spawning capacity even more. This project directly aligns with priority action CBR.RLR.HB.12.01.

Project ID	2018—2019 Grant-Based Fish Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
COA-F19-F-2720	**Improving understanding of Kokanee at Comox Lake in Puntledge River Watershed** *Year 2 assessment of Kokanee spawning in Comox Lake* The main objective of Year 2 is to further investigate Kokanee migration/spawn timing and distribution, and to broaden the scope and methodology for investigating spawning habitat selection to include nearshore and deeper water habitat. Results from this project will build on the data collected in Year 1 and will help provide a greater understanding of the Kokanee life history in Comox Lake, the combination of habitat attributes that attract spawning Kokanee, and the potential limiting factors to Kokanee production. More data will help build a database on longer-term population trends and potential future enhancement opportunities.	Courtenay and District Fish & Game Protective Association	$32,463	Research & Information Acquisition	Rivers, Lakes and Reservoirs	Puntledge	**500 Kokanee and 100 redds assessed** In Year 2 (2018), 79 fish were captured in Comox Lake (47% Cutthroat Trout, 28% Kokanee, 24% Dolly Varden). In Willemar Lake, 20 fish were sampled (90% Kokanee — mostly spawned out females, and 5% each of Cutthroat Trout and Dolly Varden). Deep water redds were observed at 20 m depth in Stockand Bay. Over 500 Kokanee adults and over 100 redds were estimated nearshore. Eggs deposited by nearshore spawners at Stockand Bay may have been at risk of a high mortality rate due to a winter drought, low inflows, and low reservoir level. Possible groundwater influence may be attracting Kokanee to this location. The extent of these hyporheic processes warrant further investigation to inform restoration opportunities.
COA-F19-F-2728	**Improving flows and habitat for Coho in Coquitlam River Watershed** *Coquitlam River habitat restoration 2018: Archery headpond* This high-priority project will repair and restore flow to an enhancement project previously funded by FWCP, which created 8,300 m^2 of high-value rearing habitat and 300 m^2 of high-value spawning habitat by excavating accumulated sediment, reshaping and expanding the existing pond, and installing a water distribution vault with a steel deflector plate to deflect flow and enable future maintenance and clean out. This will reduce future sedimentation and lengthen the maintenance return interval. The sedimentation resulted from an extreme weather event, in February 2017. This critical habitat produces 3,300 Coho smolts and 75,000 Chum fry each year. This project will restore productive capacity and again contribute to increased salmonid abundance in the Coquitlam watershed.	North Fraser Salmon Assistance Project Society	$62,789	Habitat-Based Actions	Rivers, Lakes and Reservoirs	Coquitlam	**100m^2 sediment pond and 100m^2 of Coho and Chum spawning habitat added** Archery Headpond habitat complex produces 3,300 Coho Salmon smolts and 75,000 Chum Salmon fry each year, a significant percentage of the watershed's total output. This project excavated accumulated sediments, reshaped the existing headpond and excavated a new larger sediment pond. A new spawning side channel was also constructed. New habitat includes a 100m^2 sediment pond and 100m^2 of spawning habitat. Partnerships and community involvement contributed to the project being completed on time and under budget. This project aligns with the Coquitlam River Watershed Action Priority Action COQ.RLR.HB.13.01.
COA-F19-F-2729	**Improving fish passage in the Coquitlam River Watershed** *Monitoring of Coquitlam Kokanee smolt outmigration* The Kokanee smolt outmigration response to optimized reservoir operations will be tested during April-May 2018 in the Coquitlam River ~ 1.6 km below Coquitlam Dam using a Rotary Screw Trap (RST). Results of the real-time monitoring of Kokanee smolt outmigration in a proven and highly successful location will be used to: 1) identify the timing and volume of releases through the Sluice Tower that optimize the rate of outmigration; 2) identify the timing and degree of constraints on the Buntzen Tunnel required to optimize the rate of outmigration; 3) validate the assumption that passage through LLOG-2 does not result in unacceptable injury rates; and 4) quantify the number of outmigrating smolts to determine smolt-to-adult survival associated with outmigrating Kokanee.	Watershed Watch Salmon Society	$16,286	Species-Based Actions	Rivers, Lakes and Reservoirs	Coquitlam	**Assessing options to increase Kokanee smolt outmigration** An engineered structure is being considered to increase Kokanee smolt downstream migration. In 2018, rotary screw traps (RSTs) were operated to assess outmigration at different discharge levels and reservoir levels of Coquitlam Dam. Twenty-three Kokanee smolts were captured. Two of the discharge increases may have triggered Kokanee smolt passage though the dam. Continued technical feasibility assessment of Sockeye Salmon passage is priority action 15 of the Coquitlam River Watershed Action Plan

Project ID	2018—2019 Grant-Based Fish Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
COA-F19-F-2751	**Studying Bull Trout in the Bridge-Seton Watershed** *Yalakom River Bull Trout monitoring* It has been identified that information knowledge gaps regarding habitat use and distribution of Bull Trout within the Yalakom River is needed to inform the restoration planning. A habitat use and distribution study for Bull Trout within the Yalakom River is being proposed to inform the integrated restoration and monitoring plans for the Bridge-Seton watersheds.	Coldstream Ecology, Ltd.	$5,000	Research & Information Acquisition	Rivers, Lakes and Reservoirs	Bridge-Seton	**Assessing priority actions for Bull Trout** This seed project provided the resources to develop a proposal to assess priority actions in the Bridge Seton Watershed Action Plan BRG.ALL.RI.02.03 - assess population status, habitat status and habitat capacity/cost-benefit of actions. The project will provide key information on Chinook and Bull Trout, to enable science-based planning for the restoration of fish stocks.
