Environment and Climate Change Canada

Canada Nature Fund: Community-Nominated Priority Places for Species at Risk

Kootenay Connect: 4CW Columbia Wetlands:

Restoration of habitats and Species at Risk in Columbia Valley

Final Report for Year 4

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Summary Overview of Projects in Columbia Valley

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Summary overview of Projects in Columbia Valley

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The Columbia Wetlands Stewardship Partners (CWSP) received funding from Kootenay Connect-ECCC for four projects in Columbia Valley, BC. The projects included the **4CW Conservation Lands project** with a goal to identify and rank important biodiversity hotspots in riparian and upland habitat in Columbia Valley (CV) and describe the conservation values and challenges to conservation in important wildlife corridors in CV. A related goal is to identify and initiate conservation actions in important wildlife corridors and biodiversity hotspots in CV. The second project, **4CW Conservation & Mitigation of Wetland Basins Vulnerable to Drought (4CW Hydro & Beaver)** is composed of two subprojects: a) a hydrological evaluation of wetland vulnerability to climate change and determines priority wetlands where management actions like conservation or mitigation should be implemented and b) an assessment of the impact of beaver dams on the wetlands, and selection and construction of artificial beaver dams to mitigate the loss of water overwinter on specie at risk (SAR) and waterbirds. The third project, **4CW Cottonwood & Beaver project,** focused on identifying and protecting important cottonwood trees from beaver harvesting. The fourth project, **4CW Western Painted Turtle and SAR (4CW WP Turtle & SAR) project,** sought to enhance conservation actions that would benefit American badger, western painted turtle, Lewis's woodpecker, and osprey.

In all, our projects were very successful. Here are a few highlights with more information below.

- We have ranked conservations values of 144 biodiversity hotspots and identified four cross-valley wildlife corridors – information that we are sharing with partners.
- We provided Kootenay Connect/CWSP data and maps and worked with the Columbia Valley Recreational Planning Initiative to try to protect a wildlife corridor. We advised other recreational initiatives using this information to inform conservation actions that will protect these important wildlife areas.
- Our projects aim to raise awareness around species at risk in the Columbia Valley and to enhance, restore, and manage the large riparian and wetland complex of the Columbia Wetlands and Valley to support the recovery of target species at risk.
- We identified five main types of floodplain wetlands based on their hydrology and geomorphology and have assessed their vulnerability to ensure that a suite of them can retain permanent water bodies over winter for migrating birds in the spring.
- We initiated a program on important hydrologically vulnerable wetlands to mitigate the effects of climate warming using natural and artificial beaver dams. We constructed beaver dam analogues to retain water over winter in one 54 ha wetland important for

SAR and migrating waterbirds. We repaired that dam in 2022 and collected effectiveness metrics on it in 2023. We collected data and worked with ECCC & The Nature Trust of BC to install a dam(s) on one of their sites. ECCC has applied for a restoration permit for it.

- We protected cottonwood trees from beaver harvest with 79 new trees being wrapped in wire in Fall/Winter 2022. We revisited the 45 trees that were wrapped in 2021 to assess effectiveness as a part of this year's work.
- We protected a large western painted turtle (WPT) nesting bed from predators using fencing materials on a private land and enhanced WPT habitat in five wetlands using 12 basking logs to enhance turtle digestion and protect them from disturbance.

Overview Summaries of Each of the Columbia Wetlands Projects

1) 4CW Conservation Lands

This project investigated and documented the importance of previously identified wildlife connectivity corridors; updated the valuation of Biodiversity Conservation Opportunities (BCO) properties on crown and private lands that were previously ranked. It created maps to support compatible land use planning to work towards conservation actions in support of the long-term goals of the project. In addition to research, drafting documents and mapping, advocacy work was completed through engagement in local forest harvesting plans in corridor areas and comments on tenure applications for Licences of Occupation. We also aided and responded to recreation planning strategies in various locations in the Columbia Valley.

We wrote detailed spatial descriptions of four major wildlife corridors in Columbia valley (Donald-Golden; Spillimacheen- Brisco; Radium-Steamboat; and Fairmont-Columbia Lake). We identify Conservation Values and goals within each corridor; identified threats and cumulative impacts affecting the values and goals of corridor conservation in each area. We present guidelines for best management practices and compatible uses within each corridor and mapped the BCO properties and how they related to the corridors. We advocate for conservation actions in identified corridor areas and outlined recommendations for a path towards corridor conservation throughout the Rocky Mountain Trench.

