FWCP
Fish & Wildlife
COMPENSATION PROGRAM

Annual Report

FWCP Coastal Region
2017–2018

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 2017-18. It is designed to be a plain language document covering key highlights, decisions, and expenditures for Fiscal Year 2018 (F18), covering the period April 1, 2017 and March 31, 2018, 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 the Mainland Coast, where BC Hydro generation facilities 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, which operates 14 dams across our Coastal Region.

Our work in this region is guided by a diverse 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. The Board is responsible for all funding decisions and provides oversight on our activities in each watershed.

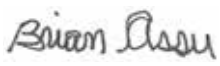
In F18, a focus of the program was finalizing our Action Plans across the 14 Coastal Region watersheds in which we operate. Activities to update the Action Plans were initiated in 2016 and took a big collective effort from the FWCP team, technical committees and Coastal Board with local input from First Nations, communities and agencies. The Action Plans were posted to fwcp.ca in September 2017.

The year also saw delivery of the 28 fish and wildlife projects approved by our Coastal Region Board. The nine wildlife and 19 fish projects represent a total project investment this fiscal year of over $1.7 million. Species and habitat-based actions are the focus for the majority of projects approved by the Board, most of which are delivered by non-government organizations or First Nations, and are spread across the watersheds in which we work.

In addition, the FWCP offers Community Engagement Grants, which provide an opportunity for our stakeholders (e.g. environmental groups, rod and gun clubs, non-profits, stewardship organizations, government, and First Nations) to apply for small amounts of funding (up to $1,000 maximum) to support their conservation and enhancement work. In F18, we were able to support a total of seven projects for $4,600. These included Coho Salmon restoration work (Alouette River Management Society); distributing Chum Salmon carcasses in the Puntledge River watershed (Steelhead Society of B.C.); and building conservation connections for species at-risk in the Coquitlam River watershed (Fraser Valley Conservancy SCCP).

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,



Brian Assu
FWCP Coastal Region Chair

Front cover: over 1800 m² of new channel like this one have constructed to help salmonids at the Dave Marshall Salmon Reserve.
Photo: Edith Tobe, Squamish River Watershed Society.

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. FWCP operates as a partnership between BC Hydro, the Province of B.C., Fisheries and Oceans Canada (DFO), First Nations, and Public Stakeholders.

FWCP has invested nearly $160 million and delivered more than 1,850 projects since 1988 that increase understanding, and conserve and enhance fish, wildlife and their supporting habitats impacted by existing BC Hydro generation facilities. Our three regional Boards approved more than $9.4 million for 102 fish and wildlife projects to be implemented in F18.

Formerly known as the Bridge-Coastal Restoration Program, the FWCP's Coastal Region was established in 1999. This voluntary initiative was developed in response to First Nations and stakeholder interests' in addressing opportunities for restoration.

As identified in the map below, the Coastal Region includes 14 watersheds: on Vancouver Island, the Mainland Coast, the Lower Mainland, and parts of the Southern Interior (e.g. Bridge-Seton and Shuswap River watersheds).

This Annual Report provides an overview of the activities and a financial performance report, as well as a project funding summary with highlights from the Fiscal Year 2018 (F18) covering the period of April 1, 2017 to March 31, 2018.

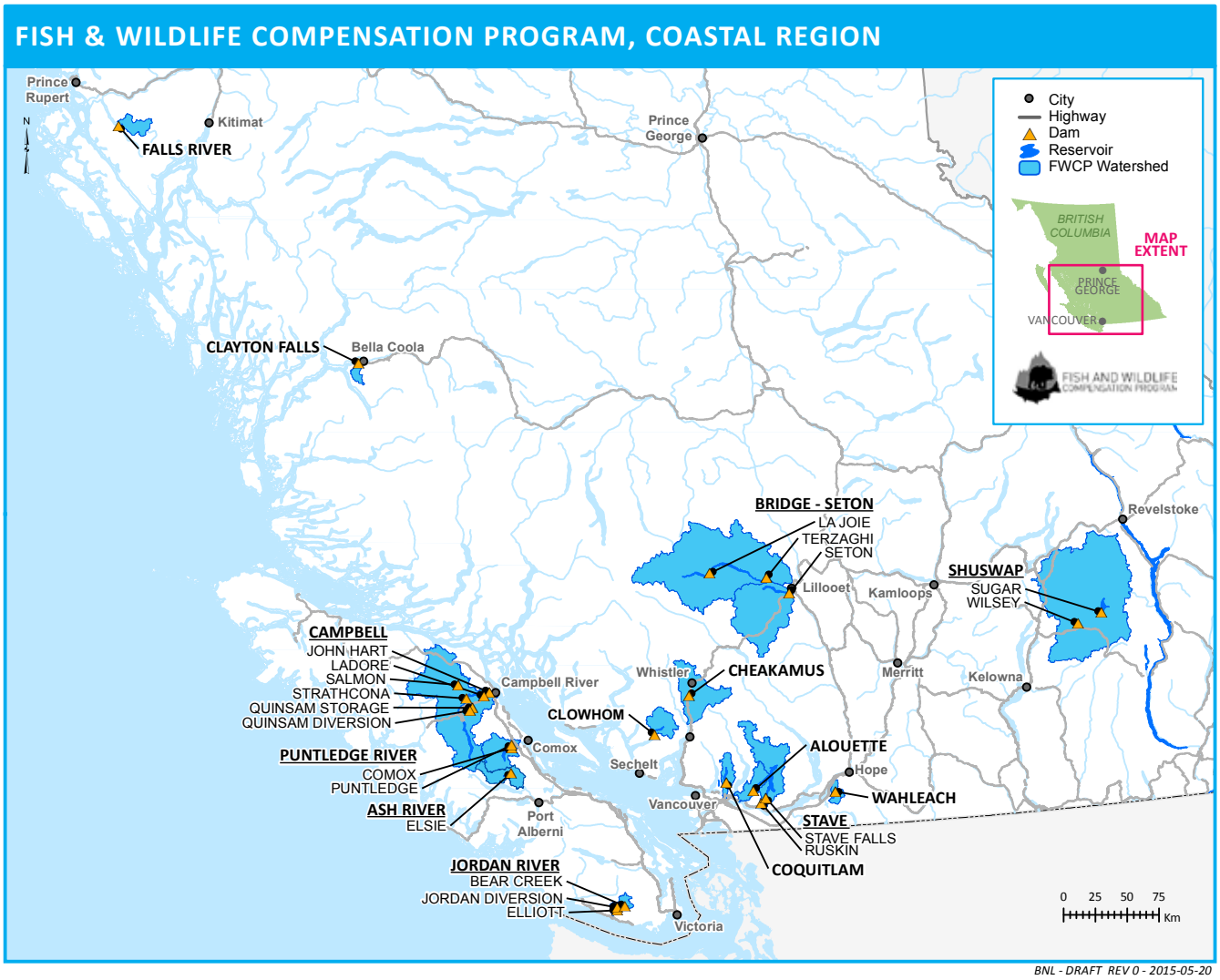


Figure 1.1 Map of the FWCP Coastal Region

GOVERNANCE

The FWCP's governance recognizes the regulatory accountabilities of our agency partners—BC Hydro, the Province of B.C., and Fisheries and Oceans Canada—and enables partnerships with First Nations and Public Stakeholders. Work in each region is guided by a local Board responsible for setting strategic priorities and approving annual expenditures, as well as our investments in conservation and enhancement projects.

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 F18 Board Members were:

First Nation Representatives:

Brian Assu, (Board Chair), We Wai Kai Nation
Larry Casper, Seton Lake Indian Band
Mark Peters, Peters Band

Public Representatives:

Vivian Birch-Jones
Todd Manning
Jack Minard

Agency Representatives:

Adam Silverstein, Fisheries and Oceans Canada

Scott Barrett, B.C. Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNR)

Laurel Stevens, BC Hydro

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 F18 Policy Committee Members were:

Karen Popoff, Director of Environmental Risk Management, BC Hydro
Kaaren Lewis / Jennifer McGuire, Assistant Deputy Minister, B.C. Ministry of Environment
Cheryl Webb, Regional Director Pacific Region, Fisheries and Oceans Canada

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 F18 Technical Review Committees were:

Lower Mainland and Coast Fish Technical Review Committee:

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

Southern Interior Fish Technical Review Committee:

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

Vancouver Island Fish Technical Review Committee:

Jim Lane, Nuu-chah-nulth Tribal Council
Eva Wichmann, (Chair), BC Hydro
Mike McCulloch, FLNR
Margaret Wright, Fisheries and Oceans Canada
Darren Hebert, Public Representative

Wildlife Technical Review Committee:

John Cooper, Public Representative
Fraser Corbould, BC Hydro
Dr. Brent Gurd, (Chair),FLNR

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

Our Coastal Region Board includes representatives from First Nations, the Province of B.C., BC Hydro, Fisheries and Oceans Canada, and Public Stakeholders. (L-R) Mark Peters, Larry Casper, Brian Assu, Jack Minard, Scott Barret, Todd Manning, Adam Silverstein, Vivian Birch-Jones, and Laurel Stevens.

