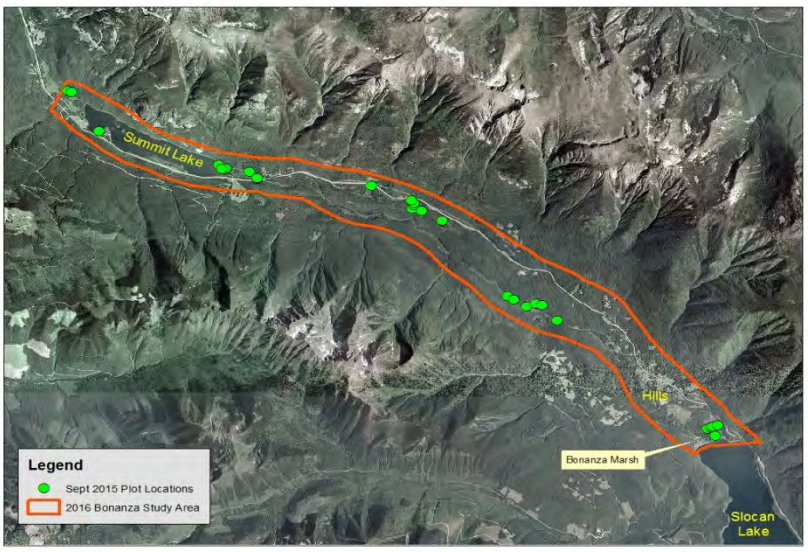
HIGH-LEVEL OVERVIEW OF THE BONANZA BIODIVERSITY CORRIDOR



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January 2018

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ACKNOWLEDGEMENTS

KCP would like to express our great appreciation to Dr. Michael Proctor for his valuable and constructive contributions to the planning and development of this overview of the Bonanza Biodiversity Corridor. We especially acknowledge his generosity in developing new maps that help characterize the biodiversity, ecological connectivity, and conservation potential of this important corridor.

BACKGROUND

In February 2017, the Kootenay Conservation Program (KCP) co-hosted an event with the Slocan Lake Stewardship Society called, the Slocan Lake Ecosystem Science & Conservation Action Planning Forum, held in Silverton, B.C. The Slocan Lake Forum included over 30 science experts, local and provincial government, and land and water stewards and managers. The priorities where to: a) think strategically about the future of the Slocan Lake Ecosystem; and b) develop science-based priorities and collaborative action plans for advancing conservation in the next 1 to 3 years (Mahr 2017a).

During the Slocan Lake Conservation Planning Forum, participants discussed the exceptional biological diversity and conservation values of the Bonanza Corridor and identified protecting landscape connectivity within the Bonanza Corridor as a priority. An action plan developed at the Forum proposed designation of the "Bonanza Biodiversity Corridor" (BBC). To achieve this outcome, the action plan refers to developing a: *"Bonanza Biodiversity Corridor" Proposal for the Provincial government for formal recognition of an ecological priority area that enhances landscape connectivity and protects critical habitat and biological diversity from Bonanza Marsh to Summit Lake* (Mahr 2017a). KCP was identified as a potential partner/collaborator in this action, along with a dozen other scientists and organizations that included Dr. Michael Proctor of Birchdale Ecological and the Transborder Grizzly Bear Project.

After the Slocan Lake Forum, KCP's Securement Committee recommended a high-level biological evaluation of the Bonanza Corridor to determine where conservation opportunities and securement efforts would be required. This evaluation would focus on assessing conservation values at a landscape level rather than at the scale of individual properties, as is typically the approach taken with KCP biological evaluations. This landscape perspective is timely because the Nature Conservancy of Canada is currently assessing how it might incorporate the Slocan Lake Watershed by expanding their South Selkirks Natural Areas Planning Region (A. Leslie 2017, pers. comm. 22 November).

