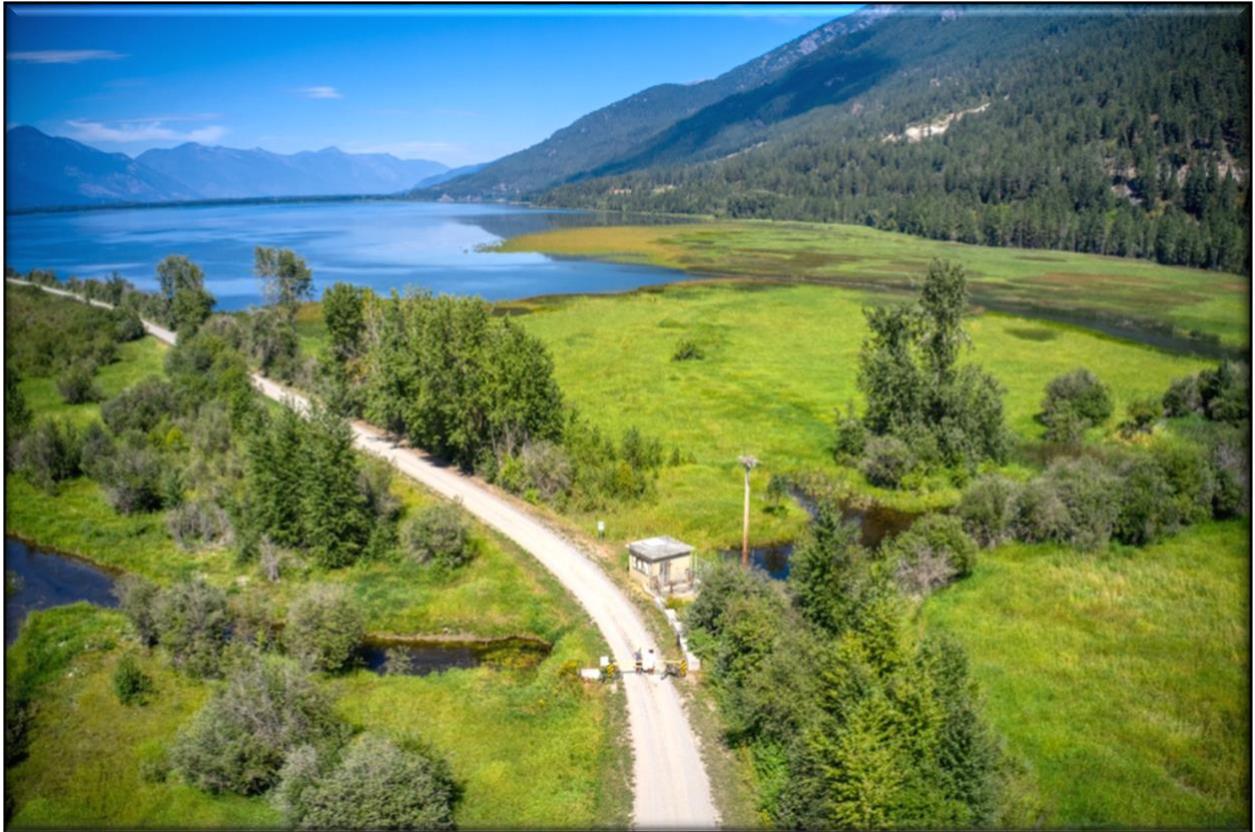


March 31, 2021

Summary of Activities for the Creston Valley Wildlife Management Area 2020-2021 (Year 2)



Environment and Climate Change Canada – Canada Nature Fund: Community-Nominated Priority Places for Species at Risk

Kootenay Connect: Creston Valley Focal Area



Environment and
Climate Change Canada

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Acknowledgements

The work completed on the Creston Valley Wildlife Management Area in 2020/2021 was funded through Environment and Climate Change Canada's (ECCC) Community-Nominated Priority Places (CNPP) Grant. Matching funds were provided by the Creston Valley Wildlife Management Area (CVWMA), Ducks Unlimited Canada (DUC), and the Habitat Conservation Trust Foundation (HCTF) and the Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD).