COA-F19-F-2761	**Improving access to salmon habitat in the Cheakamus River Watershed** *Kiwi Chanel connector project - year 2* This project builds upon the work initiated in the 2017-2018 fiscal year (which included upgrades to the intake at Far Point and improved weirs, flows, and channel works) by creating a new extension at the south end of Kiwi Channel south into what will be the new Kiwi Connector Channel that will connect into Emerald Forest Channel on the east side of Paradise Valley Road. This project will provide new spawning and rearing habitat for Coho, Chum, Pink, Chinook, and Steelhead salmon, and is expected to improve Coho productivity by 10,000 smolts, once it is fully realized. This is the second year of a three-year project.	Squamish River Watershed Society	$74,618	Habitat-Based Actions	Rivers, Lakes and Reservoirs	Cheakamus	**10,000 m² of improved salmonid habitat** Year 2 of this project included construction of a new channel, upgrading culverts, repairing two crossings, and placement of boulder clusters and large woody debris (LWD) in the newly constructed stream. Work at Gorbuscha Channel continued with two new bridge replacements and improving downstream flows. New habitat created, includes 1,800 m² along the Kiwi Connector Channel and over 10,000 m² of improved habitat along Paradise Valley Road and the Gorbuscha Channel. Evans Creek re-watering provided over 10 km of downstream habitat. Four new bridge crossings; 900 riparian plants; two new culvert crossings of Paradise Valley Road; improved trail access; and improved overall water flow were also achieved. The final outcomes were the creation of the new 4,000 m² Kiwi Connector Channel that now provides spawning, rearing, and overwintering habitat for salmonid local species. Restoration efforts within the Cheakamus River Watershed are accomplished by the work of many partners, including Squamish First Nation, Squamish River Watershed Society, School District #44, BC Hydro, DFO, and others. Aligns with the Cheakamus River Watershed Action Plan priority CMS.RLR.HB.14.01
COA-F19-F-2762	**Improving Fish Habitat in the Ash River Watershed** *Ash River nutrient enrichment project* This project aims to improve fish habitat by increasing productivity in the Ash River system. In doing so, the project will address four priority actions in the Ash River Watershed Action Plan. The Ash River supports one of the main spawning areas for summer run steelhead (Oncorhynchus mykiss) in the Somass River watershed. Human impacts have contributed to declining biological productivity. The goals of this project are to improve ecosystem productivity by: 1) evaluating the historical performance of nutrient enrichment in the Ash; 2) developing an Ash River nutrient enrichment plan with Hupačasath First Nation (HFN) to guide future nutrient enrichment, based on the analysis of historical results, and; 3) distributing salmon carcasses in the fall to enhance stream and riparian habitats.	Ecofish Research Ltd.	$14,030	Research & Information Acquisition	Rivers, Lakes and Reservoirs	Ash	**Assessing options for nutrient enrichment** Carcass distribution was identified to be the most cost-effective measure. Further enrichment of two tributaries (Wolf and Lanterman creeks) with phosphorus-based fertilizer would improve juvenile Steelhead production. Substantially greater biological benefits could be achieved by directly adding nutrients to the Ash River mainstem using inorganic fertilizer, although the cost-effectiveness of this activity would need to be confirmed during planning. This project aligns with Priority Action ASH.RLR.RI.11.01.

