Creston Valley Conservation Action Forum Summary Report

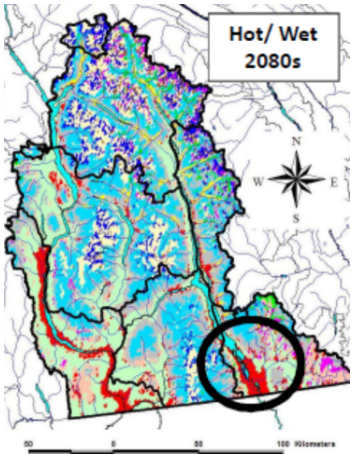
Prepared by:

Kootenay Conservation Program[1]

February 27, 2020







Photos (clockwise from top left): KCP, CVWMA, Michael Lucid, Lindsay Anderson, Greg Utzig

[1] Marcy Mahr, Stewardship Coordinator and Kootenay Connect Project Manager, www.koootenayconservation.ca

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ACKNOWLEDGEMENTS

The Creston Valley Conservation Action Planning Forum was the result of collaborative efforts of many people. We are extremely grateful to the Creston Valley Wildlife Management Area co-hosting this event, and to Marc-Andre Beaucher, Head of Conservation Programs, for sharing his expert knowledge of the area. We appreciate everyone who provided input and background information: Norm Allard, Lindsay Anderson, Brian Churchill, Valerie Evans, Adrian Leslie, Michael Lucid, Dale MacNamar, Irene Manley, Lisa Pavelich, Michael Proctor, Julia Shewan, Sarah Stephenson, Greg Utzig, and Dave Zehnder. We also appreciate funding from Columbia Basin Trust, Fish and Wildlife Compensation Program, Habitat Conservation Trust Foundation, and Nature Conservancy of Canada. We wish to extend our appreciation to everyone who attended the Forum, shared bold ideas and a collaborative spirit, and helped set the stage for greater conservation of the Creston Valley's extraordinary biological diversity.

EXECUTIVE SUMMARY

On January 22, 2020, the Kootenay Conservation Program (KCP) and Creston Valley Wildlife Management Area (CVWMA) co-hosted the Creston Valley Conservation Action Planning Forum in Creston, B.C. During this full-day workshop, 24 participants (Figure 1) representing diverse perspectives as scientists, resource managers, conservationists, keepers of indigenous knowledge, and ranchers worked together to identify priority actions that would contribute to maintaining healthy fish and wildlife populations and ecological functions in the Creston Valley over the next five years.

The Creston Valley Conservation Action Planning Forum built upon integrating scientific knowledge, analyzing values and threats, and prioritizing actions to inform conservation action plans and inspire collaborations.

The Forum began with scientists providing four-minute speed presentations of their research findings and sharing their "top three recommendations that would make the biggest difference" in keeping the Creston Valley ecologically healthy and functioning. These contributions were submitted to KCP staff in advance of the Forum so the information and recommendations could provide a starting place for: a) group discussion of key conservation values and threats; and b) small group review of the catalogue of scientists' recommendations for actions based on six conservation themes:

1. Support recovery of species at risk
2. Protect existing high-quality habitats for biodiversity
3. Enhance and restore degraded ecosystems
4. Enhance landscape connectivity and corridors
5. Advance climate change resilience
6. Reduce human-wildlife conflict and recreational pressure

Each of these themes was posted on a wall and individuals selected their **top five actions** using adhesive dots (provided for this purpose) that they thought would make the most difference in the Creston Valley over the next 1-3 years and that they would be interested in working on. This process resulted in a **selection of 21 actions** with greater than three votes. Participants then formed small groups to evaluate high-scoring actions by theme and set out to collectively build action plans (see box).

The Creston Valley Forum Resulted in Five Priority Action Plans (not ranked):

1. Develop a Landscape Scale Ecosystem-based Inventory of Biodiversity
2. Enhance Landscape Connectivity and Corridors Through a Climate Change Lens
3. Expand Stewardship Opportunities to Protect High Quality Habitats
4. Restore Floodplain Connectivity of the Kootenay/Kootenai River System
5. Perform Fire Maintained Ecosystem Restoration

The five priority actions (listed above) were collectively generated and incorporated policies, objectives and activities that align with participants' programmatic interests. All participants, as well as those people who were invited but could not attend the Creston Valley Forum, will be provided with the Forum's findings and will be encouraged to pursue these priority actions as they are able.

Moving forward, the Creston Valley Conservation Action Forum approach supports KCP's partners in developing collaborative action plans that identify conservation targets and propose on-the-ground solutions to mitigating threats in their local neighbourhood. KCP will remain engaged in supporting the Creston Valley process and tracking the implementation of priority actions. The Forum's process and outcomes will also help KCP guide collaborative neighbourhood conservation action planning in other regions of the Kootenays where partners want to work together to protect local biodiversity.

FIGURE 1. CRESTON VALLEY CONSERVATION ACTION FORUM PARTICIPANTS.

I. OVERVIEW

The Creston Valley Conservation Action Planning Forum took place on January 22, 2020 in Creston, B.C. The purpose of the Forum was to bring together a broad range of perspectives, including scientific experts on ecological topics, to identify priority actions for enhancing and maintaining the ecological health and functioning of the Creston Valley, a rich, biodiverse ecosystem nestled between the Purcell and Selkirk mountains along the US border.

KCP is a partnership program comprised of over 80 organizations that are involved in conservation and stewardship in the East and West Kootenays[2]. KCP's mandate is *to facilitate and coordinate efforts on private land and to generate the resources and support to maintain this effort*. The Creston Valley Conservation Action Planning Forum was based on a model developed by the Slocan Lake Stewardship Society in collaboration with the Kootenay Conservation Program (KCP) in February 2017[3] and is the fifth Conservation Action Forum that KCP has co-hosted.

During this full-day workshop, 24 participants (Figure 1, Appendix A) representing diverse perspectives as scientists, resource managers, conservationists, fish and wildlife associations, and keepers of Indigenous knowledge, worked together to identify priority actions that would contribute to maintaining healthy fish and wildlife populations and ecological functions in the Creston Valley over the next five years.

The goal of the Forum was not to create another plan since most agencies and organizations already have plans. Rather, the Forum was designed to help participants set priorities and develop collaborative solutions for this Valley. The starting point was science: sharing what we know about how the ecosystems, species and habitats of this area interconnect, and identifying the ecological values that make this landscape so exceptional.

The Forum agenda (Appendix B) was structured to address these questions:

- What is the current knowledge regarding species of concern, critical habitats and ecological processes in the Creston Valley? What more do we need to know?
- Based on scientific findings, what actions will make the most difference in conserving populations of species of concern, preventing/controlling invasive species, protecting high quality habitats, enhancing and restoring degraded ecosystems, enhancing

[2] www.kootenayconservation.ca

[3] Mahr, M. 2017. Slocan Lake Watershed Priority Conservation Actions Summary Report: Step #2 for an Ecosystem-based Conservation Action Framework for Slocan Lake. Report to Slocan Lake Stewardship Society. 30pp.

connectivity and corridors, promoting climate change resilience, and reducing human-wildlife conflict and recreational pressure?

- Where do you see opportunities in your organization's or agency's plans, policies, programs, budgets and communications for realizing these actions?
- What kind of alignment do we need to foster between scientists, non-profit organizations, First Nations, and local and provincial government to effectively collaborate and make a significant, positive impact while also meeting organizational mandates?

DESIRED OUTCOMES OF THE FORUM

- Science-based recommendations set the foundation for priority-setting of actions.
- Natural resource managers and representatives of local government, First Nations and non-profit organizations will have the information they need to identify how they can contribute to collaborative approaches and actions.
- The group clearly identifies at least four conservation actions and the partnerships/ teams required to achieve positive results, including applying a transboundary lens.
- Partners of Kootenay Conservation Program and the Creston Valley Wildlife Management Area have clear direction for how they can support the proposed conservation actions in the Creston Valley.

The Creston Valley Forum included scientific presentations (Section IV) with accompanying recommendations that set the foundation for small group strategy sessions (Appendix D). Within the small groups, participants discussed conservation opportunities and challenges, and identified priority actions that would benefit fish and wildlife; protect and restore high quality habitats; and increase landscape connectivity and climate change resilience. The results reported in the following sections highlight actions that participants considered feasible within the next 1-3 years (Figure 2).

FIGURE 2. THE CRESTON VALLEY CONSERVATION ACTION FORUM PROCESS.

"Creston is at the heart of the Ktunaxa Territory …. and has always been an important meeting place."

~ Welcoming remarks by Chad Luke, Ktunaxa Nation Council, January 22, 2020

HONOURING KCP'S ROOTS IN THE CRESTON VALLEY

"It was here in the Creston Valley in 2012, where over 80 conservation-minded people from throughout the Kootenays celebrated the 10th anniversary of the East Kootenay Conservation Program and the expansion of its service area to include the West Kootenay, thus transforming the partnership into the "Kootenay Conservation Program". This 2-day celebration called "East Meets West" was exactly that – a grand gathering of people dedicated to conservation and stewardship, and inspired to take a Kootenay-wide approach to protecting fish and wildlife and high-quality habitats in this very special corner of the BC.

This gathering place of Creston, midway between the East and West Kootenays, is a powerful place to address big questions for how best to collectively conserve the natural landscape and ecology of the Creston Valley. Some of the questions we are asking are: What's here and how healthy is it? What needs to be protected or restored? Where do we put our limited energy? How can we work better together? Some of the answers to these questions are scientific answers; some are about governance; others are about relationships. We believe that good information coupled with personal connections can foster innovative collaborations, and that relationship is a central ingredient for any of the actions that will result from today's work together.

There are many people working in this region, making decision daily about its future – frequently in isolation and sometimes under the gun to get a project done. This Forum is an opportunity to think more broadly and look for ways to work better together. I hope you develop new partners today."

~ Opening remarks from Marcy Mahr, KCP Stewardship Coordinator and Kootenay Connect Project Manager, January 22, 2020

**Note: Please refer to Appendix A for Forum Participants; Appendix B for the Forum Agenda; Appendix C for a Glossary of Acronyms; and Appendix D for a Catalogue of Recommendations.*

II. TAKING A CONSERVATION NEIGHBOURHOOD APPROACH

Since 2017, the Kootenay Conservation Program has engaged its partners in landscapes through the East and West Kootenays to develop an approach to framing conservation and stewardship objectives in terms of ecological benefits to local landscapes. KCP's Conservation Action Planning Initiative has worked with partners to identify 14 "Conservation Neighbourhoods" in the region (Figure 3). These areas are informed by watershed and ecosystem boundaries yet also capture what KCP partners deem "local" by encompassing areas that have a common conservation culture.

