





# Message from the board chair

Welcome to our annual report covering key highlights, decisions, and expenditures for the fiscal year 2020 (F20), from April 1, 2019, to March 31, 2020, in our Coastal Region.

In F20, a focus of the FWCP's Coastal Region board was to develop a template to consistently implement habitat assessment maps across the region's 14 watersheds. This directed project was led by Ecofish Research Ltd and was a collective effort from the FWCP's Coastal Region manager, wildlife technical committee, and board. Implementation of the habitat assessment mapping tool will be the focus of F21 and is intended to improve, and better inform, the strategic planning for conservation and restoration opportunities.

The year saw the 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 of approximately \$1.9 million. Species- and habitat-based actions are the focus for the majority of projects approved by the board, which are delivered by stewardship organizations, consultants, Indigenous groups, or government agencies.

In late 2019, an independent, third-party evaluation and financial audit as required by our governance manual was completed. The audit, which looked at each of our three regions, was conducted by Ference and Co. and resulted in nine recommendations to refine, support, and strengthen our approach to conserving and enhancing fish and wildlife in watersheds impacted by BC Hydro dams.

The summary and final reports, which include the auditor's recommendations, were posted to [fwcp.ca](http://fwcp.ca) in October 2019, and our regional boards began work to respond to the recommendations. Since receiving the final report in fall 2019, we have prioritized the recommendations and developed actions to address each one.

We recognize some recommendations will build on each other and a staged, strategic approach is required. As a result, several recommendations have been prioritized for immediate action and progress is underway. Others will be addressed in sequence, as we balance progress on the audit recommendations with the ongoing delivery of fish and wildlife projects in our three regions.

We are committed to reporting on our progress and will provide annual updates on addressing all recommendations in our annual reports starting in 2021. Contact our program manager or regional manager anytime if you have questions.

Thank you to our board, fish and wildlife technical committees, and staff for your contributions to the FWCP Coastal Region during this past year.

Sincerely,



Todd Manning  
FWCP Coastal Region Chair

Front cover: Katie First Nations technicians Curtis Chapman and Laurie Sylvester sample sockeye smolts leaving Alouette Lake Reservoir in the spring. (COA-F20-F-3072). Photo: LGL Limited



Annual reports are  
also available for our  
Columbia and Peace  
regions at  
**[fwcp.ca](http://fwcp.ca)**.

# 1. Organizational overview

## 1.1 INTRODUCTION

With annual funding from BC Hydro, the Fish & Wildlife Compensation Program (FWCP) conserves and enhances fish and wildlife in 31 watersheds impacted by existing BC Hydro dams. The FWCP directs those funds towards priority actions across its three regions (Coastal, Columbia, and Peace) to fulfill its mission and work towards its vision of thriving fish and wildlife populations in watersheds that are functioning and sustainable.

BC Hydro has water licence obligations in the Columbia and Peace regions, and has made voluntary commitments to address the impacts of dams in the Coastal Region. BC Hydro fulfills the applicable obligations through the work of the FWCP. BC Hydro works in equal partnership with the Province of B.C., Fisheries and Oceans Canada (DFO), First Nations, and public stakeholders by participating on FWCP's regional boards.

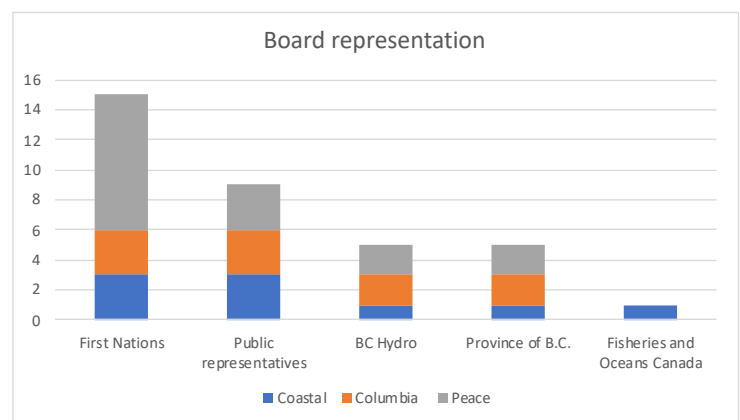
The FWCP is governed through a framework that recognizes the regulatory accountabilities of agency partners (BC Hydro, the Province of B.C., and DFO), and ensures active participation and input from First Nations and public stakeholders. Independent board members in each region review, evaluate, and approve funding for all projects. Our boards include representatives from each of our FWCP partners: BC Hydro, the Province of B.C., First Nations, and public stakeholders, and—in our Coastal Region—Fisheries and Oceans Canada. When it comes to decision-making, input from each board member is given equal consideration through collaborative discussion. Learn more at [fwcp.ca/our-story](http://fwcp.ca/our-story).

Combined, our three regional boards have the following number of representatives:

- First Nations—15
- Public stakeholders—9
- BC Hydro—5
- Provincial government—5
- Federal government—1

Board representation by region is shown in Figure 1.1 below. In F20, the boards approved approximately \$9.2 million for 97 fish and wildlife projects.

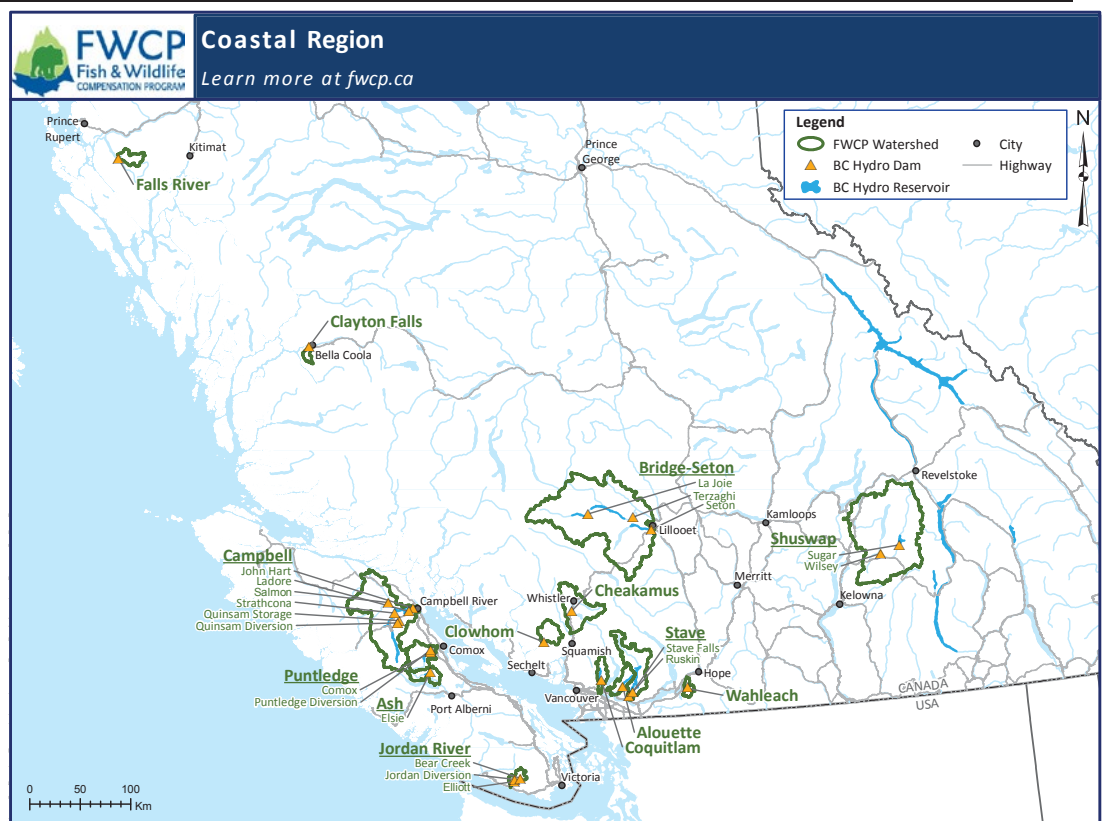
Figure 1.1: Board representation across all three FWCP regions



Since 1988, BC Hydro has provided approximately \$183 million to the FWCP to compensate for dam impacts and the FWCP has funded more than 2,000 projects across its three regions.

The FWCP's Coastal Region was established in 1999 as a voluntary initiative by BC Hydro in response to Indigenous Nations and stakeholder interests in addressing the impacts of BC Hydro dams. It includes 14 watersheds on Vancouver Island, in the Lower Mainland, the Central and Sunshine Coasts, and in the Southern Interior (e.g. Bridge-Seton and Shuswap River watersheds) where BC Hydro dams are located.

Figure 1.2: Map of the FWCP's Coastal Region



## 2. Our strategic approach

### 2.1 VISION AND MISSION

Our vision is for thriving fish and wildlife populations in watersheds that are functioning and sustainable, and our mission is to compensate for fish, wildlife, and their supporting habitats in watersheds impacted by BC Hydro owned and operated generation facilities.

We take a forward-looking, ecosystem-based approach that defines the desired outcomes and takes actions to restore, enhance, and conserve priority species and their habitats. The FWCP's strategic objectives are:

#### Conservation

Maintain or improve the status of species or ecosystems of concern.

Maintain or improve the integrity and productivity of ecosystems and habitats.

#### Sustainable use

Maintain or improve opportunities for sustainable use, including harvesting and other uses. Harvesting includes First Nations, recreational, sport, and commercial harvests. Other uses may include cultural, medicinal, or non-consumptive uses.

### Community engagement

Build and maintain relationships with stakeholders and Indigenous communities. This objective stems from BC Hydro's social responsibility policy and the Province of B.C.'s shared stewardship objective.

