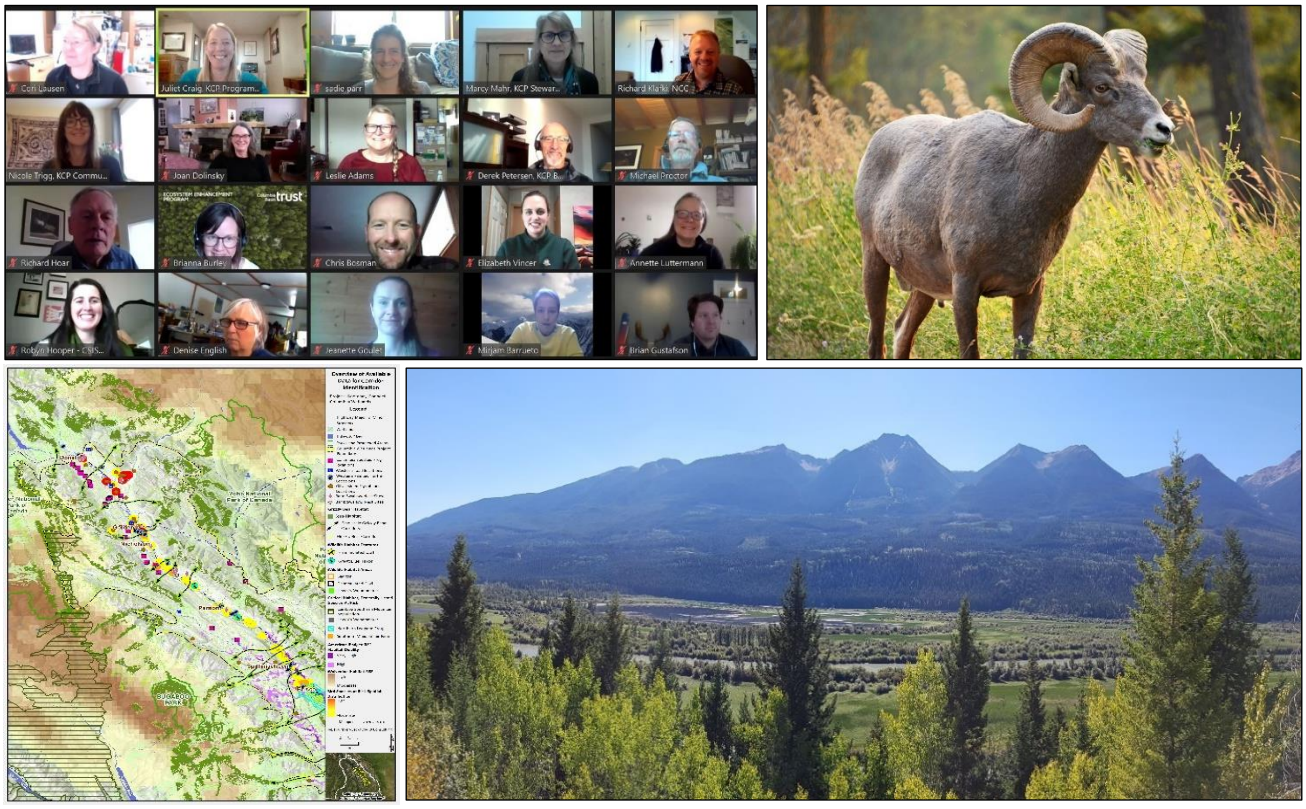
Virtual Golden Conservation Action Forum

Summary Report



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December 17, 2020

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KCP
Kootenay Conservation Program

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LIST OF ACRONYMS

CBT	Columbia Basin Trust
CSISS	Columbia Shuswap Invasive Species Society
CSRD	Columbia Shuswap Regional District
CWSP	Columbia Wetlands Stewardship Partners
CWWMA	Columbia Wetlands Wildlife Management Area
ESA	Environmentally Sensitive Areas
FWCP	Fish & Wildlife Compensation Program – Columbia Basin
GIS	Geographic Information System
GBRAC	Golden Backcountry Recreation Access Committee
GBRAP	Golden Backcountry Recreation Access Plan
HCTF	Habitat Conservation Trust Foundation
KCP	Kootenay Conservation Program
MFLNRORD	Ministry of Forests, Lands, Natural Resource Operations and Rural Development
MOTI	BC Ministry of Transportation & Infrastructure
NCC	Nature Conservancy of Canada
NGO	Non-governmental Organization
NTBC	Nature Trust of BC
OCP	Official Community Plan
RDEK	Regional District of East Kootenay
RAPR	Riparian Areas Protection Regulation
SAR	Species at Risk
SIB	Shuswap Indian Band
TCH	Trans-Canada Highway
WARS	Wildlife Accident Reporting System
WCSC	Wildlife Conservation Society Canada
WHA	Wildlife Habitat Area
WHF	Wildlife Habitat Feature
WSI	Wildlife Species Inventory
Y2Y	Yellowstone to Yukon Conservation Initiative

ACKNOWLEDGEMENTS

The Golden Conservation Action Planning Forum was held online due to COVID-19 and relied upon the collaborative efforts of many people. We are extremely grateful to Wildsight Golden and Kootenay Connect for co-hosting this event. We appreciate everyone who provided expert input and background information: Mirjam Barrueto, Suzanne Bayley, Rachel Darvill, Meg Langley, Cori Lausen, Annette Luttermann, Michael Proctor, Michael Sawaya, and Greg Utzig. We also appreciate funding from Columbia Basin Trust, Fish and Wildlife Compensation Program, Habitat Conservation Trust Foundation, The Nature Trust of BC, and Environment and Climate Change 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 Golden's exceptional biological diversity.

Environment and
Climate Change Canada

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EXECUTIVE SUMMARY

On November 25, 2020, the Kootenay Conservation Program (KCP), Wildsight Golden and Kootenay Connect co-hosted the Golden Conservation Action Forum virtually using the Zoom platform. During this full-day workshop, 31 participants representing diverse perspectives as scientists, resource managers, conservationists, fish and wildlife associations, keepers of Indigenous knowledge, and recreationists worked together to identify priority actions that would contribute to maintaining healthy fish and wildlife populations and ecological functions in the Golden Area over the next five years.

The Golden Conservation Action 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 Golden Area ecologically healthy and functioning. These contributions were submitted to KCP in advance of the Forum so the recommendations could provide a starting place for group review of actions based on five conservation themes:

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

Each of the participants received the list of over 50 recommended actions by theme and prior to the Forum selected the **top five actions** that they thought would make the most difference in the Golden Area over the next 1-3 years and that they would be most interested in working on. During the Forum, several new actions were proposed by participants which resulted in a total of **62 actions**. A group voting process resulted in **9 actions** that received three or more votes. Participants then formed **5 breakout groups** to evaluate high-scoring actions by theme and set out to collectively build action plans (see box below).

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

1. Combine Science and Indigenous Knowledge to Protect Habitat for Species at Risk and Biodiversity
2. Identify and Prioritize for Conservation Multi-Species Wildlife Corridors
3. Reduce Intensity of Human Disturbance in Backcountry, Sensitive Areas and Wildlife Corridors
4. Mitigate Recreational Impacts by Incorporating Recreation and Ecological Data to Inform Land Use Decision-Making
5. Build Climate Disruption, Adaptation and Mitigation Thinking into All Conservation Activities

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

This Conservation Action Forum has helped KCP's partners in the Golden area to develop on-the-ground solutions to mitigating threats in their local neighbourhood. Moving forward, KCP will remain engaged at a strategic level in supporting the Golden process by hosting a follow up meeting and tracking implementation of priority actions, while it is up to participating organizations to take leadership in moving the actions forward. The Forum's process and outcomes will also help KCP guide collaborative conservation action planning in other regions of the Kootenays where partners want to work together to protect local biodiversity.

Wildsight Golden will use to the Forum's five priority action plans to inform their conservation initiatives over the next three years. These priorities will help guide their West Bench Study and help plan for new projects. They also will share and promote these priority actions to government and sectors in the Golden Backcountry Recreation Access Committee and Golden and Area A Trails Alliance. The information shared at the Forum will be very useful in reviewing industrial and recreational development plans.

Kootenay Connect will nurture a working group in Golden that champions connectivity in the region. It will continue to provide strategic support for identifying multi-species wildlife corridors and connectivity as well as data and maps that help inform local and provincial government decision-making. Kootenay Connect will also bring new data to the regional conservation conversation by providing a climate lens to the necessity of connectivity to ensure wildlife and ecosystems can shift with a changing climate.

I. OVERVIEW

The Golden Conservation Action Forum took place online on November 25, 2020 virtually using the Zoom platform. The purpose of the Forum was to bring together a broad range of perspectives and scientific experts on ecological topics in order to identify priority actions for enhancing and maintaining the ecological health and functioning of the Golden area – a rich, biodiverse landscape featuring the confluence of the Kicking Horse and Columbia Rivers nestled between the Rocky, Purcell and Selkirk mountain ranges.

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 Golden Conservation Action 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 sixth Conservation Action Forum that KCP has co-hosted.

During this full-day workshop, 31 participants (Figure 1, Appendix A) representing diverse perspectives as scientists, resource managers, conservationists, fish and wildlife associations, recreationists, 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 Golden area over the next five years.

The goal of the Forum was to help participants set priorities and develop collaborative solutions for this region. 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.

[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.