2.0 FWCP's Strategic Framework

Our strategic framework guides planning for compensation investments (i.e. fish and wildlife projects) and supports our vision.

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.

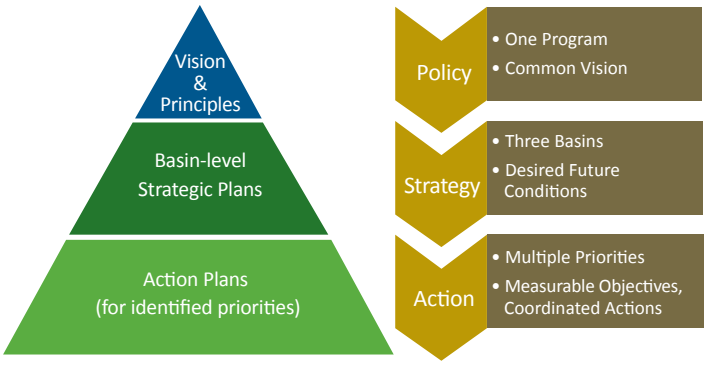


Figure 2.1
Relationship between FWCP's Strategic Framework, Basin-level Strategic Plans and Action Plans.

Over 7,000 kgs of invasive plants have been removed in the Bridge-Seton Watershed.
Photo - Lillooet Regional Invasive Species Society

3.0 FWCP Strategic Objectives and Strategic Plans

3.1 STRATEGIC OBJECTIVES

The strategic objectives for the Fish and 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. In FWCP's Coastal Region, Action Plans exist for each of the 14 watersheds where we operate. High-level watershed plans set out the strategic direction for the Coastal Region and describe the specific watershed settings and general impacts that the creation of the generation facilities (i.e. construction of the dams, the development of hydro-power, and alterations in the hydraulic regimes of the systems) had on ecosystems, fish, and wildlife habitat.

Each year, as the FWCP Coastal Board reviews and approves an Annual Operating Plan, alignment with the strategic priorities identified in the Action Plans is of key consideration.

All projects approved for F18 align with the Action Plans. The Plans are posted on fwcp.ca and each year applicants are asked to review the Plans and identify how their proposed project aligns with and supports the Action Plan relevant to their objectives.

Action Plans are updated from time to time. In September 2017, FWCP Coastal Region posted updated ecosystem and species-based Action Plans across the 14 watersheds in which we operate. Activities to update and refine the 2011 Action Plans were initiated in 2016 with local input from First Nations, communities and agencies and took a big collective effort from the FWCP team, technical committees and Coastal Board to streamline the original 41 strategic planning documents into 14 Watershed Action Plans.

4.0 Report on performance

4.1 RESULTS OF THE 2017–18 GRANT APPLICATION INTAKE

The FWCP in the Coastal Region undertakes a call for grant applications each year in the fall. The applications are submitted and managed online through the FWCP's Grant Management System (GMS). The GMS has improved administrative efficiency, enhanced data-collection and reporting, and has helped automate some of the application review process.

All grant applications received go through a three-stage review process. This consists of a review by:

- the Regional Manager to ensure they are complete and in alignment with a priority action in one of the FWCP Coastal Action Plans;
- the Fish or Wildlife Technical Committee to determine technical merit; and
- the FWCP Coastal Board .

FWCP Coastal Region received 63 grant applications for fish (33 proposals) and wildlife (30 proposals) in its 14 watersheds for implementation of projects in 2018-2019. Requests for funding totaled more than $2.9 million for the region. Applications came from 12 watersheds including 12 from Lower Mainland, 18 from Vancouver Island, 27 from Southern Interior. Following the three-stage review process, the Coastal Board approved $1.75 million in funding for 28 projects.

4.2 FINANCIAL REPORT

The FWCP is funded by BC Hydro through a notional fund that is indexed to the Consumer Price Index (CPI). For F18 BC Hydro provided $2.082 million to the FWCP Coastal Region. A deficit of unspent surplus dollars (uncommitted dollars) at the end of F17 of -$13,190 resulted in a total of up to $2.069 million available to be utilized in the Coastal Region in F18.

Each year, annual funding is allocated by our Coastal Board toward fish and wildlife projects and other program costs. In F18 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.

Similarly, not all allocated "committed" funds are expended by the end of a given fiscal year, due to the seasonal nature of some field-based projects. The unspent committed funds (e.g., "F17 remaining commitment to spend in F18") are the difference between the committed funds and what has actually been spent. These committed funds are carried forward and remain available for spending on the respective committed projects. All committed funds are associated with the fiscal year in which the spending was approved, and tracked separately.

As of April 1, 2017, the FWCP Coastal Board approved a F18 budget of $2.064 million. In addition, there were prior year funding commitments of $1.049 million from F17, $266,000 from F16, and $129,000 from F15. Entering F18 the balance of uncommitted funding was a slightly negative $13,000. The F18 budget was 99% ($2.064 million of $2.082 million) of the annual funding provided by BC Hydro.

The 500th Vancouver Island Marmot born in captivity was released in July 2017.
Photo: Marmot Recovery Foundation

For F18, the Board approved a budget of $2,063,524, primarily toward fish and wildlife projects. Figure 4.1 illustrates the approved F18 budget at the start of the fiscal year. A complete project list for F18 is found starting on page 11. 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 (17%), fish projects (50%), land securement projects (18%), and communications (2%).

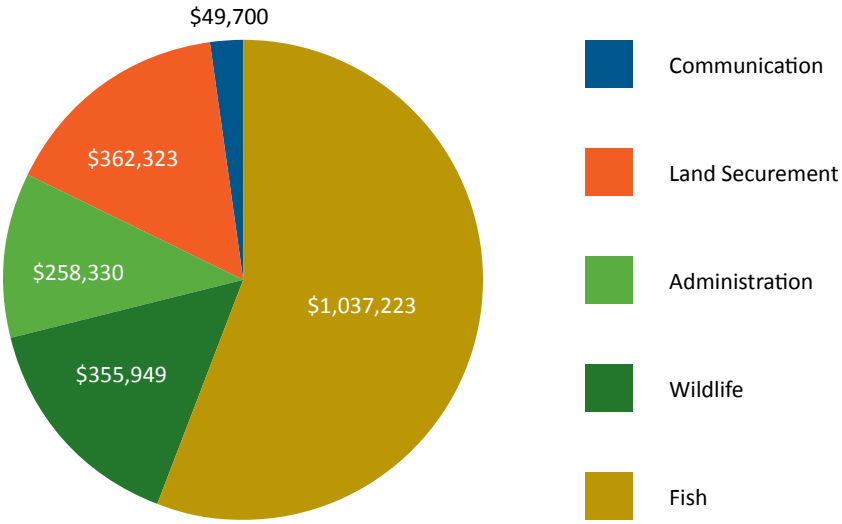


Figure 4.1: Breakdown of approved $2.064 million budget at April 1, 2017

Program expenditures up to fiscal year-end March 31, 2018 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 F18 projects. As noted above, allocated project funding each year is not fully paid by year-end, due to the seasonal nature of field-based projects and the fact that many project proponents submit their final project reports for approval beyond the March 31, fiscal year-end. Fiscal Year 18 allocated funds not yet paid by March 31, 2018 are labelled “Committed Spend” in Table 4.1.

It is not uncommon for projects to 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: F18 budget status as of March 31, 2018

Fund category	F18 approved budget	Paid up to March 31, 2018	Committed Spend [1]	Unspent funds[2]
Fish	$1,037,223	$622,672	$416,427	($1,876)
Wildlife	$355,949	$169,133	$186,816	$0
Administration	$258,330	$215,761	$15,475	$27,094
Land Securement	$362,323	$0	$362,323	$0
Communications	$49,700	$40,877	$8,233	$590
TOTAL	$2,063,524	$1,048,442	$989,274	$25,808

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 F18 (Table 4.1, March 31, 2018), $1.048 million of the F18 budget had been spent, while $989,000 remained as an F18 commitment to spend in F19 (Table 4.1, Figure 4.2). In addition, the balance of prior year funding commitments anticipated to be spent in F19 was $272,000 from F17 and $150,000 from F16, resulting in an unspent surplus of $109,000 (Figure 4.2).