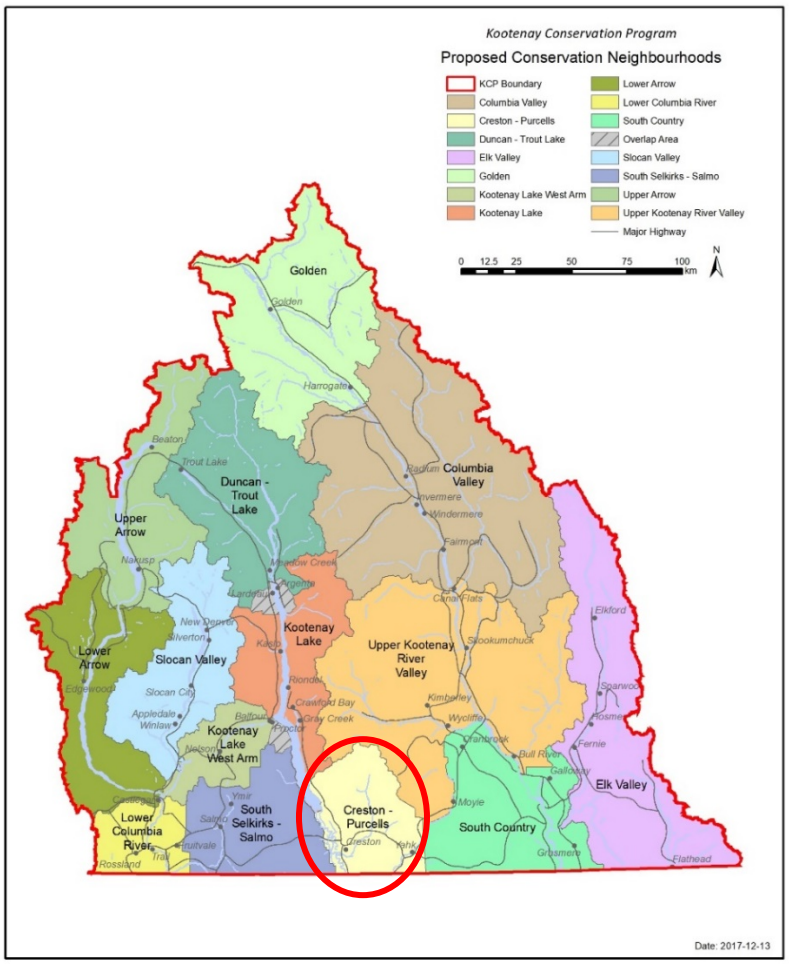

FIGURE 3. MAP OF KCP'S 14 CONSERVATION NEIGHBOURHOODS IN THE KOOTENAYS WITH THE CRESTON PURCELL NEIGHBOURHOOD CIRCLED IN RED.

The Creston-Purcells Conservation Neighbourhood extends from the south end of Kootenay Lake to the US border, along the western margin of the valley bordering Darkwoods Conservation Property in RDCK Electoral Area C, and east to the watershed divide in the Purcell Mountains which includes a small portion of RDCK Electoral Area A encompassing Wynndel/Eastshore of Kootenay Lake and a large portion of RDCK Electoral Area B extending east to the boundary with RDEK (Figure 4).

The Creston Valley is well-known for its ecological treasures such as diverse wetland and riparian habitats, active floodplains along the Kootenay River, old cottonwood galleries rich with biological diversity and uncommon and at-risk species. Since the 1940s, this region has been recognized as being exceptionally important for wildlife and led to the provincial designation of the Creston Valley Wildlife Management Area (CVWMA) in 1968, which protects over 300 species of birds, 57 species of mammals, and 29 species of fish, reptiles, and amphibians[4]. Further international recognition came in 1994, when the CVWMA was designated a Ramsar site wetland of international importance; and again, in 2002, with its designation as a nationally Important Bird Area by BirdLife International because it regularly supports over 100,000 water birds during migration periods[5] (Figure 4).

FIGURE 4. CRESTON WILDLIFE MANAGEMENT AREA, CRESTON, BC. (PHOTO COURTESY OF CVWMA)

[4] https://www.crestonwildlife.ca/

[5] Ibid.

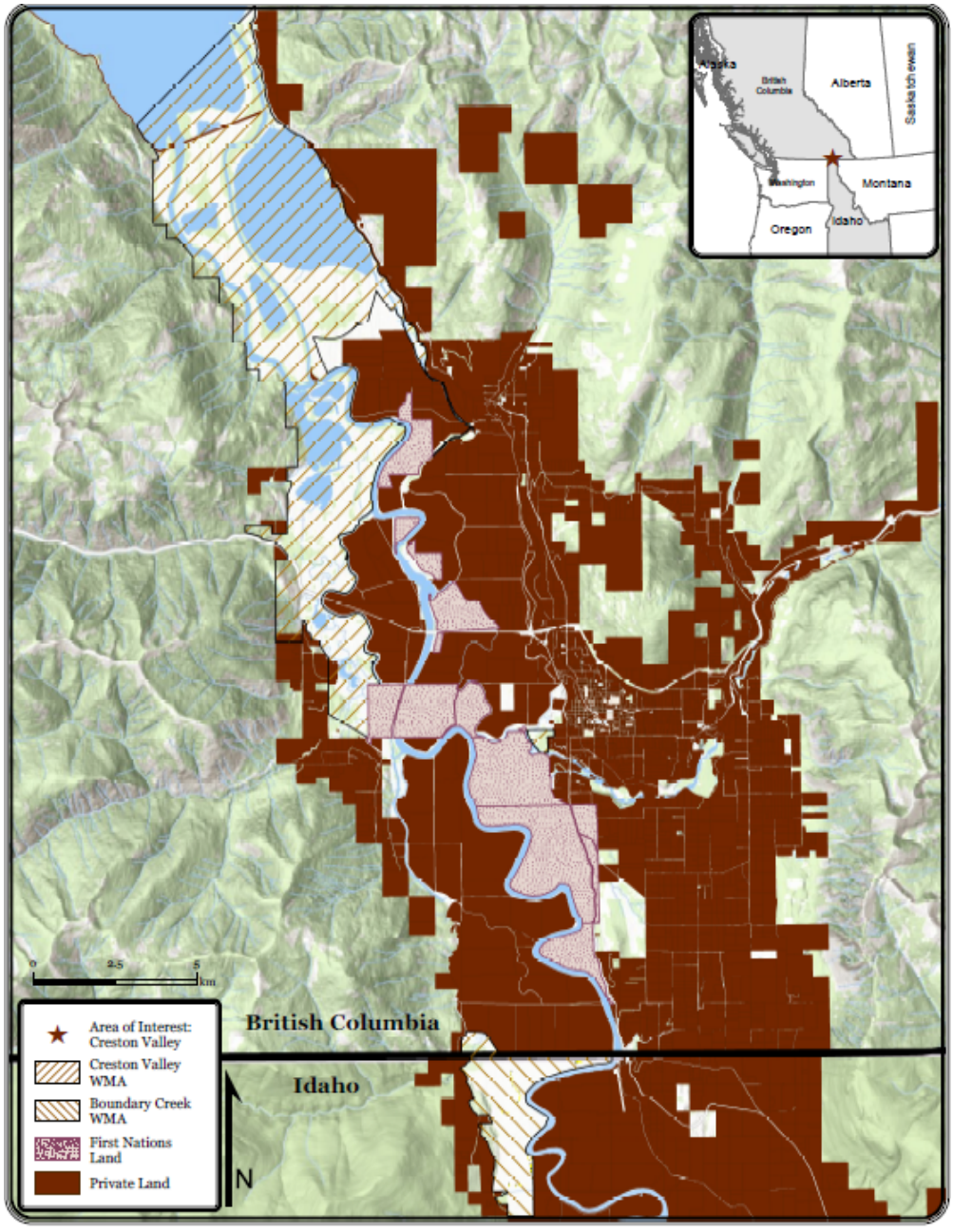

FIGURE 5. MAP OF LANDOWNERSHIP IN THE TRANSBOUNDARY AREA BETWEEN THE CRESTON VALLEY WILDLIFE MANAGEMENT AREA, BC AND BOUNDARY-SMITH CREEK WILDLIFE MANAGEMENT AREA, IDAHO. (MAP COURTESY OF IDAHO DEPARTMENT OF FISH & GAME)

III. CONSERVATION VALUES AND THREATS

Prior to the forum, KCP prepared an initial list of conservation targets and ecological threats for the Creston Valley. This list was sent to the participating scientists for their review. Expert input was summarized by KCP and resulted in the lists of targets and threats presented in Tables 1 and 2 (below).

Conservation targets were defined as species, habitat types, wildlife habitat features, special landscape elements, and ecological processes that are targets for protective action (Figure 6). The values represent the biological diversity and unique habitats of the Creston Valley ecosystem which sustain its ecological integrity and healthy functioning (Table 1). Although listed independently, conservation targets are interconnected and may nest under each other hierarchically. For example, habitat features may be embedded in particular habitat types or may be the result of certain ecological processes.

Threats were defined as negative impacts which may significantly stress or impair conservation values and directly impact species viability, habitat quality, or ecological functioning. These impacts are activities or processes that are causing or may cause the destruction, degradation and/or impairment of one or more of the identified conservation values (Table 2). Many, and likely all, of the conservation targets will face combined stresses. Cumulative impacts are difficult to quantify and even more difficult to predict. Therefore, a precautionary approach to management and further development will be important in order to minimize the non-climate stressors on conservation values.

Given that a changing climate adds a new dimension of threats, participants agreed that applying a climate change lens is essential to designing conservation actions that consider an unprecedented range of ecological conditions that have no reliable historic basis. Actions must account for changing temperature and precipitation which will disrupt habitats, move home ranges, bring diseases, and change hydrologic patterns. Thus, it was acknowledged we have to respond to existing impacts as well as plan for the anticipated threats from climate change.

FIGURE 6. WESTERN GREBE NEST VULNERABLE TO CHANGING WATER LEVELS. (PHOTO COURTESY OF CVWMA)

TABLE 1. CONSERVATION TARGETS FOR THE CRESTON VALLEY ECOSYSTEM.

Species of interest and conservation concern	• Grizzly Bear • Rocky Mountain Elk • American Beaver • Northern pocket gopher • Little Brown Myotis • Fringed Myotis • Townsend's Big-eared Bat • Western Screech-owl • Short-eared Owl	• Lewis's Woodpecker • Bobolink • Yellow-breasted Chat • Common Nighthawk • Long-billed Curlew • American Avocet • American Bittern • Double-crested Cormorant • Sandhill Crane	• Great Blue Heron • Swallows (all) • White Sturgeon • Kokanee • Bull Trout • Westslope Cutthroat Trout • Burbot • Western Painted Turtle • Northern Leopard Frog	• Western Toad • Coeur d'Alene Salamander • Western Skink • Rocky Mountain Ridged Mussel • Jumping Slug spp. (tbd) • Whitebark Pine • Rare plants (tbd) • Traditionally important plants (tbd)
Important habitat types	• Wetland • Shallow open water • Riparian area • Connected river floodplain with wetlands and shallow water • Mature cottonwood forest	• Low elevation grassland / open forest • Mid and upper elevation grassland • Low and mid elevation old growth forest (incl. dry Douglas-fir and moist cedar, spruce)	• Alluvial fans / creek mouths • Lake foreshore • Ponds and lakes • Rivers and streams	• Groundwater-surface water interface (warm water spring; mineral springs; cold water source)
Special habitat features	• Fish spawning bed in tributaries • Mainstem spawning habitat • Fish feeding / rearing area • Burrows or denning area	• Nesting and/or roosting site • Migratory stopover site • Bat hibernaculum (old mines, rock caves, surrounding forest) • Abandoned and farm buildings	• Large, old trees / wildlife trees in patches or as isolated remnants • Climax grassland • Huckleberry patches	• Mineral lick • Calcareous rock / soils • Wildlife corridors • Rocky outcrops • Rock cave
Ecological processes	• Hydrologic functions (filtering, recharge, scouring, flooding, storage) • Nutrient cycling and exchange	• Carbon sequestration • Wildlife movement and migration • Predator-prey dynamics • Natural fire regime	• Breeding and nesting • Fish spawning and rearing • Fish over-wintering • Pollination	• Geomorphological processes (erosion, sedimentation, large woody debris, gravel)

TABLE 2. ECOLOGICAL THREATS FOR THE CRESTON VALLEY ECOSYSTEM.