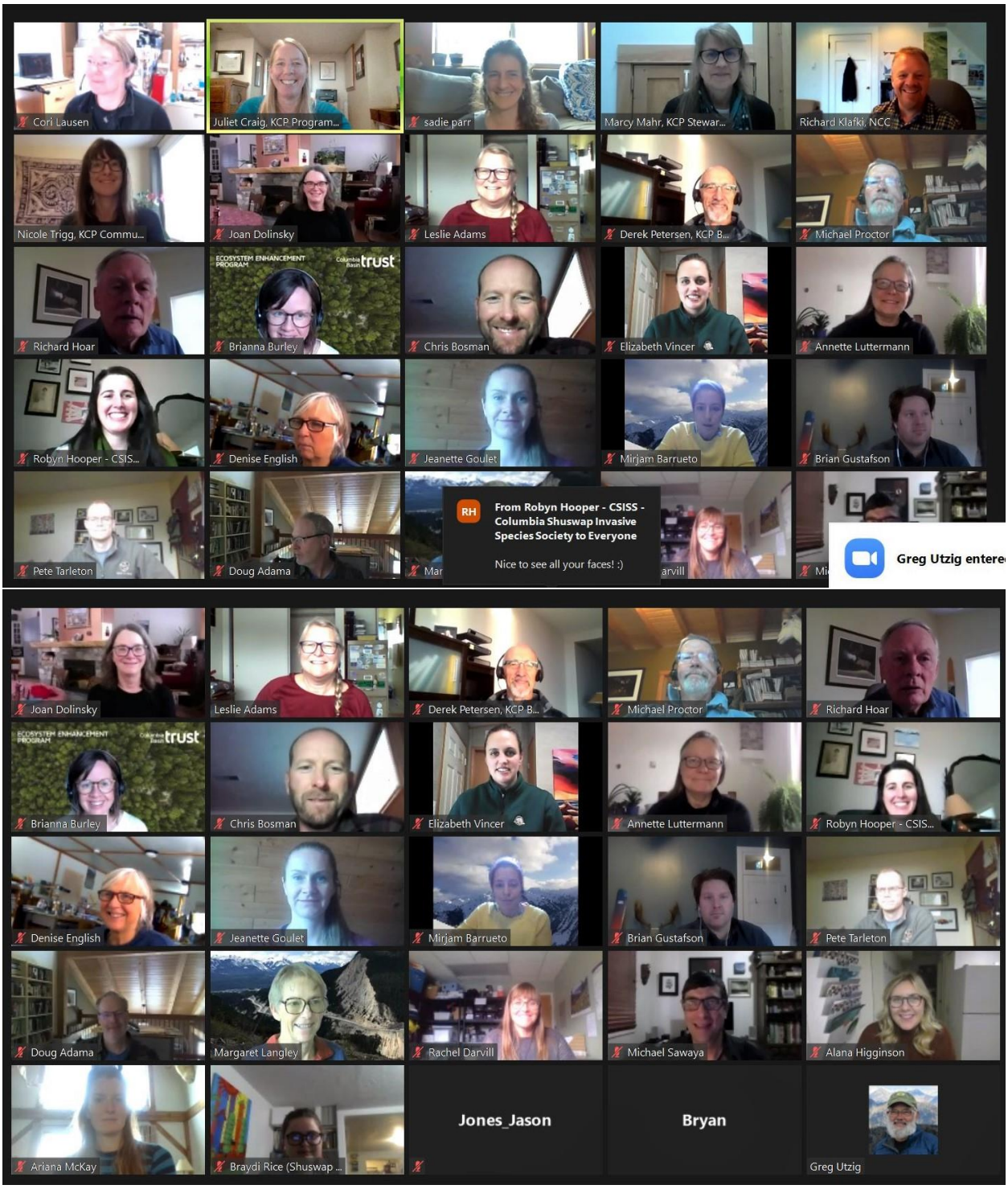

FIGURE 1. GOLDEN CONSERVATION ACTION FORUM PARTICIPANTS ON ZOOM.

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 Golden area? 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, protecting high quality habitats, enhancing and restoring degraded ecosystems, enhancing connectivity and corridors, promoting climate change resilience, preventing/controlling invasive species, 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 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.
- Wildsight Golden and other partners of Kootenay Conservation Program have clear direction for how they can support the proposed conservation actions in the Golden area.

The Golden 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; increase landscape connectivity; promote climate change resilience; and reduce human-wildlife conflicts. The results reported in the following sections highlight actions that participants considered feasible within the next 1-3 years (Figure 2).

FIGURE 2. THE GOLDEN CONSERVATION ACTION FORUM PROCESS.

I am so excited that the Kootenay Conservation Program has turned your attention to our neck of the woods. The Golden area has some highly valued ecosystems such as the Columbia River Wetlands and also some of the most heavily impacted areas such as the Kinbasket Reservoir. Sandwiched between Yoho and Glacier National Parks and at the meeting place of the northern Purcells, Northern Selkirks and Rocky Mountains, we are in a strategically important area for connecting habitats for many species at risk.

On behalf of Wildsight Golden, I would like to thank everyone for taking the time to participate today and bring your expertise and perspectives to our virtual table. I am hopeful that through this conservation forum we can work together to advance meaningful efforts in our area. We greatly appreciate this valuable planning tool KCP has provided us.

**Note: Please refer to Appendix A for Forum Participants; Appendix B for the Forum Agenda; and Appendix C 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 as well as local and provincial government administrative regions that also capture what KCP partners deem "local" since these neighbourhoods encompass areas that have a common conservation culture.

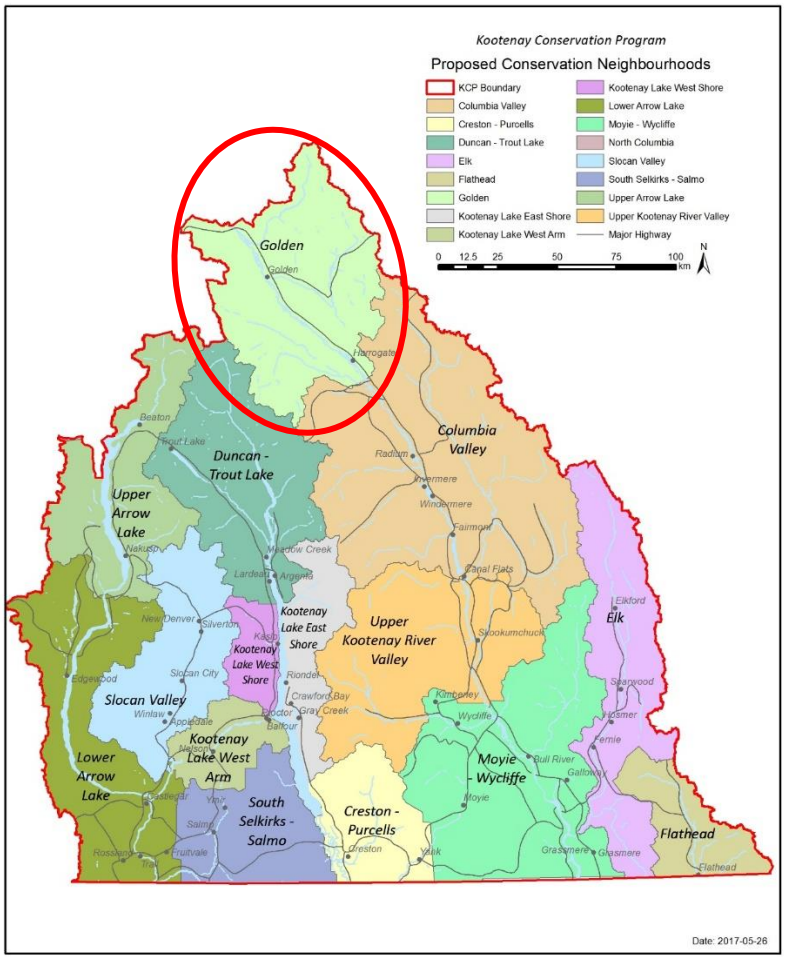

FIGURE 3. MAP OF KCP'S 14 CONSERVATION NEIGHBOURHOODS IN THE KOOTENAYS WITH THE GOLDEN NEIGHBOURHOOD CIRCLED IN RED.

KCP's Golden Conservation Neighbourhood extends from Spillimacheen and the southern boundary of the Columbia Shuswap Regional District to just north of the TransCanada Highway 1. Golden is nestled between Yoho National Park to the east and Glacier National Park to the west.

The Golden area is well-known for its ecological treasures such as diverse wetland and riparian habitats and active floodplains along the Columbia River and Wetlands. The 180 km long Columbia Wetlands is one of the few remaining pristine floodplain wetlands left in North America; and it contains the only undammed section of the entire 2,000 km long Columbia River. In 1996, the Columbia Wetlands Wildlife Management Area (CWWMA) was established under Section 4(2) of BC's Wildlife Act in order to secure the valley bottom extending from Fairmont Hot Springs to Donald for the benefit of regionally and internationally significant fish and wildlife species and their habitats. In 2005, the Columbia Wetlands were internationally recognized as a RAMSAR site for their diversity and variety of wildlife as important resting and breeding habitats for waterfowl and migratory birds of the Pacific Flyway (Figure 4). A literature review completed in 2020 identified 65 species at risk (SAR) and 21 ecological communities at risk are found within the Columbia Wetlands ecosystem[4].

The Golden area is also well-known for its extensive mountainous terrain where three mountain ranges of the Canadian Rockies, Purcells and Selkirks converge. These mountains are home to a number of species at risk that require high elevation habitats to persist, for instance, wolverine (*Gulo gulo*), olive-sided flycatcher (*Contopus cooperi*), whitebark pine (*Pinus albicaulis*) and Limber Pine (*Pinus flexilis*). Within the mountains there are also a myriad of smaller high elevation wetlands that provide immense habitat value for unique and rare plants and that provide refugia for birds, fish, amphibians, mammals, and insects. Current climate projections imply that the mountains in the Golden area and north to Mica dam are likely to remain wet and cold compared to other areas in the Columbia Basin. Precipitation is likely to decrease in the summer, but not as much as locations farther south in the East Kootenay. If this scenario holds true, the mountains around Golden will be an important climate refugia, where ecological integrity is important to maintain. The mountains are also highly valued by community members and tourists in terms of the exceptional, world-class, recreational opportunities they provide. In terms of conservation, striking a balance between developing the mountainous environment for recreational opportunities and maintaining ecological values is one of the major issues facing the Golden area.