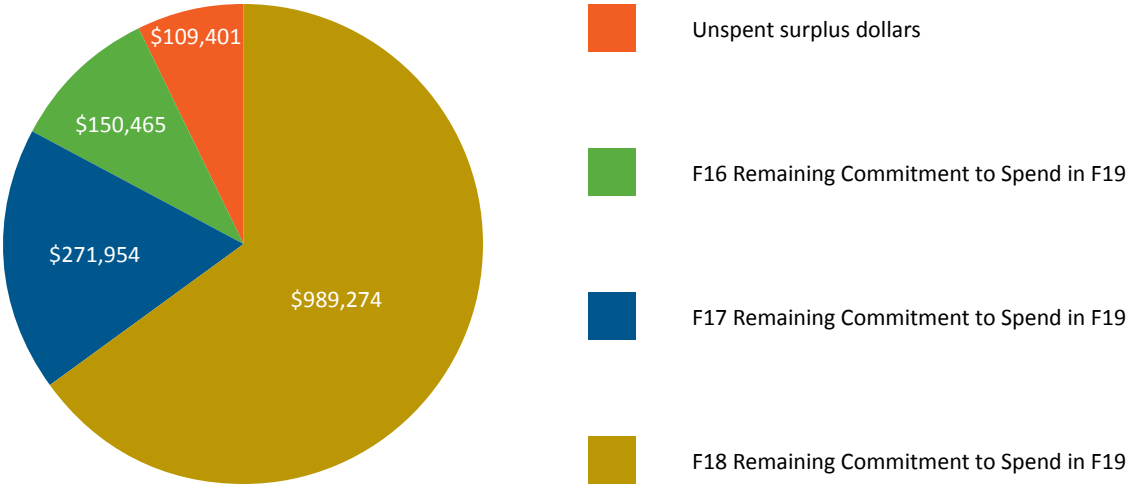


Figure 4.2: Financial Summary of FWCP Coastal Region as of March 31. 2018 (end of fiscal year)

4.3 APPROVED BUDGET ALLOCATION BY WATERSHED

The approved F18 budget for our Coastal Region included $1.04 million on fish projects, $356,000 on wildlife projects, and $362,000 for land securement initiatives, for a total of $1.76 million (85%). These projects were distributed across the watersheds in which we operate, as shown in Figure 4.3. During 2017-18, the FWCP supported projects in 10 of the 14 watersheds in the Coastal Region.

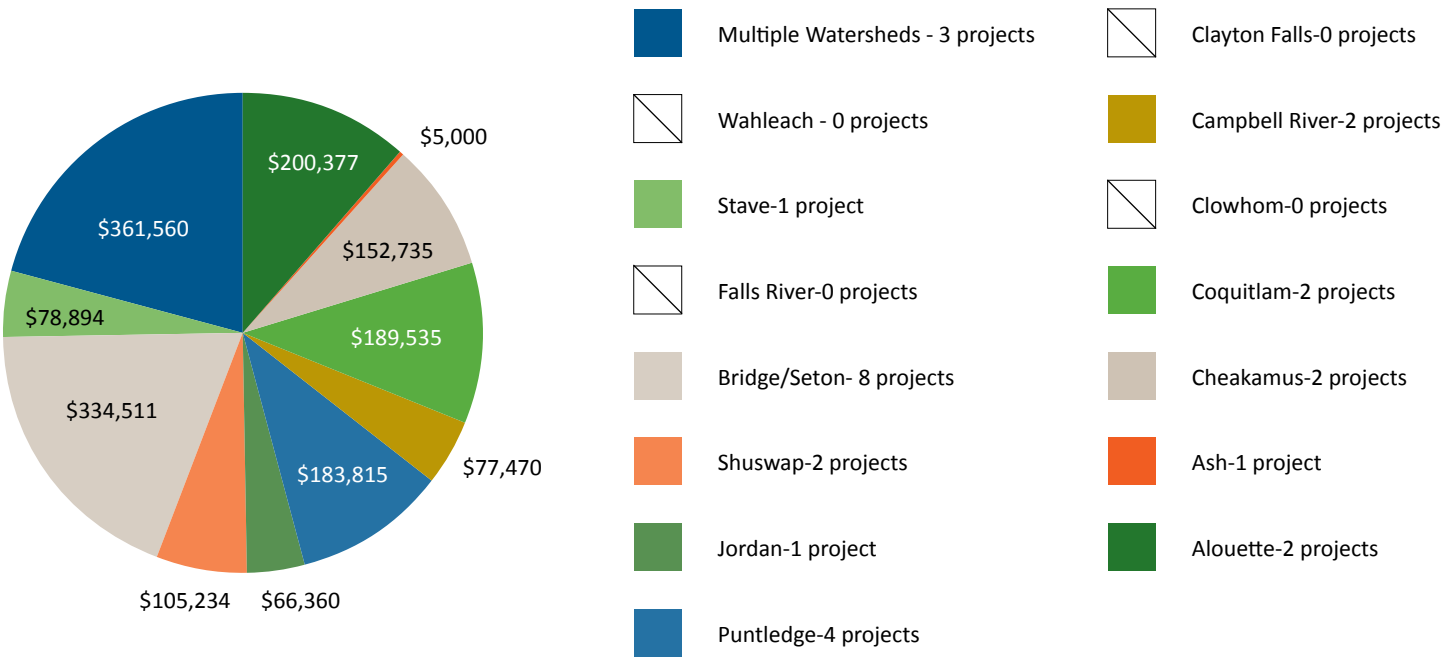


Figure 4.3: Approved budget allocation by watershed at April 1, 2017

4.4 STRATEGIC PLAN ACCOUNTABILITY

As noted in Section 2.2, alignment with the strategic priorities identified in the Action Plans is a requirement to be eligible for an FWCP grant. It is a key consideration for the Technical Review Committees and Board during the project evaluation and selection process.

Most fish and wildlife projects in FWCP's Coastal Region are funded through FWCP grants, but our Board may choose to direct projects and approve funding to address regional priorities. All projects funded, whether Board directed or through the grant application process, must align with our new Action Plans, completed in 2017.

4.5 F18 PROJECTS

Table 4.2: 2017–2018 Projects

Project ID	2017–2018 Grant-Based Fish Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Sub-Region	Project Outcomes
COA-F18-F-2385	**Supporting anadromous salmon in Alouette River watershed** *Alouette Watershed Sockeye-fish passage Feasibility-year one* The Alouette River Sockeye Re-Anadromization Program (ARSRP) is a joint initiative between the Katzie First Nation, ARMS, BC Hydro, the Ministry of Environment (MOE), Fisheries and Oceans Canada (DFO), and local stakeholders. That works to promote the re-establishment of anadromous Alouette Sockeye and investigate the feasibility of fish passage at Alouette Dam. This project will: 1. Undertake a peer review and a formal DFO review of the ARSRP program and review the MOE's Nerkid Model to determine if it can accurately forecast Sockeye restoration feasibility. 2. Monitor adult returns and juvenile outmigration necessary for the evaluation of heritability and for eventual FWCP endorsement. 3. Determine the availability of spawner habitat to confirm it can support a self-sustaining population.	Alouette River Management Society	$137,877	Research and Information Acquisition	Alouette Salmonid Action Plan	Alouette	Quadrat sample points taken using a drop camera system established the distribution of substrate composition (size and embeddedness) within the reservoir. Spatial analyses estimated 48 ha of potentially suitable spawning habitat for Sockeye and Kokanee in Alouette Reservoir, out of a total of 688 ha with the 10-80-metre depth range. The Kokanee spawning timing window was defined as October to the end of December. Kokanee spawners were captured generally between depths of 15 m and 70 m. Evidence of nest digging activity was the only type of spawning behaviour found. A total of three primary and four secondary spawning sites were identified. Results suggest that substrate size and embeddedness criteria alone were not consistent predictors of actual spawning habitat selection by Kokanee in Alouette Reservoir. Future work should focus on collecting new physical and chemical environmental data, in addition to increased densities of quadrat points on substrate composition; this will allow the project to refine the definition and estimates of suitable spawning habitat, as well as inform on the underlying mechanisms for site selection in deep water spawners.
COA-F18-F-2504	**Restoring fish passage in Alouette River watershed** *Fish Passage Data Analysis* This project will conduct a background literature and database review of fish passage work conducted to date in the FWCP's Coastal Region watersheds. In addition a GIS exercise will be conducted to screen restoration candidates by modelling habitat potential upstream of all project area crossings identified as barriers in the Provincial Stream Crossing Inventory System database, based on key habitat parameters and fish species present. The best potential opportunities for restoration will be compiled into table format with key information available (e.g., species present, habitat gain, photo links, background report links, agency responsible for road, etc.). This work is intended to serve as a catalyst to the restoration of fish passage into critical habitat areas for priority species.	Masse Environmental Consultants Ltd.	$5,000	Habitat-Based Actions	Alouette Salmonid Action Plan	Region-Wide	A detailed review and prioritization ranking was conducted for crossings structures identified as requiring further assessment across the Coastal Region's 14 watersheds. Of these, nine crossings were rated as high priority for follow up with habitat confirmation assessments and potentially fish inventories. Assessment of these crossings is recommended and should be conducted according to Fish Passage Technical Working Group (FPTWG) protocols. Please see the reports for useful information, photos, and links to the high priority sites.