Threats in bold were emphasized by participants at the Creston Valley Conservation Action Forum.

Direct loss or impairment of habitats and species	• major commercial or residential development/urban sprawl • conifer and shrub encroachment on native grassland • **woody vegetation encroachment into wetlands** • **clear-cutting private land** • **extensive logging and road building** • **barriers to wildlife corridors** • transportation corridors and hydro lines • **wildlife collisions on transportation corridors (e.g., painted turtles)** • **human-wildlife conflict (e.g., attractants to carnivores, ungulates, rodents)** • **extreme fire and fire suppression** • mining and gravel extraction • **stream bank erosion and sedimentation (e.g., in Kootenay River)** • **loss of instream complexity (large woody debris, gravel, rocks, sediment) due to climate change and human activity** • **agricultural expansion and/or intensification (removal of native habitat, draining of agricultural land, impacts to water quality and quantity)** • **timing of harvesting that interferes with nesting and fledging / crop rotations that remove nesting habitat** • **over-grazing or poor range management** • unsustainable harvesting of native species and poaching (e.g., aquatic vegetation, fish and wildlife, native plants) • **harvesting and falling of wildlife trees** • **loss of connectivity between Kootenay River and main tributaries to floodplain-wetland habitats** • **natural system modification (water diversion, dikes, dams and water management, floodplain impingement by flood protection dikes that restrict "flooding space"** • declining water quality • persecution and extermination of wildlife • **loss of old structures (providing bat hibernacula and nesting structures for Barn Swallow)** • use of *Bacillus thuringiensis* subsp. *Israelensis* (Bti) for mosquito control • herbicide/pesticide run-off
Invasive species (Existing and Potential)	• **American Bullfrog** • zebra & quagga mussels • non-native fish (e.g., eastern brook trout, yellow perch, brown bullhead, pumpkin seed, smallmouth bass) • **invasive plants (e.g., yellow-flag iris, common reed)** • ***Batrachochytrium dendrobatidis* and *Batrachochytrium salamandrivorans* (fungus causing chytridiomycosis in amphibians)** • ***Pseudogymnoascus destructans* (fungus causing white-nose syndrome in bats)** • white pine blister rust • domestic sheep, goat and feral pig diseases infecting native Bighorn Sheep • chronic wasting disease (CWD) • whirling disease

	• West Nile Virus (ticks) • creation of linear corridors increasing spread
Recreational pressure	• increased trail and off-trail usage (e.g., multi-use and non-motorized use) • increased trail building (authorized and unauthorized) • dogs off-leash in CVWMA • increased human activity in the wetlands • increased access to backcountry and high alpine areas (all seasons, including motorized access with ATVs, snowmobiles, dirt bikes, and other ORVs) • increased presence of planes, drones, helicopters
Uncertainty of climate change impacts	• **vegetational changes / habitat shifting** • **changing species distributions** • **catastrophic fire** • **hydrological changes causing floods or extreme drought** • **changes in nutrient input caused by river level fluctuations linked to floods and droughts** • **requirements for irrigation depleting water resources during droughts** • mudslides / landslides • **increasing stream temperature** • **loss of glaciers and snowpack / loss of cold-water creeks** • forest pest spread (e.g., mountain pine beetle, spruce beetle, Douglas-fir beetle, etc.) • wildlife disease spread • water impoundments and other water storage may affect hydrology
Cumulative effects	• **impacts from a combination of multiple threats**

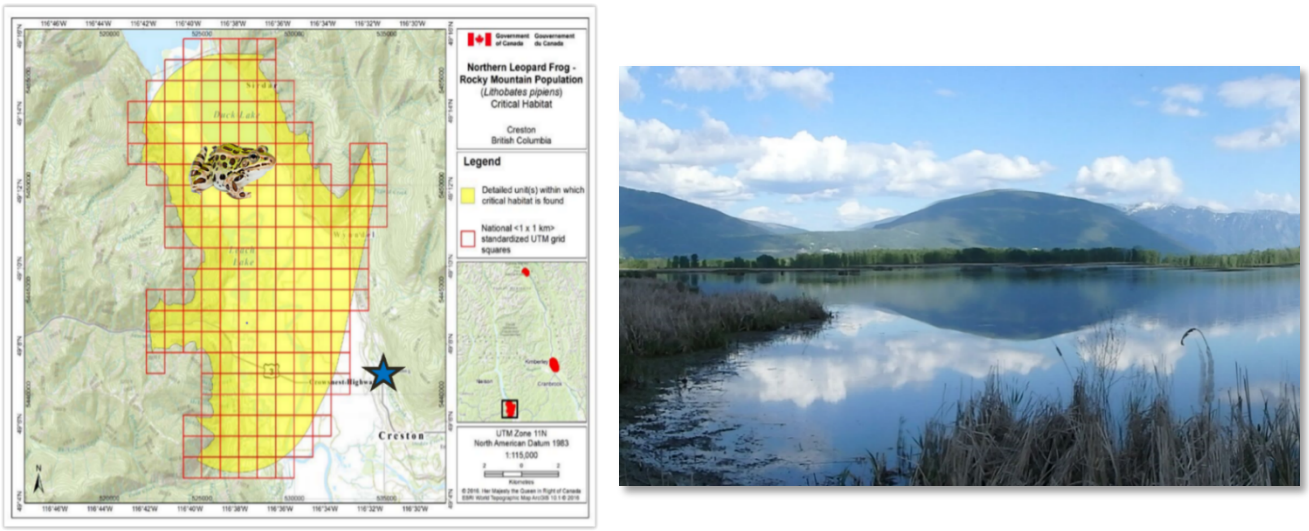

FIGURE 7. MAP OF NORTHERN LEOPARD FROG CRITICAL HABITAT AND BREEDING POND, CRESTON VALLEY. (MAP AND PHOTO COURTESY NLF RECOVERY TEAM)

IV. DEVELOPING CONSERVATION PRIORITIES

SCIENCE PRESENTATIONS

The Forum began with scientists providing four-minute speed presentations of their research findings and sharing their "top three recommendations that would make the biggest difference" in keeping the Creston Valley ecologically healthy and functioning (Appendix B). Some researchers who could not attend the Forum also provided recommended actions which were integrated into the list.

Science presentations included:

1. **Western Screech-owls** – Irene Manley, Wildlife Biologist, FLNRORD
2. **Western Grebes** – Julia Shewan, Conservation Program Assistant, CVWMA
3. **Burbot** – Sarah Stephenson, Rare & Endangered Fish Biologist, FLNRORD
4. **White Sturgeon** – Valerie Evans, Rare & Endangered Fish Biologist, FLNRORD
5. **Northern Leopard Frogs** – Dr. Lindsay Anderson, Species-at-Risk Biologist, FLNRORD
6. **American Bullfrogs** – Dr. Lindsay Anderson, Species-at-Risk Biologist, FLNRORD
7. **Reconnecting Floodplains and Cultural Values** – Norm Allard, Community Planner, Lower Kootenay Band
8. **Farm Biodiversity Plans** – Dave Zehnder, Project Lead, Farmland Advantage, and Dale MacNamar, Rancher, Goat River Farms
9. **Fire Dynamics and Management in Darkwoods** – Adrian Leslie, South Selkirk Program Manager, Nature Conservancy of Canada
10. **Climate Disruption** – Greg Utzig, Ecologist, Kutenai Nature Investigations, Inc.
11. **Green Mapping Project** – Brian Churchill, President, Creston Valley Wildsight
12. **Bees to Bears Climate Adaptation Project** – Michael Lucid, Regional Wildlife Diversity Biologist, Idaho Department of Fish & Game
13. **Kootenay Connect: Landscape Linkage Areas** – Dr. Michael Proctor, Research Biologist, TransBorder Grizzly Project

THEMES GUIDING SMALL GROUP DISCUSSIONS

Key recommendations presented by scientists were submitted to KCP staff in advance of the Forum (Appendix D) so the information and recommendations could provide a starting place for: a) group discussion of key conservation values and threats; and b) small group review of the catalogue of scientists' recommendations for actions based on six conservation themes:

1. Support Recovery of species at risk
2. Protect existing high-quality habitats for biodiversity
3. Enhance and restore degraded ecosystems
4. Enhance landscape connectivity and corridors
5. Advance climate change resilience
6. Reduce human-wildlife conflict and recreational pressure

Each of these themes was posted on the wall and individuals selected their **top five actions** using adhesive dots (provided for this purpose) – top actions that they thought would make the most difference in the Creston Valley over the next 1-3 years and that they would be interested in working on. This process resulted in the **top 21 actions** listed in the next section.

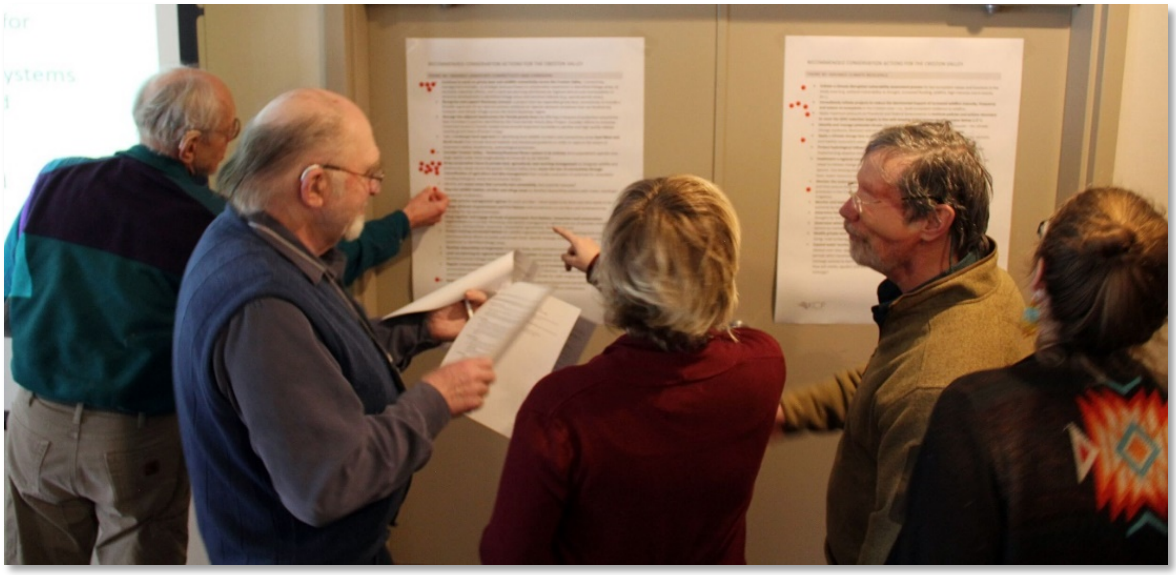

FIGURE 8. PARTICIPANTS SELECTING THEIR TOP 5 RECOMMENDATIONS FOR ACTION.