[4] http://kootenayconservation.ca/Downloads/Literature-Review-SAR-Columbia-Valley_April-23-2020.pdf

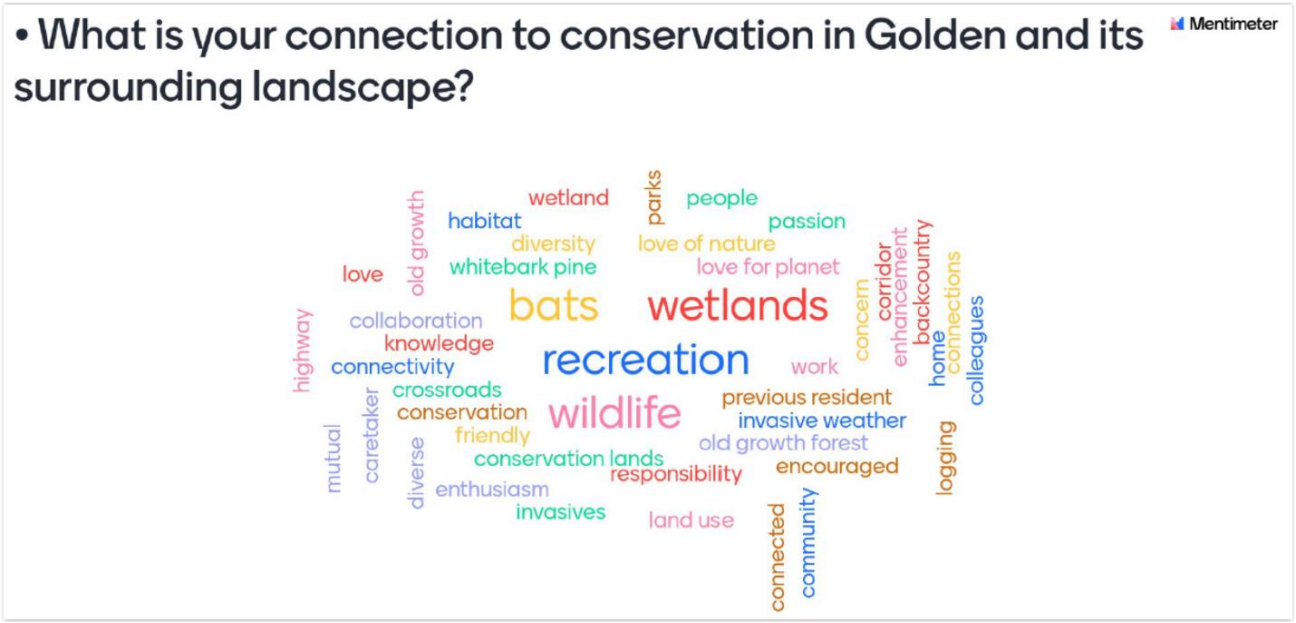

FIGURE 4. WORD CLOUD OF FORUM PARTICIPANTS' ANSWERS.

III. CONSERVATION VALUES AND THREATS

Prior to the Forum, KCP, Wildsight Golden and Kootenay Connect prepared initial lists of conservation targets and ecological threats for the Golden area that were reviewed by participating scientists for input. Proposed lists of targets and threats for the Golden area are 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. The values represent the biological diversity and unique habitats of the Golden landscape 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 5. WESTERN PAINTED TURTLES AND COMMON MERGANSER. (KCP FILE PHOTO)

TABLE 1. CONSERVATION TARGETS FOR THE GOLDEN AREA.

Species of interest and conservation concern	• American Badger • Wolverine • Grizzly Bear • Wolf • Mountain Caribou • Rocky Mtn Bighorn Sheep • Mountain Goat • Rocky Mountain Elk • Moose • Mule Deer • American Beaver • Porcupine • Little Brown Myotis • Northern Myotis	• Yuma Myotis? (possible) • Big Brown Bat • Townsend's Long-eared Bat • Silver-haired Bat • Hoary Bat • Long-eared Myotis • Long-legged Myotis • American Bittern • Sandhill Crane • Great Blue Heron • Long-billed Curlew • Swallows (all) • Western Grebe	• Horned Grebe • Eared Grebe • Pied-billed Grebe • Sora • Peregrine Falcon • Black Swift • Bobolink • Clark's Nutcracker • Short-eared Owl • Common Nighthawk • Western Painted Turtles • Northern Leopard Frog • Western Toad	• Bull Trout • Burbot • White Sturgeon • Westslope Cutthroat • Kokanee • Sculpin • Dace • Freshwater mussels • Limber Pine • Whitebark Pine • Native pollinators • Rare plants • Traditionally important plants
Important habitat types	• Valley bottom wetlands vulnerable to changes in hydrology, emergent vegetation, large open shallow water • High elevation wetlands / lakes	• Alluvial fans / creek mouths • Grassland / Open forest • Alpine & high elevation grasslands • Mature riparian cottonwood & spruce-cottonwood forest	• Inland temperate rainforest • Low elevation mature & old growth Douglas-fir forest • Mature aspen • Ponds and Lakes	• Lake foreshore • Groundwater-surface water interface (warm water spring; cold water source)
Special habitat features	• Fish spawning bed • Mainstem spawning habitat • Fish feeding / rearing areas • Nesting and/or roosting site • Burrows or denning area • Ungulate winter range	• Migratory stopover site • Bat hibernaculum (old mines, rock caves, surrounding forest) • Abandoned buildings • Steep-sided slopes / Clay banks	• Mineral Lick • Wildlife tree • Climax grassland • Huckleberry patches • Calcareous rock / soils	• Perched ponds • Wildlife corridors • Ice field / glacier • Rocky outcrops • Rock cave
Ecological processes	• Hydrologic processes (filtering, recharge, flooding, storage) • Geomorphological processes (erosion, levees, gravel, sedimentation, woody debris)	• Beaver-wetland creation • Nutrient dynamics • Carbon sequestration • Wildlife movement & migration	• Predator-prey dynamics • Breeding & nesting • Fish spawning and rearing • Fish over-wintering • Pollination	

TABLE 2. ECOLOGICAL THREATS FOR THE GOLDEN AREA.

Threats in bold were emphasized by scientists at the Golden Conservation Action Forum.

Direct loss or impairment of habitats and species	• **extensive logging & road building** • **barriers to wildlife corridors in valley bottoms** • **transportation corridors and hydro lines** • **wildlife collisions on transportation corridors (highways/railways/ transmission lines)** • **fencing along highways and private land barriers to habitat essentials like mineral licks as well as unintended access to highways** • **loss of large woody debris, gravel, rocks and sediment due to climate change and human activity** • **recreation, especially increasing mountain biking and motorized activity causing displacement** • **loss or degradation to riparian areas on private land in CSRD Electoral Area A** • major commercial or residential development/urban sprawl • conifer encroachment on native grassland • fire and fire suppression • mining and gravel extraction • erosion and sedimentation • over-grazing or poor range management • unsustainable harvesting of native species and poaching (e.g., fish and wildlife, native plants) • harvesting and falling of wildlife trees • natural system modification (e.g., water diversion, dams, water management) • declining water quality • persecution and extermination of wildlife • mine closures (providing bat hibernacula) • use of *Baciliius thuringensis subspecies israelensis* (Bti) for mosquito control
Invasive species	• **invasive plants replacing native plant communities** • **chytrid fungus** • **fungus causing white-nose syndrome** • **white pine blister rust** • **domestic sheep diseases (infecting native Bighorn Sheep)** • zebra & quagga mussels • American bullfrog
Recreational pressure	• **increased trail and off-trail usage (e.g., multi-use and non-motorized use)** • **increased backcountry access for mountain biking and motorized use from montane to high alpine habitat (e.g., causing wildlife displacement)** • **increased winter recreational activities (heliskiing, touring, snowmobiling)** • increased new and unauthorized trail building trail • increased human activity around high elevation wetland/lake habitats • increased human activity in the wetlands and motorized watercraft on wetlands and lakes • blasting from avalanche control activities • increased presence of planes, drones, helicopters
Uncertainty of climate change impacts	• **vegetational changes / habitat shifting** • **changing species distributions** • **hydrological changes (causing floods or extreme drought)** • **water impoundments and other water storage may affect hydrology** • catastrophic fire

	• mudslides / landslides • loss of snowpack / loss of cold water creeks • forest pest spread (e.g., mountain pine beetle and other insects) • wildlife disease spread • artificial bat roosts (i.e., bat boxes) becoming ecological sinks with climate change
Cumulative effects	• **impact of the combinations of multiple threats**

FIGURE 6. MAP OF BOTTOM LAND HARDWOOD FORESTS NEEDING PROTECTION, COLUMBIA WETLANDS. (MAP AND PHOTO COURTESY OF COLUMBIA WETLANDS STEWARDSHIP PARTNERS)

IV. DEVELOPING CONSERVATION PRIORITIES

SCIENCE PRESENTATIONS

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

Science presentations included:

1. **Swallows & Species at Risk** – Rachel Darvill, MSc, RPBio, Goldeneye Ecological Services
2. **Hydrology & Wetlands** – Suzanne Bayley, PhD, Columbia Wetlands Stewardship Partners
3. **Beaver-Influenced Wetlands** – Annette Luttermann, PhD, A.L. Ecologic
4. **Bat Conservation** – Cori Lausen, PhD, Wildlife Conservation Society Canada
5. **Bighorn Sheep** – Meg Langley, MSc, Wildsight Golden Rocky Mountain Bighorn Sheep Project
6. **Wolverine Ecology** – Mirjam Barrueto, PhD Candidate, University of Calgary
7. **Mitigating Wildlife-Vehicle Collisions on the Trans-Canada Highway** – Michael Sawaya, PhD, Sinopah Wildlife Research Associates
8. **Landscape Connectivity Areas** – Michael Proctor, PhD, Kootenay Connect
9. **Climate Disruption** – Greg Utzig, MSc, Kutenai Nature Investigations

THEMES GUIDING SMALL GROUP DISCUSSIONS

Key recommendations presented by scientists were submitted to KCP in advance of the Forum (Appendix C) 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 high-quality habitats for biodiversity
3. Enhance landscape connectivity and wildlife corridors
4. Reduce human-wildlife conflict and recreational pressure
5. Advance climate change resilience

Each of the participants received the list of over 50 recommended actions by theme and prior to the Forum selected the **top five actions** that they thought would make the most difference in the Golden Area over the next 1-3 years and that they would be most interested in working on. During the Forum, several new actions were proposed by participants which resulted in a total of **62 actions** presented onscreen using an application called Mural (Figure 7). A group voting process resulted in **9 actions** that received three or more votes. Participants then formed **5 breakout groups** to evaluate high-scoring actions by theme and set out to collectively build action plans.