More details can be found on these three objectives in our [governance manual](#).

### 2.2 ACTION PLANS

Our action plans guide FWCP investments in fish and wildlife projects, and are referenced annually by our regional boards to track progress toward implementation, set annual priorities, and guide decision-making in setting out and approving the annual operating plan for each region. Actions in our action plans are eligible for FWCP funding and align with our vision, mission, and geographic scope.

In our Coastal Region, we have 14 watershed-based action plans that were updated in 2017, developed with local input, and provide strategic guidance on grant applications and funding decisions.

All F20 projects approved for funding by our board align with the priority actions identified in the Coastal Region action plans that are posted at: <http://fwcp.ca/region/coastal-region/>.



Caption: Twenty-five snags—standing dead trees—and three boxes have been installed near Pitt Meadows to provide roosting, foraging, and nesting for great blue herons and barn owls. This work is part of a five-year project to implement an eco-cultural restoration plan that integrates Katzie traditional knowledge and priorities. (COA-F20-W-3105). Photo: Roma Leon



## 3.0 Board and committee members

### FWCP Coastal Region board 2019–2020

<b>Brian Assu</b>	We Wai Kai Nation
<b>Mark Peters</b>	Peters First Nation
<b>Laurel Stevens</b>	BC Hydro
<b>Adam Silverstein</b>	Fisheries and Oceans Canada
<b>Scott Barrett</b>	B.C. Ministry of Forests, Lands and Natural Resource Operations (FLNR)
<b>Laurie Kremsater</b>	Public
<b>Larry Casper, Alternate Chair</b>	Tsal'alh
<b>Todd Manning, Chair</b>	Public
<b>Jack Minard</b>	Public

The board guides our work and is responsible for approving our Coastal Region projects and budget. In addition to funding projects through our annual grants, the board may choose to direct projects and approve funding to address regional priorities.

### Policy committee

**Cheryl Webb /Brad Fanos**, 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

The policy committee provides oversight on a range of fish and wildlife-related issues.

### Lower Mainland and Coast fish technical committee

<b>Brent Wilson/Cam Hiebert Dave Nanson, (Chair)/Murray Manson</b>	BC Hydro
<b>Mike Willcox</b>	Fisheries and Oceans Canada
<b>Randall Lewis/vacant</b>	FLNR
<b>Veronica Woodruff</b>	Squamish First Nation
	Public

### Southern Interior fish technical committee

<b>Andy Morris</b>	FLNR
<b>Arne Langston</b>	BC Hydro
<b>Dr. Brian Heise</b>	Public
<b>Elinor McGrath</b>	Okanagan Nation Alliance
<b>Sean Bennett/Collin McGregor, Chair</b>	Fisheries and Oceans Canada

### Vancouver Island fish technical committee

<b>Eva Wichmann, Chair</b>	BC Hydro
<b>Jim Lane</b>	Nuu-chah-nulth Tribal Council
<b>Mike McCulloch</b>	FLNR
<b>Shannon Anderson</b>	Fisheries and Oceans Canada
<b>Sean Mitchell</b>	Public

### Wildlife technical committee

<b>Fred Hulbert</b>	Kwikwetlem First Nation
<b>Chris Apps</b>	Kitselas First Nation
<b>Fraser Corbould, Chair</b>	BC Hydro
<b>Cliff Nietvelt/Catherine Denny</b>	FLNR
<b>Paul Chytyk</b>	Public

The four technical committees 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.

In each region, program management and operations are implemented by a full-time region manager, Julie Fournier, who is responsible for all aspects of program delivery. All three regions are supported by Trevor Oussoren, FWCP program manager, and Lorraine Ens, business coordinator.



Coastal Region board near Squamish in September 2019. From left: Larry Casper, Jack Minard, Todd Manning, Adam Silverstein, Scott Barrett, Laurie Kremsater, Laurel Stevens, and Mark Peters. Missing: Brian Assu.

# 4.0 Project funding and grants

## 4.1 PROVINCIAL PROJECT FUNDING

In F20, 97 projects were approved for a total FWCP contribution of approximately \$9.2 million. The total value of these projects—including leveraged funding from other organizations and in-kind resources—was \$12.8 million.

Final reports for all FWCP-funded projects are loaded onto [Ecocat](#) or [SIWE](#) provincial databases, and searchable spreadsheets of reports for each FWCP region are available at [fwcp.ca/results/](#). Due to the COVID-19 pandemic in early 2020, there were delays in completing some projects and final reports.

## 4.2 COASTAL REGION PROJECT FUNDING

In our Coastal Region, the FWCP supports the delivery of fish and wildlife projects in a variety of ways, including grant applications and directed projects.

### Annual grant applications

FWCP’s annual grant intake opens each summer and closes in late fall. All grant applications go through a three-stage review process—for more details visit our FAQs at [fwcp.ca/apply-for-funding/](#).

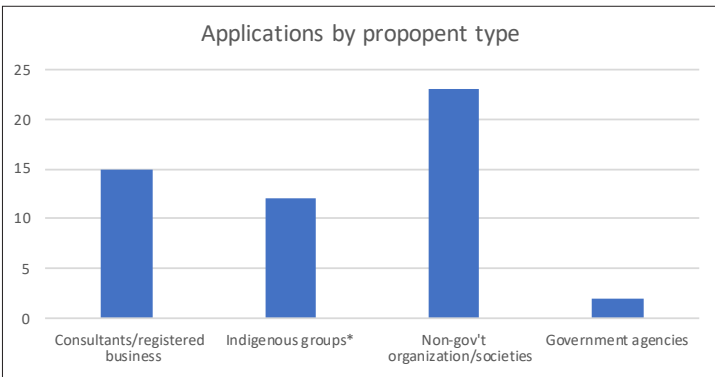


Figure 4.1: Coastal F20 applications received by proponent type

Our Coastal Region received 52 grant applications for fish (28) and wildlife (24) for implementation of projects in 2019–2020 for requests of funding of approximately \$2.4 million. Applications came from 11 of the region’s 14 watersheds, including 20 from the Lower Mainland, 15 from Vancouver Island, and 13 from the Southern Interior. Four applications were for multiple watersheds. A breakdown of the applications received by proponent type is shown in Figure 4.1 below.

Our Coastal Region board approved \$1,532,552 in funding for 30 projects through our annual intake of grant applications: 18 were fish projects for approximately \$1.133 million in funding, and 12 were wildlife for just under \$400,000.

### Directed projects

All of the projects in Table 6.1 align with our Coastal Region action plans. Priority actions identified as “Directed” are not eligible for the open application process: these are projects that our board directs funding towards. Nearly \$355,000 was approved for three directed projects. Approximately \$323,000 was set aside for future land securement, and the remainder was split between annual funding for the Puntledge River hatchery to support summer Chinook production, and for an assessment of salmon spawning habitat in the lower Campbell River.

### Community Engagement Grant

The goal of the Community Engagement Grant is to provide an opportunity for FWCP stakeholders and Indigenous Nations, bands, or groups to apply for a small grant to support their conservation and enhancement work that aligns with our action plans.

Our Coastal Region manager approved ten Community Engagement Grant applications in F20 and fully allocated the \$7,500 available. Projects included distributing chum salmon carcasses in the Puntledge River, providing education on wetlands with species of concern and raising awareness of Indigenous cultural values near Pitt Meadows, the Salmon Come Home event in Coquitlam, building swallow boxes and bee habitat in the Alouette and Shuswap river watersheds, and planting native species in Surrey and Chilliwack. The full list is shown in Table 4.1 below.

Table 4.1: F20 Coastal Community Engagement Grants approved

Applicant	Project title	Approved funds
BC Conservation Foundation	Northern Spotted Owl Breeding Season 2019 Celebration	\$1,000
SABNES (Salmon Arm Bay Nature Enhancement Society)	Watering the Hummocks	\$800
Courtenay and District Fish & Game Protective Association	Chum Carcass Distribution into the Upper Puntledge River Watershed	\$1,00
BC Wildlife Federation	Reel Fishing Workshop	\$250
BC Wildlife Federation	BCWF Youth Camp Conservation Projects	\$750
Isaac Ecological	BC-Alberta Bat Conservation Planning Workshop	\$500
ARMS (Ridge Meadows Rivers Day Committee)	Ridge Meadows Rivers Day	\$900
Katzie Development Limited Partnership	Restoring Species of Conservation Concern and Cultural Value Sign Unveil and Information Tour	\$750
City of Coquitlam	Salmon Come Home Outreach Event	\$1,000
ACT (Acting on Climate Together) Lillooet	Our Watersheds; Our Actions	\$550



## Coastal Region project highlights

The Coastal Region board approved approximately \$1.9 million in funding for 33 projects—20 fish and 13 wildlife—in F20.



Four thousand metric tonnes of gravel were placed 300 metres downstream of the John Hart Generating Station in the Campbell River, adding 3,143 m<sup>2</sup> of Chinook salmon spawning habitat. It will also support coho, chum, and steelhead populations. (COA-F20-F-3071).