Project ID	2018—2019 Grant-Based Fish Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
COA-F19-F-2765	**Improving spawning and rearing habitat near Second Island Channel in the Campbell River Watershed** *Campbell River Second Island channel restoration* The area within and just upstream of Second Island channel on the Campbell River requires in-stream works to deal with severe impacts to spawning and rearing habitats, resulting from very high main-stem flows in the Campbell River last November. Gravel accumulations in the channel are now too high to provide suitable spawning habitat at regular flows, and creates stranding issues for juveniles at low flows, reducing the rearing potential of the Campbell River by over 8000m². Gravel deposition has been accelerated by three rock weirs in the channel that were constructed in the 1990s to retain gravel before the upstream gravel placement program began. This project proposes to remove part, or all, of the weirs and use the accumulated gravel to create spawning habitat in the river mainstem.	Department of Fisheries and Oceans Canada	$27,430	Habitat-Based Actions	Rivers, Lakes and Reservoirs	Campbell	**3000 m³ of gravel removed to restore flows and improve habitat** The Second Island side channel had become a deposition point for gravel transported during high flows, resulting in limited spawning and rearing habitat. The project removed approximately 3000 m³ of gravel from the side channel to restore water flow. The excess gravel was moved and placed just outside Second Island to create roughly 4000 m² of mainstem spawning habitat. The project aligns with priority action #13 in the FWCP Campbell River Watershed Action Plan "Gravel placement in the Lower Campbell River to improve egg-to-fry survival of salmonids (primarily for Chinook)".
COA-F19-F-2771	**Improving understanding of deep-water fish species in Clowhom Lake** *Clowhom Lake Reservoir Kokanee assessment* Although there have been a number of fish surveys in Clowhom Lake Reservoir since impoundment, all have relied on shore-based gillnets as the primary fish capture technique. As a result, the survey data have been biased towards shoreline fish with Rainbow Trout being the dominant catch, followed by Cutthroat Trout. Few Kokanee have been captured. The purpose of this project is to focus fish sampling efforts on the pelagic environment to; 1) compliment the shore-based data collected to-date; 2) collect fish biometric data (primarily on Kokanee) to develop robust size at age relationships, as well as condition factor; 3) collect tissue samples for genetic analysis as a preliminary assessment of historical anadromy; and 4) preliminary assessment of diel movements. Deep water gillnets will be used.	Creekside Aquatic Sciences	$19,975	Research & Information Acquisition	Wetland and Riparian Areas / Upland and Dryland / Rivers, Lakes and Reservoirs	Clowhom	**34 Kokanee analyzed** Genetic analysis of the 34 fish revealed that they were unrelated from neighbouring Sockeye and Kokanee populations, suggesting a period of isolation longer than the period of impoundment. Genetic diversity showed no indication of a recent bottleneck event. It would appear the Kokanee were always "true" Kokanee. A comparison of Kokanee with reference populations in the Coquitlam Lake Alouette Lake reservoirs revealed that these fish tend to be smaller in size and in poorer condition.

Project ID	2018—2019 Grant-Based Fish Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
COA-F19-F-2783	**Improving estuary function in the Stave River Watershed** *Stave River restoring freshwater tidal floodplain habitats* The vision of this project is to continue to build on and enhance the tidally influenced freshwater estuary system in the lower Stave River. Particularly, enhancements will occur at Site 2, which is owned by Kwantlen First Nations IR3. Currently the site has undergone significant off-channel tidal channel restoration, as prior to 2016 this site was wetted only during high flows and freshet conditions, and was significantly encroached upon by reed canary grass. Excavation of these historic and new channels has far exceeded the ability to replant the channel riparian areas and aquatic benches, so this proposal is focusing on the replanting, bio-engineering and monitoring works to support these vital freshwater systems, crucial for in- and out-migration of all salmonids and which support a variety of biodiversity and species-at-risk values. In particular, the goals of this proposal are to: 1. Replant Stave Site 2 to support a biodiverse freshwater floodplain system supporting in- and out-migrating salmon species and low floodplain flora and fauna. Anticipated replanting of min 1500 m2 of habitat. 2. Monitor Stave Site 2 bird usage to begin understanding what bird species use these newly restored lowland scrub-shrub habitats (North American Waterfowl Management Plan (NAWMP)). Anticipated result of monitoring is a species presence summary. 3. Monitor Stave Site 2 and continue to monitor Stave Site 3 for fish usage and Water Quality. Anticipated result of monitoring are a species presence summary and water quality summary. 4. Map the west tributaries entering into the right bank of Stave to assist in directed identification of future restoration opportunities, restrictions/challenges to salmon habitat in the lower river system. Anticipated result is geospatial files of streams and enhancement/challenge features/limitations. 5. Complete an effectiveness assessment of enhancement activities - adaptive management. 6. Engage the community on the importance of freshwater tidal floodplain ecosystems.	Fraser Valley Watersheds Coalition	$67,574	Habitat-Based Actions	Rivers, Lakes and Reservoirs	Stave	**Mapping complete and planting improves biodiversity** Past planting efforts reduced Reed Canary Grass and increased biodiversity. This project falls within known critical habitat for the Western Painted Turtle. Monitoring of hatchling and sensitive nest sites during the mobilization of equipment was important. Future opportunities for enhancement were identified. Monitoring in the lower floodplain observed 37 different bird species, and showed that both native and non-native fish of all life stages are supported by the overwintering habitat. Mapping of tributaries along the west bank of the Stave River identified opportunities for potential restoration activities to improve and create connectivity of aquatic habitats. Aligns with Stave River Watershed Action Plan actions 2-1, 4-1, and 7-1.

