



Annual Report

FWCP Columbia Region 2018–2019

fwcp.ca



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 Co-Chairs

On behalf of the Fish & Wildlife Compensation Program's (FWCP) Columbia Board, we invite you to read our annual report for fiscal year 2019 (F19), covering the period April 1, 2018 to March 31, 2019. We're a partnership between 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.

FWCP projects are funded and delivered through our annual grant intake and application process, long-term agreements, contracts and partnerships. The Board may also choose to direct projects and approve funding to address Action Plan and other regional priorities.

F19 has been a busy year for us, with the team updating the Action Plans that were originally developed in 2012. We look forward to finalizing them in F20 and would like to thank everyone for their input to-date.

Our FWCP Columbia Board approved a total of 55 projects (19 fish and 36 wildlife) in F19 for a total FWCP investment of approximately \$6.1 million. Of these, 35 were approved through our annual grant application process, with the remainder either delivered through contracts/agreements or through our long-term agreement with the Ministry of Forests, Lands, Natural Resource Operations and Rural Development that delivers our ongoing, annual projects.

In addition to annual grants, 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 funding up to \$1,000, to support their conservation and enhancement work. In F19, we were able to support 11 initiatives including, but not limited to, Duck Bay restoration and education (Friends of Kootenay Lake), Waterfowl nesting box installation (Lake Windermere and District Rod and Gun Club), McGinty Lake Improvement and Outreach (Meadow Creek Community Association) and the 8th Annual Elk River Shoreline Cleanup (Elk River Alliance).

We would like to take this opportunity to offer our grateful appreciation to Rick Morley and Adam Neil who both stepped down from our Columbia Board this year, after many years of dedication and commitment toward helping fish and wildlife through the FWCP.

First Nations continue to play an important part in our decision-making process. The Ktunaxa and Secwepemc Nations, and the Okanagan Nation Alliance, each have representatives on our Board, and we'd like to thank them for their active participation in the FWCP.

And finally, we wish to thank all the dedicated applicants, proponents, contractors, as well as FWCP project partners, who work hard each year to successfully implement projects to help us achieve our vision of thriving fish and wildlife populations, in healthy and sustainable ecosystems.

Sincerely,



Trevor Oussoren
FWCP Columbia Region Board Co-Chair



John Krebs
FWCP Columbia Region Board Co-Chair

1. Organizational Overview

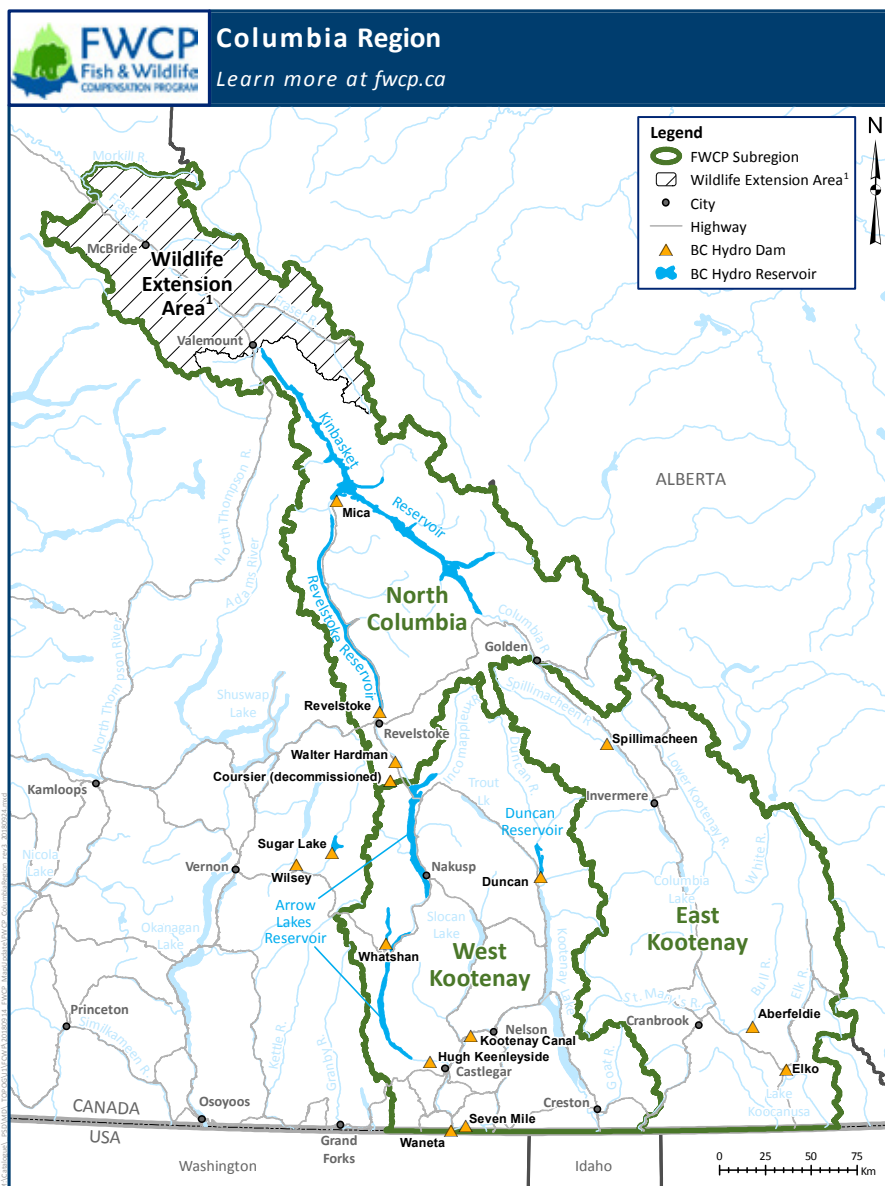
INTRODUCTION

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

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

The FWCP's Columbia Region was established in 1995 to compensate for fish and wildlife populations affected by the construction of BC Hydro dams in Canada's portion of the Columbia Basin (Figure 1.1). This program merged already-existing compensation programs for Arrow, Duncan, Mica, Seven-Mile, and Revelstoke facilities, which have water licence conditions related to fish and wildlife compensation.

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



¹ Wildlife Extension Area: The Upper Fraser area was added to the Program based on limited opportunities for wildlife compensation projects in the Canoe Reach.

Figure 1.1: Map of the FWCP Columbia Region.

GOVERNANCE

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

Our work in the Columbia Region is guided by a Board of 10 members representing First Nations, Public Stakeholders, the Province of B.C., and BC Hydro. In June 2018, we welcomed Moss Giasson as the new Public Representative, replacing Dave White who stepped down at the end of March 2018. Leaving our Board this year was public representative Rick Morley, and Adam Neil from the Secwepemc Nation.

The F19 Board Members were:

First Nation Representatives:

Adam Neil, Secwepemc Nation

Howie Wright, Okanagan Nation Alliance

Misun Kang, Ktunaxa Nation

Public Representatives:

Moss Giasson

Rick Morley

Rob Neil

Agency Representatives:

David Tesch, Ministry of Environment and Climate Change Strategy

John Krebs, Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNR) (Board Co-Chair)

Kim Cox, BC Hydro

Trevor Oussoren, BC Hydro (Board Co-Chair)

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

The F19 Policy Committee Members were:

Cheryl Webb, Regional Director Pacific Region, Fisheries and Oceans Canada

Jennifer McGuire, Assistant Deputy Minister, B.C. Ministry of Environment & Climate Change Strategy

Karen Popoff, Director, Environment, BC Hydro

The Board is supported by two Technical Committees, one for wildlife projects, and one for fish projects. The primary roles of the Technical Committees are: to provide a technical advisory role, including fair and objective technical review, evaluation and ranking of fish and wildlife project proposals; support the development of strategic plans; assist in the development and oversight of directed projects; and to provide advice on the effective implementation of Action Plans. The F19 Fish and Wildlife Technical Committee Members were:

Fish Technical Committee Members:

James Crossman, BC Hydro

Jeff Burrows, FLNR

Karen Bray, BC Hydro (Chair)

Michael Zimmer, Okanagan Nation Alliance

Tyler Weir, FLNR

Will Warnock, Ktunaxa Nation

Wildlife Technical Committee Members:

Cathy Conroy, Ktunaxa Nation

David DeRosa, Okanagan Nation Alliance

Lindsay Anderson, FLNR (Chair)

Patrick Stent, FLNR

Tom Appleby, BC Hydro

In each region, program management and operations are implemented by a full-time Region Manager, Crystal Klym, who administers all aspects of program delivery. For all three FWCP regions, the Program Administrator was Lorraine Ens and the overall Program Manager was Trevor Oussoren. Through a Letter of Agreement, FLNR supported the implementation of a number of annual and ongoing fish and wildlife projects under the direction of Eva Schindler, Team Leader.



Our 10-member Columbia Region Board consists of three First Nations, three Public Representatives, and two representatives each from BC Hydro and the Province of B.C. (L-R) David Tesch, Moss Giasson, Howie Wright, Misun Kang, John Krebs, Rob Neil, Trevor Oussoren, Rick Morley, and Kim Cox. Missing: Adam Neil.

2.0 FWCP’s Strategic Framework

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

VISION

Thriving fish and wildlife populations in watersheds that are functioning and sustainable.

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

MISSION

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

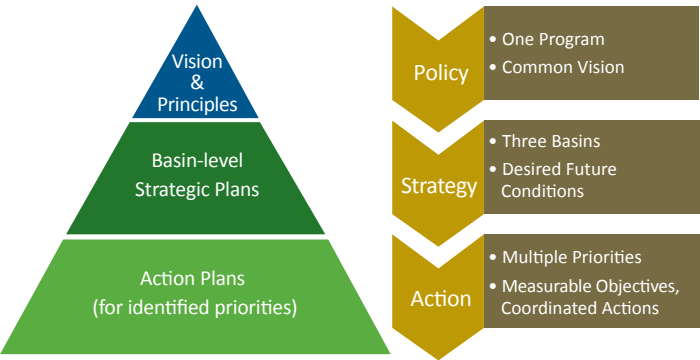


Figure 2.1
Relationship between FWCP’s Strategic Framework, Basin-level Strategic Plans and Action Plans.



Plans are underway to improve fish passage at Joseph that will help Bull Trout and other fish species. UKE-F19-F-2746. Photo: B. Meunier

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. The Columbia Basin Plan sets forth the strategic direction for the FWCP in the Columbia Region. It includes the vision, principles, policy context and strategic objectives that form the foundation of the FWCP, as well as a short description of the Columbia Basin landscape and an overview of the hydro-electric facilities and footprint impacts created by those facilities. Action Plans identify priority actions for the restoration, conservation and enhancement of fish and wildlife and their habitats in the Columbia Region.

Taken together, the Basin Plan and accompanying Action Plans present the FWCP priorities for investments in compensation activities within the Columbia Basin. All fish and wildlife projects approved by the Board, regardless of delivery method, must align with the Basin and Action Plan strategic objectives and priority actions.

Action Plans:

- | | |
|-------------------------------|----------------------------|
| • Large Lakes Action Plan; | • Streams Action Plan; |
| • Small Lakes Action Plan; | • Species of Interest |
| • Riparian and Wetland | Action Plan; and |
| Action Plan; | • Upper Kootenay Ecosystem |
| • Upland/Dryland Action Plan; | Enhancement Plan (UKEEP) |

Action Plans were originally developed in June 2012 with the exception of UKEEP, which was finalized in August 2014, and revised in June 2016. The Riparian and Wetlands Action Plan was revised in September 2014, based on input received from stakeholders, and replaced the earlier (June 2012) version. A minor update was made to Table 1 of the Upland/Dryland Action Plan in June 2016. These plans, together with the Five Year Core Fisheries Program Plan 2018-2023, are considered living documents that are reviewed and refined on an ongoing basis, as determined by the regional Board. The process of updating the Action Plans started in F19 and will be completed in summer of F20. The Columbia Basin and Actions Plans are available at fwcp.ca/region/columbia-region.

4.0 Report on performance

4.1 PROVINCIAL ROUND-UP OF F19 FUNDING

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

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

4.2 2018–19 COLUMBIA PROJECT SUMMARY

The FWCP 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 streamline the application review process.

All grant applications 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 Columbia Region Action Plans;
- Fish or Wildlife Technical Committee to determine technical merit; and
- FWCP Columbia Board¹.

In total, 63 grant applications were received through the F19 grant intake process with a request of nearly \$3 million. Of these submissions, 35 grants were approved for a total FWCP investment of \$1.39 million and a total project value of more than \$2.68 million. First Nations, stewardship groups, consultants, and agencies led the 11 fish and 24 wildlife projects that will help conserve and enhance fish and wildlife in watersheds impacted by BC Hydro dams. Of these approved grants, 13 (four fish and nine wildlife) were funded through the Upper Kootenay Ecosystem Enhancement Plan (UKEEP), which is delivered in partnership with the Columbia Basin Trust. Five (two fish and three wildlife) directed projects were also approved for funding through UKEEP for a total investment of \$181,023.

Our FWCP Columbia Board also approved 13 annual and ongoing projects for F19, for a total investment of \$4.29 million. Eight were wildlife projects (\$2.15 million) and five were fish (\$2.14 million).

A summary of F19 Board-approved fish and wildlife projects, including FWCP funding amounts, is provided in Table 4.2.