All corridors and BCO properties were spatially depicted using the most up to date information. Provincial iMapBC[2] layers were used to spatially represent land-use categories. Multi-species corridors developed and shared by Dr. Michael Proctor and the Columbia Wetlands Ecosystem Mapping. QGIS V 3.28.1 was used in the assessment of the corridor and quantification of the various attributes present. Algorithms within the QGIS platform were run to isolate attributes and clip to the boundaries of the Corridor. Corridor identification was completed by Dr. Michael Proctor. Predictive habitat modeling for grizzly bear, mountain goat, wolverine, badger, and elk were created using Resource Selection Function (RSF) models and subject matter expert input. In each corridor, the conservation values, critical species, and important habitats were

identified in words and maps. Best management plans were identified and data and criteria on wildlife avoidance was summarized.

Current land use, cumulative effects, threats, and potential mitigation options were identified for each of the four major wildlife corridors. Forestry licenses, woodlots, mineral claims, recreation areas, and licenses of operation are identified in each corridor. Heli-accessed winter and summer tenures are laid out in combination with other recreational and industrial land uses to illustrate the pressures on these areas. Transportation densities, including rail, resource roads, and recreational trails are quantified and summarized. Land ownership in the corridors is also summarized. These land use factors are presented to show the need for current land use planning to prioritize undisturbed habitat connectivity, specifically in these corridor areas.

All these anthropogenic parameters were spatially depicted, overlain over the wildlife habitats and corridors to model the best location for high quality wildlife movement within the larger corridor. The map in figure 1 of the Donald Corridor area shows a concept of varying levels of conservation land designations, and an overlay that identifies land parcels for BCO evaluation.