Project ID	2018—2019 Grant-Based Fish Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
COA-F19-F-2784	**Protecting K'omoks Estuary marsh habitat in the Puntledge River Watershed** *Restoration of Carex marsh habitat in the K'omoks Estuary* The goal of this project is to protect and restore estuarine marsh habitat within the K'omoks Estuary, now at risk due to overgrazing by locally overabundant Canada Geese populations. This project will implement restoration prescriptions developed by the Guardians of Mid-Island Estuaries Society and the K'omoks First Nations (KFN) guardian watchmen program, and build on the 2011 FWCP-funded estuary restoration plan. Existing Carex sedge habitats and other marsh vegetation will be protected from further Canada Goose herbivory by the construction of a series of enclosures and denuded sites will be restored following Carex transplant prescriptions, successfully implemented by the Guardians at other estuaries.	Guardians of Mid-Island Estuaries Society	$47,201	Habitat-Based Actions	Rivers, Lakes and Reservoirs	Puntledge	Report in progress
COA-F19-F-2794	**Monitoring Salmon River Coho in the Campbell River Watershed** *Salmon River diversion post decommissioning: Coho surveys* With the removal of the Salmon River diversion dam in September 2017, there is a need to monitor fish passage, distribution and timing of Coho adults throughout the system, and the juvenile rearing densities and biomass. Historically, these parameters were a part of determining the need for the fish passage improvements, but were not considered in the post-decommissioning plan. It is important to continue this monitoring to confirm fish passage improvements. It is assumed that the effects of the removal of the dam and naturalization of the river channel will provide more continuous access for returning Coho populations, where in the past, access was delayed or blocked by high flows and BC Hydro infrastructure. Juvenile assessment (2018) will reflect adult passage success (2017).	A-Tlegay Fisheries Society	$20,000	Monitoring & Evaluation	Wetland and Riparian Areas / Upland and Dryland / Rivers, Lakes and Reservoirs	Campbell	**Coho are using new upstream habitat** Coho fry were sampled in late summer 2018 to provide confirmation of successful 2017 upstream migration of Coho. The highest estimated abundance of Coho juveniles were found upstream at Grilse Creek, BS02 at 240, and BS03 at 162. Surveys were undertaken to assess distribution of Coho at the previous diversion site. From September 13 to November 9, 2018, 28% of the total escapement estimate of 3,868 were in the upper Salmon River. Coho adults navigated beyond the previous dam site in both 2017 and 2018. Conditions at the decommissioned dam site should continue to be monitored to note physical changes that may impact future passage of Coho and Steelhead adults; enumeration surveys should be undertaken every two to three years, to monitor the distribution up and downstream of the diversion site
		Fish Project Total:	**$922,133**				

Project ID	2018 - 2019 Grant-Based Wildlife Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
COA-F19-W-2676	**Helping captive-raise Canada's most-endangered owl species** *Northern Spotted Owl captive breeding program* The Northern Spotted Owl is one of Canada's most endangered bird species. Its entire Canadian range occurs in southwestern British Columbia. Though historic estimates suggest that as many as 1,000 Spotted Owls occurred in the province pre-European settlement, currently fewer than 30 individuals remain in Canada, with more than half of these owls residing in captivity at the Breeding Facility in Langley, B.C. The program's mission is to prevent this species from becoming extirpated from Canada by releasing captive-raised Spotted Owls back into recovery habitats protected for the species in the province. The goal of this project is to produce captive-born Spotted Owls for release into the Bridge-Seton watershed to recover the local population (restore a minimum of 20 individuals).	British Columbia Conservation Foundation	$72,000	Habitat-Based Actions	Wetland and Riparian Areas / Upland and Dryland / Rivers, Lakes and Reservoirs	Bridge-Seton	**At-risk population hatches in captivity** The captive population consists of 11 captive-born, eight wild-caught juveniles, and two of the adult founding members captured from the wild. By breeding Spotted Owls in captivity, we will be able to increase the population size of this species for eventual release in the Bridge-Seton Watershed, which aligns with BRG.ALL.HB.04.01 for species-based actions for wildlife.