Thirteen Community Engagement Grant applications were received in 2018–2019, with 11 approved, allocating \$7,400 of the \$7,500 available. Projects ranged from supporting education and training (e.g. bear safety course, national environmental education conference, bat ambassador training), to on-the-ground restoration work (Elk River clean-up, Rossland Forest Park enhancement, and Duck Bay wetland restoration).

4.3 FINANCIAL REPORT

The FWCP is funded annually by BC Hydro. These funds — indexed to the Consumer Price Index (CPI) — are directed by the FWCP towards its priority actions to help meet its vision of thriving fish and wildlife populations in watersheds that are functioning and sustainable. BC Hydro provided \$4.905 million in F19 to the FWCP Columbia Region². Unspent surplus dollars (uncommitted dollars) at the end of F18 totaled \$1.781 million, which resulted in a total budget of up to \$6.686 million available to be utilized in the Columbia Region in F19.

Each year, annual funding is allocated by our Columbia Region Board toward fish and wildlife projects and other program costs. In F19, these other costs included administrative costs (e.g. salaries, travel and expenses, office expenses, and committee costs) and communications costs (e.g. communications support and advertising). Any unallocated funds are carried forward ("unspent surplus dollars") and available for future spending.

¹ There is a Subcommittee of the FWCP Columbia Board that reviews and approves the UKEEP projects, which also includes a representative from the Columbia Basin Trust (the Trust).

² The FWCP administers UKEEP projects through a funding partnership with the Columbia Basin Trust (the Trust), which has provided \$3 million since F14. Please see Section 4.3 for the F19 UKEEP financial report.

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. “F18 remaining commitment to spend in F19”) 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 to ensure payment in full. All committed funds are associated with the fiscal year in which the spending was approved, and tracked separately.

As of April 1, 2018, the FWCP Columbia Board approved F19 budget totaled \$5.88 million. In addition, there were prior year funding commitments of \$1.116 million from F18, \$137 thousand from F17, and approximately \$9 thousand from F16 and F15, leaving an uncommitted surplus of \$1.138 million, as shown in Figure 4.1.

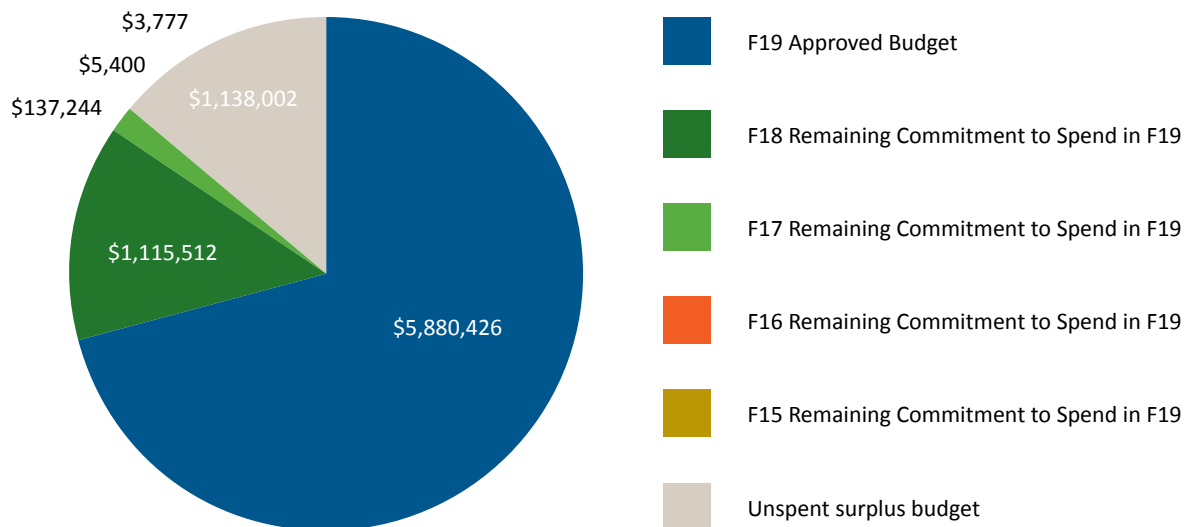


Figure 4.1: Financial Summary of FWCP Columbia Region, as of April 1, 2018.

The F19 budget of \$5.88 million went primarily towards projects related to fish and wildlife conservation, restoration and enhancement projects. Figure 4.2 illustrates the approved F19 Columbia Region budget at the start of the fiscal year. A complete F19 Columbia Region project list starts on page 12.

Administrative and communications costs made up approximately 8% and 2.5% of the total budget, respectively.

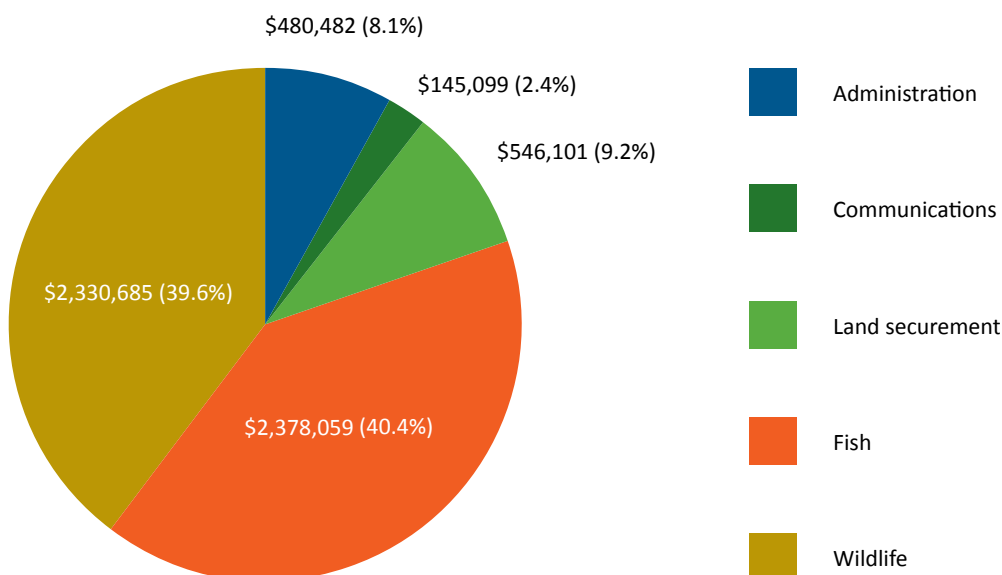


Figure 4.2: Breakdown of approved Columbia Region budget at April 1, 2018.

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

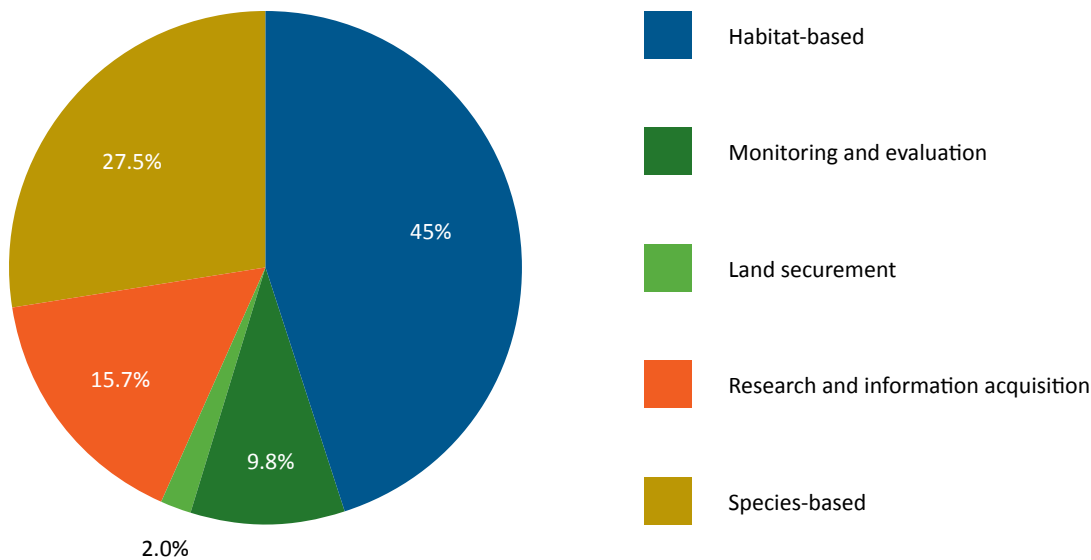


Figure 4.3: Breakdown of approved F19 Columbia Region budget by project type.

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

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

As shown in Table 4.1 below, the F19 Columbia Board-approved budget included approximately \$2.331 million for wildlife-related projects, \$2.378 million for fish-related projects, \$546,000 for land securement projects, and \$625,581 for administration and communication support. Actual and planned expenditures related to these project envelopes are also shown.

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

Fund category	F19 approved budget	Paid up to March 31, 2019	Planned payments ¹	Unspent funds ²
Wildlife	\$2,330,685	\$1,032,787	\$903,647	\$394,251
Fish	\$2,378,059	\$1,960,701	\$340,163	\$77,195
Land Securement	\$546,101	\$430,081	\$116,020	\$-
Communications	\$145,099	\$105,494	\$43,093	\$(3,488)
Administration	\$480,482	\$323,647	\$149,634	\$7,201
TOTAL	\$5,880,426	\$3,852,710	\$1,552,557	\$475,159

Note¹: Planned payments represents expected invoices for approved, ongoing projects that have not yet submitted final reports by March 31st.

Note²: Unspent funds are carried forward and available for the next fiscal year.

Totals do not include the F19 approved UKEEP budget. Please see Section 4.4 for details.

At the end of F19 (March 31, 2019), \$3.852 million of the F19 budget had been spent, while \$1.553 million remained as an F19 commitment to spend in F20. In addition, the status of prior year funding commitments anticipated to be spent in F20 was \$25,880 from F18, and \$13,200 from F17, resulting in an expected unspent surplus of \$1.781 million, which will be allocated to future fish and wildlife projects.

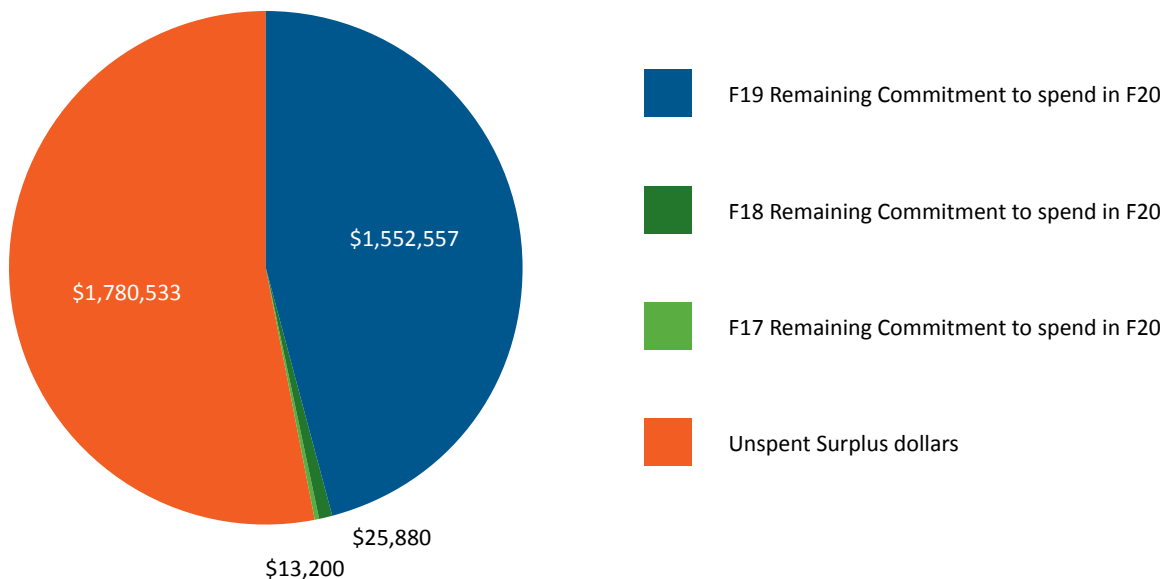


Figure 4.4: FWCP Columbia Region financial summary at March 31, 2019 (end of year).

4.4 SUMMARY: UPPER KOOTENAY ECOSYSTEM ENHANCEMENT PLAN (UKEEP)

The FWCP administers UKEEP projects through a funding partnership with Columbia Basin Trust (the Trust), which has provided \$3 million since F14. It was developed with technical and community input, and helps conserve and enhance fish, wildlife and ecosystems in the Upper Kootenay River Watershed, including the Koocanusa Reservoir. UKEEP was jointly announced by the Trust and FWCP in 2013. F19 was the final year of the FWCP's five-year partnership agreement with the Trust to fund fish and wildlife projects under UKEEP. During F20, the FWCP and the Trust will draft a "roll-up" report that will include results and outcomes over the five-year time-frame of UKEEP, to be shared with the public.

In F19, 13 applications (four fish and nine wildlife) were approved by the UKEEP Subcommittee for a total UKEEP contribution of \$644,000 and a total project value of \$1.106 million. Projects supported through the grant application process ranged from restoring habitats impacted by recreation use, to monitoring endangered Northern Leopard Frogs, and developing a Burbot conservation strategy.