BONANZA BIODIVERSITY CORRIDOR

The Bonanza Biodiversity Corridor (BBC) encompasses the entire drainage of Bonanza Creek, located between the villages of Nakusp and New Denver in the West Kootenay region of southeastern B.C. The boundaries of the corridor follow the Bonanza Creek Watershed from a hydrologic divide at Summit Lake south to Bonanza Marsh at the north shore of Slocan Lake, and from the eastern ridge line and watershed divide with Fitzstubbs Creek to the western ridge line of the Valhalla Mountains (Figure 1).

The size of the Bonanza Biodiversity Corridor is approximately 140 km^2 with only about 3 km^2 (or 2 %) private land and the remaining 137 km^2 (or 98%) is Crown land. Private land ownership primarily occurs along Highway 6, mostly clustered at the west end of Summit Lake and in the unincorporated village of Hills, with a human development footprint of private land totalling about 7 kms (or 52%) of the land along the 13.5km stretch of Highway 6 between the two lakes.

Significant conservation benefits are provided by designated Protected Areas such as, Valhalla Provincial Park (to the southwest) and Goat Range Provincial Park (to the northeast). Protected areas within the Bonanza Biodiversity Corridor include Summit Lake Provincial Park (a small recreation area with campsites and boat launches on Summit Lake); Section 16 Reserves at the heads of both Summit and Slocan lakes; and Snk'mip (Bonanza) Marsh Nature Preserve (Figure 2) at the head of Slocan Lake which provides the BBC's southern conservation anchor.

The Bonanza Biodiversity Corridor represents a broad range of the diversity present in the Inland Temperate Rainforest. It is characterized by productive interior cedar-hemlock and high elevation spruce-subalpine fir forests. The BBC's valley bottom is comprised of a diversity of wetland types (e.g., swamps, marshes and fens) that contain some rare assemblages of plants (Durand 2015; Mahr and Durand 2015). The Bonanza Biodiversity Corridor is an important wildlife corridor within the Slocan Lake Watershed. In addition to providing good quality wildlife habitat, it is a permeable feature in a valley that is otherwise filled up with Slocan Lake which presents an enormous movement barrier to terrestrial wildlife. This corridor is also ecologically important because it functions both longitudinally (north-south) and laterally (east-west) across the valley.

During a June 2013 BioBlitz of Hunter Siding Wetlands and Bonanza Marsh, the 24-hr intensive study by science experts documented plants, birds, amphibians, bats, butterflies and moths. The inventory found 55 different types of fauna and 103 flora at these two locations within the Bonanza Corridor. This corridor is also abundant in resident and seasonal birds with over 40 species found during the BioBlitz and nearly 100 species known overall in the BBC (G. Davidson 2017, pers. comm. 23 February) including green-winged teal, common goldeneye, common and hooded mergansers, virginia rail, sora, spotted sandpiper, great blue heron, belted kingfisher, trumpeter swan, red-winged blackbird, yellow-headed blackbird, bald eagle, plus many more. Netting of bats during the BioBlitz resulted in catching six species, all of which hibernate and

are susceptible to white nose syndrome, such as, silverhaired bat, california myotis, long-eared, little brown, long-legged myotis, and yuma myotis.