The work in 2020/21 was completed in collaboration with the provincial Northern Leopard Frog Recovery Team, which include members associated with the Fish and Wildlife Compensation Program (Columbia Basin), BC Ministry of Forest, Lands, Natural Resource Operations and Rural Development, The Ktunaxa Nation Council, The Nature Conservancy of Canada, the Calgary Zoo, the Vancouver Aquarium, and private contractors. Ducks Unlimited Canada worked with CVWMA on the Duck Lake Nesting Area water control portion of the project.

Kootenay Connect is a project facilitated by the Kootenay Conservation Program.

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Reporting Deliverables

The report outlines the Services provided by the Creston Valley Wildlife Management Area (CVWMA), representing the Creston Valley Wildlife Management Authority, in Fiscal Year 2020/21, as requested under Schedule A of the Service Agreement # 2020/21-CV-01 between the Kootenay Centre for Forestry Alternatives (KCFA) and the CVWMA.

The CVWMA completed the two Deliverables for Fiscal Year 2020/21:

- **2CV Duck Lake water control – Implement**
 - Removed derelict water control infrastructure and replaced with new water control system with two functional sluices gates that allows for improved water flow between Duck Lake and the Duck Lake Nesting Area.
 - Measurable outcomes: functional water control that allows regulation of water levels in the Duck Lake Nesting Area to maintain and/or improve habitat for northern leopard frog, Red-necked Phalarope, Short-eared Owl, Western painted turtle, and Western Toad.
- **2CV NLF wildlife movement – Planning**
 - Design habitat features to improve movement corridor for northern leopard frog between overwintering and breeding habitats. Develop a prescription that would improve wildlife movement from the Kootenay River East Channel eastward to the Purcell Mountain Range, which would include Nature Conservancy of Canada’s Frog-Bear conservation property.
 - Measurable outcomes: Develop design with habitat features that will improve connectivity between breeding and overwintering habitat for northern leopard frog and also improve connectivity for other wildlife south of the Duck Lake Nesting Area.

The reporting deliverables under Schedule A are outlined in Table 1. These deliverables are either provided as attachments to this report or as content, as outlined in Table 1.

Table 1 Service Agreement # 2020/21-CV-01 Reporting Deliverables

Reporting Deliverable	Location
1. Invoice for payment by including copies of all receipts labelled by Project Code, Expense Category, and Expense Amount	Dropbox: CVWMA_1475_KCFA_15 Mar 2021.pdf
2. Completed tracking sheet of all in-kind donations of services (i.e., reduced daily rate, volunteer time, donated expense) and matching funding by funder as per Attachment A: ‘Kootenay Connect CNPP In-Kind and Matching Funding Tracking.xlsx’	Dropbox: Tracking_Spreadsheet/KCFA-KC CRESTON_Funding tracking_CVWMA.xlsx (second tab).
3. Short written description of works completed for operational water control with two functional sluices gates that allows water to flow between Duck Lake and the Duck Lake Nesting Area	This report, Section 1
4. Final design plan identifying types and locations of movements/connectivity areas with habitat features that will improve northern leopard frog and other wildlife movement south of the Duck Lake Nesting Area	This report, Section 2 Contractors’ documents (2): BG_Connectivity_design

	concept_Mar 2021.pdf; BG_Connectivity_design concept text_Mar 2021.pdf
5. Before and after photos (for on the ground projects)	This report: photo section at end of document.
6. Short 3-4 minute selfie video addressing: why have you done this project(s)? What have you accomplished with this project(s)? What are the benefits to fish, wildlife, and ecosystems? Who have you collaborated with? What lessons can you share? What are the highlights of this achievement?	Dropbox: DLNA Water Control Upgrade – Final Cut.mp4

1. 2CV Duck Lake Water Control: remove existing water control infrastructure and replace with new water control – Completed

The physical work to remove the old water management infrastructure (pumphouse and sluice gates) and install a new water control at the Duck Lake Nesting Area (DLNA; Figure 1) began on October 15th, 2020¹. The project was successfully implemented as follows.