In addition, three directed projects (one fish and two wildlife) were approved for a total UKEEP contribution of just under \$103,000. These directed projects included monitoring Kokanee populations in Koocanusa Reservoir, studying elk migration, and using trail cameras to monitor wildlife. The full list of UKEEP projects is shown in Table 4.4.

4.5 F19 PROJECTS

Table 4.2: 2018–2019 Projects

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

Project ID	2018 - 2019 Grant-Based Wildlife Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
COL-F19-W-2677	Filling information gaps about marsh birds in the Columbia Wetlands <i>Columbia Wetlands marsh bird monitoring project (CWMBMP).</i> Inconspicuous marsh birds are difficult to detect; population status and habitat use for these birds are not well-known. The Columbia Wetlands marsh bird monitoring project (CWMBMP) addresses information deficiencies by collecting baseline data for 42 FWCP Inventory Species and four FWCP Focal Species. This project conducts repeated marsh bird surveys at 62 survey stations in the Columbia Wetlands (within the Canadian Intermountain Joint Venture region) over three years, to estimate bird population numbers, and identify significant habitat units used for breeding. Data from the CWMBMP is needed before making management recommendations and prior to implementing compensation actions. In 2018, this project will include a landowner outreach component, focused on educating those who have the greatest ability to affect wetland and waterfowl values on the landscape.	Goldeneye Ecological Services	\$12,529	Habitat-Based Actions	Riparian and Wetlands Action Plan	North Columbia	Increase in detections of Sora, American Bittern, and American Coot, fewer Pied-Billed Grebe and Virginia Rail During the 2018 CWMBMP, all five focal bird species were detected. In terms of focal birds, Sora had the highest number of observations (178), compared with American Coot at 138, Pied-billed Grebe with 122, Virginia Rail with 37, and 10 for the American Bittern. When compared to the 2017 data, there was an increase in detections of Sora, American Bittern, and American Coot in 2018. However, fewer Pied-Billed Grebe and Virginia Rail were detected in 2018, when compared to 2017. There were 174 point counts conducted at 61 survey stations in 2017, whereas 191 point counts were conducted at 65 survey stations in 2018. All primary species were detected in 2018, with the exception of the Horned Grebe. Red-winged Blackbird was the primary species detected most frequently. Thirty-nine of the 68 secondary species were detected in 2018, although not all secondary species areas were expected to occur in the study area. Of all bird species encountered during surveys, the Song Sparrow was detected at the highest number of survey stations (58 of 65 stations surveyed), followed by the American Robin, which was detected at 56 of 65 stations. Six bird species considered to be at-risk were detected: Double-crested Cormorant, Bank Swallow, Barn Swallow, Eared Grebe, Common Nighthawk, and American Bittern.
COL-F19-W-2688	Protecting West Kootenay conservation sites from invasive species <i>West Kootenay conservation sites: invasion to restoration.</i> The goal of this project is to improve and protect important conservation sites within the West Kootenay region. Specifically, this goal will be achieved by engaging in early detection and rapid response plans; mapping changes in composition and distribution of existing and new aquatic/ riparian invasive plant infestations; undertaking management activities (mechanical) where feasible; and conducting assessments for site-specific restoration suitability. To further support the primary goal of this project, education campaigns (focused on invasive plant awareness) will be provided to a broad spectrum of audiences, and a terrestrial restoration component will improve Summit Lake Provincial Park biodiversity and recreation, as well as present another platform for hands-on invasive species education.	Central Kootenay Invasive Species Society	\$26,975	Monitoring & Evaluation	Small Lakes Action Plan	West Kootenay	Invasive plant surveys completed and outreach delivered Full littoral surveys were conducted on Box Lake, Summit Lake, and Little Slokan Lakes. High-risk sub-sites were surveyed on Upper Arrow Lake, Slokan Lake, and Whatshan Lake. Visual littoral and riparian surveys were conducted at Erie Lake and Nancy Greene Lake, Champion Ponds, and Brilliant Head Pond. In addition to regionally and provincially-guided invasive plant priorities, this project focused on monitoring and subsequent removal, when possible, of <i>I. pseudacorus</i>, <i>N. odorata</i>, and <i>L. salicaria</i>. No riparian or aquatic invasive plants were found at Whatshan Lake, Summit Lake, Upper Arrow Lake, Slokan Lake, Little Slokan Lake, or on Upper Slokan River. Ongoing restoration activities occurred at Summit Lake Provincial Park in 2018. Community engagement was high at two maintenance and planting events held at the site. The Central Kootenay Invasive Species Society (CKISS) education outreach program promoted invasive species awareness initiatives via media interviews (26), outreach booths at community events (21), by dispersing related resources (5,491), and through social media.

Project ID	2018 - 2019 Grant-Based Wildlife Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
COL-F19-W-2692	Protecting East Kootenay conservation sites from invasive species <i>Invasive plant management and restoration of protected areas.</i> This program aims to retain functional and sustainable ecosystems in protected areas of the Upper Columbia Valley by mitigating the impacts of invasive species. Benefits include reducing pressure from neighbouring invasive species populations, wildlife habitat conservation, long-term cost-savings through collaborative invasive species management action, and restoration of degraded areas with native plant species.	East Kootenay Invasive Species Council	\$15,000	Habitat-Based Actions	Upland and Dryland Action Plan	East Kootenay	Collaboration results in reduction in invasive plants In 2018, invasive plant inventories and treatments were completed at partnering conservation properties: Nature Conservancy of Canada, the Nature Trust of BC, the Ministry of Forests, Lands, & Natural Resource Operations, BC Parks and other high-value adjacent lands. Treatments included the use of herbicides, manual site treatments, as well as biocontrol agents. Additional invasive plant inventories and monitoring activities took place throughout the field season to ensure efficacy of management practices. This successful collaboration has resulted in an efficient partnership to decrease the existing invasive plant populations, with further benefits, including reduction of propagule pressure from neighbouring invasive species populations, wildlife habitat conservation, and long-term cost-savings through collaborative invasive species management action.
COL-F19-W-2696	Restoring riparian and wetland habitat at Indian Creek <i>Indian Creek riparian restoration: phase three.</i> This project's long-term goal is to restore functional riparian and wetland habitat along Indian Creek. The project is located within traditional hunting, fishing, and gathering areas utilized by the Lower Kootenay Band, which have been heavily impacted by agriculture, grazing, and flood-control activities. Phase three will build on the work completed during phases one and two, and includes planting an area of 0.48 hectares with over 2000 riparian tree and shrub cuttings. Ongoing monitoring of phase one plantings, and new observations of phase three plantings will be conducted, in order to direct future maintenance and treatments, as part of an ongoing adaptive management program.	Masse Environmental Consultants Ltd.	\$15,619	Habitat-Based Actions	Riparian and Wetlands Action Plan	West Kootenay	865 trees and shrubs planted on two islands In October 2018, Phase 3 of the project was implemented, which included planting 865 trees and shrubs within Habitat Islands 4 and 5, throughout an area of 1800 m2 along Indian Creek. Two solarization treatment plots were installed to treat Reed Canary Grass and improve the competitive advantage of the plantings. Browse deterrent spray was applied to all plants to prevent ungulate damage. Permanent monitoring plots in Habitat Islands 1-3 were revisited and monitored to ensure that restoration is successful and to provide information for ongoing adaptive management of the site. Repeat estimates of height, area, vigour, and browse was collected for each plant in each plot. Three additional plots were added to increase the number of observations. Though browse pressure remained generally low within Habitat Islands 1-3, overall survival of plantings has declined to 55%. Several factors may be influencing this result, including prolonged inundation during spring high water in 2018, drought during 2017 and 2018, and increased competition from grasses. The project is successful with continued participation by LKB community members. A total of 1.14 ha has been planted with native species during all phases of the project to-date.

Project ID	2018 - 2019 Grant-Based Wildlife Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
COL-F19-W-2704	Protecting endangered Northern Leopard Frogs from invasive bullfrogs <i>Northern Leopard Frog preservation: American Bullfrog control.</i> This project aims to conduct a comprehensive and targeted surveillance and eradication program on American Bullfrogs. The intent of this project is to protect the productivity of the wetland ecosystem and habitats on which the Northern Leopard Frog (NLF) is directly dependent, from the specific threat that is being generated by the arrival of the highly invasive American Bullfrog. Eradicating bullfrogs will enhance potential pond habitat for Northern Leopard Frogs, as bullfrogs are an obligate aquatic species known to occupy a wide range of habitats including lakes, ponds, swamps, bogs, backwaters, reservoirs, marshes, streams, irrigation ponds, and ditches. In addition, bullfrog tadpoles are considered to be “ecosystem engineers”, altering the biomass, structure, and composition of algal communities.	Central Kootenay Invasive Species Society	\$27,302	Habitat-Based Actions	Riparian and Wetlands Action Plan	West Kootenay	Nearly 500 Bullfrogs detected in the Creston Valley In the Creston Valley, extensive surveillance activities were conducted to detect bullfrog presence. Positive detection of an estimated 477 bullfrogs, of all age and sex classes, occurred as a result of visual surveillance, and 454 bullfrogs were captured and subsequently euthanized. The detection of tadpoles and metamorphs in 2018 confirmed for the first time that breeding has occurred in this area. Bullfrog presence was not detected by means of passive acoustic recording devices; however, bullfrog calls were audibly detected by field staff in an area where bullfrog presence was not previously known to occur. The Central Kootenay Invasive Species Society (CKISS) delivered a comprehensive education and outreach program through various in-person activities, such as community events, presentations, and field trips, as well as through mass and social media. Monitoring and control work conducted in 2018 revealed the bullfrog infestation to be much wider spread than initially anticipated, and CKISS recommends that a coordinator be hired who is dedicated solely to the management of the bullfrog control program.
COL-F19-W-2707	Restoring wetland habitat in our Columbia Region <i>Advancing wetland stewardship and restoration in the Kootenays.</i> The BC Wildlife Federation will work with partners to restore 6.43 hectares of wetland habitat at various sites. Additional works will develop a wetland restoration design for King George VI Provincial Park (Rossland); deliver a Map-our-Marshes Workshop (Salmo) to build capacity among ATV-users to become environmental ambassadors; provide hands-on training to workshop participants at a restoration workshop; and training for Lower Kootenay Band (Yaqan Nukiy) resource technicians to implement additional wetland projects in their traditional territory.	BCWF	\$209,220	Habitat-Based Actions	Riparian and Wetlands Action Plan	Basin-Wide	This project is currently in progress.
COL-F19-W-2710	Monitoring riparian and wetland restoration in the West Kootenay <i>Assessing and enhancing wetland species.</i> This project’s goals are to: 1) track restoration recovery of FWCP-funded sites using quantitative measures of wetland stress and biological health; and 2) strengthen restoration work at FWCP-funded sites through enhancement. The Wetland Invertebrate Assessment Tool (W-F16-10) will be used to monitor restoration recovery in a multi-year context at Crooked Horn Farm (COL-F17W-1438) and Meadow Creek (The Nature Trust lands). An expanded goal in 2018 is to enhance restoration and conservation lands in Meadow Creek, Bonanza-Box Lake corridor and the Slocan Valley by increasing knowledge, engagement, testing new enhancement design and promoting stewardship.	Slocan Solutions Society	\$29,876	Monitoring & Evaluation	Riparian and Wetlands Action Plan	West Kootenay	This project is currently in progress.

Project ID	2018 - 2019 Grant-Based Wildlife Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
COL-F19-W-2739	Restoring ungulate habitat in the East Kootenay <i>Akisqnuq slashing, piling and burning 2018-2019.</i> This project will undertake fire-maintained ecosystem restoration on the Akisqnuq First Nation Reserve, as part of the efforts to compensate for habitat losses. Activities may include the development of Ecosystem Restoration Plans, site-specific prescriptions, burn plans, pre-burn slashing, slash pile burning, prescribed burning and mastication.	Akisqnuq First Nation	\$50,000	Habitat-Based Actions	Upland and Dryland Action Plan	East Kootenay	130 ha of restoration carried out to-date The FWCP and the Akisqnuq First Nation developed a partnership to undertake fire-maintained ecosystem restoration on the Akisqnuq First Nation Reserve, as part of the efforts to compensate for habitat losses. This is the 7th year of funding towards on-the-ground treatments. To-date, approximately 130 ha of restoration has been successfully carried out. Project objectives are to: a) re-establish historic stand structure and ecological processes to enhance the health and vigour of the ecosystem; b) ensure that wildlife habitat, especially critical ungulate winter range, is maintained in a healthy condition; ensure critical habitat for known Red- and Blue-listed species, which were historically present, are maintained/restored; c) reduce the risk of catastrophic wildfires and associated danger to human values (that is, to ensure any wildfire is within the range of historic variability); and d) promote the production of tall, large diameter conifers for both stand structure and wildlife habitat, current and future. In 2018, burning was completed on 10 ha of previously thinned forest of units OR2B1(b), along with 8.4 ha of slashing, piling, and pruning of unit OR2B1(c), all in accordance with the Wildlife Habitat Restoration Plan.
COL-F19-W-2763	Supporting caribou by monitoring deer in North Columbia <i>Monitoring White-tailed Deer in the Columbia Mountains.</i> The vast majority of caribou herds in western Canada are declining. Intense human intervention has been successful in stabilizing three herds, yet only one has shown growth. Understanding and monitoring additional limiting factors that may be preventing population growth is critical for effective adaptive management and recovery. This project will evaluate factors influencing White-tailed Deer populations in the Columbia Mountains, to support management decisions in a high-stakes socio-economic landscape while simultaneously collecting baseline data in which to evaluate the efficacy of White-tailed Deer reductions, via increased hunter harvest.	Robert Serrouya	\$40,160	Research & Information Acquisition	Species of Interest Action Plan	North Columbia	11 deer collared in the North Columbia In winter 2018-2019, deer were captured between Mica Dam and Revelstoke, in the Columbia North and Frisby-Boulder caribou ranges. Four White-tailed Deer does and three Mule Deer does were outfitted with GPS collars to monitor survival and cause-specific mortality. One White-tailed Deer fawn and three Mule Deer fawns were outfitted with VHF collars. One female White-tailed Deer mortality was investigated, with the cause of death determined as coyote predation. In future years, deer survival will be monitored and the sample size increased to 20-30 adult does. Cause-specific mortality and survival rates will be calculated, recruitment rates estimated and the doe:fawn ratio measured. The goal is to directly measure the survival and recruitment of White-tailed Deer populations, and incidentally Mule Deer populations, within the mountain caribou range. Additionally, this project will inform the missing knowledge of how White-tailed Deer populations contribute to increased abundance of wolves and cougars. Baseline data will be collected, in order to evaluate the efficacy of proposed White-tailed Deer reductions via increased hunter harvest.