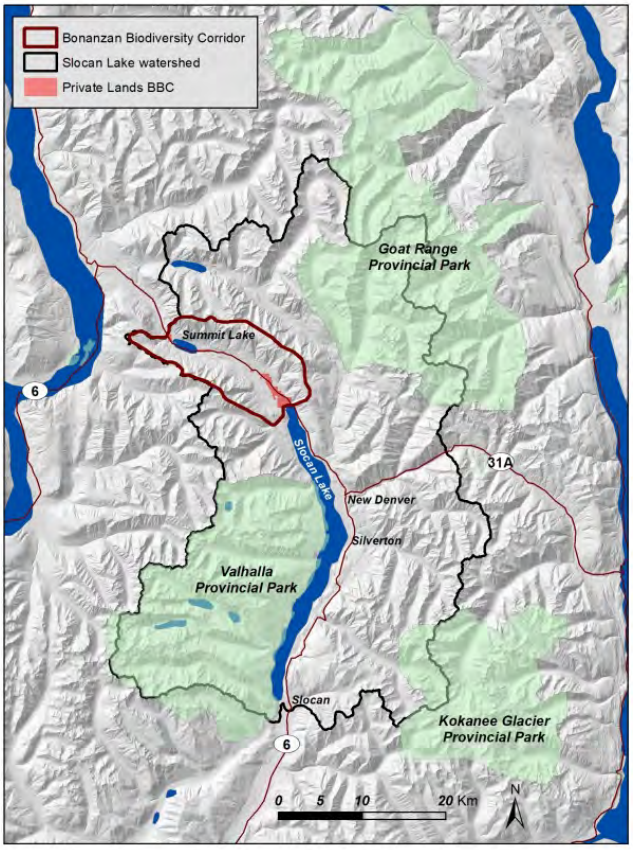


Figure 1. Location of the 140 km^2 Bonanza Biodiversity Corridor.
Bonanza Biodiversity Corridor (outlined in red) is located between Summit and Slocan lakes in the Slocan Lake Watershed of southeastern B.C. The black outline traces the height of land forming the hydrologic boundary of the headwaters of the Slocan Lake Watershed that encompasses portions of three provincial parks. (Source: Birchdale Ecological)

The following sections of this report include: 1) a timeline highlighting key conservation efforts in the Bonanza Biodiversity Corridor over the past decade; 2) lists of ecological threats at regional and watershed scales; 3) proposed "Action Plan" activities from the Slocan Lake Watershed Forum; 4) GIS mapped conservation values; and 5) climate change predictions for the area.

CONSERVATION ACTIVITY TIMELINE

About a decade ago local interest in protecting Bonanza Marsh started to gain momentum. The following is a brief outline of note-worthy conservation efforts from 2009-2017 in the Bonanza Biodiversity Corridor.

- 2009
    - Kootenay Conservation Program's biological evaluation of a private property on the north shore of Slocan Lake for the Nature Conservancy of Canada initiated early discussion of a broad conservation strategy for protecting the entire Marsh and lower reach of Bonanza Creek entering Slocan Lake
    - Valhalla Wilderness Society's visiting lichenologist found 35 species of lichen in a small area of Bonanza Marsh
    - Foreshore Analysis sponsored by the Slocan Lake Stewardship Society underscored the importance of Bonanza Marsh as the only wetland on Slocan Lake's lakeshore and Bonanza Marsh and the Bonanza Creek confluence area provides the most important and productive habitat for fish in Slocan Lake
- 2013
    - Map Our Marsh Training & BioBlitz led by BC Wildlife Federation (BCWF) and a local organizing committee
    - Creation of SWAMP (Slocan Wetlands Assessment & Monitoring Project) by local participants of the BCWF training
- 2014 & 2015
    - SWAMP wetland field surveys of Bonanza Biodiversity Corridor documenting plants, soils, birds, mammals, amphibians, aquatic invertebrates, and fungi
- 2016
    - SWAMP research determines the Bonanza Biodiversity Corridor is the highest priority wetland-riparian-lakeshore system in the north Slocan Valley for conservation and restoration
- 2017
    - Slocan Lake Watershed Forum led to a Bonanza Biodiversity Corridor priority action plan
    - Valhalla Foundation for Ecology and Social Justice acquired 35-acre Snk'mip (Bonanza) Marsh Nature Preserve

ECOLOGICAL THREATS

The Bonanza Biodiversity Corridor is fairly intact in relation to the neighbouring Arrow Lakes and Duncan valleys that have incurred significant threats to biodiversity including[1]:

- reservoir flooding and loss of regionally significant wetlands, aquatic habitat, riparian forests and connectivity due to urbanization, recreational properties and agricultural development in valley bottoms that restrict connectivity between mountain ranges
- extensive road networks in most areas, with concentrations at lower elevations
- pressure from traditional resource extraction industries (e.g., forestry, mining) and from commercial and non-commercial recreation (e.g., all-terrain vehicles, resorts)

More specifically, the Bonanza Biodiversity Corridor has and continues to undergo land use impacts. In the future, it is anticipated that new invasive species, direct loss of habitat, increasing recreational pressure and climate change will further impact the ecological integrity and biological diversity of this corridor as part of the larger Slocan Lake Watershed (Table 1)[2].