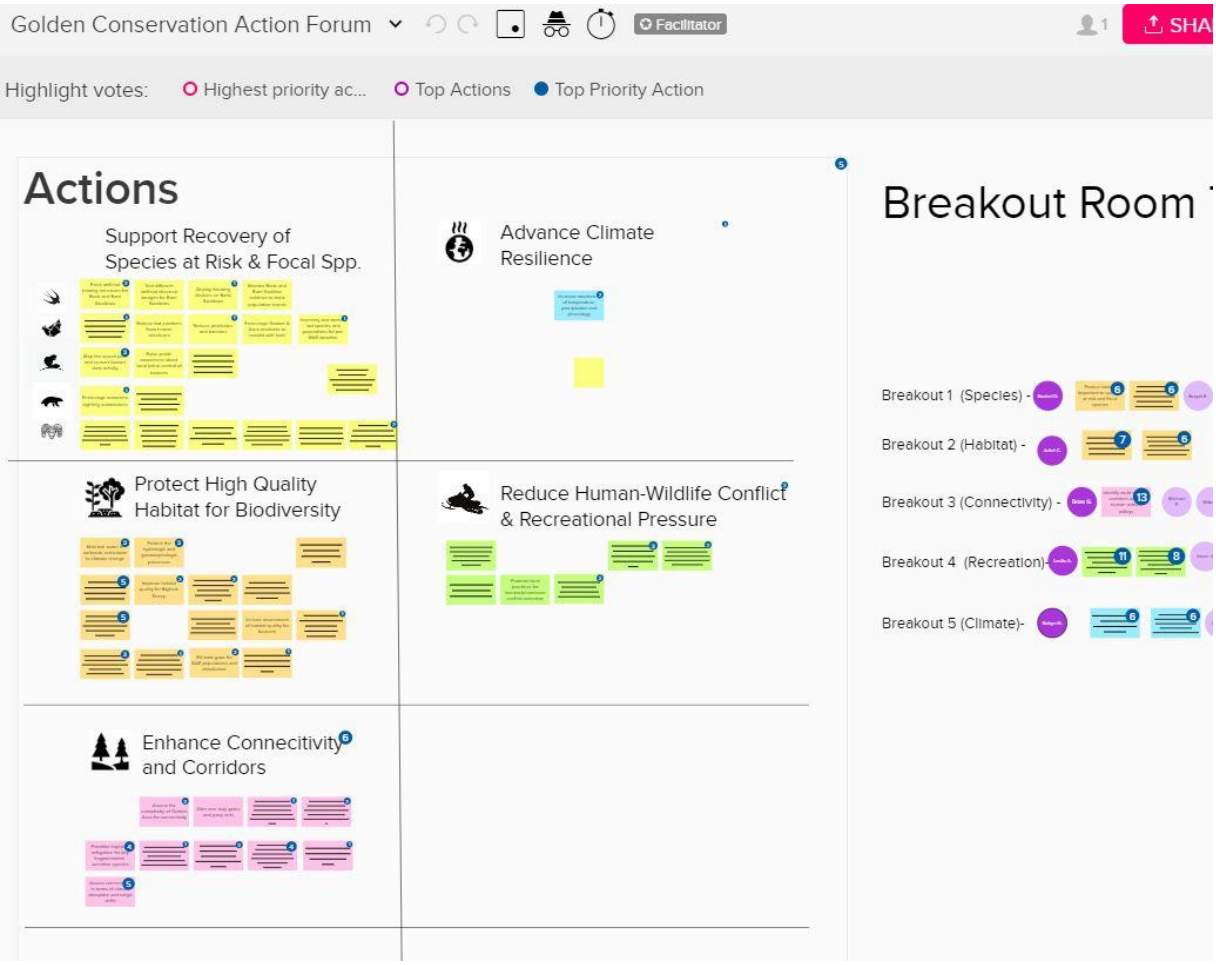

FIGURE 7. PARTICIPANTS SELECTED THEIR TOP RECOMMENDATIONS FOR ACTION USING MURAL.

V. GOLDEN 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
6. Measures of success

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

1. Combine Science and Indigenous Knowledge to Protect Habitat for Species at Risk and Biodiversity
2. Identify and Prioritize for Conservation Multi-Species Wildlife Corridors
3. Reduce Intensity of Human Disturbance in Backcountry, Sensitive Areas and Wildlife Corridors
4. Mitigate Recreational Impacts by Incorporating Recreation and Ecological Data to Inform Land Use Decision-Making
5. Build Climate Disruption, Adaptation and Mitigation Thinking into All Conservation Activities

OUTCOMES FROM BREAKOUT ACTION GROUPS

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

ACTION #1: COMBINE SCIENCE AND INDIGENOUS KNOWLEDGE TO PROTECT HABITAT FOR SPECIES AT RISK, FOCAL SPECIES, AND LOCAL BIODIVERSITY

Group Members: Rachel Darvill (Goldeneye Ecological Services), Alana Higginson (BC Wildlife federation), Braydi Rice (Shuswap Indian Band), Cori Lausen (Wildlife Conservation Society Canada), Bryan Kelly-McArthur (Botanist), Peter Tarleton (Parks Canada)

1) **Statement of Priority Action: Combine science and Indigenous knowledge to protect habitat for species at risk and biodiversity.** In order to identify and protect habitat important for species at risk, focal species, and biologically important areas in the Golden-Spillimacheen area, non-Indigenous and Indigenous knowledge keepers need to integrate scientific and traditional and cultural Indigenous perspectives to identify areas of highest conservation priority. Bringing our respective information of western science and Indigenous knowledge together in a collaborative process will allow each group to provide evidence, validation, and suggestions that will contribute to strengthening a final compilation of biodiverse and culturally important hotspots.

2) **Activities**

   - Many areas important to the Shuswap Indian Band are not spatially recorded so we need to collaboratively develop a process to spatially record and include culturally important species and traditional knowledge early in the process of identifying and mapping biodiversity hotspots.
   - Our larger group of partners needs to work on building relationships with private landowners. All partners may play a role in this, however, due to the sensitive nature of approaching landowners with respect to conservation, we need to be strategic in terms of who approaches individual landowners – based on prior relationships or some common purpose.
   - Encourage local and provincial government buy in because it might be useful in some instances to create conservation designations. We need to reach out and build relationships with the Columbia Shuswap Regional District, planners and elected officials

- Need to think about climate change predictions and how SAR habitats will change. How does this affect what we need to protect?
- Need more inventory work for SAR and focal species that we don't know much about, and habitat modelling for species that we do have some info on (e.g. Bighorn Sheep).

3) Resources

- Funding to bring together science and Indigenous information-sharing. This may entail funds to digitize Indigenous Knowledge information on biodiversity hotspots.
- Mapping and combining all the data in one place – Kootenay Connect is working on this now. We may need to help get Indigenous Knowledge digitized so it can be combined with other science knowledge.
- Once we know where these places (hotspots) are, we need a strategy for getting the results to regional and provincial planners and decision makers and also to various decision makers and groups (e.g. recreation and access planners) that help review recreation applications and forestry plans.
- More biologists on the ground doing inventory work; very little available data on plants.
- We could benefit from considering synergies between projects - this could assist with collecting data on multiple species when a biologist is out in the field. A shared biologist Google calendar may be helpful to let folks know when someone is going into the field and when/where they are going. Need the ability to coordinate who is doing what and when. This could be something that a regional NGO might be interested in taking on, such as CWSP.
- Set up a database hub for species, or make sure all biologists are entering all data into the province's Wildlife Species Inventory (WSI)[5] database.
- How do we combine the data and efforts in the end? Kootenay Connect may also be able to help with this for the next 2 years.

[5] https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/wildlife/wildlife-data-information

4) Partnerships or Collaborations

- Non-profits could bring this forward if they want to focus more on this area through connections with the government, e.g., Wildsight, BC Wildlife Federation, Wildlife Conservation Society Canada, forest licensees (since old growth is a high priority).
- First Nations, local biologists and ENGOs could explore opportunities to create new IPCAs (Indigenous Protected and Conserved Areas) to protect areas where biodiversity hotspots were also culturally significant. This is possible yet would need to be an area of significant cultural connection to the band applying. IPCAs also take a great deal of funding and a lot of collaboration with both provincial and federal government.
- Educate people about how to take care while being in ecologically important areas, get recreation groups to help with this, e.g., GBRAC partnership.
- Develop a group's ability to get all data incorporated into Forest License Plans, GBRAC.
- Partnership with Government on updating the species list for WHAs and/or WHFs. This needs to be organized by a designated group.
- Continue within Kootenay Connect projects and others to identify where these WHAs and WHFs are, and work to have them designated.
- Bring the SAR/hotspot data that is collected to the agencies that can review forestry plans and who can comment on those, e.g., Wildsight Golden, CSISS, Parks Canada, Shuswap Indian Band, Ktunaxa Nation Council, etc. can comment on the forest license plans. First Nations should get all of the referrals within their traditional territory – have departments that prioritize incoming referrals for review level, action level and response.
- Find out how to be notified about forestry plans if you are not a referral agency.

5) Timeframe

- 2021: Create a networking biologists/calendar that CWSP and KCP help promote
- 2021: Look into if and when the species list will be updated for WHAs/WHFs
- 2021-2023: Identify priorities for conservation land purchases to KCP, NTBC and NCC. KCP coordinates the securement list and NCC and NTBC can work to purchase private properties or establish conservation covenants in the coming years.
- 2021-2022: Kootenay Connect will update SAR/corridor map and arrange meeting with Indigenous groups to incorporate Indigenous Knowledge. This would best be

facilitated after the First Nations have digitized their information or have identified areas on maps so Indigenous Knowledge is geographically referenced.

- 2021-2023: A group within our partnership needs to step up and volunteer to review timber harvest plans and integrate the accumulated data from Kootenay Connect and Indigenous Knowledge to inform MFLNRORD's decision-making.