Project ID	2018 - 2019 Grant-Based Wildlife Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
COL-F19-W-2780	Conserving at-risk reptiles near Trail <i>Lower Columbia reptile at risk conservation project.</i> This is the final year of a project which targets a snake species at risk, the North American Racer, in the Lower Columbia. This project is documenting summer and winter habitat use, in order to conserve racers and other reptiles at risk in the area. The past two seasons, this project has partnered with the Kootenay Conservation Program, BC Parks, FLNRO and Teck to create an outdoor education event to be held at Beaver Creek Provincial Park. This successful event highlighted the importance of the local ecosystem and unique species that live there. This season, this project would like to hold this event again and also host a one-day educational symposium for local land managers. Similarly, this symposium will highlight the importance of the local ecosystem and unique species that live there.	Jakob Dulisse Consulting	\$17,400	Research & Information Acquisition	Upland and Dryland Action Plan	West Kootenay	This project is currently in progress.
COL-F19-W-2787	Improving wetland habitat in Slocan Valley <i>Goulden-Thurston wetland restoration project.</i> This is a wetland restoration project that aims to enhance wetland and riparian biodiversity, and further create wildlife habitat for a diversity of native species. This project will be excavating wetlands, which will be planted with native species and enhanced with logs and other natural features, which will be put in the wetland to create habitat for amphibians and invertebrates. Further enhancements will include bird and bat houses that will be placed around the wetlands to provide nesting sites for song birds, migratory birds and bats. The project is also creating a nesting area for Painted Turtles. Monitoring and public outreach are also part of the project. The project completed a similar successful wetland restoration project nearby, at Crooked Horn Farm in Winlaw (COL-F17-W-1438), in June 2017.	Slocan River Streamkeepers	\$18,435	Habitat-Based Actions	Riparian and Wetlands Action Plan	West Kootenay	This project is currently in progress.

Project ID	2018 - 2019 Grant-Based Wildlife Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
COL-F19-W-2791	Collecting baseline bat data before Whitenose Syndrome arrives in B.C. <i>Establishing and monitoring bat abundance and diversity.</i> Bats play important roles in the ecosystem and economy. Bats reduce the need for pesticides and are important for human health. The ecological fall-out from mass bat die-offs due to white-nose syndrome (WNS) is not yet known, but changes in insect communities could have far-reaching implications. Identified as high priority in the FWCP-sponsored BC Bat Action Plan, this project will employ the standardized North American bat monitoring protocol to establish baseline diversity and relative abundance of bats, and monitor trends. Also high priority, the project will continue to locate and monitor bat hibernacula, because WNS kills bats while they hibernate. This project uses acoustics and mark-recapture techniques, and engages citizens through collaborations with local stewardship groups, and cavers (BatCaver.org).	Wildlife Conservation Society Canada	\$54,186	Research & Information Acquisition	Species of Interest Action Plan	Basin-Wide	This project is currently in progress.
COL-F19-W-2797	Restoring wetland on East Kootenay conservation property <i>Silvertip Ranch wetland restoration project.</i> At 341 acres, The Nature Trust of British Columbia's (TNTBC) Silvertip Ranch is a conservation property located within the Bull River drainage that provides a key wildlife linkage and possesses significant ecological values. The ranch's 2011 acquisition was linked to a life estate agreement, in which the Logan family continues to live and ranch on the property. The project seeks to restore a naturally appearing and functioning wet meadow and ephemeral wetland along the historic location of Douglas Creek, which is currently used as a hayfield. The project will restore a natural sub-irrigation regime, including the construction of up to 14 ephemeral wetlands alongside the floodplain of the restored Douglas Creek. A wide diversity of plants and animals will be enhanced by the proposed works.	The Nature Trust of British Columbia	\$32,175	Habitat-Based Actions	Riparian and Wetlands Action Plan	East Kootenay	564 m of Douglas Creek, and 14 ephemeral wetland basins, restored After almost two years of planning, the restoration project took place in October and November 2018. It aimed to restore a naturally appearing and functioning creek channel, floodplain, wet meadow and ephemeral wetland complex along a length of Douglas Creek. Soil overburden and disturbance on upland areas associated with the project was placed in a "rough and loose" manner, in an effort to support Columbia Ground Squirrel colonies, a key prey species for badgers. By using heavy equipment, 564 m of Douglas Creek was restored with a creek channel and floodplain that averaged 10 m across, having gradual slopes that should produce over 5,000 m ² of wet meadow habitat. In addition, 14 ephemeral wetland basins of varying sizes and depths connected to the floodplain were restored, totaling over 2,500 m ² . The project also included the removal and rehabilitation of a 24-metre metal flume and the disabling and rehabilitation of over 700 m of narrow ditches. Over 2,000 m ² of upland soils disturbed from the project were manipulated to loosen soils to encourage Columbia Ground Squirrel and American Badger use. A nearby borrow pit of 61 m ² was restored, and culverts were cleaned. Invasive plant management and seeding and mulching disturbed areas were critical components that followed the earthworks.

Project ID	2018 - 2019 Grant-Based Wildlife Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
COL-F19-W-2804	Connecting transboundary wolverine habitat <i>Conserving wolverine connectivity in the Columbia Basin.</i> Wolverines are a species of management focus for the B.C. government in the Kootenay-Boundary region. The southern extent of North American wolverine range, including the Columbia Basin, is the most critical landscape given current and expanding landscape stressors. This project will capitalize on six years of non-invasive genetic sampling of wolverines across ~78,000 km² from the central Columbia Basin to the US-Canadian border, and genotyping of 170 individuals. Genetic datasets from the Columbia and Rocky Mountains will be merged and standardized, in order to identify critical linkages given future ex-urban and traffic demand projections. This project's work is timely, given the pressing need to use best science practices to manage habitats and mitigate fragmentation effects at the southern extent of wolverine range.	Montana State University	\$33,905	Research & Information Acquisition	Species of Interest Action Plan	Basin-Wide	This project is currently in progress.
COL-F19-W-2805	Protecting grizzlies by learning more about huckleberries <i>Predicting Grizzly Bear foods, huckleberries in the Columbia Basin.</i> This project will expand on a previous project that accurately predicted Grizzly Bears most important regional food resource (huckleberries) across most of the Columbia Basin. During 2013-2016, an accurate predictive model was developed for huckleberry patches important to Grizzly Bears in the south Selkirk and Purcell Mountains. This project will expand that model into the East Kootenay and North Columbia, the Central Purcell and Selkirks, and the Valhalla and Granby regions. This project's huckleberry patch model is already being used by resource managers to plan timber harvest and protect important berry patches through access controls. There is a strong demand for this model to be expanded regionally for these same purposes.	Birchdale Ecological	\$33,560	Research & Information Acquisition	Species of Interest Action Plan	Basin-Wide	332 potential huckleberry sites visited to support Grizzly Bear habitat modelling In 2019, 332 potential huckleberry patch sites were visited across the northern portion of Kootenay Region 4, between the Alberta border and the Okanagan, of which 188 were huckleberry patches, while 144 were not. Results were combined with the previous three years of effort (2014, 2015, and 2017) for a combined total of 1,179 sites visited, with 768 being huckleberry patches Grizzly Bear used, and 411 were not. This dataset was used to remodel huckleberry patches across the entire Kootenay region. We selected the best model for its overall predictability across these evaluation efforts, including multivariate models describing and explaining female Grizzly Bear summer habitat use, DNA survey results, and measures of reproductive success (fitness) using DNA pedigree data. The model went through a rigorous evaluation process to ensure it is ecologically relevant to Grizzly Bears, in context of the other forces influencing Grizzly Bear populations. The regional model equaled or outperformed previous models from previous years, despite it having modeled the entire Kootenay Region in one model. Overall, huckleberry plants are most likely to occur in areas of high snowloads, moderate to high annual precipitation, moderate to high canopy cover, cooler maximum, and elevations between 1200-2000 m. In the best "huckleberry patches-important-for-Grizzly-Bears" model, canopy cover was the most influential variable.

Wildlife Projects Total: \$616,342

Project ID	2018 - 2019 Annual and Ongoing Wildlife Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
	Enhancing habitat for species in the West Kootenay <i>F19 West Kootenay enhancement.</i> This project focuses on the oversight, coordination, and implementation of restoration activities in the West Kootenay, including prescription development; slashing, piling, and burning; masticating; burn-planning and burning; and post-burn monitoring and reporting.	Ministry of Forests, Lands, Natural Resource Operations and Rural Development	\$209,263	Habitat-Based Actions	Upland and Dryland Action Plan	West Kootenay	Seven sites identified for future ecosystem restoration Seven sites have been identified for future ecosystem restoration projects along the Lower Arrow reservoir area (Gladstone Creek North and South, Hutchison Creek, Johnstone Creek, Sangria Creek, Van Houten Creek and Octopus Creek). Sites were mapped and overview flights completed. Meetings with forest licencees were held. Prescribed burning was completed on 15 ha of habitat at Twobit on April 26, 2018. Prescribed burning was not completed on other sites in F19, due to lack of a suitable burning window. Ecosystem restoration post-treatment monitoring was completed at Grey Wolf South (Year 2 post-burn); Sunshine Creek (Year 1 post-burn); Syringa Park Marina (Year 1 post-slashing). Invasive plant treatments were completed in three ecosystem restoration units (Tulip South, Tulip North, and Graywolf South). Twelve km of road adjacent to ecosystem restoration units was also treated for invasives. Eighty-six wildlife trees were created at ecosystem enhancement sites in and near Syringa Park on conservation properties.
	Enhancing habitat for species in the East Kootenay <i>F19 East Kootenay enhancement.</i> This project focuses on the oversight, coordination, and implementation of restoration activities in the East Kootenay, including prescription development; slashing, piling, and burning; masticating; burn-planning and burning; and post-burn monitoring and reporting.	Ministry of Forests, Lands, Natural Resource Operations and Rural Development	\$398,944	Habitat-Based Actions	Upland and Dryland Action Plan	East Kootenay	60 ha of invasive plant treatment in the Lizard and Galton ranges Invasive plant treatments occurred in Lizard Range (30 ha) and Galton Range (30 ha). Target species included Spotted Knapweed, Yellow Hawkweed, Sulphur Cinquefoil, St. John's Wort and Blueweed. A Stand Management Prescription (SMP) was developed for Forsythe Creek in the Elk Valley. This area is occupied by Bighorn Sheep, elk, Mule Deer and moose. An SMP was also developed for the prescribed burning of a previously harvested BCTS block (150 ha). Post-prescribed burn invasive plant-monitoring and treatments were completed, and large burn pile scares were monitored.

Project ID	2018 - 2019 Annual and Ongoing Wildlife Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
	Enhancing non-game habitat in the Columbia Region <i>F19 Non-game enhancement.</i> Non-game enhancement projects focus on critical habitat features that are important for species reproduction and survival, such as roosting, denning, and nesting habitat.	Ministry of Forests, Lands, Natural Resource Operations and Rural Development	\$182,014	Habitat-Based Actions	Upland and Dryland Action Plan	Basin-Wide	Bats, badgers, turtles, toads, woodpeckers, and loons supported Six traditional Townsends Big-eared roost sites were observed with three new roost sites and one new cave located in 2018. Use of constructed Newgate structure was also confirmed. One badger highway crossing structure (600 metres of fence and two culverts) was maintained in the East Kootenay. Five pairs of loons were found to be using loon platforms installed at Whatshan Reservoir, and nesting success showed 60% hatched. Lewis's Woodpecker nest surveys resulted in a total of 10 nesting attempts (six likely successful) in the Pend D'Oreille (PDO) and one nest attempt (likely successful) in the Upper Slocan River. Over 2 km of fencing was maintained adjacent to Summit Lake to reduce Western Toad highway mortality. Two-hundred and twenty-three new tags were implanted, with 17 recaptures this field season. The 20th year of Western Painted Turtle monitoring at Elizabeth Lake was completed in 2018. Emergence was documented for 88 known nests laid in 2016. A total of 1009 eggs were laid and 620 hatchlings emerged. The highest number of eggs per nest was 19 (n = 2) and the lowest number of eggs per nest was 4 (n = 1). There were three fall (2016) emergences, the highest counts since the site has been monitored. There were no marked nests predated. In spring 2018, 12 Western Painted Turtle nests were found in Argenta, with 62% hatching success of 2017 laid nests. Nest protection efforts increased in 2018. Monitoring was completed at 17 Vaux Swift nest boxes in July 2018: one nest observed and five use observations were found at three additional nest boxes.