October 15-16: A herptile (amphibian and reptile) and fish salvage (Figure 2) was conducted in the channel west of the dike to allow for dewatering and the temporary construction of a coffer dam. Only exotic fish of the following species were captured during the salvage: largemouth bass, pumpkinseed, yellow perch, and black bullhead. Two amphibian species (northern leopard frog and Columbia spotted frog) and two reptile species (Western painted turtle and common garter snake) were found during monitoring near the work site and all but one individual were moved to a release site away from project activities (one individual was deceased upon detection; Table 2).

October 19-20: A FortisBC-Electricity crew relocated an Osprey nest-platform outside of the construction zone (Figure 3). The old pumphouse and sluices gates were demolished (Figure 4), and the underground culvert removed (

Figure 5). Herptile monitoring and salvage activities were ongoing, and northern leopard frog, Columbia spotted frog, and common garter snakes were relocated away from project activities (Table 2).

October 21-23: The installation of the new water control began, and a trench was dug for placement of the new high-density polyethylene culvert (

Figure 6). Two six-meter-long sections of culvert were laid into the trench and gradually buried over. Soils around and over the culvert were gradually compacted using “jumping jacks” units (Figure 7). A sand filter

¹ Additional activities that took place prior to October 15th, 2020, have been presented in progress reports provided in August and November of 2020.

diaphragm was constructed at the east end of the pipe (Figure 8). No amphibians or reptiles were found near the work site on these three days (Table 2).

October 26-27: Rock/gravel pads (2) to support the concrete headwalls (outlet structures) were constructed (Figure 9) and the two concrete headwalls were lifted and slid into place at each end of the culvert, using a 75-ton crane (

Figure 10). Herptile monitoring and salvage activities were ongoing, and a northern leopard frog was relocated away from project activities (Table 2).

October 28-29: Finished filling and compacting soils to grade along trench over culvert and around new concrete headwalls (Figure 11). Attached the new sluices gates to each of the two concrete headwalls and installed safety railing on top of headwalls (Figure 12). Herptile monitoring and salvage activities were ongoing; a group of common garter snakes were found near the work site and all but one of these individuals were safely released (one project mortality was recorded; Table 2).

October 30: Removed the coffer dams on both sides of the water control (Figure 13) and completed grading, levelling and cleaning up of project site (Figure 14), as well as seeding of all disturbed soil. Re-graveled the section of dike disturbed by project activities and digging. Re-opened dike to public (Figure 15). Herptile monitoring and salvage activities were ongoing and common garter snakes were relocated away from project activities (Table 2).

Table 2. Herptile Monitoring Details, October 2020

Date	Species and Number Observed				Total Observed	Total Relocated
	Columbia Spotted Frog	Common Garter Snake	Northern Leopard Frog	Western Painted Turtle		
15-Oct	-	2 ^a	9	2	14 ^a	12 ^a
16-Oct	3	-	-	-	3	3
19-Oct	-	-	3	-	3	3
20-Oct	1	1	1	-	3	3
21-Oct	-	-	-	-	0	0
22-Oct	-	-	-	-	0	0
23-Oct	-	-	-	-	0	0
26-Oct	-	-	-	-	0	0
27-Oct	-	-	1	-	1	1
28-Oct	-	9 ^a	-	-	9 [*]	8 ^a
29-Oct	-	-	-	-	0	0
30-Oct	-	2	-	-	2	2
Total	4	14	14	2	34[*]	32^a

^a one garter snake mortality was recorded on October 15 and 28, therefore the number relocated and released is one less than the total observed. Likewise, the total observed was 34 individuals, but only 32 individuals were relocated and released.