6) Measure of Success

- Acquiring data on SAR has occurred.
- Have met with Indigenous groups and included Indigenous Knowledge for SAR.
- Distribution of the data to various groups has happened.
- How well we have been able to coordinate? Do we have a new network in place where we all are more coordinated and work is more synergistic?
- Have we been able to contribute to the WHA species list to the benefit of the Golden area? Have we been able to designate more WHAs and WHFs?
- Has the data been useful to inform decisions on the land base?

FIGURE 8. ARTIFICIAL OLD GROWTH TREES USING BRANDEN BARK PROVIDE ROOSTS FOR BATS AT BURGES JAMES GADSEN PROVINCIAL PARK NEAR GOLDEN. (PHOTO COURTESY OF WILDLIFE CONSERVATION SOCIETY CANADA)

FIGURE 9. BANK SWALLOW BREEDING COLONY IN GOLDEN. (PHOTO COURTESY OF RACHEL DARVILL).

ACTION #2: IDENTIFY AND PRIORITIZE MULTI-SPECIES WILDLIFE CORRIDORS AND CONNECTIVITY

Group Members: Brian Gustafson (Golden District Rod & Gun Club), Jeanette Goulet (Parks Canada), Michael Sawaya (Sinopah Wildlife Research Associates), Michael Proctor (Kootenay Connect), Sadie Parr (Wolf Awareness), Elizabeth Vincer (Parks Canada), Richard Klafki (NCC), Brianna Burley (CBT), and Meg Langley (Golden Rocky Mountain Bighorn Sheep Project)

1) **Statement of Priority Action: Identify and prioritize for conservation multi-species corridors connecting backcountry core habitat areas across human-settled valley.**

2) **Activities**
   - Consider wildlife corridors based on existing data for multiple species where possible, e.g., Grizzly Bear, Mtn Goats, Wolverine Elk, Moose, Bighorn Sheep, Lynx, Black Bear, Wolf, Coyote. Key areas for connectivity:
     1. N Columbia A – just N of Donald
     2. N Columbia B – just S of Donald
     3. Between Golden & Moberly
     4. Horse Creek
     5. McMurdo
     6. Spillimacheen
     7. 12-Mile
     8. Blaeberry
     9. North – South
        - Dogtooth Range
        - Rocky Mountains
        - West Bench
     10. Low elevation passes
   - Convert data from WARS (Wildlife Accident Reporting System, a provincial roadkill database) to Lat/Long or UTM to be more useful and help identify locations for highway mitigation. Include Canadian Pacific Railroad collision data if possible (Meg Langley, Michael Sawaya)
   - Based on identified mitigation sites prioritize land for acquisition for crossing structures (Kootenay Connect, NCC, NTBC) - private lands team to identify key areas/align data and local knowledge
   - Integrate data analysis and recommendations into OCP development (Ecological Sensitive Areas and Development Permit Areas)

- Initiate concept of wildlife connectivity into Official Community Plan for Area A with planning rules and regulations – possibly lobby Provincial government to get CSRD on board?
- Protect riparian areas from development within Electoral Area A by encouraging CSRD to take the necessary steps to enact Riparian Areas Protection Regulation (RAPR). The City of Golden has adopted RAPR and is complying with its requirements, but this is not the case with Area A. In the absence of an Official Community Plan with associated Development Permit Area requirements, the CSRD is unable to enact a bylaw to make RAPR a requirement for private land development proposals within 30 m of streams.
- Consider analysis of crossing locations on Hwy 93/95. Share information with government Ministries, MOTI, and RDEK planners as per the Trans-Canada Highway Mitigation report series by Clevenger, Sawaya and others.
- Incorporate species at risk inventory data from Rachel Darvill's research for Kootenay Connect / CWSP and consider new government data layer with SAR range maps
- Investigate efficacy of current Trans-Canada Highway crossing structure and need for habitat enhancement at these crossings. (Golden District Rod and Gun Club)
- Work with MOTI with future phases of TCH and 93/95 to ensure habitat enhancement work is done in conjunction with the installation of new crossing structures. (Golden District Rod and Gun Club, Kootenay Connect, KCP, Wildsight)

FIGURE 10. TRANS-CANADA HIGHWAY MITIGATION WOULD SIGNIFICANTLY BENEFIT THE BIGHORN SHEEP POPULATION IN KICKING HORSE CANYON. (PHOTO COURTESY OF MEG LANGLEY)

3) Resources

Funding from a variety of sources:

- Kootenay Connect's current funding is generally spoken for but some of the above is being done within funded Kootenay Connect projects
- Parks Canada
- CBT-Ecosystem Enhancement Program
- CSRD- Grant In Aid
- Columbia Valley Local Conservation Fund (if in RDEK)
- Nature Conservancy Canada and Nature Trust of BC for projects related to purchasing private conservation lands
- Get creative and look for other finding opportunities

Cash or InKind support:

- Technical to support data storage
- GIS capacity for analyzing data and making maps
- Communications and Coordination (e.g., KCP, Kootenay Connect)

4) Partnerships or Collaborations

KCP, Parks Canada, GDRGC, Wildsight Golden, CBT, CSRD, local user groups, community forest, GBRAP, Golden and Area A Trails Alliance, Kootenay Connect, Ktunaxa, Secwépemc, Metis groups, NCC, NTBC, Y2Y

5) Timeframe

2 to 3 years (2021-2023)

6) Measures of Success

- Database with all available multi-species information
- All available wildlife data deposited in Kootenay Connect warehouse
- WARS Data converted and accessible to make it useful.
- Integration with local and provincial government: CSRD (OCP), MOTI, Parks Canada, MFLNRORD Habitat Branch, Columbia Shuswap Invasive Species Society
- High priority wildlife corridors identified in each of the key areas for connectivity

ACTION #3: REDUCE INTENSITY OF HUMAN DISTURBANCE IN BACKCOUNTRY, SENSITIVE AREAS AND WILDLIFE CORRIDORS

Group members: Annette Luttermann (A.L. Ecological), Ariana McKay (FLNRORD), Chris Bosman (Nature Trust of BC), Denise English (Doroshuk English Enterprises), Juliet Craig (KCP), Rick Hoar (CWSP)

1) **Statement of Priority Action: Reduce intensity of human disturbance in backcountry, sensitive areas and wildlife corridors using a variety of tools including road and trail closures, limiting access, and rehabilitation of roads.**

2) **Activities**

- Communication around the importance of low road densities and impacts of high road densities on wildlife (like Grizzly Bears). There is a good infographic that could be used.
- Build support for concept amongst local groups, e.g., Rod & Gun Clubs and their members. Need to consider a multi-species approach since some species may be disturbed at certain times of year.
- Road density of 0.6 km/km^2 may be too high a threshold.
- More than just roads, an issue is also conversion of forests in key corridors for movement.
- Could be 'remove roads or trails that lead into sensitive habitat'.
- Could invite Clayton Lamb to do a presentation for Golden Backcountry Access Recreation Committee, local government, and Wildsight.
- There are Area Closure regulations that could be used. Could close roads seasonally or year-round. Could try it in Golden with one large Access Management closure.
- Identify ways to better enforce Golden Backcountry Recreation Access Plan (GBRAP) which currently has limited enforcement, monitoring or research being done to see how effective the plan and zoning is. For example, limitation of ticketing only during salmon spawning and not other times of year.
- Develop strategies for engaging both MFLNRORD (GBRAP is legislated and enforced) and Ministry of Environment which is responsible for species protection.
- GBRAC has run out of funding, so this is an issue that needs to be addressed.
- Connectivity to the back country, and between needs to connect to critical habitats especially valley bottoms and include consideration for road density and closure within corridors.

- Decision making structure needs to be revamped because GBRAP is heavily weighted by motorized sector.
- Annette is developing a proposal to look at recreation intensity in relation to wildlife habitat (cumulative effects) on West Bench in collaboration with Karine Pigeon and Y2Y.
- Develop a Park to Park to Park concept and leverage opportunities with Parks Canada's current mandate for landscape level conservation outside park boundaries.
- Include metric of road density as critical threshold for grizzly but also access to sensitive habitats.
- Use remote cameras to document use and extent of unauthorized trails so that it can be useful to government making decisions on future trail applications. Example, recreational usage on the Columbia River is being monitored by CWSP using cameras.
- A lot of recreationalists are getting information online (e.g. trail apps). Could do an inventory on what's being listed on the platforms and what tourist info is telling people, there could be an opportunity to spread the word about voluntary trail closures.
- Inventory trails, carefully manage data, and inform about places for possible access closure. Project with Karine Pigeon and Y2Y is looking at mapped trails and apps to assess trail use. Example, volunteers in Kananaskis have mapped unofficial trails and this could be done in Golden area as well. Aerial surveys may not work with dense forest canopy. 'Secret stash' of trails is sensitive data and would not want all these trails widely known.
- West Forks Bench to Bench study is making a start on this but only in that subregion.
- Provincial government needs to give permission for trails on public land. However, these 'illegal' trails are being publicly shared and advertised.
- Need capacity and political will to take these issues on.
- Have a meeting with Y2Y, UNBC and local Golden folks to identify shared priorities.
- Incorporate work and mapping of Kootenay Connect.
- Enforced motorized closure can be legislated under the CWWMA.