COA-F19-W-2686	**Helping Canada's most endangered owl species** *Restoration of the Lillooet sub-populations of Spotted Owls* The project goal is to restore the Spotted Owl population within the northern extent of the Lillooet sub-population of Spotted Owls. This will be achieved by conducting inventories to find and protect the few remaining Spotted Owls in the area, and by releasing captive-raised Spotted Owls back into habitats protected for the species. Furthermore, the removal of Barred Owls will be a priority action, as this will reduce predation pressures and increase the abundance of Spotted Owl prey populations, and make available to Spotted Owls high-quality habitats to occupy, which were previously occupied by Barred Owls.	Ministry of Forests, Lands, Natural Resource Operations and Rural Development	$69,418	Habitat-Based Actions	Wetland and Riparian Areas / Upland and Dryland / Rivers, Lakes and Reservoirs	Bridge-Seton	**Lillooet owl population surveyed** A survey effort for Spotted Owls and Barred Owls was conducted near Lillooet. The efforts from 2015–2018 of Barred Owl removal has resulted in removal from 25% of the 16 reestablishment sites. The estimated number of Barred Owls did not decrease. Efforts for removal must continue, but consideration of methods should be reassessed. Other owl species were recorded, including Barred Owl, Great Horned Owls, Northern Saw-whet Owls, Northern Pygmy-owl, and Western Screech-owls. Two Barred Owls were removed to protect habitat for Spotted Owls. No Spotted Owl inventories were detected. A partnership between First Nations and Government to develop field staff, a long-term recovery strategy; methodology for re-introduction and control are recommended to ensure success.
COA-F19-W-2700	**Securing and restoring conservation lands in the Salmon River Estuary** *Conserving wildlife habitat in the Salmon River watershed* With funding from the FWCP and others, The Nature Trust of BC (TNTBC) purchased property on the lower Salmon River in 2015, as an addition to the Salmon River Estuary Conservation Area. The overall goal of our project is to identify additional high-value wildlife habitat to secure for conservation in the Salmon River watershed, and to restore degraded riparian forest and wetland habitat in the Salmon River Estuary Conservation Area. This project will protect and improve habitat for birds, amphibians, mammals and salmon. This will be accomplished by: 1) identifying new opportunities for acquiring properties with high-value habitat on the Salmon River; 2) restoring degraded habitat on the new property; and, 3) monitoring and maintaining past ecosystem restoration projects.	The Nature Trust of British Columbia	$46,475	Land Securement	Wetland and Riparian Areas / Upland and Dryland / Rivers, Lakes and Reservoirs	Campbell	**2000 m^2 of wetland riparian habitat replanted** In 2018–2019, 12500 m^2 of dense Red Alder forest was thinned to improve habitat for Roosevelt Elk, improve access for wildlife, revegetate 2000 m^2 of wetland riparian habitat, and create 100 m^2 of shallow wetland habitat. Invasive plants were also removed and a 1.2 ha field was re-vegetated. Four Western Screech-owl nest boxes were monitored and maintained. Aligns with the Campbell River Watershed Action Plan priority action WAR.HB.31.01.

Project ID	2018 - 2019 Grant-Based Wildlife Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
COA-F19-W-2701	**Monitoring bat roosts in Lower Mainland Watersheds** *Assessment of artificial rock roosts for bats* This project entails revisiting nine artificial rock roosts (ARRs) for bats that were installed in 2011, in order to assess their success at re-creating roosting habitat for bats. The nine experimental ARRs were designed, built, and installed as part of a previous FWCP Coastal Region (Bridge-Coastal Restoration Program) project and have not been monitored since their installation. A flexible scope will be used to inspect the ARRs for signs of bat use, and bat guano will be collected for future DNA analysis to species. Repairs and modifications to the ARRs will be carried out, as required.	Ophiuchus Consulting	$18,084	Monitoring & Evaluation	Wetland and Riparian Areas / Upland and Dryland / Rivers, Lakes and Reservoirs	Multiple	**Eight artificial bat roosts assessed** Eight of the artificial rock bat roosts (ARRs) were found in good condition; one had fallen and was reattached. Temperature loggers and guano catchment ledges were installed. The ARRs appear to provide habitat for much longer time frames than traditional wooden boxes. The concrete boxes did not suffer extreme cooling compared to ambient temperatures. However, nearly all of the ARRs had overheating events. Avoiding installation of boxes at hot sites is recommended. Warm and cool sites should be targeted for bat box installation, which is contrary to earlier guidance on bat box installation in the Pacific Northwest climate. Incorporating styrofoam and multiple chambers could provide a wider temperature gradient within a box.