Project ID	2018 - 2019 Annual and Ongoing Wildlife Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
	Conservation land stewardship activities <i>FWCP Land Management Operations</i> This project focuses on the coordination, oversight, and implementation of land stewardship activities associated with conservation-held lands.	Ministry of Forests, Lands, Natural Resource Operations and Rural Development	\$283,719	Habitat-Based Actions	Species of Interest Action Plan	Basin-Wide	Over 220 ha treated, 2,300 ha surveyed, and 86 wildlife trees created Duncan/Lardeau: a local five-person crew completed mechanical treatments of Burdock from May-September 2018; treatments were completed over 217 ha of conservation properties. Restoration work was monitored at three conservation properties, maintenance of plantings cones completed, Burdock locations were assessed and mapped on DL 570 and DL 881 properties. Lower Columbia, Lower Arrow: fieldwork was conducted between June-September, surveying approximately 2,315 ha of roads, trails, fields, and forest in nine conservation parcels and adjacent areas. Over 700 invasive infestations were mapped, with approximately 465 ha treated. Thirteen biocontrol sites were monitored with two new releases conducted. A five-year analysis of Lower Columbia invasive species crew work, estimated that the area surveyed has increased by 15%, while the area treated has increased by 36% since 2014. Land management issues for Arrow and Pend D'Oreille were mapped, photographed and compiled in a spring 2018 report. Twenty-two conservation area boundary signs were renewed with information signs currently in the process of being refreshed. Preparation, planning, and training was initiated in February 2019, for implementation of the Guardian Watch Program patrols, starting April 1, 2019. At the Marsden property, 3.1 ha of slashing treatment was completed. Eighty-six wildlife trees were created on three conservation properties and other restoration sites in the West Kootenay.
	Securing high priority lands for conservation purposes <i>Land Acquisition.</i> (Details TBC) The construction of BC Hydro dams resulted in the loss of important valley bottom wildlife habitat. Land securement is one of the FWCP's primary compensation actions. Funding is designated for high-priority securements that are developed through the FWCP's involvement with the Kootenay Conservation Program, the Nature Trust of BC, and the Nature Conservancy of Canada.	FWCP	\$546,101	Land Securement	Species of Interest Action Plan	Basin-Wide	Over 8,000 ha of high value habitat secured The FWCP Columbia Board approved funding to support the securement of two conservation properties in 2018-2019, including the Nature Conservancy of Canada's (NCC) Next Creek (7,900 hectare) and The Nature Trust of BC's (NTBC) Columbia River Wetlands – Edgewater (172 hectare). Together, these projects secured over 8,000 hectares of high value habitat in the Columbia Region. With funding from the FWCP, the Kootenay Conservation Program (KCP) continued to coordinate communication between land trust organizations in the region, and completed three property evaluations and supported one property appraisal report.

Project ID	2018 - 2019 Annual and Ongoing Wildlife Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
	Supporting Caribou recovery <i>Caribou Recovery.</i> A multi-agency effort led by the Ministry of Forests, Lands and Natural Resource Operations /Ministry of Environment to recover threatened caribou sub-populations is underway. Actions funded by the FWCP this year include: South Selkirk and South Purcell caribou/cougar/wolf mortality investigations and wolf pack size determinations; participation in caribou census and collaring; predator track survey in South Selkirks or Central Selkirks; and a survey of moose in the Revelstoke sub-unit.	Ministry of Forests, Lands, Natural Resource Operations and Rural Development	\$105,199	Species-Based Actions	Species of Interest Action Plan	Basin-Wide	Five caribou moved to the maternity pen near Revelstoke South Selkirk Caribou/wolf mortalities were investigated and pack size determination during the winter was 11-14 wolves in six separate groups in the Central Selkirks. A caribou census was completed and caribou were collared in winter 2019. Five caribou were captured and radio collared from the South Purcells (two bulls, one cow and one female calf) and South Selkirks (one cow) and moved to the maternity pen in Revelstoke. A Revelstoke moose subunit survey was completed, eight survey units were flown and observers classified 152 moose compared to 98 last year. Calves per 100 cows were 45. Bulls per 100 cows were 33.
	Supporting Northern Leopard Frog recovery <i>F19 Northern Leopard Frog Recovery.</i> This project involves the inventory monitoring and stewardship of the Northern Leopard Frog population at the Creston Valley Wildlife Management Area. This population hosts the majority of the remaining Leopard Frogs in BC, and serves as the source population for re-introductions and a captive assurance population.	Ministry of Forests, Lands, Natural Resource Operations and Rural Development	\$195,384	Species-Based Actions	Species of Interest Action Plan	East and West Kootenay	Eight egg masses recorded, and 300 eggs transported to Calgary Zoo In 2018, 330 nocturnal calling surveys, 19 egg mass surveys, 20 road surveys, and 96 visual encounter surveys (VES) surveys were completed. Eight egg masses were observed and 115 frogs were PIT-tagged (14 adults, two juveniles and 99 young-of-the-year). Three-hundred eggs were collected and transported to the Calgary Zoo to initiate the captive reassurance population.
	Restoring and enhancing wetlands <i>F19 Wetland.</i> The goal of this project is to deliver wetland restoration work, continue to develop new projects, and monitor completed projects. This involves work to identify candidate restoration sites, compile background information, pre-treatment inventory of sites, complete restoration plans working with a wetland specialist, and develop the partnerships, permits, and budgets for the implementation of the restoration projects.	Ministry of Forests, Lands, Natural Resource Operations and Rural Development	\$231,643	Habitat-Based Actions	Riparian and Wetlands Action Plan	Basin-Wide	Positive monitoring results of three constructed wetlands Monitoring was completed for three West Kootenay constructed wetlands: Creston Valley Wildlife Management Area (CVWMA) East Duck Lake (EDL) and Old Goat Channel (OGC) wetlands, and the TNTBC DL 881 and DL 570 Wetland Complex in Meadow Creek. Each site was monitored on five to seven visits from April to October. Temperature was documented by Hobo temperature loggers, water levels monitored by installed staff gauges, and photo plots captured to show landscape change over time. Amphibian occupancy surveys showed breeding of four key amphibian species bred at TNTBC DL 881 and DL 570 constructed wetlands. Pacific Tree Frog and Long-toed Salamander were observed in larval stage at the CVWMA-constructed wetlands and there were 11 observations of Northern Leopard Frogs observed in the constructed wetlands in 2018. There were between 17-18 bird species, eight mammal and two reptile observations at each of the NTBC DI complexes, and 27 bird, seven mammal and one fish species observed during monitoring surveys at the CVWMA-constructed wetlands. As well, invasive species were identified and mapped for both wetland complex sites. The Nature Conservancy of Canada (NCC) completed 6.9 ha of restoration and created 10 wetland pools. Yakan Nukiy completed 17.34 ha of restoration and created six wetland pools and seven turtle nesting sites.

Annual and Ongoing Wildlife Projects Total: **\$2,152,267**

Project ID	2018 - 2019 Grant-Based Fish Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
COL-F19-F-2684	Enhancing food for fish in Sheep Creek <i>Sheep Creek fertilization: the food for fish enhancement project.</i> The Sheep Creek fertilization project uses liquid agricultural phosphate/nitrate to provide a nutrient base for food web enhancement. This project originated as a BC Hydro compensatory project for Seven Mile Dam Unit four upgrades. This project successfully creates larger/more fish, especially project target Bull Trout (Decker 2010). The project is a state-of-the-art, solar-driven, precise injection system. The fertilizer promotes periphyton growth, which feeds invertebrates, which feed fish. Long-term Bull Trout redd monitoring in the Salmo River shows consistent Bull Trout spawning in Sheep Creek and decline in previously strong unfertilized spawning areas.	Salmo Watershed Streamkeepers Society	\$53,063	Habitat-Based Actions	Streams Action Plan	West Kootenay	Fertilization helps stabilize Bull Trout population 2018 represents the 15th year of nutrient addition to Sheep Creek. Liquid agricultural grade fertilizers, urea-ammonium nitrate and ammonium polyphosphate, were used as sources of nitrogen and phosphorus. These fertilizers were applied to Sheep Creek over a 104-day window in summer/early fall, at the single nutrient release point about 11 km from the stream mouth and 5.2 km downstream from the known Bull Trout migration barrier. In 2018, approximately 3945 litres of liquid urea-ammonium nitrate and 587 litres of liquid ammonium phosphate were metered into Sheep Creek. 2018 results indicated Periphyton biomass to be similar to the numbers observed during the pre-fertilization period. An upstream-downstream approach also revealed similar numbers in 2018. Long-term Bull Trout trend analysis revealed a more stable population in Sheep Creek (6% decline) as opposed to a 46% decline in other surveyed spawning tributaries after the fertilization procedures. Thus, fertilization appears to be an effective way to support Bull Trout in the Salmo River
COL-F19-F-2703	Studying Gerrard Rainbow Trout stocks <i>Gerrard Rainbow Trout stock productivity at low abundance.</i> This project will obtain recruitment information at low stock abundance, critical in defining important biological reference points for conservation and management of Gerrard Rainbow Trout on Kootenay Lake. Data will provide important information on the maximum reproductive rate, which can only be obtained when stock abundance is low. As in previous years, a six-person crew will conduct nighttime snorkel surveys on the Duncan River, as part of this funding, to estimate the abundance of age one juvenile Gerrard Rainbow Trout in the Duncan River. The data will be combined with information obtained from the Lardeau River to provide whole river estimates and annual production of age one juvenile Gerrard Rainbow Trout.	Ministry of Forests Lands, Natural Resource Operations and Rural Development	\$12,778	Research & Information Acquisition	Large Lakes Action Plan	West Kootenay	Nearly 100,000 age 1 Gerrard Rainbow Trout in Lardeau and Duncan rivers In 2018, age 1 abundance for the Lardeau and Duncan rivers was estimated to be 97,967, a substantial increase from the revised estimates of 58,000 in 2017. The 2018 juvenile recruitment estimates are the progeny from the 2017 spawn of Gerrard Rainbow Trout, which was estimated to be 252 AUC (area under the curve), well off the record high observed in 2012, of over 1,500 AUC and the lowest since records began in 1961. Preliminary results suggest no appreciable increase in recruitment in the age 1 juvenile abundance at egg deposition above 1,000,000. The maximum reproductive rate (not accounting for fishing mortality) increased from around 12.5 adults per recruit in the early to mid-2000s, to over 30 adults per recruit in 2007, before dropping to fewer than 5 adults per recruit in 2010. The Gerrard stock appears to indicate time variation in in-lake survival that alters the productivity of the stock over time. Based on the defined reference point, it appears that egg deposition has fallen below the limit reference point since 2015. The recent collapse of Kootenay Lakes' Kokanee population has had a severe impact on the Gerrard population. Expectedly, abundance, size, and condition of fish in the sport fishery and returning spawners have also declined. However, the current status provides a unique opportunity to assess population dynamics at low abundance and assist with developing biological reference points for the stock.

Project ID	2018 - 2019 Grant-Based Fish Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
COL-F19-F-2706	Documenting Bull Trout abundance in Whatshan Reservoir <i>Whatshan Reservoir Bull Trout risk assessment.</i> This project is aimed at tracking the abundance and distribution of spawning Bull Trout that inhabit Whatshan Reservoir. Spawning occurs in tributaries of the Upper Whatshan River, including Fife and North Fife creeks. Results from year one (2016) and year two (2017) of this project revealed the spawning numbers are relatively low (10 years), it is recommended that a minimum of three years of surveys be conducted to provide a reasonable assessment of base case spawner numbers for Whatshan Reservoir.	Ministry of Forests Lands, Natural Resource Operations and Rural Development	\$6,568	Species-Based Actions	Large Lakes Action Plan	West Kootenay	Fewer than 100 Bull Trout spawners in Fife and North Fife creeks, none in Whatshan River Survey work conducted in 2018 focused on Bull Trout redd counts on the Upper Whatshan River system. Reconnaissance surveys were conducted in mid-September and early October to determine if spawning Bull Trout were present in the Upper Whatshan River and Fife Creek, the main tributary of the river. The survey in 2019 determined a fish barrier on Fife Creek, 4.25 km upstream of the confluence with the Upper Whatshan River. A total of 26 redds were observed in the accessible portion (3.0 km) of Fife Creek and 3 redds in the 125 m of accessible stream in North Fife Creek, for a total of 29 redds. Using a bio-standard of 2.6 fish/redd indicates only about 75 Bull Trout spawned during 2018. As in 2017, a redd survey was also conducted on portions of the Upper Whatshan River, upstream of the confluence with Fife Creek and no Bull Trout spawners or redds were observed. Stevens Creek, a small creek on the northeast side of the Whatshan Reservoir was also surveyed and no Bull Trout spawners or redds were observed. Similar redd survey results in 2018, to those in 2017 and 2016, leads to the conclusion that most likely < 100 spawners spawn in Fife Creek and North Fife Creek annually and none spawn in the main Whatshan River. The small size of the spawning population should be noted with caution and a size limit regulation for the fishery is recommended.
COL-F19-F-2733	Assessing Bull Trout spawning habitat in Slocan Lake watershed <i>Slocan River Bull Trout spawning assessment 2018.</i> This project will conduct 2018 Bull Trout redd count surveys in selected streams of Slocan River and Slocan Lake, as well as a pilot project to assess and identify key Bull Trout spawning sites in the Slocan River tributaries, which have not been surveyed in the past. The Bull Trout assessment will be conducted in conjunction with redd counts of index sites, which have already been identified in tributaries of Slocan Lake. The assumption has been that Bull Trout can move freely between Slocan River and Slocan Lake, therefore additional spawning areas for the Slocan watershed population may exist in tributaries of the Slocan River itself. This project will conduct spawning assessments in the Slocan River tributaries, to obtain more accurate population size estimates for the overall Slocan Lake watershed Bull Trout population.	Mountain Water Research	\$26,180	Species-Based Actions	Streams Action Plan	West Kootenay	Bull Trout escapement in the Slocan Watershed estimated to be fewer than 500 The Slocan River associated systems of Little Slocan and its tributaries, and Lemon Creek and its tributaries were surveyed during Bull Trout spawning season in Fall 2018 to assess the habitat, confirm the barriers to fish movement, and enumerate redds and spawners. The spawning streams of Wilson and Silverton, which were identified as providing the majority of the spawning habitat for the Slocan Lake system from previous research, were also surveyed in 2018 to provide an index of spawning for the lake tributaries. The assumption is that Bull Trout move freely between the tributaries of Slocan River and Slocan Lake. The estimated escapement from the 2018 surveys was 481 for all potential Bull Trout spawning habitat in the Slocan Watershed. During the surveys, 25 female and 43 male spawners were observed for a total of 68 spawners. The addition of the Slocan River tributaries added 39 spawners to the overall calculations of Bull Trout abundance in the watershed, despite providing approximately 63 km of lineal habitat. Restoration options could be explored across the watershed.