CONSERVATION PRIORITIES

The summary of top conservation actions chosen by the participants (based on those receiving at least 3 votes) are *listed in no particular order* below. The highest-ranking actions that informed priority actions developed during the small group working session are indicated in bold and form the basis for **five action plans** discussed in Section V.

Support Recovery of Species at Risk

1. Northern Leopard Frog Recovery – Explore how climate change may impact choice/potential of future reintroduction sites.
2. Western Screech-owl – Re-forest, restore, maintain and conserve riparian forest corridors to provide forest connectivity on riparian systems of all stream orders.
3. Burbot – Assess habitat to determine current off-channel habitat improvements for egg and larvae (Idaho); and improve floodplain and off-channel re-connection in the Creston Valley (BC)

Protect Existing High-Quality Habitats for Biodiversity

1. **Develop a landscape scale / ecosystem baseline inventory, including sensitive habitats, existing habitat restoration work, and water quality and quantity measuring and monitoring.**
2. **Riparian protection, including conservation opportunities for crown, municipal and private lands, especially concentrate on maintaining and/or enhancing water sources for wetlands and ponds; and protect and enhance cottonwood floodplain forests, including assessing and remediating over-grazing issues and working with private landowners to avoid destruction.**

FIGURE 9. NORTHERN LEOPARD FROG. (PHOTO COURTESY OF LINDSAY ANDERSON)

3. **Establish a payment for ecosystem services program through Farmland Advantage in the Creston region to help agriculture and First Nations play a role in achieving long-term ecological goals. Rank riparian habitat for its ability to produce Ecosystem Services.**
4. **Identify priority parcels of private land that may be acquired for conservation or may be suitable for land trusts.**
5. Continue and expand habitat restoration work with a focus on improving landscape climate resiliency for target species and species groups. Focus on development of habitat continuity between Creston WMA and Boundary Creek WMA.
6. Set conservation goals for the Creston region with habitat-based percent targets to be conserved; connectivity linkages across the valley bottom and along creek and river systems; and species population targets.

Enhance and Restore Degraded Ecosystems

1. **Restore riparian areas and wetlands on the Kootenay River floodplain to as close to natural functioning state as possible by restoring floodplain connectivity where possible using a big picture approach.**
2. Adjust forestry practices to accommodate extreme climate and flooding events to reduce likelihood of landslides and waterborne erosion – i.e., avoid activities on or above unstable slopes, reduce watershed road density, limit clearcut area, etc.

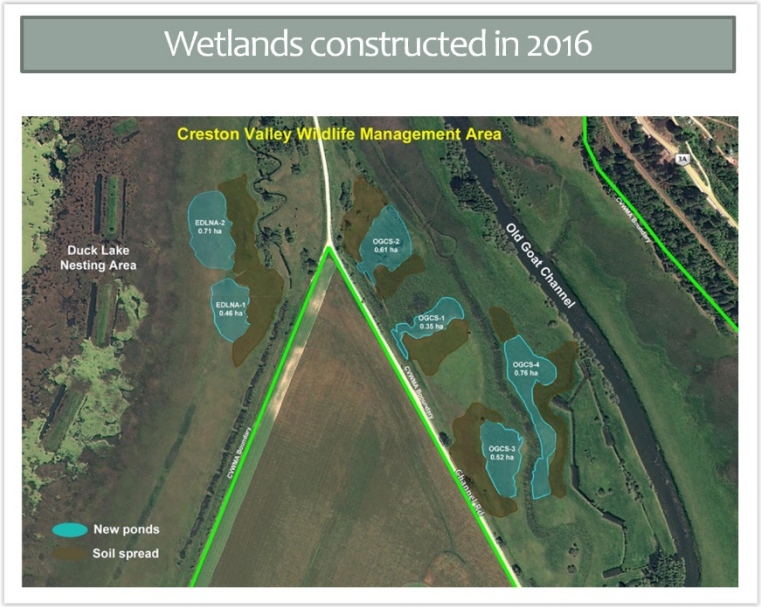

FIGURE 10. MAP OF WETLANDS REMEDIATION ON CRESTON VALLEY WILDLIFE MANAGEMENT AREA. (COURTESY OF CVWMA)

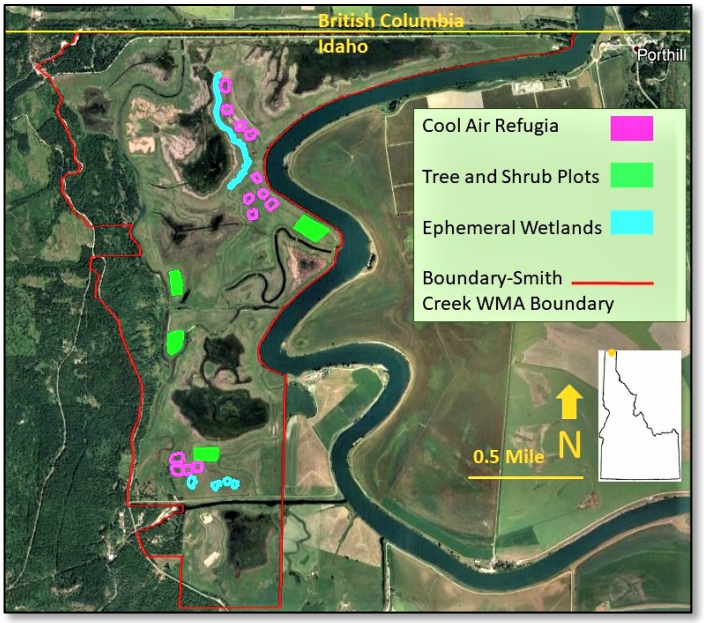

FIGURE 11. MAP OF WETLAND REMEDIATION ALONG THE KOOTENAI RIVER IN BOUNDARY CREEK WILDLIFE MANAGEMENT AREA, IDAHO. (COURTESY OF BEES TO BEARS CLIMATE ADAPTATION PROJECT)

Enhance Landscape Connectivity and Corridors

1. **Bring conservation focus to private land, agricultural, and ranching management to integrate wildlife and biodiversity values across the greater Creston Valley area; assess the loss of connectivity through intensification of agriculture and dike management that includes evaluation of potential for restoration including biological, social and economic factors.**
2. **Continue to work on grizzly bear and wildlife connectivity across the Creston Valley. Connectivity management includes: a) strategic land purchases or conservation easements in identified linkage areas, b) mortality reduction efforts, and c) land use planning and bylaws by regional district and municipalities to minimize development in identified linkage areas and sensitive habitats (e.g. special permit areas).**
3. Consider Creston Valley – Kootenay/Kootenai Rivers system in its entirety since populations operate over large spatial scales think longitudinally N-S from BC to ID/ WA/MT.
4. Map key wildlife habitat, corridor and refuge areas to develop stewardship actions with crown, municipal and private landowners.

Advance Climate Change Resilience

1. **Immediately initiate projects to reduce the detrimental impacts of increased wildfire intensity, frequency and extent on ecosystems in the Creston area – i.e., build ecosystem resilience to wildfire.**
2. **Implement a regional conservation plan to facilitate the shifts necessary for resilient ecosystems that can adapt to climate change and creates/maintains connectivity that allows for range changes by individual species. Use existing plans to incorporate potential climate change projections and scenarios for the land base, water resources and communities in the Creston Valley region.**
3. Expand monitoring of water levels and temperature throughout sub-watersheds to build a robust dataset over time. Approach mitigating climate change by understanding what's going on during low flow periods when mountains no longer store enough water for downstream needs. Identify and protect water recharge sources to learn which streams are fed by recharge from sub-surface sources and which are not. How will creeks, aquifers and wetlands react when water levels change? Where are the sources of water recharge?

FIGURE 12. RESTORATION PROJECTS USING COOL AIR REFUGIA DESIGNS, KOOTENAI RIVER FLOODPLAIN, IDAHO. (PHOTOS COURTESY OF BEES TO BEARS CLIMATE ADAPTATION PROJECT)

Reduce Human-Wildlife Conflict and Recreational Pressure

1. Reduce road mortality by installing wildlife crossing structures and/or fencing in high use and high impact areas. Fence off highway and urban areas and use crossing structures to get animals across these areas.
2. Reduce attractants (garbage, fruit trees, etc.). Encourage enforcement of all bear attractant management within residential and rural areas. Consider creative approaches to supporting fruit removal from trees.
3. Access management (including legislation, reclamation, deactivation, mixed use planning, etc.). Consider all recreational impacts during sensitive periods to wildlife, including impacts of dogs.

V. CRESTON VALLEY FORUM ACTION PLANS

The nine Priority Actions, identified in bold within the overall list 21 actions, are those which participants considered most important and feasible within the next 1-3 years. Participants formed five small groups focused on a key action or group of related actions in which they discussed how to collaboratively approach making a difference based on their organization's or agency's plans, policies, programs, budgets and communication tools.

The combination of small group work and networking open space – in which people could join different conversations and take advantage of being face-to-face – facilitated the creation of action plans that addressed:

1. Clear statement of the recommended action
2. Activities
3. Resources
4. Potential partners/collaborators
5. Timeframe

The Creston Valley Forum Resulted in Five Priority Action Plans (not ranked):

1. Develop a Landscape Scale Ecosystem-based Inventory of Biodiversity
2. Enhance Landscape Connectivity and Corridors Through a Climate Change Lens
3. Expand Stewardship Opportunities to Protect High Quality Habitats
4. Restore Floodplain Connectivity of the Kootenay/Kootenai River System
5. Perform Fire Maintained Ecosystem Restoration

OUTCOMES FROM ROUNDTABLES

This section contains the notes from each of the small groups working on action plans.

ACTION #1: DEVELOP A LANDSCAPE SCALE ECOSYSTEM-BASED INVENTORY OF BIODIVERSITY

Group Members: Julia Shewan (CVWMA), Tyson Ehlers (Masse Environmental), Jim Smith (Creston Valley Wildsight)

1. **Recommended action:** Develop a landscape scale / ecosystem baseline inventory, including sensitive habitats, existing habitat restoration work, and water quality and quantity measuring and monitoring of high biodiversity areas not already included in current CVWMA. Determine: what? where? and how much habitat to conserve? Use Green Mapping and Proctor's Kootenay Connect Grizzly Bear and Wetland/Riparian analysis to help target areas for inventory and ground-truthing of mapping.