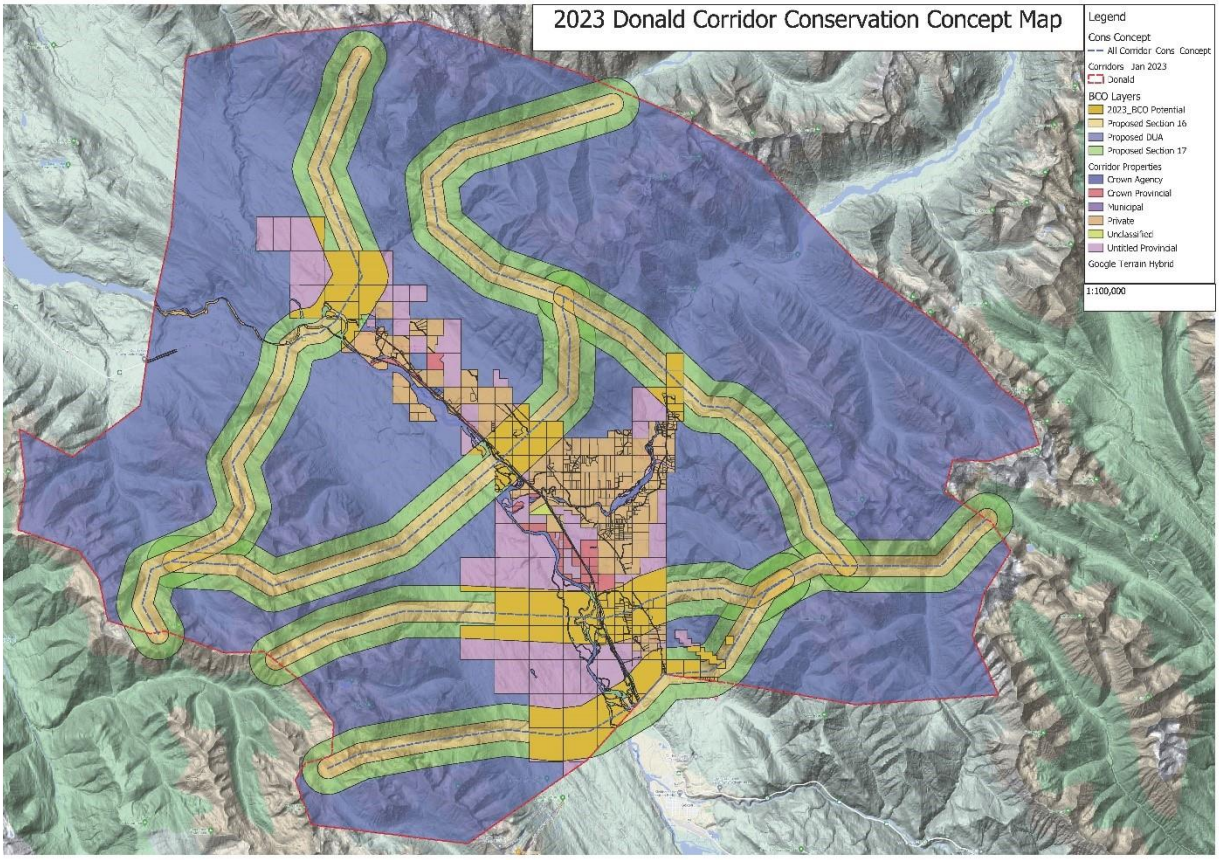

Figure 1: Donald Corridor Concept of conservation. The central dashed line shows a potential migration path based on connectivity between important habitats and suitable topography. The orange buffer area presents a suggested core corridor area with restricted use. The green buffer area identifies a management zone where compatible uses are permitted. The remaining area in the corridor is suggested to follow best management practices to reduce the potential for habitat degradation and species displacement. Land act suggestions are made for all lands outside of privately owned parcels.

Similar maps were created for each of the four major corridors to show the most likely locations to focus conservation actions in.

Finally, we met all our deliverables as outlined below. The summary report included four reports, one on each of the primary corridors. It included an updated list and justification for high priority private and unprotected crown lands, including geo-referenced locations and maps of priority candidate conservation properties in the Columbia Valley. These were provided to KCFA/KCP with the goal of sharing with KCP's securement committee, local land trusts, regional district planners, and provincial government to determine which action(s) is best to take (i.e., acquisition, restoration, stewardship, zoning, etc.). We have tried to work with the new FLWRS to determine the best conservation actions and initiate protection, especially in the Radium and Dry Gulch areas.

We are unable to write an application for a Section 16 (or 17) Lands Act, to provide to FLWRS because they feel that is their prevue. We have collaborated and encouraged FLWRS to follow through to protect high-quality crown lands. We especially provide high quality information to them and try to engage with other local stakeholders to assist us. We did develop conservation strategies to guide management, and these were shared through appropriate forums, e.g., Columbia Valley Recreation planning Initiative to help avoid high priority wildlife areas in the Steamboat Landscape Unit, Dry Gulch Recreation Strategy and other landscape initiatives as they arise. Unfortunately, we were unable to implement 1-3 conservation opportunities in collaboration with Farmland Advantage since they were unable to participate this year. We did work with the ranchers (members of the Lake Windermere District Farmers Institute) to provide specific advice to individual owners.

2) Conservation & Mitigation of Wetland Basins Vulnerable to Drought (4CW Hydro & Beaver)

This project combines hydrological and ecological assessments to better understand the Columbia Wetland Complex and the individual wetlands within it. It includes a hydrological classification of the different wetland types observed within the Columbia Wetlands and the ecological consequences of their differences. We assessed the vulnerability of the wetlands to climate change and the potential for beaver dam analogues (BDAs) to be used as a low-tech and relatively natural restoration technique. We restored (in 2021) and repaired (in 2022) one 54 ha wetland (Site 38) with several beaver dams and gathered the data and support needed to acquire a permit in another 22-ha wetland. We provided The Nature Trust of BC and ECCC, who own and manage the parcel of the Columbia National Wildlife Management Area, with the data and guidance to install and repair beaver dams in Site 71 to raise the water levels for spring migrating birds. ECCC (or their contractor) has applied for the restoration permit and the dams will be built/restored in May 2023, if the permit is approved. We identified 2 additional wetlands that may be suitable for BDA's and started the consultation on them for future restoration.

In monitoring the effectiveness of the 54 ha BDA's in Site 38, we found that the water level was raised ~35cm, enough to the cover the mud flats that were previously present. We will be comparing the spring migrating birds in 2023 to previous counts. The number of species of spring migrating birds was higher in wetlands that retain water over winter. For example, Site 24 (a potential future restoration site) had only 9 species of waterbirds, while nearby Site 21 had 23 species of waterbirds and raptors. There were also fewer individual birds observed in Site 24, with 100 individuals observed in Site 24 and 372 observed in Site 21.

In accessing the hydrologic status of the entire 20,000 ha (using LiDAR and GIS) we estimated that about 75% of the 20,000 ha wetlands are fully connected with the main river and fully flood in June. Wetlands only partially connected to the river comprise 13% of the wetland complex while isolated wetlands make up 12%; in total, that means that only a quarter of the Columbia Wetland Complex retains water over the winter and in the early spring to provide habitat for migrating spring waterbirds and species at risk.

We also used a desktop GIS reconnaissance to locate suitable wetlands in the western benchlands of Columbia Valley for the 2023-2026 Kootenay Connect project.