Project ID	2018 - 2019 Grant-Based Fish Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
COL-F19-F-2768	Improving Rainbow Trout spawning habitat at Murphy Creek <i>Murphy Creek spawning channel maintenance and monitoring.</i> Murphy Creek spawning channel has been an important Rainbow Trout enhancement project on the Lower Columbia River for many years. Initially developed and run by volunteers of the Trail Wildlife Association (TWA), this group is now looking for expertise and human resources from the Okanagan Nation Alliance to be able to continue the project into the future.	Okanagan Nation Alliance	\$19,658	Habitat-Based Actions	Streams Action Plan	West Kootenay	Improvements to spawning channel will help Rainbow Trout Murphy Creek is a primary tributary to the Columbia River, located approximately 7 km north of the City of Trail. Murphy Creek is a fish-bearing stream that was fragmented with the installation of a highway culvert considered a barrier to fish passage. As such, a resident Rainbow Trout population now exists above the highway culvert, and approximately 500 m of habitat is available below the highway culvert for migrating Rainbow Trout spawning and rearing. In an attempt to increase spawning and rearing habitat below the highway culvert on Murphy Creek, the Trail Wildlife Association (TWA) built a spawning channel adjacent to Murphy Creek in 1992. Activities at the spawning channel in 2018 included monitoring of the spawning channel during freshet, Rainbow Trout spawner and redd monitoring, dredging of the sediment settling pond, armouring of the barrier wall around the intakes, riparian planting, routine maintenance within the spawning channel (raking of gravels and removal of large woody debris), and community involvement.
COL-F19-F-2769	Improving fish habitat in Pass Creek <i>Pass Creek instream and off-channel habitat restoration.</i> This project will identify new and current instream habitat restoration structures, and maintenance activities for juvenile fish cover and adult deep overwinter holding areas within the Pass Creek Park boundaries. The project will also identify the restoration of a historic off-channel that has had water diverted, been ingrown with vegetation, and sediment compaction.	Okanagan Nation Alliance	\$5,000	Habitat-Based Actions	Streams Action Plan	West Kootenay	Fish habitat assessment completed for Pass Creek Pass (Norns) Creek is the first major tributary to the Columbia River below Hugh Keenleyside Dam, adjacent to the town of Castlegar. Pass Creek provides approximately 2.2 km of important spawning habitat for Rainbow Trout, Kokanee, and Mountain Whitefish migrating from the Columbia River. In 2015, the Pass Creek Park Management Plan was developed to guide future development, operations, and decision-making for the park. In 2018, site assessments were conducted. Data collected and photo documentation supported the completion of a fish habitat assessment, as well as a conceptual level report for: a) enhancing the creek side channel for Rainbow Trout Habitat, and b) restoring Pass Creek Regional Park recreational pond operations.

Project ID	2018 - 2019 Grant-Based Fish Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
COL-F19-F-2811	<i>Monitoring Bull Trout populations in West Kootenay.</i> The Salmo River watershed Bull Trout spawner escapement 2018 This project will carry out Bull Trout redd counts in known spawning areas, adding to long-term trend monitoring. Bull Trout are blue-listed, C1 high-risk conservation status species in the Salmo River and a focal species in FWCP's Species of Interest Action Plan. Two outcomes are: repeat this low cost, efficient way to monitor Bull Trout, and use Bull Trout population as a key indicator species for ecosystem health. In 2014, this multi-stakeholder, trans-boundary, collaborative watershed planning team directed continued monitoring of this population. Conservation biology guidelines for Bull Trout require 50-100 individuals to minimize inbreeding effects. Since 2010, the spawning population has been below 100. As such, it is critical to continue monitoring Bull Trout populations.	Salmo Watershed Streamkeepers Society	\$11,124	Monitoring & Evaluation	Species of Interest Action Plan	West Kootenay	62 redds counted in Salmo River tributaries Bull Trout redd surveys have been conducted annually in spawning tributaries of the Salmo River watershed for a period of 20 years (1998-2018). In 2018, surveys took place during October 3-10. Weather conditions during the 2018 surveys were excellent, and redds were clearly identifiable in all survey areas. No live or dead adult Bull Trout were observed during the surveys. In 2018, surveys were completed in Clearwater Creek, the upper Salmo River, Sheep Creek, lower Qua and Curtis creeks, and the South Salmo River. The total number of redds observed in the surveyed reaches was 62. When the observed number of redds identified within the watershed are expanded by assuming two adults were associated with each redd, the aggregate escapement (including mean expanded estimate for the South Salmo River) in 2018 was 140 adults. An analysis of spawner abundance trends for the period of record, a review of conservation status and threats to Salmo River Bull Trout, an analysis of population level effects of nutrient addition in Sheep Creek, and recommended strategies for recovering this population are summarized in the final report for this project.

Fish Projects Total: **\$134,371**

Project ID	2018 - 2019 Directed Fish and Wildlife Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
COL-F19-W-2853-DCA	NCC Land stewardship and wetland restoration activities F19	Nature Conservancy of Canada	\$70,000	Habitat-based Actions	Upland and Dryland Action Plan	East Kootenay	Ecosystem restoration activities on three NCC properties Three projects were undertaken between 23 August, 2018 and 31 March, 2019, including: ecosystem restoration activities — specifically restoration of grassland and open forest ecosystems — on Nature Conservancy of Canada's (NCC) Kootenay River Ranch property; invasive plant treatments on NCC properties in the Canadian Rocky Mountain Program Area; and completion of wetland restoration work on NCC's Cherry Meadows property. Work involved the removal and management of invasive species and the restoration of wetland habitat and grassland/open forest ecosystems. The funding provided by FWCP has allowed NCC to undertake a series of tasks and measures that seek to mitigate these and other threats to the local ecology, and the ecoregion as a whole.
COL-F19-W-2854-DCA	TNTBC land stewardship and wetland restoration activities F19	The Nature Conservancy of BC	\$55,000	Habitat-based Actions	Riparian and Wetlands Action Plan	East and West Kootenay	10.6 ha of wetland habitat restored at Cherry Creek For the third consecutive year, project partners worked to convert agricultural fields back to wetlands that were historically present on the Cherry Creek property. A series of shallow water basins were constructed to restore important habitat diversity and values. The total area restored in Year 3 (2018) over a two-week construction period, from October 22 to November 3, was 10.6 ha. The construction techniques used to restore nine emergent and ephemeral wetlands (5.3 hectares), and enhance 5.3 hectares of wet meadow wetland were documented. Conservation Youth Crew: In 2018, crew work activities included: fence maintenance and repair, invasive species removal, kiosk and signage installation, hand-seeding, litter removal, vegetation plot monitoring, and other basic inventories. These activities were carried out on the Nature Trust of BC (NTBC) and Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD) conservation properties and property complexes throughout the Kootenay Region. The crew also spent several days assisting local resource managers and experts with different projects, serving as on-the-job training for the crew.

Project ID	2018 - 2019 Directed Fish and Wildlife Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
COL-F19-W-2855-DCA	Kootenay Conservation Program land acquisition and base support F19	The Nature Trust of BC	\$40,000	Research Information and Acquisition	Upland and Dryland Action Plan	Basin-wide	Property evaluations completed, conservation actions identified, and “Stewardship Solutions” launched In 2018, the Kootenay Conservation Program (KCP) completed three property evaluations and supported one property appraisal report. Based on the dedication and hard work of its partners, particularly the Nature Conservancy of Canada (NCC), Next Creek was acquired in 2018, expanding the Darkwoods Conservation Area. FWCP also contributed to the purchase of the Columbia Wetlands – Edgewater Conservation Area (Tegart), which will be acquired in 2019-2020. In October 2018, KCP partnered with Pandion Ecological Research Ltd., to bring together researchers and land managers to identify conservation action priorities focused on species at risk for the Lower Columbia Valley. In addition, KCP launched the Stewardship Solutions landowner outreach hub and finalized the updated KCP Stewardship Framework. KCP continues to engage a wide range of stakeholders through a variety of tours, partner events, and presentations. A valuable professional development and networking experience for KCP partners was provided at the Annual Gathering, on the theme of “Conservation in the Context of Climate Change”. KCP continues to utilize the website, Facebook and monthly eNews, distributed to over 700 recipients, as well as host a four-part Winter Webinar series.
COL-F19-W-2871-DCA	Columbia River Wetlands – Edgewater	The Nature Trust of BC	\$400,000		Upland and Dryland Action Plan	East Kootenay	This project is currently in progress.

Directed Fish and Wildlife Projects Total: **\$565,000**

Project ID	2018 - 2019 Annual and Ongoing Fish Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
	Adding nutrients to Arrow Lakes Reservoir <i>F19 Arrow Lake Reservoir nutrient restoration.</i> To address the nutrient losses in Arrow Lakes Reservoir as a result of the construction of the Hugh Keenleyside, Mica, and Revelstoke dams. A bottom-up approach is taken with the addition of nutrients (nitrogen and phosphorus in the form of liquid agricultural grade fertilizer), to support phytoplankton populations that are suitable for the production of Daphnia, a main food source for Kokanee.	Ministry of Forests, Lands, Natural Resource Operations and Rural Development	\$821,386	Habitat-Based Actions	Large Lakes Action Plan	West Kootenay	Final report is currently in progress.
	Adding nutrients to Kootenay Lake <i>F19 Kootenay Lake nutrient restoration.</i> This project includes the coordination, oversight, and implementation of nutrient additions to the North Arm of Kootenay Lake, and the associated monitoring and reporting. Nutrient additions (nitrogen and phosphorus in the form of liquid agricultural grade fertilizer) support phytoplankton populations that are suitable for the production of Daphnia, a main food source for Kokanee.	Ministry of Forests, Lands, Natural Resource Operations and Rural Development	\$835,177	Habitat-Based Actions	Large Lakes Action Plan	West Kootenay	Final report is currently in progress.
	Funding Hill Creek spawning channel on Arrow Lakes Reservoir <i>F19 Hill Creek spawning channel.</i> The Hill Creek spawning channel was built as compensation for the construction of Revelstoke Dam. It provides spawning habitat for Kokanee and Rainbow Trout from Arrow Lakes Reservoir. This project supports ongoing operations, maintenance, and monitoring at the channel, including Kokanee fry emigration, Rainbow Trout redd counts and fry emergence, adult Kokanee size, fecundity and escapement, overwinter egg survival, and water quality.	Ministry of Forests, Lands, Natural Resource Operations and Rural Development	\$161,326	Species-Based Actions	Large Lakes Action Plan	West Kootenay	Egg-to-fry survival at 63%, and nearly 134,000 adults spawn Channel operations and sampling are completed. Egg-to-fry survival was 63% in the spring of 2018, with 3.3 million Kokanee fry produced from the channel. Channel egg deposition was 5.3 million in the fall of 2018. Spawner return was 133,714, of which 55,087 spawned in-channel, 27,673 spawned downstream, and 52,954 were used for egg collections (Freshwater Fisheries Society of BC) in support of Kootenay Lake recovery. Mean size of Kokanee was 231 mm (range of 212 – 365 mm), and fecundity was 264 eggs/female (range of 212 – 361 eggs). Settling ponds and spawning channel cleaning was completed in August 2018. Gravel was added, where needed, in the channel and lock bars for fish gates repaired. Otolith ages were 55% age 2+, 45% age 3+. Facilities and equipment are in safe, working order. Final report is currently in progress.