2. **Activities**

- Define study area - ~800 km^2 boundary of Creston Valley Ecosystem needs to be determined – see Green Mapping boundary and Proctor's Kootenay Connect Grizzly Bear and Wetland/Riparian analysis for reference.
- Create ecosystem map to identify high priority conservation areas (e.g., riparian, wetland, cottonwood) – focus on areas where CVWMA and Green Mapping project have incomplete data. Since CVWMA is already protected, focus on areas outside of CVWMA for inventory, but work in with CVWMA to ensure comparable data is obtained.
- Obtain data sources, get access, local knowledge.
- Define what is meant by "biodiversity areas" to be focal areas of what is important.
- Develop standardized method of analysis.
- Map and ground-truth "high value areas" as identified in Green Mapping project (ground truthing essential as there are likely areas that have never been surveyed and may provide higher diversity than what was identified in the Green Mapping), for example:
    - The upper reaches of the Arrow Creek and Duck Creek watershed, the northwest-facing slopes of Mount Thompson and the northern flanks of the Corn Creek watershed; and
    - Riparian areas concentrated along the lower reaches of the Goat River and Summit Creek as well as on the east bank of the Kootenay River, on Lower Kootenay Band lands.

3. **Resources**
- Wildsight's Green Mapping Project
- Proctor's mapping of grizzly habitat and Kootenay Connect
- Habitat mapping (government, consultants)
- Local knowledge
- Vegetation Resources Inventory (VRI), LiDAR, Sensitive Ecosystem Inventory (SEI), Predictive Ecosystem Mapping (PEM), Terrestrial Ecosystem Mapping (TEM), Conservation Data Centre (CDC) iMap

4. **Potential Partners/Collaborators**
- Creston Valley Wildlife Management Area
- Creston Valley Wildsight
- Nature Conservancy of Canada
- GIS experts from Selkirk College, Lower Kootenay Band
- Masse Environmental
- Farmland Advantage
- Agricultural sector
- Michael Proctor (Transborder Grizzly Bear Project, Kootenay Connect)
- Academia
- Subject matter experts (when we define what is important)

5. **Timeline**
- 1-2 years of mapping and ground truthing

ACTION #2: ENHANCE CONNECTIVITY FROM KOOTENAI RIVER, ID TO KOOTENAY LAKE, BC

Group Members: Marc-Andre Beaucher (CVWMA), Michael Proctor (Kootenay Connect), Nelson Wight (RDCK), Lindsay Anderson (MFLNRORD), Greg Utzig (Kutenai Nature Investigations), Brian Churchill (Creston Valley Wildsight), Jessie Grossman (Y2YCI), Dale MacNamar (Goat River Farms)

1. **Recommended actions:** Take a landscape level approach to identifying local wildlife corridors and connectivity areas East-West and North-South that include diverse habitats and elevational gradients in order to capture the extent of important habitat, biodiversity, and ecological processes.
   a. Spatially, consider the Creston Valley – Kootenay/Kootenai Rivers system in its entirety since populations operate over large spatial scales think longitudinally N-S from BC to ID/ WA/MT. Include assessment of current North-South bi-directional movement as well as south to north range shifting due to climate change.

b. Temporally, consider current wildlife movements and range shifts over time with climate change. Target for protection the west side of the Kootenai River Valley (nID), across the Creston Valley, and northward along the east shore of Kootenay Lake and Purcell Mountains. Conservation and stewardship should anticipate species moving north along the west side of Kootenai River Valley across the international border into the Creston Valley and then up the east side of Kootenay Lake.

2. Activities

- Conduct a strategic scoping exercise for how to steward a North-South (bi-directional) corridor from the Kootenai River in ID to Kootenay Lake in BC.
- Conduct a landscape-level vulnerability assessment to inform direction, incorporating climate.
- Identify focal areas for conservation that are informed by scoping exercise and vulnerability analysis.
- Develop potential management plan linked to focal areas that considers future conditions to guide actions that build climate resilience.
- Continue and expand habitat restoration work with a focus on improving landscape climate resiliency for target species and species groups.
- Focus on development of habitat continuity between Creston WMA and Boundary-Smith Creek WMA and Lower Kootenay Band (potentially), e.g., reconnecting riparian cottonwood corridors associated with channels that have been modified over time.
- Conduct monitoring to be adaptive to changes.
- Target hydrologic connectivity which is a key ecological process within Creston Valley.
- Manage for increased natural fluctuations of ecological processes.
- Increase climate resiliency by finding innovative ways to hold water longer in Creston Valley.
- Protect existing connected habitats for wildlife migration and movement by supporting land conservation and stewardship efforts on public and private lands. Identify strategic land purchases or conservation easements in identified linkage areas.
- Recognize and support *Kootenay Connect*, a project that has expanded grizzly bear connectivity to include riparian-wetland complexes.
- Continue to work on grizzly bear and wildlife connectivity across the Creston Valley – connectivity management includes: a) strategic land purchases or conservation easements in identified linkage areas, b) mortality reduction efforts, and c) land use planning and bylaws by regional district and municipalities to minimize development in identified linkage areas and sensitive habitats (e.g. special permit areas).
- Integrate landscape connectivity at large scale with more local scale, on-the-ground hydrological connectivity actions from Floodplain Restoration action group
- Integrate identification of focal areas for connectivity with areas identified by Landscape Scale Inventory action plan.

3. **Resources**

- Floodplain management plans (Lower Kootenay Band, RDCK)
- Grizzly bear + Kootenay Connect research by Michael Proctor
- Climate change analysis by Greg Utzig
- Kootenai Tribe of Idaho (KOTI) Kootenai River restoration project
- Columbia River Treaty
- Published research on Kootenai River
- Kootenay Connect money for restoration
- Idaho Chapter of The Wilderness Society's "Climate Connect" workshop

4. **Potential Partners / Collaborators**

- Rachel Holt and Marlene Machmer – conservation planning
- Existing landowners and managers
- Creston Valley Wildlife Management Area
- Ktunaxa Nation Council
- Lower Kootenay Band
- Kootenai Tribe of Idaho
- Fish & Wildlife Compensation Program
- Idaho Department of Fish & Game
- FLNRORD
- US-Canadian Burbot and Sturgeon collaborative recovery teams
- Yellowstone to Yukon Conservation Initiative

5. **Timeline**

- 2020-2023: East-West connectivity assessment in Years 1-2 of Kootenay Connect and implementation in Years 3-4 of Kootenay Connect – restore to "Range of Future Variability (RFV)" in contrast to the Range of Natural Variability (RoNV). Address diking as a part of this assessment.
- 2020-2021: Look at including vulnerability assessment in Years 1 & 2 of Kootenay Connect.

ACTION #3: EXPAND STEWARDSHIP OPPORTUNITIES TO PROTECT HIGH QUALITY HABITATS

Group Members: Joe Strong (Nature Trust of BC), Hailey Troock (Young Agrarians), Valerie Evans (MFLNRORD), Dave Zehnder (Farmland Advantage), Dale MacNamar (Goat River Farms), Juliet Craig (KCP)

1. **Recommended actions:** Protect existing good quality habitats including conservation opportunities for crown, municipal and private lands, especially concentrate on: a) maintaining and/or enhancing water sources for wetlands and ponds, and b) protecting and enhancing cottonwood floodplain forests, including assessing and remediating over-grazing issues and working with private landowners to avoid destruction.

   Bring conservation focus to private land, agricultural, and ranching management to integrate wildlife and biodiversity values across the greater Creston Valley area and establish a payment for ecosystem services program through Farmland Advantage in the Creston region to help agriculture and First Nations play a role in achieving long-term ecological goals.

2. **Activities**

- Discuss which form or combination of protection (e.g., stewardship agreements, covenants, or acquisition) is most appropriate for private land conservation in Creston Valley. There are pros and cons to each tool.
- Set priorities, make a 'wish list' of areas to protect (see Actions Plans #1 and 2, above).
- Enhance agricultural perspective in KCP, land trusts and land planners.
- Encourage stewardship agreements on private land through for example, Farmland Advantage, and acquisitions and covenants by land trusts.
- Promote Farmland Advantage in Creston to work with local farmers to create Farm Biodiversity Plans – could be a model for the region.
- Develop science-based priorities for Farmland Advantage; and rank riparian habitat for its ability to produce Ecosystem Services.
- Assess use of "sheet water" practices on the farmland to see if there are "fertilizing" benefits by leaving water on the fields from late fall to mid-spring. Farmers have been very effective at draining and keeping field relatively dry year-round, which affects waterfowl foraging behaviours over time. Explore whether farmers could be compensated for doing this.
- Add Stewardship Agreement properties to KCP's conservation layer of acquisitions to help build conserved areas.
- Invite Dave Zehnder (Farmland Advantage) to talk to KCP Securement Committee.
- Recognize importance/role of agriculture (emotional links to lands), integrate into decision making (farmers may see conservation lands as a threat).
- Outreach/education to farmers about conservation values. This should be done by farmer to farmer.
- Deadstock bin/management is one way to prevent agriculture/wildlife conflict.

- Include electric fencing as part of Farmland Advantage farm planning.
- Talk to farmers first about conservation actions (farming community coordinator).
- Appoint a farming community coordinator responsible for the ongoing coordination and facilitation of stakeholders to achieve habitat-based objectives and ecosystem services to ensure healthy agriculture and ecosystems.
- Land trusts to work on public image with agricultural community (some view land trusts as 'kicking people off farmland') – farmer community coordinator could help.

3. Resources

- Funding, some can be routed through Farmland Advantage and land trusts
- Agricultural Land Reserve (ALR) and Agriculture Land Commission
- Creston Valley Beef Growers Association
- Kootenay Boundary Farm Advisors

4. Potential Partners/Collaborators

- Environmental Farm Plan Program
- Kootenay Boundary Farm Advisors
- Nature Conservancy of Canada
- Nature Trust of BC
- Kootenay Conservation Program
- Agricultural community, farmers
- CVWMA
- Food Action Coalition
- Creston Valley Ag Society
- Creston Valley Beef Growers Association
- Grizzly Bear Coexistence Solutions
- Farmland Advantage

FIGURE 13. MEMBERS OF THE HABITAT GROUP DEVELOPING THEIR ACTION PLAN.

5. Timeline

- 2020-2021: Farmland Advantage working with local farmers to create Farm Biodiversity Plans – could be a model for the region.
- 2020-2021: Kootenay Connect could identify high priority areas for conservation and then Farmland Advantage could be provided with priority areas for farm stewardship.

ACTION #4: RESTORE FLOODPLAIN CONNECTIVITY OF KOOTENAY/KOOTENAI RIVER SYSTEM

Group Members: Norm Allard (Lower Kootenay Band), Irene Manley (MFLNRORD), Michael Lucid (ID Dept. Fish & Game), Kersti Vaino (MFLNRORD), Adrian Leslie (NCC), Melissa Flint (Creston Valley Wildsight), Sarah Stephenson (MFLNRORD)

1. **Recommended actions:** Restore riparian areas and wetlands on the Kootenay River floodplain to as close to natural functioning state as possible by restoring floodplain connectivity using a big picture approach from the south end of Kootenay Lake, BC to Bonner's Ferry, ID.