COA-F19-W-2702	**Securing important land in the K'ómoks Estuary** *Kus Kus Sum land securement for Puntledge salmonids* Project Watershed has a vision to secure and restore a key property, a former sawmill site, in the K'ómoks Estuary. The original riparian salt marsh that existed on the site was filled in, paved over, and the foreshore was artificially armoured with 440 metres of steel-clad retaining wall. This area acts as a "pinch point," where Puntledge Salmon stocks (both out-migrating juveniles and returning spawners) are easily trapped and preyed upon by seals. This project is for funding the purchase pf this property - now referred to as Kus Kus Sum, to acknowledge the long-standing Aboriginal connection to the site. This is the first step in seeing it returned back to a natural functioning condition, so that it will once again support fish and wildlife. *Funded from previous year's property acquisition set aside.	Comox Valley Project Watershed Society	$400,000	Habitat-Based Actions	Rivers, Lakes and Reservoirs	Puntledge	**Fundraising continues for land securement** The local community was targeted through a public fundraising campaign, which has been met with widespread community support. CVPWS has made great advances towards garnering funds from Provincial and Federal Government sources. With multiple funding opportunities on the horizon and strong governmental partnerships, CVPWS is well poised for making the final payments to the landholders in 2020. The Puntledge River Watershed Action Plan identified the acquisition and restoration of Kus-kus-sum as a priority action — PUN. RLR.HB.16.01.
COA-F19-W-2725	**Maintaining ecological function by managing invasive plants in the Campbell River Watershe**d *Restoring ecological function in the Campbell River Estuary* This project aims to restore ecological functioning in the Campbell River Estuary through management of invasive species including Yellow Flag Iris, Purple Loosestrife and Japanese Knotweed. After a century of industrial use, over $1 million has already been spent on restoring the Campbell River Estuary, but more work remains to be done to ensure that the estuary regains its historic ecological integrity and functioning. The proposed project will provide additional capacity for invasive species management that will improve the ecosystem functioning of the estuary, including protecting the provincially Red-listed "Henderson's Checker-mallow-Tufted Hairgrass" ecological community, and habitat for the Vancouver Island beggarticks, a species of Special Concern under the Species at Risk Act.	Discovery Coast Greenways Land Trust	$20,515	Habitat-Based Actions	Wetland and Riparian Areas	Campbell	**5,680kgs of invasive plants removed in estuary** Yellow Flag Iris has invaded several hectares of sensitive marsh habitat in the estuary. Invasive species management is a priority #1 action of the Campbell River Watershed Action Plan (CBR.WAR. HB.31.01 Implement Wetland and Riparian Restoration Projects). Greenways Land Trust has been working to manage invasive species in the estuary for over five years. In 2018–19, 4,570 kg of Yellow Flag Iris was removed; 570 kg of Purple Loosestrife; and 540 kg of Scotch Broom and Himalayan Blackberry was sent to landfill. Treatments of broom and blackberry on 8.7 hectares of upland habitat were carried out, with disposal taking place on-site. One infestation of Japanese Knotweed was treated within the estuary, with another 11 infestations being monitored after potentially being eradicated. Two new knotweed infestations were found in areas where they are unable to be treated, due to restrictions on herbicide use. Greenways facilitated over 100 volunteers and 250 volunteer hours towards carrying out action on invasive species in 2018–19.

Project ID	2018 - 2019 Grant-Based Wildlife Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
COA-F19-W-2727	**Conserving biodiversity in the Stave River Watershed** *Priority species habitat conservation in the Stave watershed* This project will build upon past works to enable the implementation of priority species- and habitat-related conservation actions in the Stave River watershed. Benefits to overall biodiversity in the watershed will be observed through multiple species and stakeholder habitat management and restoration. Specific project activities for priority species will include follow up monitoring, as well as road mortality mitigation for Western Toads, potentially applying adaptive management to Western Screech-Owl boxes already present, building upon restoration activities undertaken for Western Painted Turtle and protection of bat species. Works will be conducted in partnership with FLNR, BC Parks, First Nations, watershed societies, and private landowners.	Athene Ecological	$17,400	Habitat-Based Actions	Wetland and Riparian Areas / Upland and Dryland / Rivers, Lakes and Reservoirs	Stave	**Toads and turtles benefit from conservation actions** This project monitored the success of habitat and conservation activities of COA-F17-W-1207. Species at risk conservation in the Stave River Watershed provided mitigation for Western Toads, and restored turtle nesting site. Works were conducted in partnership with the Ministry of Forests, Lands, Natural Resource Operations and Rural Development, BC Parks, First Nations, Watershed Societies, and private landowners. This project aligns with the Stave River Watershed Action Plan SFN.ALL.HB.19.01.