Project ID	2017–2018 Grant-Based Fish Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Sub-Region	Project Outcomes
COA-F18-F-2460	**Restoring habitat in Ash River watershed** *Ash Watershed Habitat Restoration Planning and Engagement* This project will facilitate the engagement of First Nations, landowners, community groups, and private parties with the purpose of establishing objectives for the development of an integrated habitat restoration plan for the Ash River Watershed. Information acquisition with respect to fish habitat status and stock status will be completed to provide a shared understanding of the status of the watershed and the fundamental information required for the development of the restoration plan.	Hupacasath First Nation	$5,000	Research and Information Acquisition	Ash Salmonid Action Plan	Ash	The estuary is an area where many opportunities for restoration may exist but it was decided that a number of knowledge gaps concerning the limiting factors and utilization of the estuary should be investigated first. In response to this, it was decided that a monitoring plan should be developed for the estuary and implemented in the coming years. This plan and work will be vital for the development of an integrated habitat restoration plan.
COA-F18-F-2387	**Removing invasive plants in Bridge-Seton River watershed** *LRISS Aquatic Invasives Project* Aquatic invasive species threaten to take over riparian and wetland areas in the Bridge-Seton Watersheds. Over the last two years, the Lillooet Regional Invasive Species Society (LRISS) has, in our work funded by the FWCP, found invasives in several lakes, namely Yellow Flag Iris, Knotweed, and Himalayan Blackberry. Manual removal of Yellow Flag Iris is very labour intensive, but eradication is an attainable goal. This project will continue to remove invasives to protect shoreline and monitor sites that have been treated. LRISS is in partnership with local stakeholders and First Nations to complete this work. The project activities fall within the priority goals as set out in the LRISS Aquatics Action Plan for the region.	Lillooet Regional Invasive Species Society	$9,980	Research and information aquisition	Bridge-Seton Riparian Wetlands Action Plan	Bridge-Seton	The Lillooet Regional Invasive Species Society (LRISS) has completed the third year of an Aquatic Invasives Project. This project targeted Yellow Flag Iris (Iris pseudacorus), Himalayan Blackberry (Rubus armeniacus) and Japanese Knotweed (Fallopia japonica). Data collection using the Lightship Collector App was piloted in partnership with the St'at'imc Government Services. Twenty-two sites were surveyed and 12 sites were treated. Nine sites were surveyed but found to have no invasive plants on-site. Although the largest site on Seton Lake was treated, the majority of the 23 patches had not grown back. The amount of Yellow Flag Iris on-site was cut by approximately 80%. Our partnerships with First Nations and private landowners will facilitate any need for future treatments. Outreach was an important component of our project, in order to continue educating the public to identify aquatic invasives and understand their impacts. LRISS staff attended eight community events where information was shared. LRISS will continue outreach, inventory and surveys, to protect and restore aquatic environments from aquatic invaders using the Aquatic Invasive Strategy as a guide.
COA-F18-F-2438	**Improving fish habitat at Gates Creek** *Gates Creek Level 2 Fish Habitat Survey* The Gates Creek Level 2 Fish Habitat Survey will generate restoration prescriptions for fish habitat in Gates Creek.	Lillooet Tribal Council	$25,320	Research and information aquisition	Bridge-Seton Salmonid Action Plan	Bridge-Seton	In fall 2017, a level two FHAP was conducted on Gates Creek. The survey team developed a set of habitat restoration prescriptions to create or enhance fish and riparian habitat. Sites were selected if habitat deficiencies (e.g. lack of instream or overstream cover, sedimentation issues, bank erosion, poor fish access, or lack of connection to natural flood plain) were identified. A concern for at least two potential restoration sites was the presence of reed canary grass as the dense grass mats prevent the establishment of a native riparian plant community. The removal of grasses and replanting of riparian vegetation is suggested for these sites. In addition, historical agricultural practices across much of the valley have contributed to a reduction in bank stability, instream cover, and pool habitat for juvenile salmonid rearing. Riparian planting can help to improve bank stabilization. Placement of large woody debris (LWD) habitat structures is recommended to increase instream cover for species such as Bull Trout and Coho Salmon. Two properties, owned by the FWCP, offer opportunities for construction of off-channel, fish-accessible wetland habitat to increase the abundance of rearing habitat for salmonids.

Project ID	2017–2018 Grant-Based Fish Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Sub-Region	Project Outcomes
COA-F18-F-2383	**Improving spawning habitat in Campbell River** *Elk Falls Canyon Spawning Gravel Bulk Delivery* Year Two With the new bulk gravel delivery system in place in Elk Falls Provincial Park (completed and used in 2016), this proposal aims to provide funding for the second year of major gravel additions to the Upper Canyon Reach of the Campbell River. Using the new delivery system, approximately 200 m3 of gravel will be added to the first pool tail-out. Based on the 2016 project, costs per-unit of gravel is about 40% of the helicopter method. This gravel will provide valuable spawning habitat for all species of salmon and trout. Also, as more gravel is added to the canyon over time, the habitat will become more gravel-rich, increasing the spawning capacity further. Given the infrastructure investment by the FWCP and others, this is a logical step forward in mitigating the gravel recruitment issue in this system.	British Columbia Conservation Foundation	$49,073	Habitat-Based Actions	Campbell Salmonid Action Plan	Campbell	The restoration of the spawning area in the first pool tailout below Elk Falls was restored with 300 m3 of washed spawning gravel in July 2017. In 2017, fall flows distributed the gravel into downstream habitats, beginning the enhancement of this habitat by increasing the amount of usable spawning habitat. Increased spawning habitat should improve the chances of long-term stability for the stocks of concern in the Campbell River watershed, especially Chinook and Steelhead. Public Awareness remains high for this project. The information signboard continues to inform thousands of park users every month. Interest in the project was exceptional during the implementation of the project, with project staff answering dozens of questions daily.
COA-F18-F-2421	**Restoring fish habitat in Campbell River watershed** *Quinsam River Fish Habitat Restoration Plan* The Lower Quinsam River Fish Habitat Restoration Plan will provide a list of achievable and prioritized habitat restoration projects. The restoration plan will focus on the Quinsam River, upstream of the hatchery fence to the outlet of Lower Quinsam Lake. This reach is approximately 24-kms long. The deliverable will be a summarized list of specific projects outlining project components, construction details and limitations, estimated costs, and priority for completion. The techniques will incorporate a range of accepted standards for habitat restoration, including instream habitat, riparian habitat, tributary enhancement, wetland connectivity, water-quality enhancements, and habitat conservation, where appropriate.	A-Tlegay Fisheries Society	$27,885	Research and Information Acquisition	Campbell Salmonid Action Plan	Campbell	A-Tlegay undertook a survey polling the five-member Nations to assist in targeting regional restoration focus. A long list of 24 restoration options varying in scale, target species, and life-stages was prepared. This list was reviewed with local DFO experts and stakeholders, and was then condensed to a short list of four projects. Each short list project includes a highly approximate cost for implementation, an overview, processes and limiting factors addressed, a work plan, access information, and risks, limitations, and uncertainties. The short list of projects include the following activities: enhancement of Cold Creek through flow management, channel manipulation, or riparian planting management; gravel placement at the outlet of Lower Quinsam Lake; flow management using Lower Quinsam Lake storage capacity; and enhancement of an oxbow wetland complex.
COA-F18-F-2492	**Creating habitat for salmon in Cheakamus River watershed** *Kiwi Channel Connector & Gorbuscha Channel Complex Project* This project builds on the work initiated in the 2016-17 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 the Kiwi Channel South into what will be the new Kiwi Connector Channel, which will connect into the new Moody's Channel extension (part of the Evans Creek Re-Watering project). As well, work will be undertaken on the Gorbuscha Channel to improve water flows through this complex. 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 proposal is the second of three in a three-year phased project.	Squamish River Watershed Society	$147,735	Habitat-Based Actions	Cheakamus Salmonid Action Plan	Cheakamus	The Kiwi Connector Channel included the construction of a new channel. The project also included upgrading the existing culvert crossing across Paradise Valley Road, repairing bridge crossings (two), and placement of boulder clusters and large woody debris in the newly constructed stream. On the east side of Paradise Valley Road, work continued with the Gorbuscha Channel, also with two new bridge replacements and cleaning out sediment buildup to improve overall downstream flows. The weirs that are controlling the flow were also cleaned and upgraded to better perform their function.