Photo: Campbell River Salmon Foundation



Sixty-five at-risk western painted turtles were released at nesting sites in the Lower Mainland as part of the recovery plan for the Pacific Coast population. The project also documented a record number of 53 turtle nests, with one-third of those nests occupied by young females laying eggs for the first time. (COA-F20-W-3056). Photo: J. Fournier



An aged wooden fish ladder was replaced with a new 8.5-metre-long steel structure on Thompson Creek, a tributary of the Stave River near Mission. The ladder will provide long-term, reliable access to good-quality, valuable habitat for salmonids, including coho, chum, Chinook, sockeye, pink, cutthroat, and rainbow trout. (COA-F20-F-3110). Photo: Fraser Valley Watershed Coalition

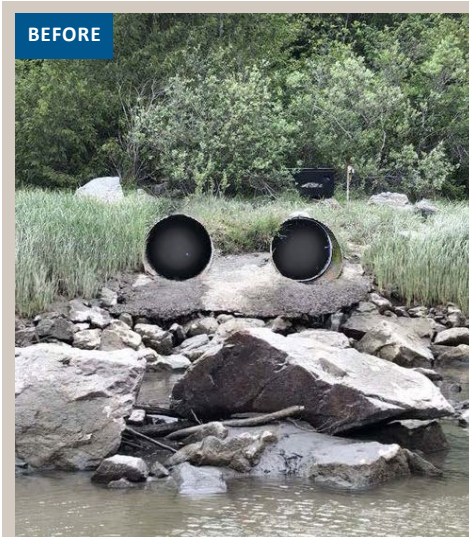




The Northern Spotted Owl Breeding Program's 2019 season was the most successful season to date with the most fertile eggs produced (11) and the highest number of successful hatches (5), including "Chick F" who was the subject of the FWCP's owl webcam live stream. (COA-F20-W-2982). Photo: NSO Breeding Program



The Comox Valley Project Watershed Society inventoried and mapped three priority areas in the the K'ómoks Estuary to control reed canarygrass, where its spread has tripled since 2004. Seven test-treatment methodologies were used over approximately 1,200 m<sup>2</sup>. (COA-F20-F-3063). Photo: Comox Valley Project Watershed Society



A large concrete box culvert installed in the Squamish River Estuary restored access to juvenile Chinook salmon habitat and resulted in more fresh water in the estuary than there has been for the last 50 years. (COA-F20-F-3067). Photo: Squamish River Watershed Society



Seventy hectares of land were protected for conservation adjacent to Bella Coola. (COA-F20-W-3259-DCA). Photo: Nature Conservancy of Canada



## 5.0 Financial report

Annual funding is allocated by our Coastal Region board toward fish and wildlife projects, administration, and communications (e.g. salaries; safety, board, and technical committee expenses; 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.

Our FWCP Coastal Region board approved an F20 budget of approximately \$2.208 million and utilized 100% of its annual funding from BC Hydro—which for F20 was just over 2.163 million. This, together with unspent funds from previous years, of \$1.649 million, resulted in available funds of approximately \$3.857 million.

Figure 5.1 shows a total of just over \$3.857 million available to the FWCP Coastal Region as of April 1, 2019. This comprises the approved budget of approximately \$2.208 million, plus an unspent surplus of just over \$135,000, and prior year funding commitments remaining of nearly \$390,000 for F18 and approximately \$1.124 million for F19.

Figure 5.2 illustrates the approved F20 budget as of April 1, 2019. Funding for fish projects made up 53% of the budget, wildlife projects 18%, and land securement projects 15%. Administrative costs made up approximately 11% 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 allocation was for communications, for approximately 3% of the annual budget.

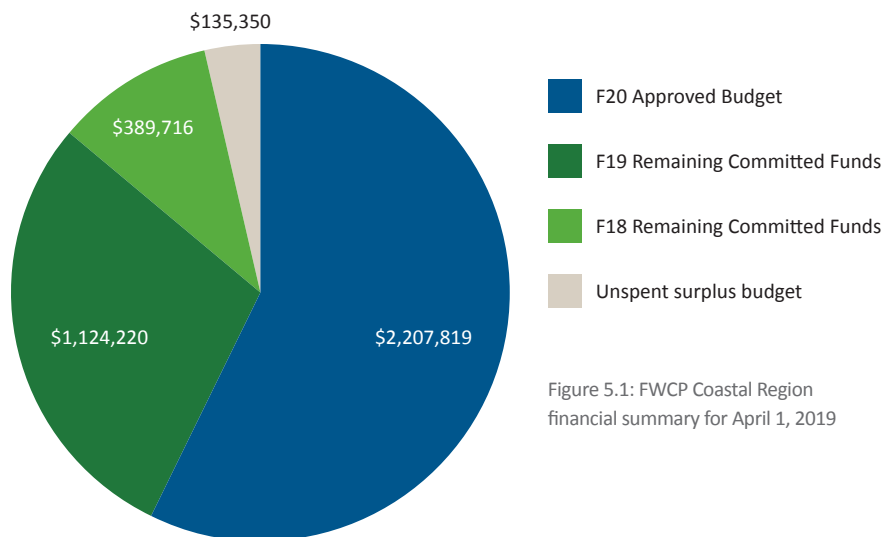


Figure 5.1: FWCP Coastal Region financial summary for April 1, 2019

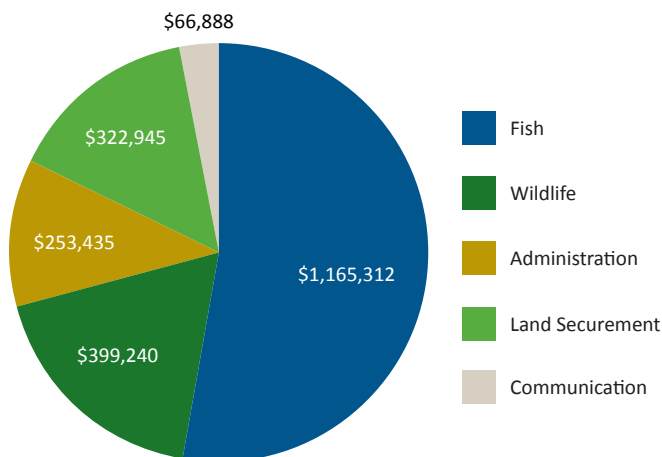


Figure 5.2: Breakdown of approved Coastal Region budget of \$2.208 million as of April 1, 2019

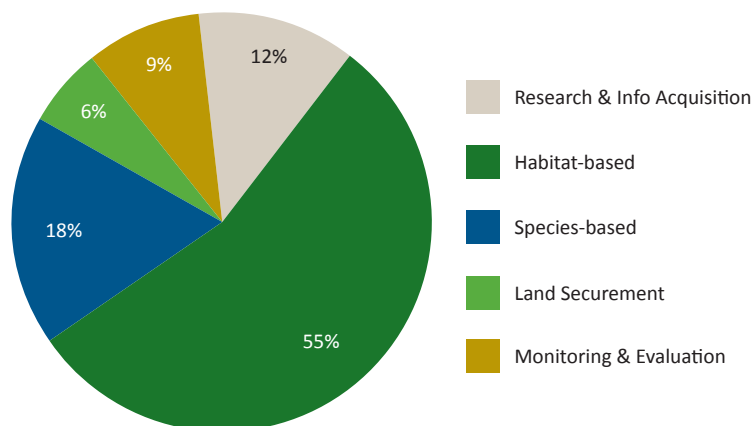


Figure 5.3: Breakdown of approved F20 Coastal Region budget by project type. More than 73% funded were either habitat- or species-based projects

Program expenditures up to March 31, 2020, are shown in Table 5.1. This reflects a “snapshot” in time of actual and planned payments made related to F20 projects. Project funding each year may not be fully allocated by year-end and—as shown in Table 5.1—F20 allocated funds not yet expended by March 31, 2020 are labelled as “planned payments.”

On occasion, projects come in under budget (“unspent funds” in Table 5.1). 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 5.1: F20 budget status as of March 31, 2020

Fund category	F20 approved budget	Paid up to Mar. 2020	Planned payments <sup>1</sup>	Unspent funds <sup>2</sup>
Fish	\$1,165,312	\$510,285	\$623,538	\$31,488
Wildlife	\$399,240	\$236,151	\$148,344	\$14,745
Administration	\$253,435	\$212,084	\$14,283	\$27,068
Land Securement	\$322,945	\$0	\$332,945	-\$10,000
Communications	\$66,888	\$50,148	\$16,825	-\$85
<b>TOTAL</b>	<b>\$2,207,820</b>	<b>\$1,008,668</b>	<b>\$1,135,937</b>	<b>\$63,215</b>

Note 1: Planned payments 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 F20 (Table 5.1), approximately \$1.009 million of the F20 budget had been spent, while nearly \$1.136 million remained as an F20 commitment to spend in F21. In addition, the balance of prior year funding commitments anticipated to be spent in F21 was approximately \$107,000 from F19, resulting in an unspent surplus of approximately \$332,000 (Figure 5.4).