   Continue and expand habitat restoration work with a focus on improving landscape climate resiliency for target species and species groups. (Refer to Action Plan #2, above).

2. **Activities**

- What exists or is planned today? Use the hand-drawn map generated at the Forum to identify the various projects that already exist or are planned to get a full picture of restoration efforts in the transboundary Kootenay/Kootenai River Valley, e.g., Six Mile Slough, Corn Creek, Old Goat River, Goat River South Channel, Yaqan Nukiy Hunting Grounds, Bees to Bears, etc.
- Focus on development of habitat continuity between Creston WMA- Lower Kootenay Band wetlands-Boundary Creek WMA.
- Develop a Working Group to coordinate collaboration, integrate all projects into a larger picture/approach, and help keep everyone informed. Regular communications and annual meetings to assess results, guide prioritization of new projects, and share expertise, techniques, lessons learned.
- Analyze / clean LiDAR for use by everyone – determine what's current status and extent. Check with Ryan Durand who is managing LiDAR coverage & mapping for Kootenay Connect.
- Conduct Floodplain groundwater mapping.

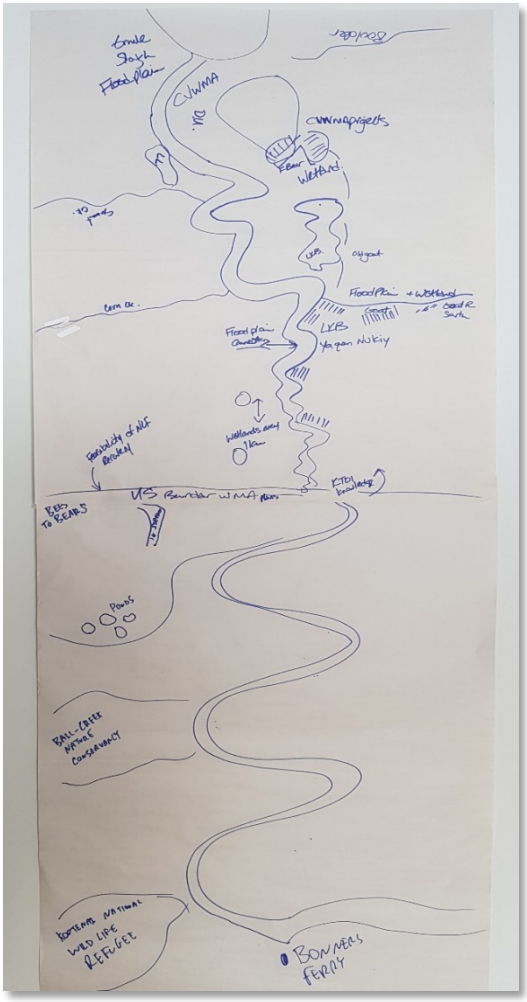

FIGURE 14. HAND-DRAWN MAP OF THE KOOTENAY/KOOTENAI RIVER VALLEY IDENTIFYING CURRENT RESTORATION PROJECTS.

- Assess the loss of floodplain connectivity through intensification of agriculture and dike management that includes evaluation of potential for restoration including biological, social and economic factors. Refer to LKB Floodplain Management Plan for some of this information.
- Assess removal of unnecessary dikes, which ones to set back, and which ones to repair – assessment could contribute to a holistic valley-wide compensation plan. Get buy from other Diking Districts.
- Identify future sites for projects – for example, create wetlands every 1km along west bank of Kootenay/Kootenai River to increase habitat opportunities for amphibians … and ensure these are not "sinks" for amphibians.
- Identify opportunities to restore, maintain and conserve riparian forest corridors to provide connectivity for Western Screech-owl on riparian systems of all stream orders.
- Improve floodplain and off-channel re-connection to benefit Burbot.

3. Resources

- Kootenay Connect funding for CVWMA 2019-2023 wetland enhancement
- CBT's Ecosystem Enhancement Program funding to Lower Kootenay Band and CVWMA
- Kootenai River Bees to Bears Climate Adaptation Project
- EcoAction Community Funding Program – Environment and Climate Change Canada
- Aboriginal Fund for Species at Risk

4. Potential Partners / Collaborators

- Lower Kootenay Band
- FLNRORD
- CVWMA
- Ducks Unlimited Canada
- Masse Environmental
- Idaho Department of Fish & Game
- RDCK
- Diking Districts
- Kootenay Conservation Program
- Creston Valley Wildsight
- Farmland Advantage
- Living Lakes Canada
- Y2Y Conservation Initiative

FIGURE 15. MEMBERS OF THE FLOODPLAIN CONNECTIVITY GROUP DEVELOPING THEIR ACTION PLAN.

5. Timeline: Spring 2020 field tour for project planning and information sharing.

ACTION #5: PERFORM FIRE MAINTAINED ECOSYSTEM RESTORATION

Group: *Adrian Leslie (NCC), Norm Allard (Lower Kootenay Band), Irene Manley (MFLNRORD), Michael Lucid (ID Dept. Fish & Game), Kersti Vaino (MFLNRORD), Adrian Leslie (NCC), Melissa Flint (Creston Valley Wildsight), Sarah Stephenson (MFLNRORD)*

1. **Recommended Action:** Immediately initiate projects to reduce the detrimental impacts of increased wildfire intensity, frequency and extent on ecosystems in the Creston area – i.e., build ecosystem resilience to wildfire by reintroducing low-intensity fire into the landscape. This action plan will target low to mid elevation areas on south aspects to reduce fire fuels and risk, and at lower elevations maintain fire resistant trees such as ponderosa pine, Douglas fir, and western larch so they are more likely to survive intense fire in the future.

2. **Activities**

- Do community outreach (public meeting + Creston Valley Wildsight)
- Map forest fuel type and hazard throughout the Creston corridor, e.g., LiDAR
- Assess fuel loads in NDT4[6] forests near communities and reduce the potential impacts of landscape-scale high-intensity fires
- Evaluate positive benefits of extending fire out into the CVWMA wetlands, if feasible.
- Identify areas of overlap with other objectives, e.g., Wildlife-Urban Interface (WUI) and Species at Risk critical habitat and recovery
- Identify sites and patch size > 100 ha
- Carry out at least one ecological restoration (ER) demonstration project that includes prescribed fire visible from Creston.
- Expertise to 1) design and execute; 2) pre and post monitoring
- Use funding for a specific SAR (e.g., Nighthawk) to complete an ER project

3. **Resources:** tbd (NCC lead)

- Funding: BC provincial government wildfire protection, FWCP, CBT

4. **Potential Partners / Collaborators**

- CVWMA
- NCC
- Ktunaxa Nation Council
- Creston Valley Wildsight
- Funders (BC provincial government wildfire protection, FWCP, CBT)

5. **Timeline:** 2022-23 for prescribed burn by NCC in Darkwoods.

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[6] Natural Disturbance Type 4 describes ecosystems with frequent stand-maintaining fires. Source: http://www.env.gov.bc.ca/fia/documents/TERP_eco_rest_guidelines/defgoals/natdisturb.htm

VII. CONCLUSIONS

During the Forum, scientific recommendations lead to identifying conservation targets and threats and provided a foundation for setting conservation priorities. Five of these priorities were developed into action plans that proposed positive solutions and activities to address biodiversity, high quality habitat, floodplains, and landscape connectivity and resilience through the lens of climate change in the transboundary Kootenay/Kootenai River ecosystem. The Creston Valley Conservation Action Forum succeeded in providing participants with a new way to approach conservation by working in the context of a "conservation neighbourhood" in order to identify common priorities and objectives for on-the-ground conservation and stewardship activities.

All participants at the Forum indicated on their evaluation form that they would recommend this process to other regions in the Kootenays. According to participant evaluations, 95% of participants rated the Forum "helpful" to "super helpful." The amount of learning and relationship-building was reflected in many comments, such as:

"*This Creston meeting was a great success! Working at a local scale we had a productive dialog about how stewardship and securement can be brought together synergistically to have a meaningful impact on conservation. In many ways this meeting was the realization of the dream we when EKCP first got going. Thank you!*"

"*Getting people together in the same room is super helpful for getting creative juices flowing and sharing ideas. Forums like this strengthen existing relationships.*"

"This face to face networking and information sharing is especially important with folks you only know by email."

"My first time at a KCP event and really enjoyed all of the minds in the room!"

"I was amazed at the interest! Overlapping projects might now have new synergies."

"Making new connections for my project was important."

"Enjoyed the espresso shot presentations to quickly get up to speed on scientific knowledge and issues. Very helpful start to the day."

"Good group brain dump on thematic issues helped to get to action steps. Focus on key actions was essential rather than a roaming discussion of all the issues."

Comments (continued):

"Developing action plans for conservation projects was a highlight, felt tangible, and was very useful in identifying priorities and collaborators."

"Balancing the needs of species, habitats and landowners. Farmers can help biologists and sometimes can get things done faster."

"Appreciated having Farmland Advantage, the agricultural perspective and connecting to the local ag community."

"The projects being done by the Yaqan Nukiy to reconnect the river floodplain were inspiring."

"North-south connection is very important. Enjoyed learning about projects in the US and the concept of 'cool air refugia'."

"New learning about upland habitats, need for fire in the NDT4 forests, Kootenay Connect, climate change adaptation and floodplain connectivity."

"Great to be around so many groups doing such good work!"

VII. MOVING FORWARD

All Forum participants, as well as those people who were invited but could not attend, will be provided the Forum's findings and will be encouraged to pursue actions as they are able. The priority actions were collectively generated and incorporated policies, objectives and activities that align with participants' programmatic interests. Participants indicated that they would like to meet again to check-in on actions. KCP will organize a check-in meeting sometime in 2020.

Missing groups that were invited but could not attend this Forum include: Local and regional government and politicians (RDCK Area Directors, Creston Mayor and Councillors), Central Kootenay Invasive Species Society, Kootenay and Boundary Farm Advisors, Grizzly Bear Solutions, Yaak Valley Forest Council, Columbia Basin Trust, and BC Wildlife Federation.

Moving forward, KCP will remain engaged in supporting the Creston Valley process and tracking the implementation of priority actions. The Forum's process and outcomes will also help KCP guide collaborative neighbourhood conservation action planning in other regions of the Kootenays where partners want to work together to protect local biodiversity.