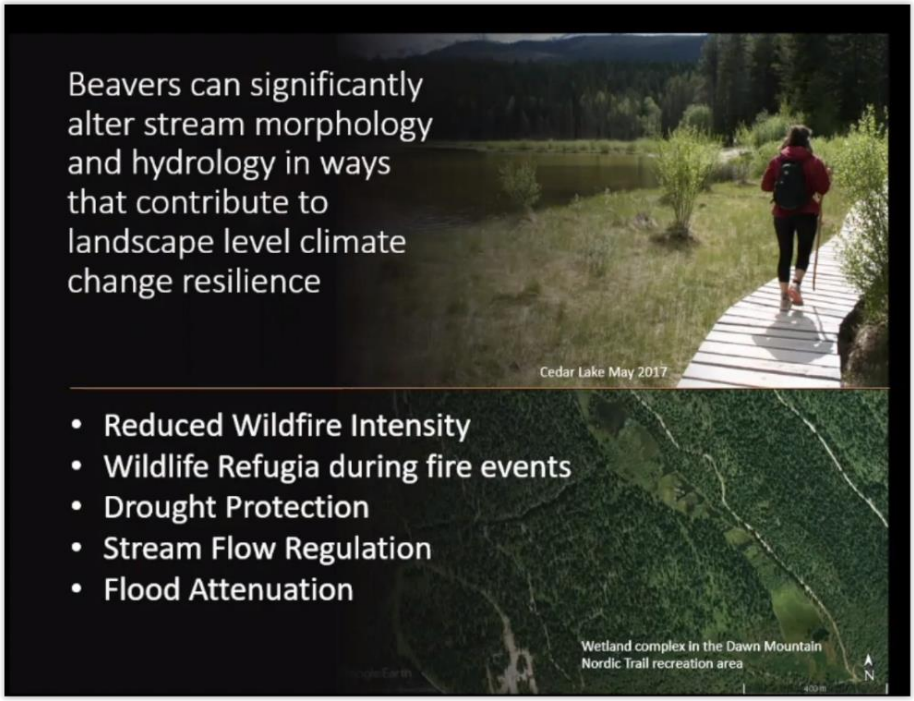

FIGURE 11. ROLE OF BEAVERS IN INFLUENCING WETLANDS AND MITIGATING THE IMPACTS OF CLIMATE CHANGE. (SOURCE: ANNETTE LUTTERMANN).

3) Resources

- Excellent infographic has been produced by Clayton Lamb.
- Effects of habitat quality and access management on the density of a recovering grizzly bear population (Lamb et al. 2018)
- Golden Backcountry Recreation Access Plan
- Inventory and map of the trails to identify priority areas to focus on.
- Funding (Real Estate Foundation BC).
- Forest Service road layers
- Official trails are mapped in iMapBC data hub but many out of date

4) **Partnerships or Collaborations**

- Annette Luttermann
- BC Timber Sales
- Louisiana Pacific

- MFLNRORD (Ariana McKay)
- Ministry of Environment (Conservation Officers)
- Wildsight Golden
- Golden Rod & Gun Club
- Yellowstone to Yukon Conservation Initiative
- University of Northern British Columbia (Karen Pigeon)
- University of Calgary (Miriam Barrueto)
- Golden Backcountry Recreation Access Committee
- Jordy from Pioneer or Foresight out of Salmon Arm (mapping expertise)
- Michael Proctor (Kootenay Connect) for map layers and analysis
- Local mapping person (TBD)

5) **Timeframe**

- January 2021: apply to Real Estate Foundation BC for inventory of trails and initial landscape level connectivity planning. Wildsight Golden could be organization to manage grant funding. Y2Y and UNBC is keen to collaborate and put in grant applications for landscape level (e.g., Real Estate Foundation)
- 2021-2022: Incorporate work of Kootenay Connect (ongoing)
- 2021-2022: MFLNRORD Stakeholder engagement (approx. 6 months to a year)
- 2021-2023: Road deactivation work (1 to 3 years)

6) **Measure of Success**

- 10 roads deactivated that lead into high value habitat.
- Information to support decisions about high intensity use in region, particularly on West Bench (trails, connectivity corridors, impacts, where to go/not go)

ACTION #4: MITIGATE RECREATIONAL IMPACTS BY INCORPORATING RECREATION AND ECOLOGICAL DATA TO INFORM DECISION-MAKING

Group Members: Leslie Adams (Wildsight Golden), Derek Petersen (KCP), Mirjam Barrueto (University of Calgary), Jason Jones, (Golden Backcountry Recreation Advisory Committee and Golden Trail Alliance), Joan Dolinsky (Wildsight Golden)

1. **Statement of Priority Action: Mitigate recreational impacts by incorporating recreation and ecological data to inform decision making.**

2. **Activities**

   - Improve understanding of the relationship of human recreational activities to wildlife displacement and disturbance - glean information from literature/peer reviewed information and collect data.
   - Need to establish thresholds in GBRAP.
   - Map specific permitted, proposed, and informal (e.g. local mountain bike, ATV, snowmobiling clubs) recreation areas
   - Overlay the above map with a map of the ecological values of the area
   - Identify the ecological values that are being compromised by recreation activities and areas to inform recreation – ecological values impact assessment
   - Trail use data sources: Wildsight, Strava data, Y2Y, Social media data (available for purchase), trail counters, trail cameras, BC Rec Sites & Trails, Clubs, forecasting expansions of trails (user groups)
   - Commercial Recreation data - MFLNRORD (lands)
   - Aerial surveys of off-trail impacts - Karine (Y2Y), Mirjam (U of C)
   - Identify priority areas/habitats for wildlife species: data from Kootenay Connect, Mirjam Barrueto, provincial data, Golden Backcountry Recreation Access Plan (GBRAP), trail cameras

3. **Resources**
   - Mapping resources and data to populate maps of recreation activity
   - Resources for airplane flights to identify recreation activities or impacts not generally known
   - Government support for permitted area recreation and proposed recreation area mapping and capacity
   - GBRAC support and capacity
   - Support for research to assess the impact of current and proposed recreation activities

- Inject recreation map, ecological map and compromised ecological values information into access management
- Funding for all of the above

4. **Potential Partners / Collaborators**
   - Yellowstone to Yukon Conservation Initiative, Wildsight, Kootenay Conservation Program, commercial operators, local recreation clubs, Golden Trail Alliance. Incorporate tourists through Tourism Golden, websites and apps.
   - Involve local and provincial government, Parks Canada, forest industry, CBT in the discussion
   - Access to the best available data - collected together and give to Jason Jones for Golden Backcountry Recreation Advisory Committee (GBRAC) - make the data accessible to partners, local, regional and provincial government
   - Alliances and cooperation are critical between users and data - users can collect data
   - An organization to be a data warehouse body – possibly GBRAC (Jason Jones, ED)

5. **Timeline**

   2021-2022: Applications constantly coming forward that Government is evaluating: a) get GBRAP on a cycle of amending and incorporating data as it comes in and b) make the plan accessible and more user-friendly and publicly available.

6. **Measures of Success**

   - A process that regularly updates the GBRAP
   - When we have the, current, proposed and informal recreation areas mapped and the accompanying and overlapping ecological to inform a recreation – ecological values impact assessment that itself informs and updates the GBRAP
   - Products that people can use
   - When we have a map of permitted recreational activities that do not overly impact ecological values as a guide to the community including locals, commercial operators, and tourists.
   - Buy-in from the Recreation and Environmental sectors - participating in the process and sharing their results.
   - Project could be led by the Trail Alliance or GBRAC or another non-partisan - very objective group in order to create buy in from all stakeholders.

ACTION #5: BUILD CLIMATE DISRUPTION, ADAPTATION AND MITIGATION THINKING INTO ALL ACTIVITIES

Group Members: Robyn Hooper (CSISS), Greg Utzig (Kutenai Nature Investigations), Doug Adama (LGL Limited)

The group began considering these 2 recommendations:

· **Build climate disruption, adaptation and mitigation thinking into all activities**: every decision and action should provide positive answers to: Will this reduce Greenhouse Gas emissions? Will this increase resilience?

· **Plan and implement a regional conservation plan that increases ecosystem resilience to climate disruption in the Golden area** (e.g., build resilience to disturbances, facilitate range shifts, maintain connectivity, reduce other stresses, eliminate habitat destruction, maintain a diversity of habitat elements, etc.).

1) **Statement of Priority Action: Build climate disruption, adaptation and mitigation thinking into all activities.** As a practical application, anticipate in low elevations it will be hotter and drier. Golden area is unusual because three modeling scenarios are quite different, high elevation mountains capture moisture. Alpine may see increased moisture. Need to look at common elements of the three scenarios and go into more detail, such as, a) precipitation likely to decrease in the summer but not as much as locations farther south; and b) winter increase in precipitation (but not beyond 1920s). Lower elevations likely more of an issue for precipitation. For other regions in the Kootenays the focus is fire resilience. Engelman spruce and subalpine fir will disappear but unsure of what replacement species will be with warmer, wetter conditions – could be coastal in high or low elevations in Revelstoke/Mica area. For example, Mountain Hemlock or more like Coastal Hemlock.

2) **Activities**
   - To understand Golden area – also look north to Mica. Golden climate refugia will likely be cold and wet comparably. Retain refugia: 1) Create protected areas because ecosystems more likely to persist in this area! 2) Implement Forest Practices Code recommendations. Lost a lot of old growth already. Snowbrush (*Ceanothus velutinus*) changes moving farther north - seed banker, adapted to fire, moving up Blaeberry with logging/openings/slash burns. Monitor phenology as first sign of things changing - when things are flowering. Mismatches between birds and insect outbreaks. Health of aspen stands has been looked at - decline in growth, climate

impacts on survival - serious implications on biodiversity. Spruce die back in Rogers Pass.

- Include climate change predictions in Timber Supply Analysis.
- Review landscape impacts of climate change - investigate potential protections of ecosystem impacts. Use this as basis for regional planning. Very little information on where things are going. Work completed by Greg Utzig only for West Kootenays[6]. Mapping has not been completed for the Golden area. Detailed analyses need. Need to look at aquatic and terrestrial ecosystems.
- Create low elevation protected areas - "climate refugia" - connectivity to facilitate range changes. Look at old biodiversity guidebook - stand and landscape and regional level. Site level protection depends on climate change impacts - sites that need to be managed for fire vs. sites that have water (riparian / groundwater)
- Regional plan - priority areas for protection - aquatic and terrestrial
- Municipal planning for climate change
- Invasive spp projections with climate change and tie into plans e.g., wildfire protection, prescribed burns

3) Resources

- Federal government have some info on impacts but not related to wildlife/habitat, but projections for extreme events in streams
- West Kootenays Greg Utzig work can be basis for looking in more details for Golden area - provides template
- Wildfire Hazard Mapping (provincial)
- Pacific Climate Impacts Consortium (PCIC)[7] and Columbia Basin Climate Source[8] for looking at data; but for data manipulation then go to Climate BC / Climate WNA[9]
- UBC / UA - Hammond and Wang - Climate BC, Climate WNA - data for western north American, can download info directly for any sites - raw data
- Wildlife management data - listservs, Utzig has 5GB on wildlife and hydrologic articles.
- National Park planning work - ask Parks staff
- CBT - Selkirk College - Rural Development Institute data portal
- Invasive species data - research for BC climate projections. Similar to Alberta research; consider priority invasive species. Look at range expansions. Aquatic and terrestrial species – ability for invasives to do much better!