Project ID	2017–2018 Grant-Based Fish Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Sub-Region	Project Outcomes
COA-F18-F-2496	**Improving flows in Squamish River** *Squamish River Training Dyke Fish Passage Upgrades* In 1970, BC Rail constructed a dyke to train the Squamish River against the western bank in order to build a coal port. By 1972, the "training dyke" had been constructed, but the government of the day shut down all future operations. From 1970–1999, next to no water flowed across the dyke as there was only one small culvert that was obstructed with woody debris by the early 1980s. In 1999 the Squamish River Watershed Society, in partnership with Fisheries and Oceans Canada, commenced a program to install two, three-metre diameter culverts at key locations along the training dyke to reconnect the Squamish River with the Central Estuary channel and provide tidal flows once again. Currently, many of these culverts are underperforming and are in need of replacement (e.g., Clear Span Bridge).	Squamish River Watershed Society	$5,000	Habitat-Based Actions	Cheakamus Salmonid Action Plan	Cheakamus	The scope of the project was to examine the Training Dike and identify restoration opportunities to improve salmonid and other fish access across the dike, along with wildlife passage and habitat improvements. The installation of the nine culvert crossings between 1994 and 2007 have improved water flow across the Training Dike between the Squamish River and the Central Estuary. However, recent studies on juvenile Chinook outmigration have indicated the culverts are limiting access from the river to the estuary (InStream, 2017). Monitoring and scientific studies have been undertaken along with the restoration efforts, to determine the effectiveness of the works and provide a mechanism for adaptive management to improve the structures and sites for salmonid habitat. The results of the monitoring programs have indicated the culverts are being underutilized by salmonids. This has led to numerous meetings and discussions between DFO and SRWS, and the project partners to discuss methods by which fish access, particularly salmonids, can be improved upon across the Training Dike. The recommendations include replacement of culverts at key locations with either bridges, arch culverts, or similar structures that would allow improved fish passage through most tidal cycles. Meetings were held in the spring and summer of 2017 between DFO and the SRWS and the Squamish Terminals, District of Squamish, Provincial Ministry (FLNROD), Squamish Nation, and representatives from the windsports and conservation groups. The result was strong support to allow upgrades along the Training Dike, provided provisions were made to minimize impacts from increased sedimentation (that could impact the west berth of the Squamish Terminals), provide modelling of hydrologic flow with any culvert replacement or upgrades, consider impacts to vegetation colonization, and hold a meeting with the broader public. The latter recommendation resulted in a community-based meeting in January 2018, which included discussions around the potential impacts of any changes to the estuary. In addition to the discussion around modifying culvert crossings at key locations to improve salmonid access between the river and the estuary, were also dialogue around the potential realignment of the southern end of the Training Dike, often referred to as the Windsurfers Spit. As a follow-up to these discussions, applications were submitted to secure funding for physical works within the estuary that would include upgrading the culvert crossings and examining the potential to realign the Spit and restore the original flow of the Squamish River to pre-1972 dike construction conditions.

Project ID	2017–2018 Grant-Based Fish Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Sub-Region	Project Outcomes
COA-F18-F-2362	**Restoring Sockeye in Coquitlam Reservoir** *Sockeye Smolt Passage Design for Coquitlam Reservoir* Forebay BC Hydro, Metro Vancouver, First Nations, Fisheries and Oceans Canada (DFO), the Ministry of Environment (MOE), and local municipalities have formed the Kwikwetlem Salmon Restoration Program (KSRP) with the goal of restoring anadromous fish to the Coquitlam Watershed. A primary KSRP goal is the restoration of Sockeye Salmon in the Coquitlam Reservoir. A critical uncertainty identified for this goal is the feasibility of providing safe and effective downstream passage for smolts from the reservoir to the lower river. Using data from other fish passage facilities and site-specific information, this project will evaluate passage feasibility and develop a concept-level design and cost estimate for a chosen alternative. The project will also address potential operational modifications to attract smolts to the outlet at the south end of the reservoir.	R2 Resource Consultants, Inc.	$93,000	Research and Information Acquisition	Coquitlam Salmonid Action Plan	Coquitlam	R2 has worked with BC Hydro to identify existing potential obstacles and hazards to Sockeye Salmon (or currently Kokanee) smolts attempting to migrate through and ultimately out of the Coquitlam Reservoir. R2 recommended modified operations for the reservoir and outlet during the smolt outmigration season that should minimize the obstacles and avoid the hazards, potentially increasing the number of smolts that reach and pass through the reservoir outlet, as well as increase the passage survival through the outlet structure. These optimized outmigration operations have been accepted by BC Hydro and have been formalized in an Implementation Plan, which was initiated in spring 2018. In addition, R2 prepared two conceptual design alternatives for physical modifications to the outlet facilities to potentially increase the number of smolts collected and safely passed downstream, in the event the optimized operations alone continue to pass an inadequate number of smolt to support a successful restoration of Sockeye Salmon upstream of the dam. These activities represent a major step in the process of restoring Sockeye Salmon to the Coquitlam River, and fulfill the requirements of Step Four (Preliminary Technical Feasibility Consideration) of the Fish Passage Decision Framework for BC Hydro Facilities. Throughout this project, R2 worked closely with the KSRP to ensure that representatives of the local communities, First Nations, and governmental agencies participated in the decisions leading to the optimized operations, and the choice of potential physical modifications to be evaluated. This allowed for the concerns of community stakeholders in the restoration of Sockeye Salmon in the Coquitlam River to be addressed and incorporated into the restoration Implementation Plan. As part of this project, R2 assisted LGL with the development of a biological field study plan and analysis of the results of the studies performed during the spring of 2017. The results of these studies identified previous misconceptions about the conditions impacting safe passage of smolts passing through the existing reservoir outlet facilities. The improved understanding of which components of the outlet facilities were actually safe for passage, and which were not, allowed for a scientifically informed basis from which to develop the optimized outmigration operations in the restoration Implementation Plan.