Project ID	2018 - 2019 Annual and Ongoing Fish Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
	Funding Meadow Creek spawning channel on Kootenay Lake <i>F19 Meadow Creek spawning channel.</i> BC Hydro built the Meadow Creek spawning channel in 1967 to compensate for lost natural Kokanee habitat due to the construction of Duncan Dam. The facility sustains Kootenay Lake Kokanee, which are the primary prey species for both Bull Trout and Gerrard Rainbow Trout.	Ministry of Forests, Lands, Natural Resource Operations and Rural Development	\$197,274	Species-Based Actions	Large Lakes Action Plan	West Kootenay	Egg-to-fry survival at 75%, and nearly 16,500 adults spawn Egg to fry survival was approximately 75% in the spring of 2018, with a Kokanee fry outmigration 6.4 million. The wild spawner return was 16,487 adults in fall 2018, of which 11,807 spawned in-channel. Average length of spawners was 370 mm (range of 237 – 470mm). Fecundity was 646 eggs/female (range of 346 – 1034 eggs). Channel wild egg deposition 3.9 million, plus 4.3 million supplemental eggs planted into upper channel. Monitoring and water control completed from April 2018 to March 2019. Scarification and settling pond cleaning completed in August. IHN drying was completed in August. Mowing, invasive plant, tree control and other maintenance was completed between May to September 2018. Water control during the winter period was completed to March 2019. Electric fence installed August 2018. Bear safety persons were on-site for visitor safety and compliance monitoring on weekends during the spawning run. There were a total of 1,150 visitors in September — a decrease from previous years possibly due to the fire season. Fish salvage was completed 31 July, 2018, prior to drying channel to kill IHN virus (83 Bull Trout, eight Rainbow Trout juveniles, one adult Kokanee, and two sculpins transferred to the creek). Egg plants were completed in the channel in October. Natural spawning equalled 3.9 million eggs in-channel, 5.5 million total in Meadow Creek system. Another 4.3 million eyed eggs were planted in the channel approximately 10 M total for system (as a component of Kokanee recovery). Final report is currently in progress.
	Supporting sturgeon recovery in Upper Columbia River <i>F19 Upper Columbia Sturgeon.</i> The objectives of this conservation aquaculture program are to: 1) prevent extirpation, and 2) retain the genetic diversity of the existing wild stock in supplemental progeny.	Freshwater Fisheries Society	\$120,000	Species-Based Actions	Species of Interest Action Plan	West Kootenay	200 juvenile White Sturgeon released Wild origin progeny were successfully collected and transferred to the hatchery. Two hundred 200-gram juvenile White Sturgeon were released in early May 2019. These fish were released at three locations on the lower Columbia River, including downstream of Hugh L. Keenleyside Dam and Millennium Park, in the city of Castlegar and at Beaver Creek, downstream of the City of Trail. All annual reports are available from Columbia River White Sturgeon Management Plan.

Annual and Ongoing Fish Projects Total: \$2,135,163

Project ID	2018 - 2019 UKEEP Directed Fish and Wildlife Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
UKE-F19-F-2859-DCA	Monitoring Kokanee populations in Koocanusa Reservoir in Upper Kootenay River Watershed <i>Koocanusa Kokanee enumeration (2018-2019).</i> The Koocanusa Kokanee population enumeration study has been conducted since 2012, under funding by the Columbia Basin Trust (the Trust) and the FWCP. Spawning Kokanee are enumerated from a helicopter in seven index streams, upstream of Koocanusa Reservoir. Results from the study are summarized in a yearly report, distributed to fisheries managers across the region, to advise on current trends in the population.	Vast Resource Solutions	\$45,000	Monitoring & Evaluation	UKEEP: Streams Action Plan	East Kootenay	Declining Kokanee numbers in Koocanusa index streams Kokanee spawning abundance in the Upper Kootenay River was assessed in September 2018, as part of the annual Koocanusa Kokanee Enumeration Study that began in 2012. A total of 100,135 spawning Kokanee were observed at seven index streams — Sand Creek, Little Sand Creek, Bull River, Norbury Creek, Kootenay River side-channels, Lussier River, and Findlay Creek. Although very similar in size to 2017, the 2018 Kokanee run ranks relatively low compared to historical runs (i.e. 1996-2018). There is an overall declining trend in population numbers and biomass, and it appears that, at comparable density, Koocanusa Kokanee are smaller in recent years than they were prior to 2003. The report recommends pursuing monitoring efforts on an annual basis, without interruption to ensure data continuity, inform management decisions, and drive management actions should they become necessary to maintain the long-term sustainability of the population.
UKE-F19-W-2856-DCA	Studying elk migration in the Upper Kootenay River Watershed <i>Sparwood Elk Valley elk project (2018-19).</i> Elk in the Elk Valley appear to have changed migration patterns in recent years, resulting in a redistribution of elk during the summer and fall. Productivity and survival of non-migratory and migratory elk may differ, contributing to differences in the abundance of individuals following these differing migration strategies. Non-migratory elk tend to be more readily involved in agricultural conflicts and may contribute to overgrazing on some ranges. In response, the Sparwood Fish and Wildlife Association obtained funding to initiate a five- to six-year study examining elk movements and survival in the Elk Valley. The results of this study will provide information to help make informed wildlife management decisions.	Sparwood and District Fish and Wildlife Association	\$32,850	Species-Based Actions	UKEEP: Upland and Dryland Action Plan	East Kootenay	Only 14% of elk mortalities verified as predation Seventy-eight cow Elk were radio-collared between January 2016 and March 2018. Twenty-one mortalities have been recorded to March 2019, resulting in 30 collars active and being monitored, as of 29 March 2019. Eleven of the mortalities (52%) were human-related (seven from vehicle or train strikes), and 10 were natural mortalities, with only 14% of all mortalities verified as predation, although 19% were natural mortalities of unknown cause. One mortality was attributed to hunting. Spring carryover recruitment counts were conducted on four routes in the Elk Valley during April and May 2018. Calf ratios were consistently low on three of the routes at ≤20 calves:100 adults. Elk Valley cow/elk migratory behaviour was complex. Overall, the proportion of elk that were migratory was 67% in 2016, and 42–44% in 2017 and 2018, with the differences likely related to different elk being monitored, rather than changes in behaviour.
UKE-F19-W-2857-DCA	Using trail cameras to monitor wildlife in the Upper Kootenay River Watershed <i>Kootenay remote camera wildlife monitoring (Year Two).</i> B.C. Fish and Wildlife, Kootenay Region, is proposing a remote camera wildlife monitoring project in the Southeast part of the region, covering wildlife management units (MU) 4-01 (Flathead), 4-02 (Wigwam), 4-23 (Elk Valley), and 4-22 (Bull River). The purpose is to monitor trends for multiple ungulate and large carnivore species using a relatively cost-effective method, and by involving the public in citizen science.	Ministry of Forests, Lands, Natural Resource Operations and Rural Development	\$25,000	Species-Based Actions	UKEEP: Upland and Dryland Action Plan	East Kootenay	78 cameras now deployed to detect wildlife Cameras are being deployed over a five-year period using sampling design and analysis developed in the surrounding mountain parks. Previously, cameras have been deployed in the Flathead and Wigwam (31) and in the Elk Valley (32). In 2018, 25 cameras were deployed in the Bull River (MU 4-22). Cameras were located to maximize the probability of detecting wildlife, such as in narrow valleys, pinch points, creek forks, mineral licks and Grizzly Bear rub trees. Discrete events are classified based on species, sex, and age classes using the image classification software TimeLapse. The proponent is awaiting results of image classification to move forward with analyses.
	Placeholder for priority Board directed fish projects Directed project placeholder These funds have been set aside by the Board to support work that is a priority within the UKEEP.	To be determined	\$39,086	To be determined	To be determined	East Kootenay	

Project ID	2018 - 2019 UKEEP Directed Fish and Wildlife Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
	Placeholder for priority Board directed wildlife projects Directed project placeholder These funds have been set aside by the Board to support work that is a priority within the UKEEP.	To be determined	\$39,086	To be determined	To be determined	East Kootenay	

UKEEP Directed Projects Total: **\$181,022**

2018 - 2019 Project Spend Total: **\$6,063,149**

Project ID	2018 - 2019 UKEEP Grant-Based Wildlife Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
UKE-F19-W-2679	Restoring habitats impacted by recreation use in the Upper Kootenay River Watershed <i>Koocanusa habitat restoration: cumulative recreation impacts.</i> The purpose of this project is to restore and enhance important wildlife habitat degraded through intensive recreation use in the Koocanusa area. The project goal is to rehabilitate damaged grasslands and other important wildlife habitat features by decommissioning and restoring recreation trails and high-use recreation areas (e.g. camping areas) that are clearly unsustainable and/or unacceptable for recreation use. The focus will be on recreation trails that are highly visible to recreation users, as a means of educating recreation users and promoting stewardship. Project objectives align particularly with objective three of the UKEEP Upland and Dryland Action Plan (i.e. improvement of opportunities for sustainable use), however, they are consistent with all objectives.	Koocanusa Recreation Steering Committee	\$88,807	Habitat-Based Actions	UKEEP: Upland and Dryland Areas Action Plan	East Kootenay	This project is currently in progress.
UKE-F19-W-2693	Protecting ecological function from invasive plants in the Upper Kootenay River Watershed <i>Invasive plant management and restoration of protected areas.</i> This project aims to retain functional and sustainable ecosystems in protected areas of the Upper Kootenay ecosystem by mitigating the impacts of invasive species. Benefits include the reduction of propagule pressure from neighbouring invasive species populations, wildlife habitat conservation, long-term cost-savings through collaborative invasive species management action, and restoration of degraded areas with native plant species.	East Kootenay Invasive Species Council	\$30,000	Species-Based Actions	UKEEP: Upland and Dryland Areas Action Plan	East Kootenay	Decrease in invasive plants on conservation properties In 2018, invasive plant inventories and treatments were completed at conservation properties, and other high-value adjacent lands, in the Upper Columbia Valley and Upper Kootenay watershed. Treatments included the use of herbicides, manual site treatments, as well as biocontrol agents. Additional invasive plant inventories and monitoring activities took place throughout the field season to ensure efficacy of management practices. Partnerships and collaboration resulted in a decrease in the existing invasive plant populations, with further benefits including reduction of propagule pressure from neighbouring invasive species populations, wildlife habitat conservation, and long-term cost savings through invasive species management action.

Project ID	2018 - 2019 UKEEP Grant-Based Wildlife Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
UKE-F19-W-2709	Restoring wetlands in the Upper Kootenay River Watershed <i>Wetland restoration projects.</i> This project will restore wetlands within the region of the Upper Kootenay Ecosystem Enhancement Plan (UKEEP) where there are significant opportunities to achieve wildlife enhancement objectives through habitat restoration on historical wetlands that were drained for hay production. Project activities will involve disabling ditches and restoring the areas to support habitat for ungulates, waterfowl, bats, and amphibians.	British Columbia Wildlife Federation	\$150,000	Habitat-Based Actions	UKEEP: Wetland Action Plan	East Kootenay	This project is currently in progress.
UKE-F19-W-2717	Controlling invasive plants in the Upper Kootenay River Watershed <i>Tobacco Plains grassland and open forest restoration.</i> Invasive plant control on grasslands and open forests on Tobacco Plains Indian Reserve (TPIR) will improve habitat for multiple species, including ungulates; support rare and threatened species recovery; improve habitat connectivity with surrounding Provincial Crown land; and engage First Nations and community members in land stewardship. This is year four of a proposed five-year project collaboration between Keefer Ecological Services Ltd. (KES) and Tobacco Plains Indian Band (TPIB). Year one identified distribution and density of invasive plant infestations on TPIR and steps for invasive plant management. Years two and three involved treating and monitoring infested areas, and year four will continue treatment and monitoring to restore grassland and open forest habitat.	Keefer Ecological Services Ltd.	\$57,028	Species-Based Actions	UKEEP: Upland and Dryland Areas Action Plan	East Kootenay	Multiple invasive weeds monitored and treated, and forest thinning continues. Efforts in 2018 focused on continued recovery of grassland and open forest habitat through invasive plant management, including herbicide application and targeted goat grazing, as well as forest thinning. A Leafy Spurge infestation has been reduced from approximately 2.7 ha to 2.1 ha, and treated in summer 2018. Orange Hawkweed treatment has been found to be successful, but re-treatment in some areas is necessary, with new infestations identified. Spotted Knapweed re-sprouted in a few areas that were sprayed in 2015, and re-sprayed. New Scentless Chamomile patches were identified, and a Yellow Toadflax infestation was re-sprayed. Blueweed and Dalmatian Toadflax not previously found on TPIR, were located on the reserve and adjacent areas. Canada Thistle and Bull Thistle were sprayed with herbicide. Forest thinning continued to address ecological restoration objectives. Manual thinning occurred on 4.9 ha, while treatment using an eco-mulcher occurred on 1.4 ha. Pile burning of last season's thinning slash was carried out on 10.4 ha. Monitoring showed that target densities were attained in some areas of the manual treatment, and exceeded in others, and the area treated by the eco-mulcher achieved target densities.
UKE-F19-W-2719	Supporting Mule Deer in the Upper Kootenay River Watershed <i>Kootenay Mule Deer survival monitoring.</i> The Ministry of Forests, Lands and Natural Resource Operations initiated a five-year Mule Deer monitoring project to assess factors limiting population growth and recommend actions to increase abundance. Project spin-offs will support restoration of Mule Deer habitat in the Upper Kootenay area, where FWCP has invested substantial funding in ecosystem restoration. GPS collar data will be used to identify Mule Deer migration routes, assess use of ecosystem restoration sites, and identify important habitats for ecosystem restoration planning, which will occur in Year five.	Ministry of Forests, Lands, Natural Resource Operations and Rural Development	\$22,250	Species-Based Actions	UKEEP: Upland and Dryland Areas Action Plan	East Kootenay	136 deployed collars improve understanding on Mule Deer To-date, 136 GPS collars have been deployed on adult female Mule Deer since 2014-15 in three Management Units (MUs). There have been 84,035 monitoring days and 61 mortalities. Causes include 30 cougar and 10 wolf kills, four vehicle collisions, two unknown predator kills, two unlicensed hunting, two health-related mortalities, one natural mortality (avalanche), one bear and one coyote predation, and eight unknown mortalities. Preliminary survival rates for Year 5 (May 2018 – April 2019) were 0.77 (MU 4-26), 0.78 (MU 4-02), and 1.0 (MU 4-03). In two MUs, the fawn:adult ratio was 35:100. Overall project results suggest survival of adults may be limiting population growth in MU 4-26, while variations in fawn recruitment may be having a larger effect on population trend in MU 4-02 and 4-03, given the relatively stable adult survival rates. Five high-priority ecosystem restoration sites were identified, and migration corridors analyzed.