[6] https://kootenayresilience.org/
[7] https://www.pacificclimate.org/
[8] https://basinclimatesource.ca/
[9] http://www.climatewna.com/

- Novel ecosystem research - changes in predator/prey relationships, native species acting like invasives; ecosystem function overall goal.

4) **Partnerships or Collaborations**
   - Golden District Rod and Gun club - woodlot outside of town, wildfire interface
   - Town of Golden
   - CSRD - local land use planning but only if residents vote it in
   - KCP
   - CBT – funding for ecosystem enhancement -> seral aspen stands, fire
   - FUNDERS (FWCP, CBT, etc.) in the region - require having CC considered for all restoration/habitat and spp projects
   - Involve everyone because climate change impacts all

5) **Timeframe**

   2021: Start immediately! Ongoing work needed and will become increasingly important.

6) **Measure of Success**
   - All levels of government land managers are well-versed in climate change impacts
   - Management plans prepared for adapting to climate change
   - Projects actively monitoring how ecosystems are adapting to projected impacts

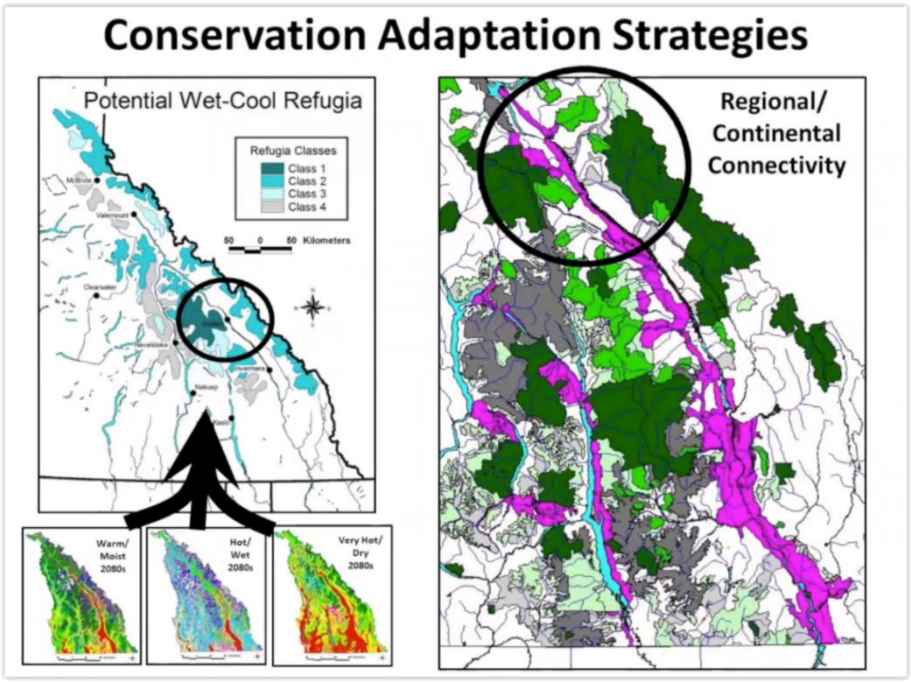

FIGURE 12. THE GOLDEN AREA IS AN IMPORTANT REGIONAL CLIMATE CORRIDOR FOR POTENTIAL COOL-WET REFUGIA FOR SHIFTING SPECIES AND HABITATS. (SOURCE: KUTENAI NATURE INVESTIGATIONS)

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, landscape connectivity, recreational impacts, and resilience through the lens of climate change in the Golden area. The Golden 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.

According to participant evaluations, 96% of participants rated the Forum "very good" to "excellent." The amount of learning and relationship-building was reflected in many comments.

"What a great day! I really appreciated the big picture thinking and cross-section and diversity of participants."

"A great opportunity and wonderful forum for sharing and making things happen. Very well done!!"

"*I learned so much. I don't have a solid understanding of the conservation players, issues and opportunities in the Golden area so, in this respect, getting a basic understanding was quite interesting. I found the work regarding highway crossings and Bighorn sheep to be especially interesting."*

"It was super helpful to learn about key priorities for conservation and have an overview of all the great research and conservation work that's being done in our region!"

"The willingness to share data and project information d to support shared goals is so important."

"Great facilitation in the virtual format. Very smooth and good use of different online tools for participation!"

"Using a new platform for a workshop such as this was a highlight. In particular, all of the cool supporting software tools that were integrated into the session...good job KCP! Excellent use of technology, everything was seamless!"

"The menti-meter word cloud was a fun idea and really showed how passionate everyone is. And, the break-out rooms provided great networking opportunities and a space for everyone to create actual action items that can be accomplished."

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 2021.

Missing groups that were invited but did not attend this Forum include: local and regional government and politicians (Golden Mayor, CSRD Area A Director), BC Parks, Ministry of Transportation and Infrastructure, Louisiana Pacific, Ktunaxa Nation Council, Metis Nation Columbia River Society, and Yellowstone to Yukon Conservation Initiative.

This Conservation Action Forum has helped KCP's partners in the Golden area to develop on-the-ground solutions to mitigating threats in their local neighbourhood. Moving forward, KCP will remain engaged at a strategic level in supporting the Golden process by hosting a follow up meeting and tracking implementation of priority actions, while it is up to participating organizations to take leadership in moving the actions forward. The Forum's process and outcomes will also help KCP guide collaborative conservation action planning in other regions of the Kootenays where partners want to work together to protect local biodiversity.

Wildsight Golden will use to the Forum's five priority action plans to inform their conservation initiatives over the next three years. These priorities will help guide their West Bench Study and help plan for new projects. They also will share and promote these priority actions to government and sectors in the Golden Backcountry Recreation Access Committee and Golden and Area A Trails Alliance. The information shared at the Forum will be very useful in reviewing industrial and recreational development plans.

Kootenay Connect will nurture a working group in Golden that champions connectivity in the region. It will continue to provide strategic support for identifying multi-species wildlife corridors and connectivity as well as data and maps that help inform local and provincial government decision-making. Kootenay Connect will also bring new data to the regional conservation conversation by providing a climate lens to the necessity of connectivity to ensure wildlife and ecosystems can shift with a changing climate.

APPENDIX A: GOLDEN FORUM PARTICIPANTS

Specialists - Presenters

Annette	Luttermann	Principle Consultant	A.L.Ecologic
Cori	Lausen	Bat Biologist	Wildlife Conservation Society Canada
Greg	Utzig	Conservation Ecologist	Kutenai Nature Investigations Ltd.
Meg	Langley	Wildlife Biologist	Wildsight Golden Rocky Mountain Bighorn Sheep Project
Michael	Proctor	Grizzly Bear Biologist	Kootenay Connect
Mike	Sawaya	Carnivore Research Ecologist	Sinopah Wildlife Research Associates
Mirjam	Barrueto	Wildlife Biologist	University of Calgary
Rachel	Darvill	Biologist	Goldeneye Ecological Services
Suzanne	Bayley	Wetland Ecologist; President	Columbia Wetlands Stewardship Partners

Resource Managers & Conservation Stakeholders

Alana	Higginson	Wetlands Program Assistant	BC Wildlife Federation
Ariana	McKay	Terrestrial Habitat Biologist	FLNRORD
Braydi	Rice	Biologist	Shuswap Indian Band
Brian	Gustafson	Member Representative	Golden District Rod and Gun Club
Brianna	Burley	Manager, Environment	Columbia Basin Trust
Chris	Bosman	Kootenay Conservation Land Manager	The Nature Trust of BC
Denise	English	Forester	Doroshuk English Enterprises
Derek	Petersen	Board Chair	Kootenay Conservation Program
Douglas	Adama	Wildlife Ecologist	LGL Limited
Eddie	Petryshen	Conservation Specialist	Wildsight
Elizabeth	Vincer	Ecosystem Scientist	Parks Canada
Jason	Jones	Landscape Architect	Golden + Area A Trail Alliance / Golden Backcountry Recreation Access Committee
Jeanette	Goulet	Nature Legacy Ecosystem Scientist	Parks Canada
Joan	Dolinsky	President	Wildsight-Golden
Leslie	Adams	Branch Manager	Wildsight Golden
Robyn	Hooper	Executive Director	Columbia Shuswap Invasive Species Society
Sadie	Parr	Executive Director	Wolf Awareness Inc.

Facilitators

Marcy	Mahr	Stewardship Coordinator & Kootenay Connect Project Manager	Kootenay Conservation Program
Juliet	Craig	Program Manager	Kootenay Conservation Program
Nicole	Trigg	Communications Coordinator	Kootenay Conservation Program

APPENDIX B: FORUM AGENDA

Golden Conservation Action Forum

Common Values, Threats & Actions

Wednesday, November 25, 2020

10:00 am – 4:30 pm Mountain Time
9:00 am – 3:30 pm Pacific Time
online Zoom event

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

Guiding questions:

- What is the current knowledge regarding species of concern, critical habitats and processes in the Golden Area? What more do we need to know?
- Based on scientific findings, what actions will make the most difference in conserving species at risk, protecting high quality habitats, restoring ecosystems, enhancing connectivity, 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 Wildsight Golden have clear direction for how they can support the proposed conservation actions in the Golden Area.

MORNING (All times are Mountain Time)

9:55 Arrive on Zoom

10:00 – 10:30

- Settling In & Welcome - Marcy Mahr, Forum Facilitator and KCP Stewardship Coordinator and Joan Dolinksy, President of Wildsight Golden
- High-level Review of Agenda
- Breakout Groups for Sharing Connections: What is your connection to conservation in Golden and its surrounding landscape?

10:30 – 12:00

- Scientists' speed presentations – 4-5 minute "espresso shots" of what we know, what it means and recommendations for what we need to do.