Project ID	2017–2018 Grant-Based Fish Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Sub-Region	Project Outcomes
COA-F18-F-2485	**Tagging salmon in Coquitlam Reservoir** *Sockeye Smolt Behaviour in the Coquitlam Reservoir Forebay* This project proposes to carry out an Acoustic Telemetry Study using 100 tags deployed in hatchery-raised Coquitlam Reservoir Kokanee/Sockeye Salmon smolts that will be released into the Coquitlam Reservoir forebay area. The smolts will be tracked using an array of time-synchronized receivers with overlapping fields of detection resulting in a high-detail behavioural forebay assessment. In addition, 500 Chinook Salmon smolts raised in a Coquitlam River hatchery will be released close to or into the Coquitlam Dam Sluice Tower to assess tunnel passage mortality. Forebay behaviour and tunnel passage mortality will be assessed during high- and low-flow scenarios, and will inform the feasibility assessment of a dam passage structure for Sockeye smolts.	LGL Limited Environmental Research Associates Ltd.	$96,536	Research and Information Acquisition	Coquitlam Salmonid Action Plan	Coquitlam	To determine where a smolt passage structure could be positioned to be most effective, Sockeye smolt behaviour in the vicinity of Coquitlam Dam and the entrance to the sluiceway was investigated. Following successful raising of Coquitlam Sockeye smolts, 103 tagged Sockeye smolts were released and tracked in 2D and 3D, to monitor and compare their movements in the vicinity of the sluiceway. All of the smolt movement parameters were compared between the two discharge conditions of 3 cm and 8 cm. smolts were released in three locations in Coquitlam Reservoir. The results suggested that neither the low or high discharges were attracting fish to the LLOs and leading to dam passage into Coquitlam River. Only 47-80% of the fish released at the Boom were detected in the forebay and again, the greatest proportions of fish came into the forebay during the less attractive flow period. There was not a noticeable or consistent difference between the two flow treatments in terms of fish distribution or behavior, and there was no evidence that fish tended to sound deeper as they approached the sluiceway at either discharge. That said, the distributional data, both aerial and vertical, suggest that a smolt passage structure in the middle of the forebay attracting and guiding fish from the mid-water depths to the surface, may be most suitable to facilitate passage based on the natural smolt behaviour in the forebay. Only one of 103 tagged smolts was detected in Coquitlam River downstream of the dam and passed at 8 cm, and none were detected in Buntzen Lake. Nevertheless, for potential connection of a fish passage structure to LLOs, passage survival was investigated and at least for the average spring discharge of 3 cm, survival was estimated to be close to 100%.
COA-F18-F-2495	**Improving spawning habitat in Jordan River** *Gravel Placement in Reach 1 of the Jordan River (Phase I)* The goal of this project is to place high-quality spawning gravel in Reach 1 of the Jordan River at Prescription Site 5 in the Jordan River Restoration Plan (Burt and Hill, 2015). This project represents Phase 1 of gravel placement for this site, which involves the removal of existing poor quality gravels and interspersed cobbles and replacing them with high-quality spawning material while maintaining the existing grade in the final product.	Pacheedaht First Nation	$66,361	Habitat-Based Actions	Watershed Plan	Jordan	Reporting in progress.

Project ID	2017–2018 Grant-Based Fish Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Sub-Region	Project Outcomes
COA-F18-F-2299	**Supporting Chinook stocks in Puntledge River watershed** *Puntledge summer Chinook parentage-based tagging study Year Four* 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 an individual fish to its parents will enable the examination of the influences of both parental characteristics (migration timing, BKD infection load) and release group/strategy on survival in those programs. It will also 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	$35,688	Species-Based Actions	Puntledge Salmonid Action Plan	Puntledge	High quality DNA has been extracted and analyzed from adult summer Chinook Salmon (SCN) sampled from the Puntledge River in 2013-2017. To-date, a total of 955 Chinook Salmon have been assigned to hatchery parents over the three years of escapement sampling between 2015 and 2017, representing progeny from brood years 2013-2015. For the 2017 SCN adult returns, hatchery parents of fish ages 2-4 were in the analysis and 86% were assigned to hatchery parents. These hatchery-origin fish contained greater diversity than the natural-origin fish, indicating that hatchery production is successfully retaining genetic diversity in the population. Preliminary results on the survival of progeny from the different BKD treatment groups indicates no significant difference in progeny survival from female parents that tested Negative, Low Level of Detection or Low Positive for BKD. Although lower survival was observed for progeny of females that tested Moderate Positive (MP), the differential treatment of this group (eggs out-planted to the river for natural incubation/rearing as opposed to hatchery incubation/rearing for the other groups) likely accounts for most, or all, of the reduced survival of the MP progeny. These results provide further evidence on the importance of the hatchery program for both maintaining abundance and genetic diversity in the Puntledge SCN population, and that the retention of eggs from BKD-positive females for rearing (in the hatchery or by out-planting) will be an important factor contributing to the maintenance of genetic diversity in the hatchery population.
COA-F18-F-2375	**Upgrading fish monitoring equipment at Comox Lake Reservoir** *Comox impoundment dam adult enumeration equipment upgrade* The adult salmon video enumeration equipment at the Comox Impoundment Dam—funded by the FWCP—is now ten years old and requires replacement. The current setup is prone to algal fouling, making fish identification increasingly difficult. Debris accumulation on the bar screens surrounding the camera tunnel can obstruct fishway flow, forcing all water through the tunnel and making fish passage difficult. To remedy this, the fishway must be drained during infrequent periods of low lake levels. This requires a significant amount of planning, and BC Hydro staff involvement to implement. This project includes purchasing new video equipment, fabricating a new camera retrieval system, and installing additional screens that will allow operation and maintenance of the equipment without having to drain the fishway.	K'omoks First Nation	$18,440	Monitoring and Evaluation	Puntledge Salmonid Action Plan	Puntledge	Reporting in progress.

Project ID	2017–2018 Grant-Based Fish Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Sub-Region	Project Outcomes
COA-F18-F-2398	**Improving fish passage at Courtenay River** *Simms Park Side Channel Habitat Enhancement for Fish* This project involves the reworking of a high-priority habitat restoration project on a tidally-influenced section of the Courtenay River. The original project, creating off-channel habitat for salmonids, resulted in the development of a blind channel and a pond connected by a culvert (the pond is then connected back to the river by a small pipe that does not allow for salmonid access). The project was not successful as the culvert is not "fish friendly," and was installed too high and only flows at very high tide levels. Fish and wildlife habitat will be enhanced through the removal of the culvert—to be replaced with a larger "fish friendly" one at a lower elevation—and the installation of a pedestrian bridge to connect the pond to the river on the other side.	Comox Valley Project Watershed Society	$112,686	Habitat-Based Actions	Puntledge Salmonid Action Plan	Puntledge	The project encompassed the removal of two existing culverts and replacing them with larger more "fish-friendly" culverts, installed at a lower elevation to allow for enhanced fish passage at a variety of tidal cycles and river flows. The site was excavated, regraded, and culverts were installed on a suitable substrate. River rock was placed in the bottom of the culverts. One culvert was installed on the north side of the side channel to connect with the Courtenay River, the other on the opposite side of the inner pond on the south side to connect with the adjacent Courtenay Slough. The project resulted in a true flow-through area of off-channel habitat with more connectivity to the Courtenay River, as opposed to the blind channel that had previously existed at the site. Pre-construction, the area was only inundated with water 19% of the time, post-construction the site is now inundated 68% of the time. The inner pond was regraded, larger woody debris was added, and deep pools and sedge benches were created to enhance the area for fish and other wildlife. The project resulted in a net gain of both permanent and ephemeral aquatic habitat for fish rearing, foraging and refuge. This large-scale construction project took place in a highly utilized public park within the City of Courtenay, and generated a high degree of community interest and involvement. Once construction was complete, the site was replanted with more than 1,000 native plants with help from volunteers.
COA-F18-F-2412	**Developing a fish passage plan at Wilsey Dam** *Plan for Fish Passage at Wilsey Dam* With the construction of the Wilsey Dam in 1928, the Middle Shuswap River was divided into a lower reach that provided spawning and rearing habitat for anadromous salmon, and an upper reach that did not. For over 40 years, various agencies and community groups have advocated for fish passage past the dam and have undertaken studies to demonstrate environmental and technical feasibility. This project intends to bring this stakeholder-driven process to closure by developing a plan for fish passage. The plan will include the most recent cost estimates for the options considered and essential technical (engineering) information required to ensure feasible implementation. The plan will be part of Steps 5–7 of the BC Hydro Fish Passage Decision Framework.	Whitevalley Community Resource Centre Society	$99,903	Research and Information Acquisition	Shuswap Salmonid Action Plan	Shuswap	A structured decision-making approach guided the evaluation process for fish passage alternatives. This approach was supported by the provision of two workshops, expert opinion, technical literature review, and two focused fish passage engineering feasibility studies. The Naturalized By-Pass Channel was selected through consensus as the preferred fish passage alternative at Wilsey Dam because of the many ecological benefits produced through the provision of passage to a wider range of aquatic species, comparatively lower operations and maintenance requirements, comparatively lower public and worker safety risk, and excellent educational and tourism opportunities associated with the close access to migrating salmon in a natural setting. The WDFPC proposes an adaptive management approach to fish passage at Wilsey Dam that incorporates monitoring data to assess and evaluate the effectiveness of fish passage at achieving its restoration goals and intended benefits. Restoration of fish passage at Wilsey Dam via a Naturalized By-Bass Channel provides a demonstrated biologically and technically feasible concept that is expected to provide substantial benefits to anadromous (Chinook, Coho, and Sockeye Salmon) and resident (Rainbow and Bull Trout) salmonid populations through restoring connectivity with high quality spawning and rearing habitat above the dam (McGrath et al., 2014).