Table 1. Ecological threats identified in the Slocan Lake Stewardship Society's Conservation Framework for the Slocan Lake Watershed that includes the Bonanza Biodiversity Corridor.

Introduction of new invasive species	• zebra & quagga mussels • bullfrog • fungus causing white-nose syndrome • northern pike
Direct loss or impairment of habitat	• extensive logging & road building • erosion • residential development • commercial development • barriers to wildlife corridors
Recreational pressure	• increased trail usage • multi-use trails • increased access to backcountry & high alpine
Uncertainty of climate change impacts	• vegetational changes • fire • hydrological changes (causing floods or extreme drought) • mudslides / landslides • loss of snowpack / loss of cold water creeks

[1] Based on Utzig, G. and R. Holt. 2015b.
[2] Mahr, M. 2017b.

CONSERVATION ACTIVITIES IDENTIFIED AT THE SLOCAN LAKE WATERSHED SCIENCE AND CONSERVATION ACTION PLANNING FORUM

The map layers and quantitative and qualitative assessment contained in this report are intended to fulfill several of the activities identified as steps in the Bonanza Biodiversity Corridor's Action Plan that was developed at the Slocan Lake Watershed Forum. The BBC's Action Plan called for identifying ecological attributes and conservation values of the corridor, for example:

- Make a draft map of this corridor and develop a rationale for why it is important
- Define size and shape, conservation values, ecological threats
- Locate special designations (such as, Old-growth Management Areas (OGMAs), Caribou Recovery Areas, Provincial Parks, etc.) and future conservation opportunities
- Map riparian areas and wetland complexes with buffers
- Generate a comprehensive map of the corridor based on ecological multi-themes and cumulative impacts

CONSERVATION VALUES: CHECKLIST OF GIS LAYERS

To better understand the ecology of the Bonanza Biodiversity Corridor, the first step was to research and develop GIS layers for the corridor. For the purposes of this KCP assessment, the following layers were investigated:

1. Private/crown ownership
2. Parcel information
3. ALR boundary
4. Roads/road density
5. Riparian and wetlands (if available, SWAMP wetland polygons/classes)
6. Conservation Data Centre species at risk occurrences *
7. Grizzly bear habitat suitability
8. Caribou Recovery Areas
9. Old Growth Management Areas
10. Biogeoclimatic Zones
11. Western toad management area at Summit Lake
12. North American Bat Monitoring
13. Biodiversity Atlas*
14. Section 16 Reserves ^
15. Existing conservation properties

* Denotes databases and layers reviewed but not used in mapping and analysis in this report.
^ Denotes databases and layers not obtained for mapping and analysis in this report.