12:00 – 12:10 BIO BREAK

12:10 – 12:30

- Review Conservation Action Themes and Top Recommendations
- Select Top Recommendations for Action

12:30 – 1:15 LUNCH

AFTERNOON

1:15 – 2:30

- Establish Action Groups for Breakout Session
- Action Group Planning in Breakout Groups

2:30 – 2:40 BIO BREAK

2:40 – 3:20

- Develop Action Plans to Address: Activities, Resources, Who's Involved, Timeframe, Measures of Success

3:20 – 3:50

- Groups Report Out

3:50 – 4:10

- Wrap Up & Evaluation
- What's Next?
- Closing Remarks

4:10-4:30 SOCIAL TIME (Optional)

Environment and Climate Change Canada

Environnement et Changement climatique Canada

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

THEME #1: SUPPORT RECOVERY OF SPECIES AT RISK & FOCAL SPECIES

Bank & Barn Swallows

- **Erect artificial nesting structures for Bank and Barn Swallow** in areas where breeding habitat has been or will be lost in the near future.
- **Test different artificial structure designs for Barn Swallows** to better inform agencies to adopt preferred structure designs, to support the recovery of this species.
- **Deploy tracking devices on Bank Swallows** to identify their large-scale migratory routes, preferred habitats, breeding colonies, and roost sites in our region to maintaining connectivity and protecting colonies.
- **Monitor Bank and Barn Swallow colonies to track population trends**.

Bats

- **Build resiliency in bat populations pre-white nose syndrome (WNS) by reducing cumulative stressors on bats**.
- **Reduce bat evictions** from human structures: 1) replace lost bat roost habitats with suitable replacements; and 2) seek help from the BC Community Bat Program
- **Reduce pesticides and biocides** (e.g., Bti – mosquito control)
- **Encourage Golden & Area residents to 'coexist with bats'** (i.e., Kootenay Community Bat Project) and to report and monitor bat roosts.
- **Inventory and monitor** to know what bat species we have and what their baseline levels are in terms of populations to inform management of these populations pre- and post-white nose syndrome.

Beavers

- **Map the recent past and current beaver dam activity** in smaller isolated wetlands in the region in more detail to better understand the current status of beaver colonies and their impact of wetland function and maintenance.
- **Raise public awareness about local lethal control of beavers.**

- **Relocate unwanted beavers to the Kinbasket** where beaver dispersal may be limited by the reservoir.

Wolverine

- **Encourage wolverine sighting submissions** throughout the region, ideally with photos, to our website: www.wolverinewatch.org/report-observations/
- **Help Wolverine Watch to find out if there is a reproductive female in the Dogtooth Range**: Signs of a den site/denning area (Feb – May). Double sets of tracks/two individuals together.

Bighorn Sheep

- **Install speeding cameras and lighted signage** in the Kicking Horse Canyon near areas of high use by Bighorn Sheep and where drivers increase speeds.
- **Use wildlife locations identified through roadkill records and public reporting of live and dead animals** to best locate mobile message signs on Highway 95 during Phase 4 traffic rerouting.
- **Determine species of dorsal spine larvae present using molecular techniques** in order to anticipate future disease outbreaks and track this disease in Rocky Mountain Bighorn Sheep.
- **Ensure the lambing area immediately west of Yoho bridge experiences limited to no disturbance from May 10 to July 30, annually.**
- **Incorporate radio collar information into habitat use** of Bighorn Sheep in the Kicking Horse Canyon.
- **Conduct habitat modelling for Bighorn Sheep distribution** from Radium to Kicking Horse Canyon.

Plants

- **Learn more about the distribution and abundance of rare and at-risk plant species and ecological communities**.

THEME #2: PROTECT HIGH-QUALITY HABITAT FOR BIODIVERSITY

- Develop and implement plans to **maintain water in wetlands vulnerable to climate change**.
- **Protect the hydrologic and geomorphologic processes** that maintain the diversity of habitats in the Columbia Wetlands and its levees.
- Identify and work to **protect habitat important to Species at Risk and focal species**.
- **Identify and protect habitats** that contain multiple at-risk and focal species and localized biodiversity hotspots.
- **Identify, disseminate and promote bird friendly agricultural practices** on private farm and ranch lands.
- **Retain/recruit old growth trees for bats and other old growth-dependent species** – protect remaining old growth forests for significant biodiversity values associated with old growth.
- **Improve habitat quality for Bighorn Sheep** by cultivating highly digestible and high-protein shrubs, forbs and grasses and remove invasive weeds and garbage.
- **Educate the public to appreciate and protect the internationally significant Columbia Wetlands and its watersheds. and**
- **Improve silvicultural practices to encourage longer-term huckleberry productivity** following logging in key highly productive areas for huckleberries—an important food source of Grizzly Bear.
- **Reduce backcountry road densities where there are excessive (>0.6 km/km^2) for sensitive wildlife (Grizzly Bear, Elk, Wolverine) especially in identified critical habitats**
- **Identify provincial land conservation areas (no development) and private lands for conservation acquisition** in locations where federally identified Critical Habitat and SAR occurrences are clustered within identified wildlife corridors for Grizzly Bear and Wolverine, e.g., West Bench between Golden and Donald.
- **Consider how CSRD Area A could develop Official Community Plan(s)**, and use identified SAR occurrences, Grizzly Bear core areas and linkage corridors, to identify **Environmental Development Permit Areas (EDPAs)**.
- Wolverine trapping is now banned around Golden, now need to **focus on higher-level land use planning/access management in wolverine habitat & travel corridors** surrounding Golden Area. Look for synergies for protecting other sensitive species: Caribou, Grizzly Bear, Mountain Goats.

- Include **assessment of habitat quality for beavers** especially in relation to food sources, hydrology, and potential conflicts with human infrastructure and activity that may pose barriers to dispersal and long-term persistence of beaver colonies.
- **Engage the public, private landowners and land managers** in discussions about the importance of beaver ecology in maintaining high quality habitats for biodiversity and climate change resilience.
- **Incorporate all SAR spatial occurrence data and new grizzly bear corridor information into the Golden Backcountry Recreation Access Plan (GBRAP).**
- **Document sources of required minerals within the area currently used by Bighorn Sheep, and ensure access to mineral licks without interaction with highway or highway construction.**
- **Fill data gaps for SAR populations and distribution.**
- **Protect riparian habitats including ephemeral streams on private land in CSRD Area A.**

THEME #3: ENHANCE LANDSCAPE CONNECTIVITY AND WILDLIFE CORRIDORS

- **Identify multi-species corridors across human-settled valleys** and work to recognize and establish them for conservation. Consider corridors based on Proctor's modeling of multiple species (Grizzly Bear, Mtn Goats, Wolverine)
    1. N Columbia A - just N of Donald
    2. N Columba B - just S of Donald
    3. Golden N - between Golden & Moberly
    4. Horse Creek
    5. McMurdo
    6. Spillimacheen
- **Assess the complexity of Golden Area for connectivity:** North-South / East-West from Spillimacheen to Golden, and North-South / East-West along TCH from Yoho to border of Glacier NP
- **Alter one-way gates and jump-outs** to impede two-way use and change fencing to allow access to existing open SW facing slopes.
- **Create level to slightly sloping travel routes for Bighorn Sheep** to move east - west through the Kicking Horse Canyon without using the highway.

- **Construct a system of strategically placed and species-appropriate wildlife crossing structures and fencing and signage on the Trans-Canada Highway (TCH)** to reduce wildlife vehicle collisions and increase demographic and genetic connectivity.
- **Prioritize highway mitigation for key fragmentation-sensitive species** (grizzly bears, wolverines) and other wildlife along the TCH in the high elevation mountain passes (Kicking Horse Pass, Rogers Pass) and the low elevation valley bottoms (Beaver River, Columbia River, Kicking Horse River).
- **Identify low-cost highway mitigations associated with existing below-grade passages such as bridges and culverts in riparian corridors**.
- **Pilot and implement measures to reduce mountain goat and bighorn sheep attraction to roads** throughout the Columbia Mountains using a collaborative interagency and inter-jurisdictional approach (BC & AB, fed/prov governments).
- **Engage all levels of government and First Nations on corridors, and evaluate how corridors fall within CSRD's OCP boundaries.**
- **Assess, plan and install finer scale crossing structures and strategically placed signage along Highway 93/95,** taking into account wetlands and construction feasibility.
- **Assess connectivity in terms of climate disruption and range shifts.**

THEME #4: ADVANCE CLIMATE RESILIENCE

- **Build climate disruption, adaptation ad mitigation thinking into all activities**: every decision and action should provide positive answers to: Will this reduce GHG emissions? Will this increase resilience?
- **Plan and implement a regional conservation plan that increases ecosystem resilience to climate disruption in the Golden area** (e.g., build resilience to disturbances, facilitate range shifts, maintain connectivity, reduce other stresses, eliminate habitat destruction, maintain a diversity of habitat elements, etc.).
- **Increase monitoring of temperature, precipitation and phenology** to better understand how local climate is changing and its impacts on species.

THEME #5: REDUCE HUMAN-WILDLIFE CONFLICT AND RECREATIONAL PRESSURE

- **Assess the extent to which land use practices may be excluding beavers**, and identify opportunities to better support co-existence.
- **Work to incorporate** data on a variety of wildlife into government processes for important land use decisions, e.g., recreation versus conservation areas.
- **Assess the extent that high levels of recreational activity** (motorized and non-motorized) has the potential to cause disturbance and displacement of Wolverine, Bighorn Sheep, elk, and other sensitive or important species.
- **Winter recreation (ski & sled) & forestry – Do not expand into current low-use and roadless areas**, e.g., drainages around 12 Mile, Canyon Creek, Ventego Creek, Cupola Creek, Windy Creek, Waitabit Creek, too bad about Upper Blaeberry.
- **Continue monitoring possible introductions and providing public education to keep high priority aquatic and terrestrial invasive species** out of the Columbia Wetlands, and water bodies in the Golden Area.
- **Consider methods of reducing domestic cats/birds & dog/wildlife conflicts. Promote best practices for livestock/carnivore conflict reduction.**
- **Need better quantitative data on recreational extents and intensities** throughout the Golden area.