APPENDIX A: CRESTON VALLEY FORUM PARTICIPANTS

Specialists - Presenters	
Norm Allard	Community Planner, Lower Kootenay Band
Lindsay Anderson	Species-at-risk Biologist, Ministry of Forests, Lands, Natural Resource Operations, and Rural Development
Brian Churchill	President, Creston Valley Wildsight
Valerie Evans	Rare and Endangered Fish Biologist, Ministry of Forests, Lands, Natural Resource Operations, and Rural Development
Adrian Leslie	South Selkirk Program Manager, Nature Conservancy of Canada
Michael Lucid	Regional Wildlife Diversity Biologist, Idaho Department of Fish and Game
Irene Manley	Wildlife Biologist, Ministry of Forests, Lands, Natural Resource Operations, and Rural Development
Michael Proctor	Research Biologist, Trans Border Grizzly Bear Project & Birchdale Ecological
Julia Shewan	Conservation Programs Assistant, Creston Valley Wildlife Management Area
Sarah Stephenson	Rare and Endangered Fish Biologist, Ministry of Forests, Lands, Natural Resource Operations, and Rural Development
Greg Utzig	Research Ecologist, Kutenai Nature Investigations Ltd.
Dave Zehnder	Project Lead, Farmland Advantage/Environmental Farm Plan
Resource Managers & Conservation Stakeholders	
Marc-Andre Beaucher	Head of Conservation Programs, Creston Valley Wildlife Management Area
Tyson Ehlers	Ecologist, Masse Environmental Consultants Ltd.
Melissa Flint	Project Director-Coordinator, Creston Wildsight Branch
Jessie Grossman	Cabinet-Purcell Mountain Corridor Project Coordinator, Yellowstone to Yukon Conservation Initiative
Chad Luke	Lands & Resources, Ktunaxa Nation Council
Dale MacNamar	Farmer, Goat River Farms; President, Creston Valley Beef
Jim Smith	Regional Director, Wildsight
Joe Strong	Kootenay Conservation Land Coordinator, Nature Trust of BC
Hailey Troock	Land Matcher-Columbia Basin, Young Agrarians
Kersti Vaino	Habitat Biologist, MFLNRORD
Nelson Wight	Planning Manager, Regional Distr. of Central Kootenay
Curtis Wullum	Director of Development Services, Lower Kootenay Band
Facilitators	
Juliet Craig	Program Manager, Kootenay Conservation Program
Marcy Mahr	Stewardship Coordinator, Kootenay Conservation Program
Nicole Trigg	Communications Coordinator, Kootenay Conservation Program

APPENDIX B: FORUM AGENDA

Creston Valley Conservation Action Forum

Common Values, Threats & Actions
Wednesday, January 22, 2020

9:30 am – 4:00 pm Mountain Time
Creston Ramada
1809 BC Highway 3A

Purpose: to identify priority actions that will contribute to maintaining healthy fish and wildlife populations and ecological functions in the Creston Valley over the next 5 years.

Guiding questions:

- What is the current knowledge regarding species of concern, critical habitats and processes in the Creston Valley? What more do we need to know?
- Based on scientific findings, what actions will make the most difference in preventing / controlling invasive species, protecting critical habitats, enhancing connectivity, enhancing ecosystems, reducing recreational pressure and promoting climate change resilience?
- Where do you see opportunities in your organization's or agency's plans, policies, programs, budgets and communications for realizing these actions?
- What kind of alignment do we need to foster between scientists, non-profit organizations, First Nations, and local and provincial government to effectively collaborate and make a significant, positive impact while also meeting organizational mandates?

Desired outcomes:

- Science recommendations set the foundation for priority-setting of actions.

- Natural resource managers and representatives of local organizations will have the information they need to identify how they can contribute to collaborative approaches and actions.
- The group clearly identifies at least 4 conservation actions and the partnerships / teams required to achieve positive results.
- The partners of Kootenay Conservation Program and Creston Valley Wildlife Management Area have clear direction for how they can support the proposed conservation actions in the Creston Valley.

MORNING

9:00 **Display Set-up, Registration & Refreshments**

9:30 **Welcome** - Marcy Mahr, Forum Facilitator and KCP Stewardship Coordinator

Norm Allard, Community Planner, Lower Kootenay Band

Marc-Andre Beaucher, Head of Conservation Programs, CVWMA

9:40 **Agenda Overview**

9:45 **Round Table of Introductions: 1 minute each**

Name, title/position, organization, and brief description of your connection to the Creston Valley.

10:20 **Scientists' speed presentations – 4 minute "espresso shots" of what we know, what it means and recommendations for what we need to do.**

11:20 **Bio break**

11:30 **Checking in on Conservation Targets and Threats – have the draft tables adequately captured the values and threats for the region?**

11:50 **Preview of Conservation Action Themes**

12:00 **LUNCH**

AFTERNOON

12:45 **Action Identification – Small Groups with Table Hosts**

Based on scientific findings, what actions will make the most difference in, for example, preventing / controlling invasive species, protecting critical habitat, enhancing ecosystems, enhancing connectivity, reducing recreational pressure and promoting climate change resilience?

1:30 **Report out on Top 3 actions we could start working on in the next 1-3 years**

2:00 **Action Planning & Networking – Small Groups with Table Hosts**

Based on the priority actions identified, where do you see opportunities in your organization's or agency's plans, policies, programs, budgets and communications for realizing these actions?

3:00 **Action planning components: Activities, Resources, Who's Involved, Timeframe**

Networking open space with the goal of developing mini action plans for each of the priority actions.

What other conversations do you need to have in order to move forward on the identified priority actions? Would you like to invite someone to your table and take advantage of being face-to-face? Do you see another action that you would like to contribute to?

3:30 **What's Next? Round Table Check-in**

3:45 **Evaluation**

3:50 **Closing Remarks**

4:00 **Departure**

APPENDIX C: DEFINITION OF ACRONYMS

ALR	Agricultural Land Reserve
BCWMA	Boundary Creek Wildlife Management Area
CBT	Columbia Basin Trust
CVWMA	Creston Valley Wildlife Management Area
ER	Ecosystem Restoration
FWCP	Fish & Wildlife Compensation Program
GIS	Geographic Information System
HCTF	Habitat Conservation Trust Foundation
KCP	Kootenay Conservation Program
KTOI	Kootenai Tribes of Idaho
MFLNRORD or FLNRORD	Ministry of Forests, Lands, Natural Resource Operations and Rural Development
NCC	Nature Conservancy of Canada
NDT4	Natural Disturbance Type 4, i.e., ecosystems with frequent stand-maintaining fires
NTBC	Nature Trust of BC
OCP	Official Community Plan
RDCK	Regional District of Central Kootenay
RFV	Range of Future Variability
RoNV	Range of Natural Variability
SAR	Species at Risk
WHA	Wildlife Habitat Area
Y2YCI	Yellowstone to Yukon Conservation Initiative

APPENDIX D: CATALOGUE OF "TOP RECOMMENDATIONS THAT WILL MAKE A DIFFERENCE"

THEME #1: SUPPORT RECOVERY OF SPECIES AT RISK

Northern Leopard Frog Recovery

- **Public concern for NLF increased** (through outreach, public events, publications, signage, webpage, media, etc.).
- **Water quality and pollution information** to establish baseline parameters for Critical Habitat areas and monitor over time.
- **Explore how climate change may impact choice/potential of future reintroduction sites**.
- **Contribute to Bullfrog Program efforts to help prevent incursion of BF into NLF habitat**.

American Bullfrog

- **Citizen science and participation in Surveillance** to report observations and/or participate in calling surveys coordinated by the Bullfrog Program to help with detection of BFs in the Creston Valley.
- **Outreach and education both locally and beyond** (Kootenay Boundary Region and US states of ID/WA/MT) to increase awareness of: 1) BF identification and detection, 2) the ecological impacts of BF, and 3) the impacts of human transport and release of BFs.
- **Continue American Bullfrog control** efforts with evaluations of effectiveness of this work transboundary with the US.

Western Screech-owl

- **Re-forest, restore, maintain and conserve riparian forest corridors** to provide forest connectivity on riparian systems of all stream orders.
- **Plan for forest corridors that connect from the main Goat Creek and Kootenay River systems to upland forests**.
- **Promote integrated pest management to minimize the use of rodenticides and pesticides** in agricultural and other settings, potentially through an agricultural outreach position.

Western Grebe

- **Information sharing and filling in knowledge gaps to better understand population dynamics** of Western Grebe for Creston and other Canadian populations and threats common or specific to the Creston Valley.
- **Citizen science monitoring to supplement monitoring of WEGR by CVWMA staff**, to increase knowledge on breeding dynamics and sources of disturbance.

- **Public outreach and communication** in order to increase public awareness regarding WEGR breeding in Duck Lake and their sensitivities.
- **Management and monitoring actions on CVWMA lands to increase likelihood of WEGR breeding**, such as closing off breeding areas to boat traffic (buffers), monitoring prey distribution and water quality, and habitat enhancement.

Sturgeon

- **Conduct genetic research to allow for Parental Based Tagging (PBT)**.
- **Re-evaluate recruitment failure hypotheses and chart course forward**.
- **Improve floodplain and off-channel habitat re-connection in the Creston Valley** 1
    - Agricultural succession land planning?
    - Can we promote or maximize regenerative farming practices with floodplain re-connection?
    - Will there be an opportunity to convert some farmland to floodplain?

Burbot

- **Shift to lake stocking and get a better understanding of the lake population** (and relationship with river use).
- **Assess habitat**:
    - Assess – current off-channel habitat improvements for egg and larvae (Idaho)
    - Improve floodplain and off-channel re-connection in the Creston Valley

THEME #2: PROTECT EXISTING HIGH-QUALITY HABITAT FOR BIODIVERSITY

- **Continue and expand habitat restoration work** with a focus on improving landscape climate resiliency for target species and species groups. **Focus on development of habitat continuity between Creston WMA and Boundary Creek WMA.**
- **Develop long term biodiversity and micro-climate monitoring program** with focus on conducting initial surveys during next five years.
- **Build resilience to climate change for all ecosystem types.**
- **Set conservation goals for the Creston region** with habitat-based percent targets to be conserved; connectivity linkages across the valley bottom and along creek and river systems; and species population targets.
- **Create a database of all "natural" functioning habitats** their present condition and future desired condition.
- **Develop a landscape scale / ecosystem baseline inventory,** including sensitive habitats, existing habitat restoration work, and water quality and quantity measuring and monitoring.

- **Cumulative effects analysis** – need to manage the gamut of human-caused impacts; map land uses and develop indices or some way to measure and monitor and influence land use decisions.
- **Wetland and riparian protection, including private land along borders of CVWMA**.
- **Conserve and restore montane** processes and habitats that benefit a suite of species of interest and of conservation concern.
- **Protect a suite of valley bottom species** by determining which need active recovery vs. more passive conservation measures. Identify which are habitat-dependent (i.e., need to protect their habitat) vs. require species-level intervention.
- **Inventory riparian habitat** within the region and assess and document its health status and identify important areas for riparian restoration projects
- **Develop specific recommendation for species at risk** dependent on wetlands and riparian habitats.
- **Organize a workshop or focus groups with First Nations** to identify cultural values and traditional knowledge associated with riparian areas and specific areas of concern.
- **Work with local government and OCPs** to influence development pressure along wetlands and riparian habitat.
- **Riparian protection, including conservation opportunities for crown, municipal and private lands**. Especially concentrate on maintaining and/or enhancing water sources for wetlands and ponds. Protect and enhance cottonwood floodplain forests, including assessing and remediating over-grazing issues and working with private landowners to avoid destruction (note that cottonwood floodplain forests are red- and blue-listed).
- **Improve huckleberry habitat through changes to silvicultural practices** that encourage longer term huckleberry productivity following logging in key highly productive areas for huckleberries.
- **Adjust forestry practices to accommodate extreme climate and flooding events** to reduce likelihood of landslides and waterborne erosion – i.e., avoid activities on or above unstable slopes, reduce watershed road density, transition species and stand structures to align with projected climates, and limit equivalent clearcut area.
- **Establish a payment for ecosystem services program through Farmland Advantage** in the Creston region to help agriculture and First Nations play a role in achieving long-term ecological goals. Rank riparian habitat for its ability to produce Ecosystem Services.
- **Identify priority parcels of private land** that may be acquired for conservation or may be suitable for land trusts.
- **Put in place a combination of voluntary stewardship agreements, Payment for Ecosystem Services agreements, covenants, and purchases to conserve private land riparian**.
- Establish special management designations on Crown riparian areas.
- **Appoint someone responsible within this region for the ongoing coordination and facilitation** of stakeholders to achieve the goals of habitat-based objectives and ecosystem services to ensure healthy agriculture and ecosystems.
- **Convene a working group** to encourage regular networking for collaboration and information sharing.