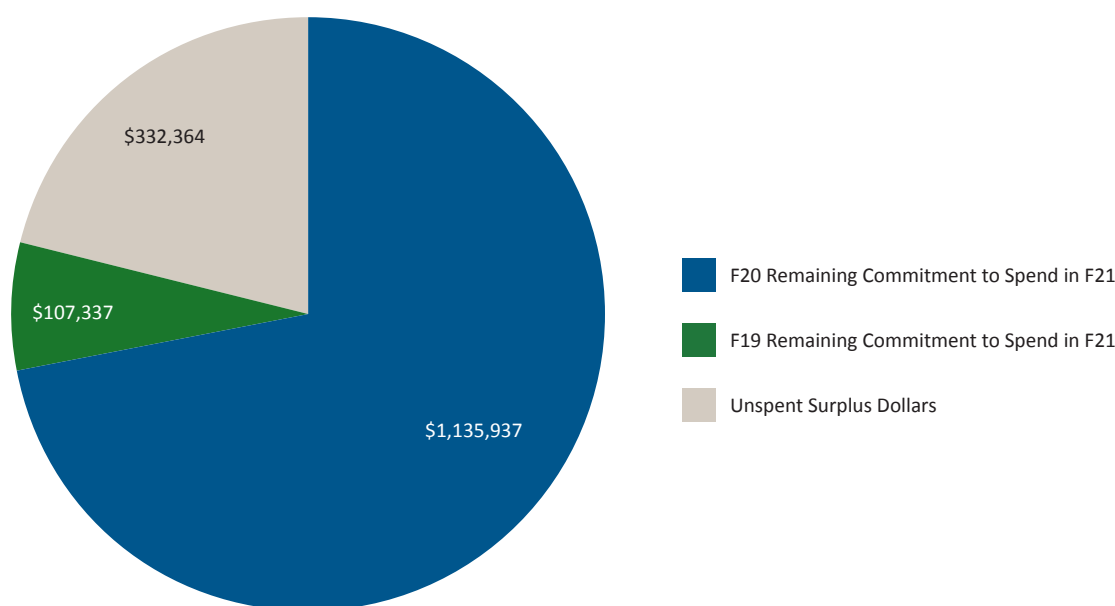


Figure 5.4: Financial summary of FWCP Coastal Region, as of March 31, 2020 (end of fiscal year)



## 5.1 COASTAL REGION APPROVED BUDGET ALLOCATION BY WATERSHED

The approved F20 budget for our Coastal Region included approximately \$1.165 million on fish projects, \$399,000 on wildlife projects, and nearly \$323,000 for land securement initiatives, for a total of \$1,887,497 on project funding, or 85.5% of the total budget. These projects were distributed across the watersheds in which we operate, as shown in Figure 5.5. During 2019–2020, the FWCP supported projects in nine of the 14 Coastal Region watersheds—not including projects covering multiple watersheds.

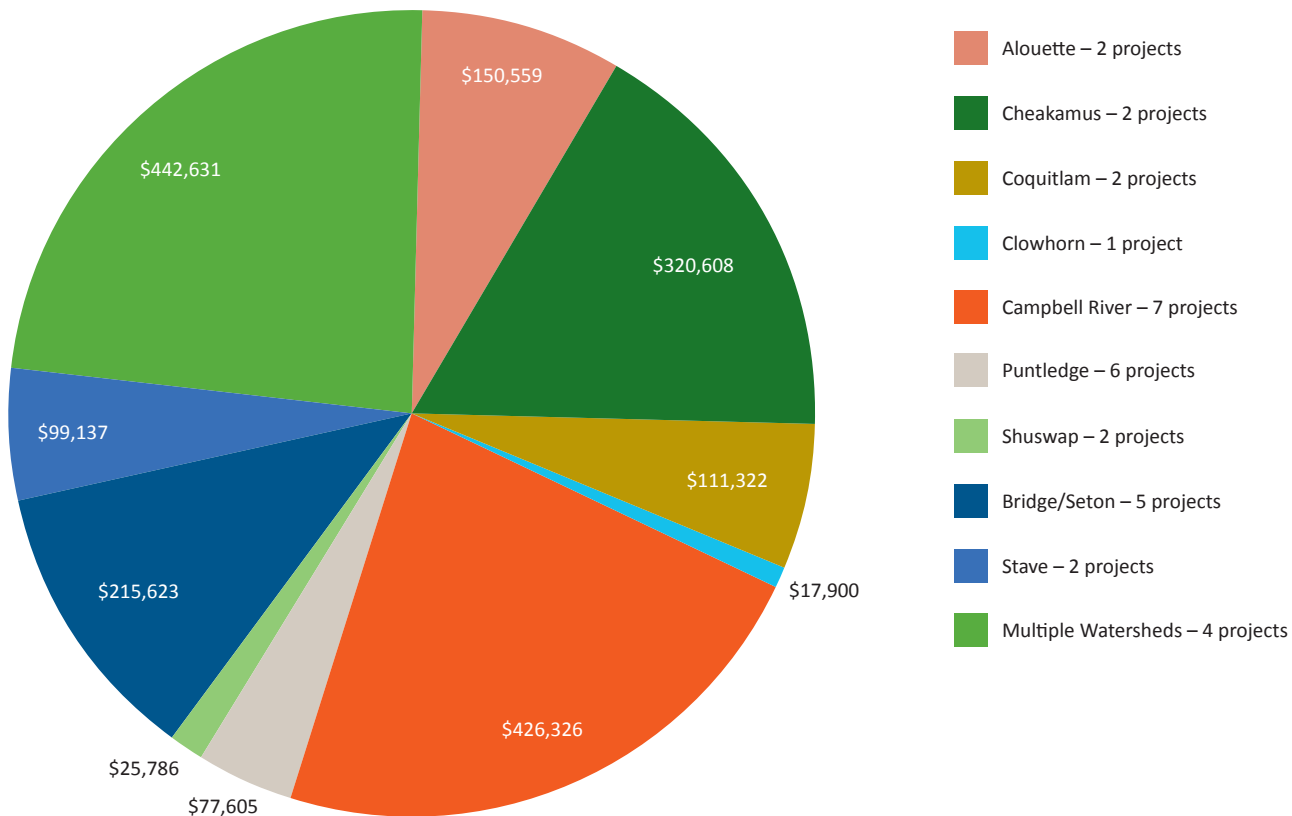


Figure 5.5: Approved F20 budget allocation by watershed at April 1, 2019

The FWCP encourages grant applicants to seek additional funding sources (e.g. other funding agencies, in-kind contributions) to leverage FWCP funding contributions. Demonstration that funds have been leveraged for a project is a consideration for the board’s decision-making. In F20, the FWCP funding allocation for grant-based projects was approximately \$1.533 million. The total value of the projects was approximately \$3.214 million as a result of financial partnerships and in-kind contributions. In other words, for every dollar invested by FWCP, others contributed nearly \$1.10, greatly increasing the value of the FWCP’s investment overall.

## 6.0 Coastal Region projects

Table 6.1 provides a listing of 2019–2020 Coastal Region fish and wildlife projects approved for funding. The funding identified may vary from the approved budget as of April 1, 2019, due to project budget increases or decreases, as they progressed throughout the fiscal year. Final reports for all projects are posted to the appropriate provincial databases once available. Visit [fwcp.ca/](http://fwcp.ca/) results for an updated list of all available final reports.

Table 6.1: 2019–2020 projects

Project ID, project lead, FWCP \$s, and sub-region	Project title and description	Outcomes
COA-F20-F-3021, Fisheries and Oceans Canada, \$13,039, Bridge-Seton River Watershed	<b>Portage Creek Chinook Conservation Enhancement</b> Portage Creek Chinook are classified federally as a vulnerable single-site Conservation Unit and have had diminishing returns for almost 10 years. In this multi-year project, Fisheries and Oceans Canada proposes strategic enhancement for a minimum of one generation (five years), to support rebuilding this population and preserving its genetics. Further work will investigate the limiting factors contributing to the decline. This project will support enhancement and coded-wire tagging activities of up to 50,000 yearling smolts. Enhancement will provide the population with a greater smolt survival rate, while the tags will provide much-needed assessment and stock distribution information.	<b>Portage Creek Chinook successfully spawned</b> Unprecedented broodstock collection efforts took place from October 15–28, 2019, resulting in the first ever successful spawning of Portage Creek Chinook in the Bridge-Seton River Watershed. Gametes (reproductive cells) were collected on-site from adults and transported back to Tenderfoot Creek Hatchery. A total of 12 females and 25 males were spawned, for a total egg take of 54,300 eggs and an average fecundity of 4,525 eggs per female. Offspring from female fish with low-positive detections of bacterial kidney disease (approximately 4,000 fish) were released as fry on February 19, 2020. All fry were transported and released safely in healthy condition. The remaining 48,000 Portage Creek Chinook will be released as yearling smolts in spring 2021. Tenderfoot staff conducted the collection activities with support from St'at'imc Eco-Resources Ltd. and Salmonid Enhancement Program (SEP) staff from DFO regional headquarters.
COA-F20-F-3030, Coldstream Ecology, Ltd., \$17,299, Bridge-Seton River Watershed	<b>Yalakom River Fish Inventory Update</b> This project will update the fish inventory and habitat data for the Yalakom River to address a long-standing knowledge gap, and support mitigation and restoration planning for salmonids, including Chinook, which were once a staple food for Xwisten (Bridge River Indian Band). Chinook stocks below Terzaghi Dam have declined, prompting renewed interest in restoration opportunities in the Yalakom River—the only major stream habitat accessible to fish populations below the dam. Past opposition to increasing Chinook access in the Yalakom has been based partly on bull trout status, however, the increasingly critical status of Chinook across its entire range is shifting local priorities towards a multi-species approach.	<b>Electrofishing surveys conducted at 12 sites on the Yalakom River</b> Electrofishing surveys conducted at 12 spatially distributed sites on the Yalakom River in the Bridge-Seton River Watershed by Coldstream Ecology in October 2019, showed four fish species: Chinook and coho salmon, bull trout, and rainbow trout/steelhead ( <i>Oncorhynchus mykiss</i> ). Bull trout and rainbow trout/steelhead were the most abundant and widely distributed species observed. Coho and Chinook salmon were observed in the lower 5 km of the Yalakom River and at relatively low abundances. Samples were not taken above river km 32 due to cold-water temperatures precluding the implementation of electrofishing surveys. Fish habitat use in the upper Yalakom River will require additional research.
COA-F20-F-3046, Splitrock Environmental Sekw'el'was LP, \$66,240, Bridge-Seton River Watershed	<b>Seton River Spawning Channel Fish Conservation Project</b> The Seton River Spawning Channel Fish Conservation Project is gathering critical data to evaluate the functionality of the spawning channels—post-complexing—in relation to egg-to-fry survival. Data collected during this multi-year project will provide information needed to develop a sustainable management plan for the channels and will provide a baseline to monitor the long-term productivity of the channels.	<b>Water temperature found not to have negative impacts on spawning or incubating salmon</b> Water temperature was monitored continuously in the Lower Seton Channel (LSC) during 2019. Daily average temperature ranged from 1.4 °C on March 5, 2019 to 19.2 °C on August 9, 2019. Temperatures are within the normal range for the LSC and should not have had any negative impacts on spawning or incubating salmon.