Project ID	2017–2018 Grant-Based Fish Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Sub-Region	Project Outcomes
COA-F18-F-2481	**Building awareness of Chinook Salmon** *Conservation of Shuswap River Chinook through education* This project aims to educate hundreds of local school children, teachers, and parents through hands-on experiences with Shuswap River Chinook. This project will strive to provide knowledge, understanding, and respect for our Chinook Salmon and the habitats and ecosystem they require for survival. The education provided will give the participants a first-hand look at our "kings." With these experiences, this project will be not only be educating the public but creating salmon stewards.	Kingfisher Interpretive Centre Society	$5,331	Habitat-Based Actions	Shuswap Salmonid Action Plan	Shuswap	The Kingfisher Interpretive Centre Society is pleased with the results of the project and considers it to be a success. The project aligned with the Shuswap Salmonid Action Plan through habitat-based actions. The priority action was to work towards the sustained abundance of anadromous and resident salmonid populations at target levels over time. To achieve this result, around 675 local schoolchildren from two local school districts were educated about the habitat needs of Shuswap River Chinook, to create another generation of salmon stewards by supplying them with the knowledge, awareness and passion needed, in order to protect the available habitats required in maintaining the populations of Chinook and other salmon species in the Middle and Lower Shuswap Rivers.
COA-F18-F-2396	**Restoring salmon habitat in Stave River watershed** *Stave River Watershed-Restoring Salmon Habitat* This project will continue creating tidally-influenced channels to support salmon habitat, replanting the freshwater estuary, and conducting water-quality and fish monitoring—including Salish Sucker recon to inform habitat use and knowledge gaps. Benefits are increased habitat for Coho, Pink, Chum, Sockeye, and Chinook, and improved estuary conditions. It aligns with the FWCP Salmonid Action Plan Conservation Objective to ensure a productive and diverse aquatic ecosystem and maintain or improve opportunities for sustainable use. It supports inventory efforts for the Salish Sucker and aligns with the FWCP Riparian and Wetlands Action Plan to ensure productive and diverse wetland and riparian ecosystems.	Fraser Valley Watersheds Coalition	$78,894	Habitat-Based Actions	Stave Salmonid Action Plan	Stave	This project is a collaborative effort to enhance, restore, and promote shared conservation values in the Stave River watershed. It is a continuation of projects that have occurred in the Lower Stave River region to improve the overall salmon habitat in the area. This project resulted in the restoration of 12,500 m² of newly created off-channel aquatic habitat and 4,375 m² of riparian and aquatic planting, using 13,035 individual native plants between July 2017 and March 31, 2018. Thanks to the momentum of on-the-ground restoration activities, the strength in partnerships and sponsorships, and overall importance of this project, further restoration efforts and long-term management plans are being developed, to continue building upon the success and ensure long-term ecological integrity is maintained.
		Fish Project total:	**$1,019,710**				

Project ID	2017–2018 Grant-Based Wildlife Projects	Project Lead	Funding	Project Type	Action Plan Alignment	Sub-Region	Project Outcomes
COA-F18-W-2439	**Restoring species of conservation and cultural value in Alouette and Pitt River watersheds** *Restoring species of conservation and cultural value* An eco-cultural restoration plan for Katzie traditional territory (Alouette and Pitt River watersheds) has been developed that integrates the principles of restoration science and adaptive management with Katzie traditional knowledge and values. This five-year project proposes to implement the plan at riparian wetland sites throughout the Alouette Watershed. In year one of the project (2016), habitat was restored at two sites to support healthy populations of five culturally-valued species, 12 species of conservation concern, and two keystone species. In 2017-18, the plan is to continue these efforts at a third site, thereby totalling 12 ha of restored wetland habitat, while implementing an effectiveness monitoring plan to measure success in meeting our eco-cultural restoration goals.	Katzie Development Limited Partnership	$62,500	Habitat-Based Actions	Alouette Riparian Wetlands Action Plan	Alouette	In year two, the project extended efforts to include habitat enhancement and effectiveness monitoring for salmonids. At the Neaves Road site, a reed canary grass meadow was excavated to create 0.17 ha of tidal marsh and a three-metre-deep pond (20 m wide). A berm created from spoil (0.22 ha) was planted with diverse and culturally valued shrubs. Fish inventoried during March 2018, as part of the effectiveness monitoring program, showed that Coho smolt used the excavated pond and nearby deep off-channel areas for over-wintering, or rest and foraging during out-migration. Other off-channel areas in the reach dewater completely or become very shallow at the lowest tides, revealing both the importance of deep off-channel areas as habitat and the need to excavate to well below minimum water elevations when provisioning off-channel salmonid habitat in this system. The other key outcome of effectiveness monitoring was the detection of four times fewer marsh wrens during point count surveys in 2017 compared to 2016. This result paralleled findings that marsh wrens were not detected nesting at post-restoration sites in 2017, whereas this species likely nested within the reed canary grass meadows of the sites prior to restoration in 2016. It is more likely that marsh wren nesting was delayed by high water levels in June 2017 (approximately 1 m higher than in 2016), rather than because post-restoration sites lacked suitable reed canary grass meadow, some of which was excavated to create tidal marsh habitat. Future years of data will be required to distinguish between these two effects.
COA-F18-W-2392	**Supporting recovery of Northern Spotted Owls** *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 Northern Spotted Owls occurred in the province pre-European settlement, fewer than 30 individuals remain in Canada, with approximately half of these owls residing in captivity at a captive breeding facility in Langley, BC. The Program's mission is to prevent this species from becoming extirpated from Canada by releasing captive-raised owls back into recovery habitats protected for the species in the province. The goal of this project is to produce captive-born Northern Spotted Owls for release into the Bridge-Seton Watershed to recover the local population (restore a minimum of 20 individuals).	British Columbia Conservation Foundation	$68,892	Species-Based Actions	Bridge-Seton Species Action Plan	Bridge-Seaton	The Northern Spotted Owl (NSO) is one of British Columbia's most endangered species. There are currently 20 Northern Spotted Owls at the breeding facility in Langley. By breeding Spotted Owls in captivity, the project will be able to increase the population size of this species for eventual release into the Bridge-Seton watershed.

Project ID	2017–2018 Grant-Based Wildlife Projects	Project Lead	Funding	Project Type	Action Plan Alignment	Sub-Region	Project Outcomes
COA-F18-W-2394	**Testing artificial Fisher dens in Bridge-Seton watershed** *Fisher Artificial Reproductive Den Box Study* The goals of this project are to determine the extent that artificial den boxes will be used by reproductive fishers, identify the degree to which these devices will mitigate losses of natural denning habitat, provide a science-based mitigation technique to address the loss of fisher habitat, and engage stakeholders that can influence fisher habitat in the conservation efforts for this species.	Davis Environmental Ltd.	$41,120	Species-Based Actions	Bridge-Seton Species Action Plan	Bridge-Seton	This fifth year of the study continues the monitoring efforts on the 53 remaining den boxes. Similar to 2017, monitoring during the reproductive season (April – June) identified four den boxes that were used for reproduction, three of which were in the Bridge watershed. Two den boxes that had not previously been used for reproduction were used in 2017, bringing the total number of den boxes used to eight and reproductive uses to 10 over four denning seasons. Over the four years, an average of 1.7 kits were observed at the den boxes. A male Fisher was also observed chewing the entrance of one den box to allow his entry and he subsequently killed both kits. This is the only documented case of infanticide by Fishers. This incident helped identify a design flaw in the structures that has now been addressed. A replaceable solid wood door jamb and molding has been designed that will deter squirrel chewing and decrease the potential for male Fishers gaining entry. The project also assessed 17 Fisher den trees identified during other research projects for structural integrity. The den trees included 11 cottonwoods (Populus balsamifera ssp. trichocarpa), four Lodgepole Pines (Pinus contorta), one Trembling Aspen (Populus tremuloides), and one Douglas-fir (Pseudotsuga menziesii). Approximately 50% were still functional as den trees, and the trees had lasted at least 14 years since first being discovered. The longevity of the den trees likely varies by species and when cottonwood trees were analyzed separately, six out of 11 were still alive and functional. Cottonwoods lasted for at least 16 years since being found, yielding a longevity estimate of at least 32 years. Increasing the number of trees assessed and conducting periodic assessments of the remaining trees is recommended to allow for a more rigorous examination of den tree longevity.
COA-F18-W-2409	**Restoration of the Lillooet sub-population of Northern Spotted Owls** *Restoration of the Lillooet Sub-Population of Norther Spotted Owls* The project goal is to restore the Northern 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 Northern Spotted Owls in the area, and by releasing captive-raised Spotted Owls back into habitats protected for the species.	Ministry of Forests, Lands and Natural Resource Operations	$67,370	Habitat-Based Actions	Bridge-Seton Species Action Plan	Bridge-Seaton	Survey efforts for Spotted Owls and Barred Owls was conducted in the Lillooet sub-population portion of the range. Call-playback surveys were conducted to detect Spotted Owls and Barred Owls, and determine status of Northern Spotted Owls. Other owl species were recorded including Barred Owl (Strix varia), Great Horned Owls (Bubo virginianus), Northern Saw-whet Owls (Aegolius acadicus), Northern Pygmy-owl, (Glaucidium gnoma), Western Screech-owls, and (Megascops kennicottii). The project has progressed according to plan, completing the proposed survey of the Lillooet sub-population, including Barred Owl inventory and capture evenings over 67 nights at 16 study sites. The effort detected and estimated 46 barred owls at 12 of the 16 study sites. During 67 capture evenings, 18 Barred Owls and one hybrid owl (spottedXbarred) were removed from seven study sites to enhance and protect habitat for Spotted Owls. Spotted Owl inventories were only conducted at two of the 16 sites, as efforts for the 2017 project were focused on the removal of Barred Owls. The ARU data resulted in no Spotted Owl detections.