The two new sluice gates were opened for the first time on January 12th, 2021, to let water into the DLNA from Duck Lake. Both gates were opened approximately 30 cm and operated properly; water flowed

through to DLNA as expected (Figure 16). Water levels were brought up approximately 10 cm from January 12th to January 29th, 2021.

“Before and After” photos were taken with a small drone on August 18th (Figure 17) and November 14th (Figure 18); these photos show the removal of the old pumphouse and a minor re-configuration of the channel on the east side of the dike to accommodate the new water control.

The new water control structure will improve wetland habitat conditions across at least 300 (floodable) out of 430 ha in DLNA compartment. The water control upgrade, in conjunction with northern leopard frog habitat enhancement completed in 2019, specifically work completed along channels to improve water flow, will allow for persistence of water throughout the year across much of the DLNA.

The main species at risk that will benefit from the water control upgrade at the DLNA is the northern leopard frog, with the DLNA being the core breeding area for the species. The water control upgrade was considered a critical part of enhancement activities that began in 2019 with habitat restoration within the DLNA compartment. The upgrade will make managing water levels easier and more efficient and eliminated the potential for a catastrophic structural failure of aging (~50-year-old) infrastructure. While the water level management is primarily to support and maintain northern leopard frog habitat in DLNA, water level management will also benefit other wetland-associated species at risk such as western painted turtle (widely distributed in this area), western toad (rare species in this area), and Red-necked Phalarope (rare and uncommon in this area). Improved water level management capabilities will help better maintain habitat for these three species.

Finally, the completed work should help maintain conditions that favor open “upland” habitat used by Short-eared Owls on the west side of the DLNA. For years, the fluctuations between moist and “dry-ish” conditions have maintained the grassy habitat free of woody vegetation where vole species have thrived and provided foraging and nesting opportunities for Short-eared Owls.

2. 2CV Wildlife Movement: Develop and implement a prescription that would improve wildlife movement from Kootenay River east channel to Purcell Mountain range to the east including portions of CVWMA’s West Meadows Farm and Nature Conservancy of Canada’s “frog-bear” parcel – Planning Completed

CVWMA completed the planning phase of this project through a series of meetings, field trips, and collaboration with stakeholders and consultants.

CVWMA organized a video-call on June 8th, 2020 to kick start the project. Maps of the area and landownership were presented and broad topics were discussed, such as pertinent legislation to consider in project planning, species at risk presence in the area, flood protection and aspects of water management for agriculture in the area using dikes and drainage ditches, and future plans for agriculture

on the Nature Conservancy of Canada’s “frog-bear” property. CVWMA followed up the video-call by organizing a “field tour” on 9 July 2020 to visit the “corridor” and gather on-the-ground ideas from participants (Figure 19); a summary of topics discussed, and potential habitat “improvements” was prepared and distributed to participants in late August 2020.

In October 2020, CVWMA retained the professional service of Leslie Lowe with Beargrass Landscape Architecture (Marysville, BC) to help develop a conceptual design for a “connectivity corridor” for an area that spans through the West Meadows Farm on the CVWMA and Nature Conservancy of Canada’s Frog-Bear property roughly along the southern edge of the Duck Lake Nesting Area. Leslie visited the project site with Julia Shewan (CVWMA) on August 28th, 2020, to familiarize herself with the project area and existing landscape features.

From October 2020 through March 2021, Leslie gathered data on wildlife and plant species present in the area of interest, researched species requirements, analyzed available geographical information system data/layers, assessed existing landscape features and prepared a comprehensive document – the “Master Plan” – that will be used as the guiding document for the on-the-ground activities planned for 2021 and 2022. The Master Plan summarizes existing conditions along the area of interest and identifies key species that could benefit from enhanced connectivity within their ranges, and the steps that could be taken to re-establish habitat connectivity. The Master Plan is a visual tool that re-imagines how the project might look and feel over the long term and the positive effect on increasing habitat connectivity and its benefits to a multitude of species, including but not exclusively species at risk. The plan provides for a holistic approach to creating habitat connectivity, balancing values for wildlife, ecosystems, and agriculture.