Project ID, project lead, FWCP \$s, and sub-region	Project title and description	Outcomes
COA-F20-F-3053, A-Tlegay Fisheries Society, \$19,517, Campbell River Watershed	<b>Cold Creek Habitat Enhancement</b> The Quinsam River Fish and Fish Habitat Restoration Plan, funded by FWCP in 2017-2018, identified five restoration projects for Cold Creek, an important tributary of the Quinsam River. In 2019, A-Tlegay Fisheries Society will complete riparian restoration work that will benefit five species of Pacific salmon and other species. This is a multi-year project.	<b>Riparian habitat enhanced at twelve sites along Cold Creek</b> Approximately 577 m <sup>2</sup> of riparian habitat along lower Cold Creek were treated in the fall of 2019 as a part of the Cold Creek Habitat Enhancement project in the Campbell River Watershed. Treatment at 12 sites included “wattle” fence installation, live staking, and planting western hemlock seedlings. Seven of the sites are above the Cold Creek Bridge. These sites consisted largely of eroding banks and gravel bars, or areas that have been subjected to channel widening due to the deposition of accumulated fines. Approximately 62 m <sup>2</sup> of wattle fencing was installed across three of these sites. An additional five sites below the Cold Creek Bridge were also treated. These sites, under a canopy of large red alders, were low gradient, where fines had accumulated.
COA-F20-F-3063, Comox Valley Project Watershed Society, \$14,268, Puntledge River Watershed	<b>Reed Canary Grass Removal in the K’ómoks Estuary</b> Invasive reed canary grass is an introduced species spreading within the Courtenay River (K’ómoks) Estuary, especially in Hollyhock Marsh and Mallard Creek. This invasive grass out-competes native plant species, provides little value for native wildlife, grows too thickly for mammals or waterfowl to use for cover/nesting, reduces foraging and feeding opportunities for juvenile salmonids, and impedes salmon from reaching spawning habitats. This project will inventory, map, and work on removing and controlling this invasive grass to restore more natural habitat conditions for fish and wildlife.	<b>Over 1,300 m<sup>2</sup> treated for invasive reed canary grass in the K’ómoks Estuary</b> It is estimated that the amount of reed canary grass in the K’ómoks Estuary in the Puntledge River Watershed has tripled since 2004. It can outcompete native grasses within six months of introduction, leading to a reduction in native plant diversity. During the spring of 2019, the Comox Valley Project Watershed Society inventoried and mapped three priority areas: Hollyhock Marsh Conservation Area, Dyke Slough, and the lower reaches of Mallard Creek. Seven treatment methodologies were trialled within these areas, and approximately 1,200 m <sup>2</sup> were treated. In addition, 108 m <sup>2</sup> of land adjacent to Mallard Creek was planted with willow stakes. Monitoring will determine the most effective method for treating reed canary grass.
COA-F20-F-3066, Watershed Watch Salmon Society, \$31,688, Coquitlam-Buntzen River Watershed	<b>Kwikwetlem Sockeye Restoration Program Year 1 Hatchery Augmentation Studies</b> The Kwikwetlem Sockeye Restoration Program (KSRP) developed an eight-year plan under BC Hydro’s Fish Passage Decision Framework. The plan will assess the uncertainties in the 2018 life-cycle modelling and re-evaluate smolt outmigration again in 2019. This project will include assessment of smolt outmigration efficiency under optimized operations and collection of returning adult sockeye and/or Coquitlam Reservoir kokanee broodstock for hatchery incubation.	Project report not yet submitted
COA-F20-F-3067, Squamish River Watershed Society, \$250,538, Cheakamus River Watershed	<b>Central Squamish Estuary Restoration Project - Year 2</b> This is the second year of a multi-year project to improve fish passage along the Squamish Training Dike by replacing culverts with bridge crossings at key locations. The 2019 project will concentrate on realigning the spit to construct a deflection berm north of the Squamish Terminals and install a flow control structure across the CN spur line to reconnect the water from the central estuary back into Bridge Pond/Cattermole Slough.	<b>Improving fish passage in the Cheakamus River Watershed</b> This was the second year of a multi-year project to improve fish passage along the Squamish Training Dike. Work in 2019-2020 concentrated on plans to establish flows across the CN spur line to improve salmon habitat in the Bridge Pond (Phase 3). To better understand how tidal flow function on either side of the CN spur line, the Squamish River Watershed Society collected data, including biophysical modelling, and deploying data loggers (e.g., level loggers, temperature loggers, and photo-point monitoring stations). Other activities included developing an interim access engagement plan (District of Squamish); the Squamish training berm realignment wave impact assessment (SNC-Lavalin); stakeholder workshops; articles; and the Squamish River Central Estuary restoration effectiveness in-stream monitoring.

Project ID, project lead, FWCP \$s, and sub-region	Project title and description	Outcomes
COA-F20-F-3068, K'omoks First Nation, \$16,988, Puntledge River Watershed	<p><b>Puntledge Summer Chinook Parentage-based Tagging Study</b></p> <p>Genetic methods, known as parentage-based tagging (PBT), will be used in this multi-year project to identify individual Puntledge River summer-run Chinook salmon back to parental crosses (both in the hatchery and in the wild). The effects of parental Chinook return migration time, and bacterial kidney disease infection status on their progeny will be examined. Results will guide Fisheries and Oceans Canada in development of management actions focused on improving wild and hatchery summer Chinook productivity, and preserving the genetic integrity of the stock.</p>	<p><b>Study supports genetic diversity in Puntledge summer Chinook salmon</b></p> <p>A parentage-based tagging study on Puntledge summer Chinook exploring the effect of maternal bacterial kidney disease (BKD) load on progeny survival and BKD level indicates that retention of eggs from females with BKD loads as high as those classified as “low positive” did not translate into decreased survival in returning hatchery fish in Puntledge summer Chinook salmon or increased BKD load. Results on the effect of parental return time on progeny return time indicate that for the 2015 birth year, progeny from the mid-parental spawning group are returning later than those from the early parental groups. Both natural- and hatchery-origin summer Chinook salmon contributed to the genetic diversity of the population, and the contribution of spawners in the natural environment is critical to maintaining adaptation to that environment. However, the ongoing low abundance and the apparent reduction in effective population size in the summer Chinook salmon population over the course of the study is of concern and supports the continued use of genetic screening to avoid inbreeding and maximize diversity within the population.</p>
COA-F20-F-3071, Campbell River Salmon Foundation, \$197,881, Campbell River Watershed	<p><b>Campbell River Spawning Gravel Placement Site 7-V</b></p> <p>This project is part of an ongoing gravel replenishment program on the Campbell River to restore degraded salmon habitat. Construction of the John Hart Generating Facility in 1947 blocked gravel recruitment from the upper Campbell River and reduced Chinook spawning habitat. The project includes construction of a single, 1,500-square-metre spawning bed at Site 7. This project will provide critical spawning habitat for an additional 150 Chinook spawning pairs. The design would incorporate design features intended to prevent the washing away of spawning gravel during high flow events. Restoration of this spawning habitat will also benefit coho, chum, and steelhead populations.</p>	<p><b>4,000 metric tonnes of gravel improve Chinook spawning habitat in the Campbell River</b></p> <p>Approximately 4,000 metric tonnes of washed and screened spawning gravel have been added to the Campbell River, supplying spawning habitat for an estimated 190 pairs of Chinook, as well as other species such as chum and pink salmon. Embedded gravel pads were installed in an attempt to retain the spawning gravel during high scouring flows. The constructed platform is approximately 1,900 m<sup>2</sup>. Scour sensors at the site location allow for hydrologic analysis, and the relative frequency of scour-inducing discharge can be estimated along with the estimated longevity of the spawning gravel.</p>
COA-F20-F-3072, Alouette River Management Society, \$102,780, Alouette River Watershed	<p><b>Alouette Watershed Sockeye-Fish Passage Feasibility: Year 3</b></p> <p>The Alouette River Sockeye Re-anadromization Program is a joint initiative between the Katzie First Nation, the Alouette River Management Society, BC Hydro, the Province of B.C., Fisheries and Oceans Canada, LGL Limited, and local stakeholders. The project promotes the re-establishment of anadromous Alouette sockeye at the Alouette Dam. This project will support work on year three of an updated 11-year plan to assess environmental feasibility of fish passage in alignment with step three of the BC Hydro Fish Passage Decision Framework.</p>	<p><b>298 adult sockeye salmon released in the Alouette River Watershed since 2007</b></p> <p>Fifteen adult sockeye salmon returned to the Alouette River Watershed between July 22 and October 16, 2019. Fork length measurements were taken of all sockeye with scale and tissue samples, indicating an average of 60.3 cms. Genetic sampling identified that all adults originated from Alouette River stock. Between 2007 and 2019, 361 adult sockeye salmon have returned to the fish fence, 298 of which have been successfully released into the reservoir. A rotary screw trap was operated in Mud Creek from April 11–June 15, 2019, to monitor the sockeye smolt migration from Alouette Reservoir. Due to unseasonably low water levels in the Alouette Reservoir, BC Hydro was unable to provide the spring surface release minimum of three m<sup>3</sup>/s until May 22, a 37-day delay from preferred timing. Only a single degraded sockeye mortality was captured on April 13. No live sockeye smolts were captured migrating from Alouette Reservoir in 2019. All other species captured were counted and released</p>
COA-F20-F-3076, Splitrock Environmental Sekw'el'was LP, \$19,060, Bridge-Seton River Watershed	<p><b>Seton River Spawning Channel Riparian Habitat Enhancement</b></p> <p>The Seton River Spawning Channel riparian habitat enhancement project will assist in the development of a management plan for the Seton River spawning channels. This project aims to restore and maintain important salmonid fish spawning and rearing habitat in the upper and lower spawning channel portion of the Seton River Watershed. This work will help support sustainability and functionality of the spawning channels, as well as support coho, Chinook, and pink salmon, in addition to steelhead and rainbow trout.</p>	<p><b>Bridge-Seton River Watershed salmon habitat restored: 370 plantings and 50 trees caged</b></p> <p>This project aims to restore and maintain important salmonid spawning and rearing habitat in the upper and lower spawning channel portion of the Bridge-Seton River Watershed. In the spring of 2019, 190 plants were planted in the upper spawning channel of the Seton River and 180 in the lower spawning channel, for a total of 370. Further, 4,089 m<sup>2</sup> around the channels were enhanced. During a mortality survey, 122 plants were confirmed to be killed by high temperatures and dry conditions or by herbivory. All were replaced with like species, for a total of 492 plants planted throughout the year. Fifty trees were caged with thick gauge wire, and one beaver dam was removed at the upper spawning channel.</p>