3) Conservation of Cottonwoods (4CW Cottonwoods & Beaver)

The purpose of the cottonwood/beaver project is to assess the status of important cottonwood stands and install wire protectors if they are required to protect critical stands from beaver harvesting. The cottonwood conservation project promotes retention of mature wildlife trees in the Columbia Wetland by protecting trees from beaver herbivory. Wetland mapping and surveys in Year 1 identified critical stands of cottonwoods within the project areas.

Building on the work completed in Year 3, the work in Year 4 targeted high value cottonwood trees. Mature cottonwoods that had existing nest structures were prioritized, as well as stands with multiple mature trees and younger recruitment trees. Almost all these stands were near significant evidence of beaver activity. The stands near Golden are in a location known to previously have housed a large heron rookery.

In total, 79 new trees were wrapped in Fall/Winter 2022. The 45 trees that were wrapped in 2021 were revisited to assess effectiveness as a part of this year's work. Several were repaired.

4) Western Painted Turtle and SAR (4CW WP Turtle & SAR)

In Year 4, the WPT & SAR project continued work on species at risk in the Columbia Valley, from Canal Flats north to Golden. We built upon knowledge gained in previous years and developed conservation actions benefiting four at-risk species: western painted turtle - intermountain -

Rocky Mountain population (*Chrysemys picta* pop. 2), American badger (*Taxidea taxus jeffersonii*, eastern population), Lewis's woodpecker (*Melanerpes lewis*), and osprey (*Pandion haliaetus*).

We had a public outreach campaign to pursue information on locations of public sightings of badgers (or their dens) to get a sense of where badgers occur on the landscape. Seventy-nine public observations were recorded. our goal is to establish a conservation designation for badger habitat; a designation that only applies on Crown land. During badger inventories, we identified 983 badger burrow entrances in four unique areas with 790 of those burrows observed in functioning condition (i.e., still capable of providing habitat and ecological functions for badgers). Those burrow locations have been nominated to become Wildlife Habitat Features and two Wildlife Habitat Areas.

We met with a consultant who is developing the Dry Gulch Area Management Plan for the provincial government and provided her with the information on burrow activity/burrows in the Dry Gulch area. The government is planning to create designated/authorized biking and hiking trails in the Dry Gulch Area even though that is one of the few grassland areas within the CWWMA. They had no information on the status of badgers prior to our information. We do not support the compromises as they were laid out and will provide more information in the future.

Area	# of burrows in functioning condition	# of new burrows (used in 2022)	# of old burrows (used previous to 2022)	Unknown year of burrow use (2022 or previous)	Total burrow #	Inventory completed in area in 2022
Old Coach	367	0	0	367	367	no
Rushmere	96	8	149	42	199	yes
Steamboat	322	137	239	34	410	yes
Thunderhill	5	2	1	4	7	no
Totals	**790**	**147**	**389**	**447**	**983**	

Our goal is to identify where potential important habitats are located for badgers, collect the requisite data at these locations, and submit applications for WHF/WHA proposals. The Dry Gulch Area Management Plan is increasing the urgency for us to apply for a WHA for that area.

We created a new western painted turtle nesting area in the Spillimacheen area, and 12 basking logs were installed in 5 wetlands. The Spillimacheen location is a nesting hotspot, and the turtle population was being impacted by mortality events (roadkill and predation). To help reduce mortality during this critical life stage, an alternate nest site was created in 2022 to entice turtles to a safer nesting location. Nesting substrate was brought in and fenced. After the alternate site was completed, we observed turtles continuing to use their historic nesting area. Through effectiveness monitoring we learned of additional challenges at this site during the nesting season. Identified challenges will be addressed in 2023 and it is unlikely that we will go to a new area in 2023. Rather we will revise and revamp the two nesting areas we created in

2022 and 2021. We also had Ministry of Transportation and Infrastructure install warning signs along Westside Road to help reduce the mortality of WPT.

We also monitored Lewis's Woodpecker and osprey nests. In 2022, 11 active nests were identified, which could trigger the Key Biodiversity Area (KBA) threshold for LEWO. This information was sent to the agency tasked with determining whether an area qualifies as a Key Biodiversity Areas (KBA) for British Columbia - Wildlife Conservation Society Canada. All nest trees were on private land. Since no nests were located on Crown land, FRPAs special management designations (WHA, WHF) do not apply for any of the nests located in 2022. We also monitored osprey nests success. We monitored 71 osprey nests three times during the breeding season. Twenty-seven of the 71 nests surveyed produced chicks and were deemed successful. Comparison of chicks produced over the four years of monitoring showed similar results with about 27 chicks produced each year. We also recommend to BC Hydro to replace damaged nest platforms in critical areas.