Project ID	2017–2018 Grant-Based Wildlife Projects	Project Lead	Funding	Project Type	Action Plan Alignment	Sub-Region	Project Outcomes
COA-F18-W-2472	**Restoring endangered Whitebark Pine in Bridge-Seton River watershed** *Integrative Whitebark Pine Ecosystem Restoration Initiative* 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.	Lillooet Tribal Council	$21,829	Habitat-Based Actions	Bridge-Seton Species Action Plan	Bridge-Seton	Whitebark Pine (Pinus albicaulis) is a blue-listed species in British Columbia and listed as endangered under the federal Species at Risk Act (SARA), primarily due to White Pine Blister Rust, Mountain Pine Beetle, fire suppression, and global climate change. This project aligns with the Bridge-Seton Species Action Plan (2017); including Action 37: inventory and restoration for at-risk and/or culturally important plant species and ecological communities; and Action 38: build upon previously-funded Whitebark Pine work. In early summer two locations for late summer restoration implementation were surveyed. This included a survey of the Mount McLean fire for planting suitability, and a survey of the Blustry Mountain area for competition removal locations and planting of a rust screening field trial. A total of 2,100 Whitebark Pine seedlings were planted on Mount McLean, over a total area of 5.18 ha in early September 2017. Seedlings were planted using a combination of paid and volunteer planters from the community. The number of seedlings planted was lower than planned due to funding shortfalls. The competition removal and field-based rust screening trial planned for Blustry Mountain could not be completed, as fire hazard levels were too high to permit fieldwork in the area. Layout work was completed for these phases and funding and in-kind labour has been secured to complete these phases in 2018. New recommendations from the project implementation in 2017 include: increase nursery production of Whitebark Pine seedlings to hopefully lower production costs; seek multi-year funding to limit funding-caused shortfall in project implementation; and where conditions permit, and is appropriate, implement fieldwork as early in the season as possible, to limit fire condition restrictions.
COA-F18-W-2305	**Supporting recovery of Vancouver Island Marmot** *Vancouver Island Marmot – Buttle Lake Supplementation & Monitoring 2017* The Vancouver Island Marmot is an iconic and endemic B.C. species, and also the most endangered mammal in Canada. This project is a strategic, statistically informed continuation of efforts to restore marmots to their historic habitat in the mountains around Buttle Lake in the Campbell, Puntledge, and Ash watersheds. Guided by the results from previous projects (2007-16), spring supplemental feeders will be installed at several locations to improve the likelihood of reproduction. A select group of captive-born and wild-born marmots will be released to vulnerable colonies in the region, bolstering the metapopulation and creating additional opportunities for in situ reproduction. Monitoring will increase our understanding of this marmot metapopulation and will inform future recovery efforts.	Marmot Recovery Foundation	$60,000	Species-Based Actions	Campbell Species Action Plan	Campbell	Eight supplemental feeders at Mt. Washington and four feeders in Strathcona Provincial Park were installed, in order to improve female body condition and increase the likelihood of reproduction. During live-trapping sessions at Mt. Washington, three wild-born marmots were implanted with radiotelemetry. In total, three wild-born marmots were released into Strathcona to support seven existing colonies. Seven potential release candidates were retained in the Mt. Washington colony to protect future reproductive outputs, and an additional five captive-bred marmots were released on Mt. Washington for pre-conditioning and future translocation. Throughout the active season, MRF used radiotelemetry to monitor the survival of fewer than 55 marmots. There was above average overwinter survival in Strathcona in 2017. Remote cameras captured footage of weaned pups at two of six monitored colonies, and field crews observed three litters and seven pups on Mt. Washington. MRF estimates that there are currently 78-85 established marmots living in seven to nine colonies in the Strathcona region; this metapopulation now comprises 50% of the current wild population.

Project ID	2017–2018 Grant-Based Wildlife Projects	Project Lead	Funding	Project Type	Action Plan Alignment	Sub-Region	Project Outcomes
COA-F18-W-2482	**Supporting mesocarnivores in Wahleach and Stave River watersheds** *Mesocarnivore inventory in the Wahleach and Stave Watersheds* Little is known of the occupancy, distribution, or habitat use of mesocarnivores in the Wahleach and Stave watersheds. This project will provide baseline inventory information on mesocarnivores in these watersheds and characterize human activities and potential threats facing mesocarnivore populations. The project will assess gaps in our understanding of ecological factors that hinder or support sustainable mesocarnivore populations in these watersheds, and provide solutions to overcome identified barriers. Finally, the project will develop key partnerships to build support for the sustainability of mesocarnivores in southern British Columbia and engage these project partners to ensure that project direction and extension tools support their specific information needs.	Ministry of Environment	$34,238	Research and Information Acquisition	Watershed Plan	Stave and Whaleach	Progress during year one of this three-year project focused on establishing partnerships with local groups and resource-users, as well as initiating surveys in the two watersheds. Partnerships were established by information-sharing via targeted outreach and direct communications with First Nations, land managers, trappers, and community organizations throughout the Lower Mainland of British Columbia. A meeting was held with 15 trappers from the Lower Mainland Local, where a short presentation on project objectives was given, mesocarnivores were generally discussed, questions and concerns were addressed, and members completed a questionnaire on their perceptions of mesocarnivores and associated issues in the Lower Mainland region. Thirty-eight monitoring stations were established among the two watersheds between November 2017 and March 2018, and 7,186 images were captured during that time. Coyotes and bobcats were the most commonly detected species, but other mesocarnivore species detected included Pacific martens, racoons, possible long-tailed weasels, short-tailed weasels, American minks, and striped skunks. Activities proposed for year two include continued surveys in both watersheds and continuation of the extension program.
		Wildlife Project Total:	**$355,949**				

Project ID	2017–2018 Fish and Wildlife Directed Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Sub-Region	Project Outcomes
—	**Acquiring lands for conservation purposes** The Coastal Region Board has approved funding for the future purchase of lands for conservation purposes in the Coastal Region	—	$312,232	Land Acquisition	All 14 Action Plans have a land securement action	Region-Wide	The Coastal Region Board set aside funding to contribute to land securement initiatives throughout the region.
—	**Managing conservation lands in the Coastal Region** The Coastal Region Board has approved funding for managing conservation lands.	—	$50,000	Land Acquisition	Bridge-Seton Riparian Wetlands Action Plan	Bridge-Seton	Although this funding was set aside for land management at Gates Creek Conservation Property, it was not spent, and carried over to be available for F19 spending
—	**Supporting aquaculture at Puntledge hatchery** FWCP provides annual funding to the Puntledge River hatchery to support Summer Chinook production in the watershed.	DFO	$17,000	Species-Based Actions	Species of Interest	Puntledge	Funds were utilized for the purchase of fish feed, marking of Summer Chinook, and general fish culture, including holding, transporting, and release of smolts.
		Directed Project Total:	**$379,232**				
		2017-2018 PROJECT SPEND TOTAL	**$1,754,891**				

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