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COA-F20-F-3077, Squamish River Watershed Society, \$70,070, Cheakamus River Watershed	<b>Cheakamus Floodplain Upgrades and Restoration</b> This project will improve habitat for salmonids and redds stranded by lower flow levels in the Cheakamus River, especially along Mykiss Channel on the west side of Bailey Bridge. The Mykiss floodplain channel will be deepened, providing more year-round habitat.	<b>Salmon habitat restored in the Cheakamus River Watershed</b> This project is aimed at improving habitat for salmonids and redds in the Cheakamus River. In late July 2019, woody debris obstructions were removed along the lower reach of Evans Creek just above the confluence with the Cheakamus River, an area of 15 m <sup>2</sup> . Work was undertaken between August and October 2019 to clean out the intakes at Far Point and Gorbushca Headpond and to clean out woody debris in Mykiss Channel, Gorbushca Head Pond, and Wountie Channel, resulting in 520 m <sup>2</sup> cleared, and 2500 m <sup>2</sup> of salmon habitat restored. Later in the season, 125 m <sup>3</sup> of sediment was removed from the Duck Pond intake. In the spring of 2020, the newly constructed Evans Creek Connector Channel was cleaned (it had filled with sediment following winter storm events) restoring another 525 m <sup>2</sup> of habitat.
COA-F20-F-3081, British Columbia Conservation Foundation, \$63,683, Campbell River Watershed	<b>Elk Falls Canyon Spawning Gravel Bulk Delivery: Year 4</b> This project provides the fourth year of gravel additions to the Upper Canyon Reach of the Campbell River using the 2017 bulk gravel delivery system, constructed in Elk Falls Provincial Park. Using the new delivery system, approximately 250 m <sup>3</sup> of gravel will be added to the first pool tail-out. This gravel will provide valuable spawning habitat for all species of salmon and trout. Over time, as gravel is added, the canyon habitat will become more gravel-rich, further increasing spawning capacity. The cost-per-unit of gravel is about 30 per cent of the previous helicopter-based delivery method. The infrastructure investment by FWCP and others provides an effective tool to help improve salmon spawning habitat in the watershed.	<b>Improving spawning habitat in Campbell River Watershed: 355 tonnes of gravel added to Elk Falls Canyon creates 400 m<sup>2</sup> of spawning habitat</b> This project is focused on providing high-value spawning habitat for all species of salmon and trout. Approximately 600 gravel drops were made in the Elk Falls Canyon, placing 355 tonnes, or approximately 200 m <sup>3</sup> , of washed and graded spawning gravel into the first pool tail-out below Elk Falls. The gravel created a nicely contoured gravel pad of approximately 8x50 m that is immediately useable by spawning salmonids. The gravel creates approximately 400 m <sup>2</sup> of salmon spawning habitat.
COA-F20-F-3083, North Fraser Salmon Assistance Project, \$79,634, Coquitlam-Buntzen River Watershed	<b>Reeve Slough Feasibility Assessment 2019</b> This project will provide a feasibility assessment of Reeve Slough, which could provide 31,800 m <sup>2</sup> of potential rearing habitat for salmonids. This is the largest parcel of unrestored, off-channel habitat remaining in the Coquitlam Watershed. Assessment and restoration of this site would primarily benefit coho salmon, but would also be accessible and utilized by Chinook, chum, sockeye, and pink salmon, as well as cutthroat and steelhead juveniles. The project is located in Port Coquitlam B.C., on Kwikwetlem First Nation lands.	<b>Reeve Slough Feasibility Assessment explores options for new water source in the Coquitlam-Buntzen Watershed</b> The Reeve Slough Feasibility Assessment suggests there is no persistent water supply sustaining a perennial flow-through hydrologic regime at Reeve Slough. The off-site Reeve Park Pump Station and associated drainage flows provide a unique opportunity to establish an upstream water supply with the ultimate downstream connection remaining the Coquitlam River as the receiving environment. There are significant flooding concerns regarding the Kwikwetlem First Nation Cemetery, however, due to the ongoing beaver activity and observed floodplain connectivity between the Coquitlam River and Reeve Slough. The establishment of a water source will require the formalization of a defined outlet control that can be accessed, monitored, and maintained, as the risk of beaver activity within Reeve Slough is significant. The present-day hydrologic controls are the direct result of beaver activity at the northwest terminus of the slough.
COA-F20-F-3090, Guardians of Mid Island Estuaries Society, \$45,173, Campbell River Watershed	<b>Eco-Cultural Restoration of the Campbell River Estuary</b> This eco-cultural restoration of the Campbell River estuary will help the marsh recover. This project will use applied restoration techniques for estuaries, alongside the Wei Wai Kum First Nation and partners, which will restore vital estuary sedge marsh habitat by modifying traditional fish weir techniques. This project builds on recent restoration efforts in the Campbell River estuary and will use 100 per cent organic materials to create wooden enclosures to protect channel edge habitat, and stop Canada goose herbivory. This project will benefit salmonids.	<b>12,000 m<sup>2</sup> of marsh habitat restored</b> The existing 2018 pilot enclosures of just over 2,000 m <sup>2</sup> resulted in a total of 12,000 m <sup>2</sup> of carex sedge marsh habitat in 2020 using eco-cultural restoration techniques and transplanting 6,390 carex shoots. Four new Wei Wai Kum guardians were trained over the year in regard to transplants of sedges and building eco-cultural habitat enclosures. Two BCIT students assisted the work in 2019, but due to COVID-19 restrictions they were unable to join in the field season for early 2020.
COA-F20-F-3096, Kingfisher Interpretive Centre Society, \$6,066, Shuswap River Watershed	<b>Protection of Shuswap River Chinook through Education</b> This project will build awareness about Shuswap River salmon, and the habitats and ecosystems they require, through hands-on experiences. This project is aimed at school children, teachers, parents, and community members. Instilling passion, understanding, and compassion will promote future actions for restoration, and the protection for our “Kings” to support the long-term survival of all salmon and the preservation of the Shuswap River Watershed.	<b>More than 700 students educated about salmon</b> Just over 700 local students and another 100 parents were educated about the importance of salmon to the local ecosystem.