Project ID	2018 - 2019 UKEEP Grant-Based Wildlife Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
UKE-F19-W-2730	Protecting Bighorn Sheep habitat from invasive plants in the Upper Kootenay River Watershed <i>Invasive plant management on bighorn sheep winter ranges.</i> Invasive plants are compromising the quality of low elevation bighorn sheep winter ranges, particularly in Wigwam Flats and Bull River. Approximately 300 Bighorn Sheep utilize Wigwam Flats and Bull River grassland ecosystems during the late fall, winter and early spring. These grasslands are becoming inundated with invasive plants such as Yellow Hawkweed, St. John's Wort, and Sulphur Cinquefoil. Without a comprehensive invasive plant management program, the continued rapid loss of forage quality and quantity will ultimately result in bighorn sheep population decline. This project will implement a cooperative management/treatment strategy to improve the existing compromised quality of these ranges and reduce invasive plant coverage.	Ministry of Forests, Lands, Natural Resource Operations and Rural Development	\$40,100	Habitat-Based Actions	UKEEP: Upland and Dryland Areas Action Plan	East Kootenay	Reduction in invasive plants to help Bighorn Sheep In Bull River, 65 Bighorn Sheep (14 lambs, 27 ewes, 21 rams, and three unconfirmed) were counted and the population estimate reduced from 120 in 2012, to 80 in 2019 —a decline of 40%. In Wigwam Flats, in February 2019, the total number of Bighorn Sheep observed was 184 (31 lambs, 105 ewes, and 41 rams), with the population estimate remaining stable at approximately 230 sheep. Vegetation sampling was conducted (post-treatment) on eight plots in Bull River and 10 plots in Wigwam Flats during spring 2018. Invasive species cover was reduced to 2.4% post-treatment. At Bull River, Hawkweed cover was reduced from 10% to 1%, and Spotted Knapweed (present in 2017 - 1.5%) was absent in 2018. Sulphur Cinquefoil cover reduced from an average of 5.0% to 2.3% post-treatment. At Wigwam Flats, Hawkweed was reduced from 6.4% in 2017, to 0 in 2018; Spotted Knapweed cover reduced from 2.8%, to less than 1%, with St John's Wort still present with little change.
UKE-F19-W-2737	Improving and increasing wetland and riparian habitats in the Upper Kootenay River Watershed <i>Elk Valley Wilson Lake wetlands enhancement.</i> In 2004, the Nature Conservancy of Canada (NCC) acquired 2,999 acres (1,213.7 hectares) of lands for permanent conservation in the Elk Valley, near Hosmer, BC. Existing on the property, were two gravel pit operations with one area having a reclaimed man-made lake. In 2015, NCC undertook design consultation and initial planning to convert defunct gravel sites into an engineered wetland complex that would greatly increase the area of shallow-water wetlands, improving habitat for waterfowl, shorebirds, rare species and other wildlife. In 2017, this work began on the Fiorentino site with funding from FWCP (COL-F18-W-2370). This project sets out to achieve similar wetland restoration results for the Lake Wilson Gravel Pit by creating a naturally appearing and functioning wetland, located across the road from the Fiorentino site.	Nature Conservancy of Canada	\$27,873	Habitat-Based Actions	UKEEP: Wetland Action Plan	East Kootenay	Wetland and riparian restoration complements adjacent project The wetland enhancement project took place from July 26 to July 31, 2018, on NCC's Elk River Heritage Conservation Area in the Elk Valley. Wetland and riparian restoration and enhancement activities were conducted, specifically along the inactive portions of shoreline of an active gravel quarry (Wilson Lake), near Hosmer. This area is being restored to provide enhancements to riparian and wetland ecosystems that will benefit regionally significant and listed species such as American Badger, Grizzly Bear, moose, shorebirds, waterfowl, bats, Western Painted Turtle, and amphibians. Naturally appearing and functioning riparian areas will also control erosion, recharge groundwater, and reduce area flooding. The project builds on four new wetlands that were created in place of an exhausted gravel quarry in 2017 (COL-F18-W-2379).

Project ID	2018 - 2019 UKEEP Grant-Based Wildlife Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcomes
UKE-F19-W-2753	Supporting endangered Whitebark Pine in the Upper Kootenay River Watershed <i>Whitebark Pine restoration in the Kootenay-Columbia.</i> 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; rust levels are especially high in southeast B.C. 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 collecting seeds from potentially rust-resistant parents, planting seedlings, and identifying local issues and opportunities through outreach.	Randy Moody	\$27,120	Habitat-Based Actions	UKEEP: Upland and Dryland Areas Action Plan	East Kootenay	300,000 seeds collected to help Whitebark Pine During summer 2018, cones were collected from 22 sites within the study area. Trees were visited in early summer to place cages over cones, then revisited in early fall when the seeds had matured. Trees for cone collection were those displaying putative resistance to white pine blister rust. An estimated 300,000 seeds were collected in the region. Outreach was conducted with a number of groups, including: Canfor, Zanzibar, nature writer Fraser Los, Kimberley Daily Bulletin, and CBC. Originally designed as a three-year project, the number of years to compete it will be expanded, given the exceptionally large seed collection.
UKE-F19-W-2759	Monitoring endangered Northern Leopard Frog populations in Upper Kootenay River Watershed <i>Monitoring a reintroduced population of Northern Leopard Frogs.</i> The endangered Northern Leopard Frog was reintroduced to the Upper Kootenay Floodplain, at Bummers Flats. The IUCN has identified ongoing monitoring as a crucial and necessary feature of reintroduction programs for endangered species. Nocturnal calling surveys (NCS) of Leopard Frogs will allow this project to determine whether they are still present and provide information on population trends. Visual encounter surveys in summer and fall will inform the project if reproduction is successful. Measuring frogs, weighing them, photographing spot patterns and PIT-tagging individuals (where appropriate) will indicate growth rates, movements, survivorship, and general health, and provide direction for future analysis of population size. Monitoring will allow the project to assess the value of reintroduction for future recovery.	Isabel Ohanjanian Consulting Biologist	\$26,392	Monitoring & Evaluation	UKEEP: Wetland Action Plan	East Kootenay	No Northern Leopard Frog reproduction at Bummers Flats In 2018, surveys were carried out on Bummers Flats, private land, and the Cherry Creek Nature Trust. Two males were heard calling on May 5 at the North Bummers Calling Ditch (NBCD) — the maximum number heard at one time. One male was captured here. Unlike 2017, no females were observed and no Young-of-Year were produced at the NBCD. Similarly, no Northern Leopard Frogs were observed on the Upper Kootenay Floodplain. Columbia Spotted Frogs were detected during 30 of 54 visual encounter surveys. Spotted Frogs were more abundant in the NBCD than in other years. The reason for Northern Leopard Frog reproductive failure at the NBCD in 2018 is not known, and it is the first time in at least nine years that no reproduction occurred.

UKEEP Wildlife Projects Total: \$469,570

Project ID	2018 - 2019 UKEEP Grant-Based Fish Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcome
UKE-F19-F-2682	Studying Westslope Cutthroat Trout hybridization in Upper Kootenay River Watershed <i>Westslope Cutthroat Trout hybridization evaluation.</i> This is year four of a five-year project aimed at determining the extent of Westslope Cutthroat Trout (WCT) hybridization with Rainbow Trout (RB) in the Upper Kootenay drainage. Tissue samples will be collected and genetically analysed at the University of Montana. Results will identify hybridization in individuals and populations, and guide actions to conserve WCT. This project has four objectives: 1) fill data gaps on current levels of hybridization in the Upper Kootenay watershed, which is this species' largest remaining stronghold, 2) identify WCT populations that are pure strain for high priority conservation, 3) compare hybridization over time, and 4) monitor hybridization prior to, and after, actions are taken to remove sources of hybridization.	Ministry of Forests, Lands, Natural Resource Operations and Rural Development	\$93,000	Species-Based Actions	UKEEP: Streams Action Plan	East Kootenay	This project is currently in progress.
UKE-F19-F-2734	Developing a Burbot conservation strategy in Upper Kootenay River Watershed <i>Upper Kootenay burbot conservation strategy.</i> This project will develop a conservation strategy for burbot in the Upper Kootenay watershed. Objectives will include reviewing and summarizing past research, monitoring, and local knowledge on burbot populations, as well as recommending options for population recovery.	Ministry of Forests, Lands, Natural Resource Operations and Rural Development	\$26,980	Species-Based Actions	UKEEP: Lakes Action Plan	East Kootenay	This project is currently in progress.
UKE-F19-F-2746	Working towards rehabilitating Joseph Creek in Upper Kootenay River Watershed <i>Rehabilitating Joseph Creek: a community initiative.</i> The objective of this project is to compile and summarize historical fish and fish habitat data collected in Joseph Creek. This information will be used to inform long-term planning decisions proposed under the Joseph Creek Management Framework project, led by Columbia Outdoor School. The end goal of this seed project is to establish a baseline understanding of the current state of aquatic resources in the creek, for example, locating fish barriers that are limiting fish distribution in the drainage and identifying significant gaps in knowledge (e.g. infrastructure changes). This project will support prescriptive rehabilitation and monitoring measures (i.e. to rehabilitate the indigenous species in the creek - Cutthroat and Bull Trout).	Vast Resource Solutions	\$4,977	Research & Information Acquisition	UKEEP: Streams Action Plan	East Kootenay	Opportunities identified to restore Joseph Creek A literature review compiled environmental information to identify data gaps that would help support the development of a future stream restoration strategy. The review indicated that Joseph Creek is heavily impacted by anthropogenic activities, particularly along the reach flowing through Cranbrook. It's no longer functioning as a healthy ecosystem with poor water quality, loss of instream and riparian habitat, and insufficient flow due to water diversions. Westslope Cutthroat Trout and Bull Trout have been extirpated from some sections. The review states that long-term water quality and quantity monitoring data, fish species distribution information, and understanding of specific flow needs required, are the main information gaps. The report identified opportunities available to help improve water quality, reinstate natural flows, and restore aquatic and riparian habitat conditions required by local species to complete their lifecycle.

Project ID	2018 - 2019 UKEEP Grant-Based Fish Projects	Project Lead	FWCP Funding	Project Type	Action Plan Alignment	Watershed	Project Outcome
UKE-F19-F-2760	Studying Bull Trout in the Wild Horse River in Upper Kootenay River Watershed <i>Wildhorse River Bull Trout population inventory and recovery.</i> The Wild Horse River is an historically important system for Upper Kootenay River Bull Trout, which has been adversely impacted by hydraulic mining, timber harvest, and intensive recreational use, particularly in the lower reaches. This project will estimate use, abundance, migration timing, and biological data of Wild Horse River Bull Trout; identify critical spawning and rearing habitats; estimate limiting factors to population recovery; directly mitigate recreational impacts by implementing an education plan and working with government agencies to deal with in-stream works; initiate a multi-stakeholder stewardship model for the Wild Horse River; and conduct a preliminary restoration prescription to inform future projects aimed at re-establishing natural morphology and channel connectivity.	Ministry of Forests, Lands, Natural Resource Operations and Rural Development	\$49,455	Research & Information Acquisition	UKEEP: Streams Action Plan	East Kootenay	384 Bull Trout captured, and importance of Wild Horse River identified This three-year study (2016-2018) has provided sufficient baseline inventory/biological data to assist in future conservation efforts and management plans, and to direct a draft prescription for habitat restoration. Project components include: installation of an enumeration fence on the lower Wild Horse River; identifying and mapping of critical spawning and rearing habitats; providing education and outreach to the local community; and determining feasibility of future stream restoration efforts. A Total of 384 out-migrating Bull Trout were captured in the fence throughout the three-year project. It was determined that the Bull Trout population in the Wild Horse River is significant within the Upper Kootenay River. The Wild Horse River is now identified as providing critical spawning and rearing habitat for Bull Trout and other native species.

UKEEP Fish Projects Total: \$174,412