COA-F19-W-2731	**Growing endangered Whitebark Pine in the Bridge-Seton Watershed** *Whitebark Pine recovery in St'at'imc Traditional Territory* Whitebark Pine is an endangered keystone species of high elevation ecosystems. It is an important food source of many species of wildlife, most notably the Grizzly Bear and Clark's Nutcracker. It is endangered due to the introduced White Pine Blister Rust, Mountain Pine Beetle, fire, and climate change. The most effective means for Whitebark Pine recovery is through promoting the regeneration of blister rust-resistant seedlings via planting or natural means, retaining healthy trees on the landscape, and ensuring the perpetuation of natural recruitment. This project will directly aid in recovery by planting seedlings grown from potentially rust-resistant parent trees and by surveying past planting to determine success level of plantings.	Lillooet Tribal Council	$17,665	Species-Based Actions	Upland and Dryland	Bridge-Seton	**3,248 at-risk Whitebark Pine seedlings planted** The objective of this project was to survey previous planting sites and to restore Whitebark Pine sites through planting. Surveyed densities identified survival rates of 55% and 74%. Although these survival rates are acceptable, improvements can be made by producing more robust seedlings and increasing planting densities at sites with easy access. All seedlings planted were from putatively resistant parents. A total of 3,248 seedlings were planted over 6.87 ha. This project aligns with the Bridge Seton Watershed Plan BRG.UAD.SB.38.01.
COA-F19-W-2758	**Conserving and restoring high-value habitat in the Seton River Watershed** *Seton River conservation / restoration management planning* This project is designed to develop conservation, restoration, and/or sustainable management strategies that will benefit fish and wildlife values within the corridor, while also honouring cultural and operational activities. During 2012-16, habitat and wildlife surveys were completed, and partner and stakeholder meetings were held annually. The result is a planning document that was drafted and approved by the partners and stakeholders in spring 2016. The next step proposed is to work directly with the partners and targeted individual stakeholders to develop the necessary management strategies at four specific locations that have been identified as high-value habitat during the planning process.	Cayoose Creek Indian Band	$16,450	Habitat-Based Actions	Wetland and Riparian Areas / Upland and Dryland / Rivers, Lakes and Reservoirs	Bridge-Seton	This project is extended to October 15, 2019

Project ID	2018 - 2019 Grant-Based Wildlife Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
COA-F19-W-2776	**Creating and enhancing wetland and riparian habitat in the Alouette River Watershed** *Restoring species of conservation concern and cultural value* The goal of this project is to create and enhance wetland and riparian habitat within the lower Alouette watershed to support healthy populations of five culturally-valued species and 12 species of conservation concern. The project represents the implementation of an eco-cultural restoration plan for Katzie Traditional Territory, which integrates the principles of restoration ecology and adaptive management with Katzie Traditional Knowledge and priorities for conservation. In 2018, an enhancement site started in 2017 will be completed, a third year of effectiveness monitoring will be conducted to evaluate restoration success, and surveys for species at risk will be conducted, to guide conservation and habitat enhancement actions that address management plan priorities.	Katzie First Nation	$64,200	Habitat-Based Actions	Wetland and Riparian Areas	Alouette	**1.6 ha of wetland habitat restored** Loss of 80% of wetlands in Katzie traditional territory in the Alouette Watershed has impacted several species, including those of cultural value, such as Wapato. A plan prioritizes wetland habitat enhancement within the core of Katzie traditional territory. In Year 1 (2016), two sites (1 ha) were enhanced along the lower Alouette River for 13 species of conservation concern. In Year 3 (2018–2019), habitat enhancement work was completed at Neaves Road. A "Wapato garden" for harvesting by the community, was constructed in addition to restoring 1.6 ha of wetland habitat. Monitoring found planted aquatic species had high mortality due to uprooting during freshet. A very low diversity of native fish species (one) compared to earlier observations of five at the Neaves site. Bird monitoring and habitat modeling showed that marsh wrens may be negatively impacted by excavation of Reed Canary Grass meadow required to create marsh habitat. Higher tree cover predicted higher songbird richness, implying that planting trees may result in higher species richness than improving shrub cover. A trial to introduce Vancouver Island Beggarticks (SARA-listed of Special Concern) was initiated. Seedlings planted after freshet survived at rates 2.5 times higher than those planted pre-freshet. It was observed that Vancouver Island Beggarticks can produce abundant seed when planted at low elevations where Reed Canary Grass does not grow.