Project ID, project lead, FWCP \$s, and sub-region	Project title and description	Outcomes
COA-F20-F-3110, Fraser Valley Watersheds Coalition, \$69,646, Stave River Watershed	<b>Thompson Creek Fish Ladder, Replanting and Assessments</b> This project will improve fish passage and habitat in the Stave River Watershed, and will benefit coho, chum, Chinook, sockeye, and pink salmon, as well as cutthroat and rainbow trout. A wooden fish ladder on Thompson Creek—a salmon-bearing tributary to the Stave River—will be replaced. Bio-engineering and planting efforts will continue within the Stave River to replace invasive reed canary grass with natural vegetation and to improve ecological function. An effectiveness assessment will be conducted on right bank erosion protection work and will help further downstream restoration of additional off-channel habitats. This project will host a local stakeholder meeting and community planting events.	<b>Stave River Watershed: Thompson Creek fish passage improved</b> A new fish ladder was installed at Thompson Creek and habitat below the ladder was stabilized: 5,750 native trees and shrubs were planted, representing 1,626 m <sup>2</sup> of new riparian habitat, and 190 kg of garbage was removed. Fifteen volunteers assisted with the planting, and one volunteer supported the installation of the fish ladder and ongoing maintenance. The Fraser Valley Watersheds Coalition worked with Kwantlen First Nation and archaeologists to assess the right bank erosion control measures implemented in 2018, with recommendations to pursue additional bank structures in the future. Community engagement was implemented in partnership with Kwantlen First Nation to share knowledge about the importance of the site as a salmon and wildlife refuge.
COA-F20-F-3120, British Columbia Conservation Foundation, \$19,262, Puntledge River Watershed	<b>Nutrient Enrichment of the Upper Tributaries of Comox Lake</b> This project is designed to improve growth and survival of juvenile salmonids, primarily, cutthroat and rainbow trout, coho salmon, Dolly Varden, and steelhead. Fertilizer, packaged in biodegradable burlap bags, will be applied at two sites in Comox and Eric creeks (tributaries of Comox Lake) at a loading rate of about 100 kg/site. Monitoring will include water and periphyton monthly sampling in enhanced tributaries and in three control tributaries. Electrofishing depletion estimates will be used in monitoring. This project could expand to other salmon-bearing tributaries, including Reese Creek, Upper Cruickshank River, Lower Cruickshank River, Upper Puntledge River, and Beach Creek.	<b>Puntledge River Watershed: four km of juvenile trout habitat enhanced</b> This project is designed to improve growth and survival of juvenile salmonids by applying fertilizer at two sites. Periphyton and water-quality results suggest that the fertilizer added for the nutrient enrichment of the upper tributaries of Comox Lake did enhance the primary productivity of the targeted streams. In total, an estimated 4 km of juvenile trout habitat was artificially enhanced through the inputs of fertilizer. Unfortunately, as a result of low sample sizes, effects of the fertilizer on the mean weights of juvenile trout could not be measured.
COA-F20-F-3150-DCA, Laich-Kwil-Tach Environmental Assessments Ltd Partnership, \$14,995, Campbell River Watershed	<b>Assessment of High Flow Impacts to Lower Campbell River</b> In consideration of high winter flows in the lower Campbell River, and the importance of salmon, the Coastal Region board approved funding for an assessment of the quantity and location of spawning habitat in 2019-2020.	<b>Campbell River Watershed: spawning habitat monitoring methods established</b> Post-storm spawning habitat monitoring provided the Campbell River Salmon Spawning Habitat Restoration Roundtable with valuable information regarding the quality and quantity of salmonid spawning habitat in the lower Campbell River. Further, robust and repeatable monitoring methods were developed that can be undertaken independently by the A-Tlegay Fisheries Society in future years. A total of 2,421 m <sup>2</sup> of functional spawning habitat was measured at six sites. Following the monitoring, the Campbell River Spawning Habitat Roundtable met on September 12, 2019, to review the monitoring results and discuss next steps.
COA-F20-W-2903, SNC-Lavalin Inc., \$2,206, Multiple watersheds	<b>DNA Analysis of Bat Species Using Artificial Rock Roosts</b> In 2010, the FWCP funded the installation of artificial rock roosts for bats in our Coastal Region. In 2018, the roosts were revisited and guano was collected. This project funding will be used to complete DNA analysis of bat guano collected at six artificial rock roosts in the Coquitlam-Buntzen, Alouette River, and Stave River watersheds. The results will confirm which bat species use the roosts.	<b>DNA analysis confirms bat species at artificial rock roosts</b> A DNA analysis of guano samples was conducted to confirm the bat species using five of the nine artificial rock roosts in the Stave, Alouette, and Coquitlam river watersheds. Thirteen samples were extracted for the first round of DNA analysis, but only two of those produced a strong result because of in-lab contamination. The lab undertook several rounds of re-analysis from select samples, and bat species were identified at three of the five artificial rock roost sites from which guano was collected. <i>M. yumanensis</i> was detected through one sample from Site 8 in June, two samples from site 5 in October, and through three samples from site 5 in June. <i>E. fuscus</i> was present in October at sites 6 and 8 (one sample each). No more than one species was detected at any single collection event, but the two species were present at different times at sites 8. These results confirm that at least two bat species use the artificial rock roost sites, and that subsequent guano collection can be used to continue to monitor bat use.



Project ID, project lead, FWCP \$s, and sub-region	Project title and description	Outcomes
COA-F20-W-2982, British Columbia Conservation Foundation, \$90,985, Bridge Seton River Watershed	<p><b>Northern Spotted Owl Captive Breeding Program</b></p> <p>The northern spotted owl is one of Canada's most endangered bird species. Its entire Canadian range occurs in southwestern British Columbia. Historic estimates suggest that up to 1,000 spotted owls were present in the province pre-European settlement. Currently, however, fewer than 30 individuals remain in the province and more than half of these owls reside in captivity at the breeding facility in Langley, B.C. This project's mission is to prevent this species becoming extirpated from Canada by releasing captive-raised northern spotted owls back into recovery habitats, which are protected for the species in B.C. The goal of this multi-year project is to produce captive-born spotted owls that can be released into suitable habitat within the Bridge-Seton Watershed, in order to recover the local population to a minimum of 20 individuals.</p>	<p><b>Northern Spotted Owl Captive Breeding Program has its most successful season</b></p> <p>The 2019 breeding season was the most successful year yet for the Northern Spotted Owl Captive Breeding Program, with 11 fertile eggs produced and five successful hatches, the most on record. One chick did not survive after fledging from the nest, and one wild juvenile was added to the program, resulting in five new juveniles added to the population in 2019. Two of the four juveniles that were captive-born and reached adulthood, were a result of double clutching. They were the first successful second-clutch chicks. As of March 2020, there are six breeding pairs, with indication that two more breeding pairs may be established. This will be the highest number of breeding pairs in any given year of the program. The wild-caught male juvenile was added to the captive population and paired with a young captive-born female. This young male is not directly related to any of the owls currently in the Northern Spotted Owl Breeding Program and the pairing will increase the genetic diversity of the captive population.</p>
COA-F20-W-3033, Wildlife Conservation Society Canada, \$29,491, Stave River Watershed	<p><b>Developing and Evaluating Bat Mitigation Strategies</b></p> <p>This multi-year project will study bat maternity colonies in the Stave River Watershed to understand how roost selection (i.e. bat boxes vs. buildings) affects bat health and reproduction. Sentinel sites will be monitored to evaluate the newest, most promising, white-nose syndrome mitigation strategies for western North America. The results will have broad applicability across watersheds to inform mitigation strategies for bats. Bat habitat has been compromised at hydroelectric developments, as riparian habitats have flooded. This project will benefit the little brown and Yuma bat species.</p>	<p><b>200 bats inoculated against white-nose syndrome in Stave River Watershed</b></p> <p>A total of 1,807 bats were individually marked in 2018 and 2019 across four study sites: Colony Farm Regional Park (220 banded bats), Burrville Deas Island House Roost (309 PIT-tagged bats), Stave Lake BC Hydro (213 banded bats, 493 PIT-tagged bats, 15 with both bands and PIT-tags), and Alice Lake Provincial Park (235 banded bats, 337 PIT-tagged bats, 16 bats with both bands and PIT-tags). In August 2019, the first-ever application of a probiotic inoculating against white-nose syndrome was applied to bats at two sites: Stave Lake and Colony Farm. At the Stave Lake site, probiotic-laden clay powder was applied to the roost chambers of three bat boxes and at the entrance of the Slave Lake Lodge roost. Sampled bats and roost chambers were swabbed for probiotic, verifying the successful transfer of probiotic to roost substrate and bat wings. An estimated 200 bats in the Stave Lake bat maternity colony were successfully inoculated with probiotic before leaving for their winter hibernacula.</p>
COA-F20-W-3034, Nature Trust of British Columbia, \$35,000, Campbell River Watershed	<p><b>Conserving Wildlife Habitat in the Salmon River Watershed</b></p> <p>This project will protect and improve habitat for birds, amphibians, large mammals, and salmon in the Salmon River Estuary Conservation Area. A portion of this conservation property was purchased in 2015 with FWCP support. Year two of habitat restoration includes restoring degraded habitat by thinning dense alder forest, managing invasive plant species, re-establishing riparian forests, and enhancing wetland habitat. Past ecosystem restoration projects will be monitored and maintained. This project will benefit Roosevelt elk, great blue heron, northern pygmy owl, western screech owl, Band-tailed Pigeon, barn swallow, common nighthawk, olive-sided flycatcher, northern red-legged frog, Pacific salmon, and cutthroat trout</p>	<p><b>1,000 m<sup>2</sup> of new wetland habitat created in Campbell River Watershed</b></p> <p>Approximately 4.5 ha of old field habitat in the Campbell River Watershed was protected from encroaching broom with brushcat mowers and field crews, and approximately 4.5 ha of old field habitat was prepped for native species plantings using novel silviculture techniques. A 1,000 m<sup>2</sup> elk enclosure area was constructed and replanted with native vegetation. Approximately 1,000 m<sup>2</sup> of wetland habitat was created by removing and redistributing fill and creating shallow marsh benches. Wetland habitat complexing was completed with the installation of four large woody debris structures and the planting of emergent wetland vegetation. Surveys for vegetation, wildlife, breeding birds, and amphibians were completed as part of the monitoring program, including monitoring and maintaining four existing western screech-owl nest boxes. A new forest cover map and forest prescription plan was created to guide future activities.</p>
COA-F20-W-3037, Marmot Recovery Foundation, \$11,000, Multiple watersheds	<p><b>Translocating Vancouver Island Marmots to Strathcona Park 2019</b></p> <p>This project will support the Marmot Recovery Foundation to translocate between five and 10 endangered Vancouver Island marmots to colonies in Strathcona Provincial Park. These marmots will support previously re-established colonies, helping those colonies persist, while future recovery efforts are prepared. The Strathcona colonies will require support until the population grows significantly. The marmot is an endemic, endangered species that was extirpated from Strathcona Provincial Park in the 1990s. Reintroduction efforts have successfully established a number of colonies and a small population of marmots in the park.</p>	<p><b>16 endangered Vancouver Island marmots monitored</b></p> <p>This project supports recovery of endangered Vancouver Island marmots. Five marmots were translocated into the Strathcona region (Buttle and Puntledge river watersheds), and six colonies were provided with supplemental feeding, benefiting at least 48 marmots. Sixteen wild marmots were implanted with telemetry to support future monitoring. A total of 147 monitoring days took place in the Strathcona region.</p>