The Mater Plan is intended as a support piece for future decision making. Final habitat enhancement prescriptions will need to take into consideration input from biologists, landscape architects, botanists, farmers, Indigenous peoples, and hydrologists.



Figure 1 Duck Lake Nesting Area Water Control Upgrades – project location



Figure 2 Fish and amphibian salvage, October 15th, 2020.



Figure 3 Osprey nest-platform relocation, October 19th, 2020.



Figure 4 Pumphouse demolition, October 19th, 2020.

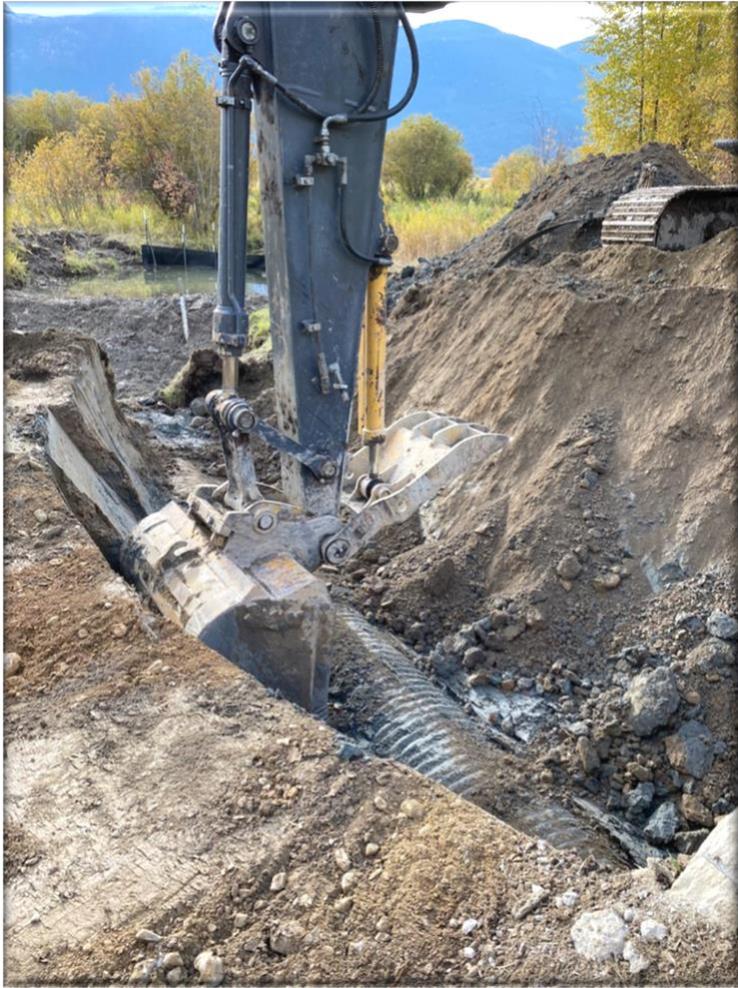


Figure 5 Removal of old culvert, October 20th, 2020.



Figure 6 Culvert installation, October 22nd, 2020.



Figure 7 Compacting soils with “jumping jacks” units, October 23rd, 2020.



Figure 8 Sand filter at east end of culvert, October 23rd, 2020.



Figure 9 Building gravel/rock pad for concrete headwall support, October 27th, 2020.



Figure 10 Lifting of concrete headwall, October 27th, 2020.



Figure 11 Filled and compacted soil over culvert and around concrete headwalls, October 29th, 2020.



Figure 12 Anchoring sluice gate to one of two headwalls, October 29th, 2020.



Figure 13 Removing coffer dams, October 30th, 2020.



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Figure 16 Water flowing into DLNA from Duck Lake, January 16th, 2021.



Figure 17 Aerial photo showing site before project was implemented, August 18th, 2020.



Figure 18 Aerial photo showing site after the project was completed, November 14th, 2020.



Figure 19 Participants viewing and discussing maps of proposed project area, field tour 9 July 2020.