COA-F19-W-2803	**Supporting Mule Deer and habitat in the Shuswap River Watershed** *Mule Deer seasonal ranges and migration in the upper Shuswap* This project seeks to collar 15 adult female Mule Deer. Utilizing high fix rate GPS collars, these animals will be tracked for a period of two years. Upon completion of two years of GPS data, seasonal ranges and migration corridors will be plotted. Combining GPS and ground work, a habitat map and resource selection function model will be developed, which will allow Mule Deer use to be predicted and identify capable and suitable habitats. Completion of these habitat maps and RSF models will allow identification of potential habitat enhancement sites to offset impacts of hydro development. This work is a joint project with FLNR, UBCO and Splatsin first nations.	Ministry of Forests Lands, Natural Resource Operations and Rural Development	$38,500	Research & Information Acquisition	Upland and Dryland	Shuswap	**Baseline data gathered on Mule Deer** Mule Deer have seen a long-term decline in populations and the Splatsin Nation is concerned about the population within their traditional territory. This project seeks to build a baseline data set to provide guidance for further management and habitat enhancement options, to support and promote Mule Deer populations. Between December 1, 2018 and April 15, 2019, Ministry of Forests, Lands, Natural Resource Operations and Rural Development staff, volunteers, and technicians attempted to capture and collar Mule Deer. Unexpected seasonal movements of Mule Deer and the competitive nature of White-tails reduced the success. Four GPS collars were deployed on adult female Mule Deer. This project aligns with the Shuswap Action Plan SHU.UAD.RI.19.01.
		Wildlife Project Total:	**$780,706**				

Project ID	2018 - 2019 Fish and Wildlife Directed Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
-	**Supporting aquaculture in Puntledge River Watershed** *Puntledge River Hatchery annual contribution* FWCP annual funding to the Puntledge River Hatchery to support Summer Chinook production in the watershed.	Department of Fisheries and Oceans Canada	$17,000	-	-	Puntledge	Project in progress.
-	**Supporting habitat assessment mapping in the Coastal Region** *Habitat assessment mapping* The Coastal Board has approved funding for the development of methods, measures and a scope of work towards the directed priority action for habitat assessment mapping.	-	$50,000	-	Wetland and Riparian Areas / Upland and Dryland / Rivers, Lakes and Reservoirs	-	Project in progress.
COA-F19-F-2851-DCA	**Addressing fish and flows in the Lower Stave River** *Stave spawning channel rewatering* This project represents a collaborative effort to address the de-watering of Centre-Right (Channel 5) in the Lower Stave River system during low flows, causing the stranding of adult Chum Salmon and the desiccation of some redds. And, reduce the impacts of significant erosion along the right (west) bank at a known archaeological site during higher flows. This project aligns with Action 2-1 and Action 4-1, habitat-based actions for fish and wildlife. Project objectives included: • re-watering of 500 square metres of salmon spawning habitat within the lower Stave River, • stabilization of 250 linear metres along the right bank from erosion that is (a) threatening to destroy a Kwantlen First Nation archeological site, and (b) contributing to fine sediment deposition into the spawning grounds; • replanting and bioengineering, designed in collaboration with Kwantlen First Nation and the archaeologists to help reduce erosion and protect artifacts and sites. • developing strong working relationships between project partners; and • increasing awareness amongst the community about the value of the Stave River system.	Fraser Valley Watershed Coalition	$90,626	Habitat-Based Actions	Wetland and Riparian Areas / Upland and Dryland / Rivers, Lakes and Reservoirs	Stave	**6,000 m^2 of salmon spawning habitat restored** Channel five became dewatered, stranding adult Chum and causing the desiccation of redds. Restoration resulted in 6,000 m^2 of restored salmon spawning habitat. Bioengineering was implemented along 27 linear metres of the right bank to reduce erosion, protect artifacts, and enhance the habitat. Given the re-grade of lower riverine channels, anticipated climate change models, and the need to continue producing power, it may be a good time to establish a working group to set objectives for the Lower Stave. Recommendations include monitoring for effectiveness and assessing feasibility of additional bank and channel restoration projects. This project aligns with the FWCP Stave River Watershed Action Plan Action 2-1 and Action 4-1.

Project ID	2018 - 2019 Fish and Wildlife Directed Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
-	**Securing conservation lands in our Coastal Region** *Property Acquisition* Acquiring lands for conservation purposes. The Coastal Region Board has approved annual land acquisition set aside of its funds for the future purchase of lands for conservation purposes in the Coastal Region.	-	$318,172	Land Securement	-	Region-wide	Project in progress.

Directed Project Total: **$475,798**

2018 - 2019 PROJECT SPEND TOTAL: **$2,178,638**

BCH19-621