Project ID, project lead, FWCP \$s, and sub-region	Project title and description	Outcomes
COA-F20-W-3056, British Columbia Conservation Foundation, \$111,480, Multiple watersheds	<p><b>Western Painted Turtle Recovery in Lower Mainland Watersheds</b></p> <p>This project will support B.C.'s only remaining native freshwater turtle - the endangered and Red-listed Pacific Coast population of western painted turtles. There are only 18 known sites where this turtle exists in the Lower Fraser Valley. Ten turtle sites are in the Coquitlam, Alouette, and Stave watersheds. This project's goal is to recover these populations by releasing head-started turtles, monitoring recruitment, and providing and monitoring effectiveness of habitat for basking and nesting. Western painted turtles may be found in most types of standing water at low elevations, but also require upland terrestrial habitat for nesting and dispersal.</p>	<p><b>65 at-risk western painted turtles released in Lower Mainland watersheds</b></p> <p>This project supports B.C.'s only remaining, freshwater turtle. Basking surveys of western painted turtles were conducted at twelve sites in Lower Mainland watersheds, including 22 observations of basking habitat. Two hundred hours of nesting monitoring were completed, and forty trap days took place at four sites. Fifty-three nests were identified through nesting monitoring at the headstart source population site. Half were brought into captivity (26), and the other half (27) remained onsite, protected with cages to foster natural recruitment. Headstart trials were completed at a Greater Vancouver Zoo facility operated by Wildlife Preservation Canada to assess individual treatment methods to reduce or eliminate the development of soft shell, leading to a recommendation to change to a biofiltering tank system. Sixty-five headstart turtles were released at four sites. A 150-square-foot nesting beach was constructed and eight basking logs were installed at Lost Lake and Minnekhada.</p>
COA-F20-W-3085, Comox Valley Land Trust, \$100,000, Puntledge River Watershed	<p><b>Morrison Headwaters Nature Preserve</b></p> <p>This project will support the Comox Valley Land Trust to purchase a 55-acre (22-hectare) parcel of private land in the headwaters of Morrison Creek in the Puntledge River Watershed. The land has high conservation values for wetland and riparian habitats. The headwaters of Morrison Creek are known for its unique "climate-proof," spring-fed hydrology, and abundant, reliable runs of salmon. The land is the largest remaining unprotected area of core wildlife habitat in the Comox Valley lowlands, providing habitat for all large mammals native to Vancouver Island, and habitat for more than 12 species at risk, including Morrison Creek lamprey, found nowhere else on earth. Species that will benefit include: coho, pink, chum, and Chinook salmon, steelhead, cutthroat and rainbow trout, Dolly Varden, Morrison Creek lamprey, Roosevelt elk, black bear, Columbian black-tailed deer, beaver, marten, little brown bats, red-legged frogs, and a diversity of birds.</p>	<p><b>55 acres of important fish and wildlife habitat protected</b></p> <p>The headwaters of Morrison Creek (a tributary to the Puntledge) has been widely recognized by several agencies as a conservation priority that provides important fish and wildlife habitat, including for species at risk. One species in particular, the Morrison Creek lamprey (<i>Lampetra richardsonii</i> var. <i>marifuga</i>), occurs only in Morrison Creek and nowhere else on earth. DFO considers Morrison Creek to be the best salmon-producing river of its size anywhere in the Comox Valley and possibly the east side of Vancouver Island. The Comox Valley Land Trust has initiated a campaign to acquire the entire headwaters of Morrison Creek (~600 acres) for conservation purposes. A first parcel of land within the site became available for sale in 2018. With the help of FWCP and other partners CVLT was successful in acquiring the 55-acre parcel from BG Linton Construction Ltd. Concurrent with the acquisition (May 29, 2019), CVLT leased its interest in the land to the Comox Valley Regional District for a 99-year term, to be managed as a nature preserve with low-impact public access restricted to existing trails. As a result of this successful project, 55 acres of important fish and wildlife habitat has been protected from the threats associated with residential and agricultural conversion.</p>
COA-F20-W-3086, Discovery Coast Greenways Land Trust, \$23,723, Campbell River Watershed	<p><b>Restoring Ecological Function in the Campbell River Estuary</b></p> <p>This project aims to restore ecological function and integrity in the Campbell River Estuary by managing invasive species, including yellow flag iris, purple loosestrife, and Japanese knotweed. In addition to improving ecosystem functioning, the species that will most directly benefit are native wetland plant species, including the B.C. Blue-listed Henderson's checkermallow and Vancouver Island beggarticks, a SARA Species of Special Concern.</p>	<p>Project report not yet submitted</p>
COA-F20-W-3102, Ministry of Forests, Lands, Natural Resource Operations and Rural Development, \$19,720, Shuswap River Watershed	<p><b>Mule Deer Migration and Seasonal Ranges in the Upper Shuswap</b></p> <p>This project will help inform development of a habitat map and resource selection function model that will predict mule deer use and identify suitable habitats. Fifteen adult female mule deer will be collared and tracked for two years. Data from the GPS collars will help plot seasonal ranges and migration corridors. Completion of habitat maps and resource selection function models will help identify potential habitat enhancement sites to offset impacts of hydro development. This is a joint project with the Province of B.C., UBCO, and the Spltasin First Nation.</p>	<p>Project cancelled</p>

Project ID, project lead, FWCP \$s, and sub-region	Project title and description	Outcomes
COA-F20-W-3105, Katzie Development Limited Partnership, \$52,650, Alouette River Watershed	<p><b>Restoring Species of Conservation Concern and Cultural Value</b></p> <p>The goal of this project is to create and enhance wetland and riparian habitat within the lower Alouette Watershed, to support healthy populations of salmonids and species of cultural value and 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 2019, the fourth year of this five-year project, effectiveness monitoring at habitat enhancement sites will be expanded to include water quality parameters, and address local and regional management priorities for species at risk: great blue heron, western toad, and the barn owl.</p>	<p><b>Habitat enhancement includes installation of owl, bat, and swallow boxes, and 85 new plantings</b></p> <p>Three barn owl nest boxes were installed along the Alouette River, two at Neaves Road and Hale Road restoration sites, and the third on private land. The Neaves Road owl box was declared occupied as of March 2020. Habitat enhancement efforts at Hale Road also included the planting of 25 cottonwood trees that will provide nesting habitat in the long term, 60 sweet gale shrubs that will provide nesting habitat for a variety of songbird species and protection small mammals and waterfowl, and willow whips that will provide nesting materials for bird species. All of the vegetation planted will provide shading of reed canary grass once mature. Twenty-five wood snags installed at Hale Road and five large wood snags at Neaves Road will provide roosting for great blue herons. Bat and swallow boxes were installed at Neaves and Hale restoration sites.</p>
COA-F20-W-3117, Sunshine Coast Wildlife Project, \$17,900, Clowhom River Watershed	<p><b>Conservation of Bats and their Habitat in Clowhom Watershed</b></p> <p>This project will help conserve bats and their habitat in the Clowhom River Watershed by protecting and repairing two bat maternity roosts, each housing more than 1,000 bats; identifying and protecting additional bat roosts; undertaking white-nose syndrome (WNS) surveillance; and installing and monitoring installed bat houses to determine ideal design, placement, and temperature to benefit bats. This project will help build healthy and resilient populations of little brown myotis, Yuma myotis, and migratory bats, prior to expected arrival of white-nose syndrome in B.C.</p>	<p>Project report not yet submitted</p>
COA-F20-W-3121, Comox Valley Land Trust, \$10,085, Puntledge River Watershed	<p><b>Puntledge Watershed Bat Project</b></p> <p>This project will record ultrasonic acoustic data of bats in the Puntledge River Watershed, to determine which bat species are present. The project will gather data about their life history attributes, identify maternal colonies and hibernacula; and develop strategies to protect high quality bat habitat areas in the watershed. Delivered in partnership with BC Community Bat Program, the Province of B.C., the US Fish and Wildlife Service, and the North American Bat Monitoring Program, this project will include permanent acoustic monitoring stations, driving transects, and site-specific field investigations with ultrasonic acoustic data-recording devices, as well as community outreach and education.</p>	<p><b>Puntledge River Bat Project: 8,782 bat calls recorded</b></p> <p>This research project will provide important information about bat species in the Puntledge River Watershed. A total of 8,782 reliable ultrasonic bat echolocation calls were recorded, and 10 bat species were identified in the watershed. Bats were detected in five of the five biogeoclimatic variants sampled, and bats were detected in all twelve of the habitat types sampled.</p>
COA-F20-W-3259-DCA, Nature Conservancy of Canada, \$175,000, Clayton Falls Watershed	<p><b>Bella Coola Estuary Tidal Flats Land Acquisition</b></p> <p>The Coastal Region board has approved an annual land acquisition, which is a set aside of funds, for the future purchase of lands for conservation purposes in our Coastal Region.</p>	<p><b>Clatyon Falls Watershed: 70 ha of land conserved near Bella Coola</b></p> <p>Acquiring priority habitat and ecosystems for long-term conservation is a priority. A total of 70 ha of high-value conservation land was secured in perpetuity through the Bella Coola Estuary Tidal Flats Land Acquisition project, including 27 ha of estuary habitat ranked as a high value by the Pacific Estuary Conservation Program (PECP), approximately 750 m of Bella Coola River riparian habitat, and approximately 29 ha of upland forest habitat.</p>