- **Create a greater public conservation consciousness and engagement** through information and volunteer engagement.
- **Target outreach to private landowners living along the Creston wetlands and riparian areas**, e.g., to promote bird-friendly agricultural practices on agricultural land.

THEME #3: ENHANCE AND RESTORE DEGRADED ECOSYSTEMS

Riparian & Wetland Restoration

- **Restore riparian areas and wetlands** on the Kootenay River floodplain to as close to natural functioning state as possible by **restoring floodplain connectivity** where possible using a big picture approach:
    - Remove unnecessary dikes
    - Set back dikes
    - Repair dikes and contribute to Holistic Valley Wide Compensation Plan
- **Restore the Goat River stream channel and riparian areas**; plus other tributaries in the floodplain.
- **Create mutually beneficial habitat for agriculture**.
- **Address cumulative effects** - development (residential, industrial, retail), recreation, industrial activities (logging, mining, etc.), highways, railway, quad/mountain bike/snowmobile, etc. all impacting on a relatively small area, especially Creston valley bottom.

Restoring Fire Processes & Management

- **Map forest fuel type and hazard** throughout the Creston corridor (LiDAR?).
- **Identify areas of overlap with other objectives (WUI, target SAR)** and identify partners and funders to initiate ER work.
- **Carry out at least one ER project** that includes a component of prescribed fire.
- **Address wildfire fuel loads** particularly near communities and to reduce the likelihood of landscape-scale fires. Treat low elevation and mid-elevation areas on south aspects areas to reduce fire risk and promote ecosystem resiliency. At lower elevations maintain fire resistant trees species of dry forest types such as ponderosa pine, Douglas fir and western larch and reduce fuels around them so they are more likely to survive intense fire.
- **Adjust forestry practices** to accommodate extreme climate and flooding events to reduce likelihood of landslides and waterborne erosion – i.e., avoid activities on or above unstable slopes, reduce watershed road density, limit clearcut area, etc.

Restoring Fish Habitat

- **Restore and enhance quality spawning habitat for priority fish species** in the Kootenay River and tributaries. Identify potential stream and fish restoration projects to restore and/or improve the capacity of existing fish habitat – for example, restoring tributary streams used for spawning that have been impacted by road building, historical forest practices and channelization.
- **Restore/maintain fish passage** at appropriate locations.
- **Consider Wildlife Habitat Areas for key spawning habitats**.

Invasive Species Management

- **Conduct ecosystem restoration within areas with low invasive plants** to reduce and eradicate.
- **Manage high priority invasive species as per the Central Kootenay Invasive Species Society priority lists**.
- **Treat existing invasive plant infestations and prevent spread**.
- **Continue education and outreach** to prevent introduction and spread of invasive species in the Creston Valley using behaviour change messaging, including PlantWise, Clean, Drain, Dry, and PlayCleanGo.

THEME #4: ENHANCE LANDSCAPE CONNECTIVITY AND CORRIDORS

- **Continue to work on grizzly bear and wildlife connectivity across the Creston Valley**. Connectivity management includes: a) strategic land purchases or conservation easements in identified linkage areas, b) mortality reduction efforts, and c) land use planning and bylaws by regional district and municipalities to minimize development in identified linkage areas and sensitive habitats (e.g. special permit areas).
- **Recognize and support *Kootenay Connect***, a project that has expanded grizzly bear connectivity to include a broader spectrum of our natural systems centered on riparian-wetland complexes that are biodiversity hotspots and climate refugia across the entire Kootenay region.
- **Manage the adjacent backcountry for female grizzly bears** by offering a measure of protection around the best huckleberry patches identified by the Trans-border Grizzly Bear Project. Consider efforts to minimize motorized access in heavily roaded areas around important huckleberry patches and high-quality habitat used by grizzly bears (Proctor's map).
- Take a **landscape level approach** to identifying local wildlife corridors and connectivity areas **East-West and North-South** that include diverse habitats and elevational gradients in order to capture the extent of important habitat, biodiversity, and ecological processes.
- **Consider Creston Valley – Kootenay/Kootenai Rivers system in its entirety** since populations operate over large spatial scales think longitudinally N-S from BC to ID/ WA/MT.
- **Bring conservation focus to private land, agricultural, and ranching management** to integrate wildlife and biodiversity values across the greater Creston Valley area; **assess the loss of connectivity through intensification of agriculture and dike management** that includes evaluation of potential for restoration including biological, social and economic factors.
- Identify and **assess areas that currently lack connectivity**, but could be restored?

- **Map key wildlife habitat, corridor and refuge areas** to develop stewardship actions with crown, municipal and private landowners.
- **Identify priority management regimes** for each corridor – what needs to be done and who needs to do it.
- **Engage all levels of government and First Nations** and jurisdictions on corridors and landownership, including the Ag Land Commission.
- **Bring together and engage all levels of government, First Nations, researchers and conservation organizations** at a Corridor Workshop and identify management regimes and use all possible conservation tools (e.g. land purchase, covenants, stewardship agreements, WHAs, OCPs etc.).
- **Protect existing connected habitats** for wildlife migration and movement by supporting land conservation and stewardship efforts on public and private lands. Identify strategic land purchases or conservation easements in identified linkage areas.
- **Develop stewardship arrangements** on private lands, within corridors and high conservation value.
- **Land use planning by regional district and municipalities** in bylaws and OCPs to minimize development in identified priority linkage areas (not necessarily zero development, but appropriate and minimized).
- **Regular communication with local governments to influence of municipal planning / legislation** in conservation planning. Creston Valley is a hodgepodge of jurisdictions - maintaining clear, open and regular communication among these jurisdictions is essential, especially for wide-ranging species like grizzly.
- **Reduce road mortality** – can be through both increased education/awareness and physical road works, such as installing wildlife crossing structures and/or fencing to direct wildlife to underpasses.

THEME #5: ADVANCE CLIMATE RESILIENCE

- **Initiate a climate disruption vulnerability assessment process** for key ecosystem values and functions in the study area (e.g. wetland vulnerability to drought, increased flooding, wildfire, high intensity storm events, etc.).
- **Immediately initiate projects to reduce the detrimental impacts of increased wildfire intensity, frequency and extent on ecosystems** in the Creston area – i.e., build ecosystem resilience to wildfire.
- Apply maximum pressure on Provincial and Federal Governments to **institute policies and actions necessary to meet the GHG reduction targets in line with keeping global temperature increases below 1.5° C**.

- **Identify and manage potential climate change 'cool refugia'** – both terrestrial and aquatic – for climate change resilience. Maintain cold stream temperatures through inventory and monitoring.
- **Apply a climate change lens to all conservation actions**, e.g., all resource management, species recovery and habitat restoration plans.
- **Protect hydrological inflows into the Kootenay River & Wetlands** by expanding water monitoring and implementing adaptive measures for ecosystem health.
- **Implement a regional conservation plan** to facilitate the shifts necessary for resilient ecosystems that can adapt to climate change and creates/maintains connectivity that allows for range changes by individual species. Use existing plans to incorporate potential climate change projections and scenarios for the land base, water resources and communities in the Creston Valley region.
- **Monitor the watersheds of the Creston Valley to determine the hydrologic response to climate change** and then ensure that mitigations and adaptations to climate change do not negatively impact ecological processes in the Creston wetlands. (e.g., impoundments, land clearing, dike management, increased irrigation).
- **Monitor and maintain the water flows in tributaries, streams and small creeks** entering the Creston wetlands by working with local landowners to keep peak runoff flows.
- **Determine how the different wetland habitats respond to flooding** (its variability, peak & low flows, and drought) by monitoring the wetland hydroperiod and mapping the types of wetland habitat.
- **Determine which types of wetland habitat are most vulnerable to changing hydrology** and recommend options to maintain them (e.g. protecting beaver, diking, vegetation management).
- **Modify private-land practices** to prepare for extreme hydrologic events - i.e., water conservation, culvert sizing, road surfacing, etc.
- **Expand monitoring of water levels and temperature** throughout sub-watersheds to build a robust dataset over time. Approach mitigating climate change by understanding what's going on during low flow periods when mountains no longer store enough water for downstream needs. Identify and protect water recharge sources to learn which streams are fed by recharge from sub-surface sources and which are not. How will creeks, aquifers and wetlands react when water levels change? Where are the sources of water recharge? **2**

THEME #6: REDUCE HUMAN-WILDLIFE CONFLICT AND RECREATIONAL PRESSURE

- Reduce chances for mortality by supporting practices and programs that promote **coexisting with wildlife** to allow wildlife secure passage around human-settled areas.

- **Reduce road mortality** by installing wildlife crossing structures and/or fencing in high use and high impact areas. Fence off highway and urban areas and use crossing structures to get animals across these areas.
- **Reduce attractants** (garbage, fruit trees, etc.). Encourage enforcement of all bear attractant management within residential and rural areas. Consider creative approaches to supporting fruit removal from trees.
- Engage FLNRORD and Conservation Officers on alternate **non-lethal approaches** to problem bear management.
- **Promote public safety using hands-on bear safety, electric fencing, and bear spray workshops**; 50% cost share electric fencing program; workshops to teach bear safety and bear spray use.
- **Reduce biodiversity losses from cat predation** by promoting education of feral cat management, for example, low cost spay and neuter, keep cats indoor programs, trapping feral animals.
- **Access management (including legislation, reclamation, deactivation, mixed use planning, etc.)**. Consider all recreational impacts during sensitive periods, including impacts of dogs.
- **Implement road deactivation prioritization** process on crown and private lands in the region to reduced road density. Engage in planning that is considerate of multiple uses, seasons and applies a conservation perspective.
- Consider efforts to minimize motorized access in heavily roaded areas around important **huckleberry patches and high-quality habitat used by grizzly bears**.
- **Increase involvement of First Nations in government to government planning to address recreational impacts**.
- **Reduce recreational pressures through road reclamation and decommissioning** – include forest licensees, industry, FLNRORD, First Nations, engineers and habitat biologists working on connectivity to identify priority areas for road reclamation / decommissioning to help stop access into so many places.
- Install more **signage, education and enforcement** so access and/or closures are crystal clear.