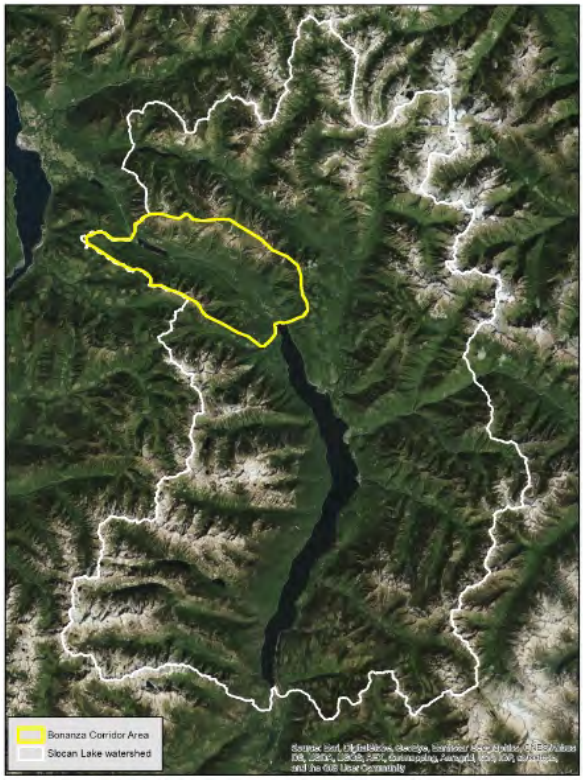
All of the GIS databases and layers were obtained or built by Dr. Michael Proctor. Two of the databases – the Conservation Data Centre species at risk occurrences and Columbia Basin Biodiversity Atlas – did not contribute relevant information to this high-level ecological assessment. Also, obtaining a GIS coverage of the Section 16 Reserves did not occur in time for completing this report.

The next section focuses on the 12 GIS databases and layers that were useful in illustrating the biological diversity, conservation values and ecological threats within the Bonanza Biodiversity Corridor. The last few maps in the sequence illustrate the cumulative impacts and most secure area for a wildlife corridor across Highway 6. These maps are important for identifying future conservation opportunities as well as minimizing new resource extraction activities, infrastructural improvements and the expansion of recreational uses in the corridor.

Figure 2. Snk'mip (Bonanza) Marsh Nature Preserve at the head of Slocan Lake.
Snk'mip (Bonanza) Marsh Nature Preserve provides the southern conservation anchor of the Bonanza Biodiversity Corridor. (Photo: Marcy Mahr)

MAPS OF THE BONANZA BIODIVERSITY CORRIDOR

Below are a series of maps with relevant influential variables that describe key conservation values and threats within the Bonanza Biodiversity Corridor. In most cases the maps are presented in a sequence of related themes with a brief description. All maps were produced by and shared courtesy of Birchdale Ecological.



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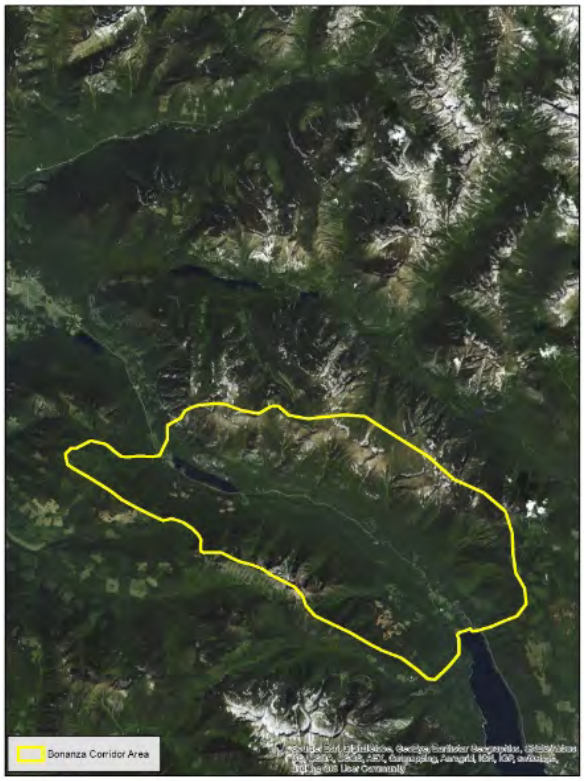

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Figure 3. Location of the Bonanza Biodiversity Corridor in yellow in relation to the Slocan Lake Watershed hydrologic boundary in white.
Figure 4. Bonanza Biodiversity Corridor featuring Summit Lake, Bonanza Creek, Highway 6, residential areas and forestry cutblocks.

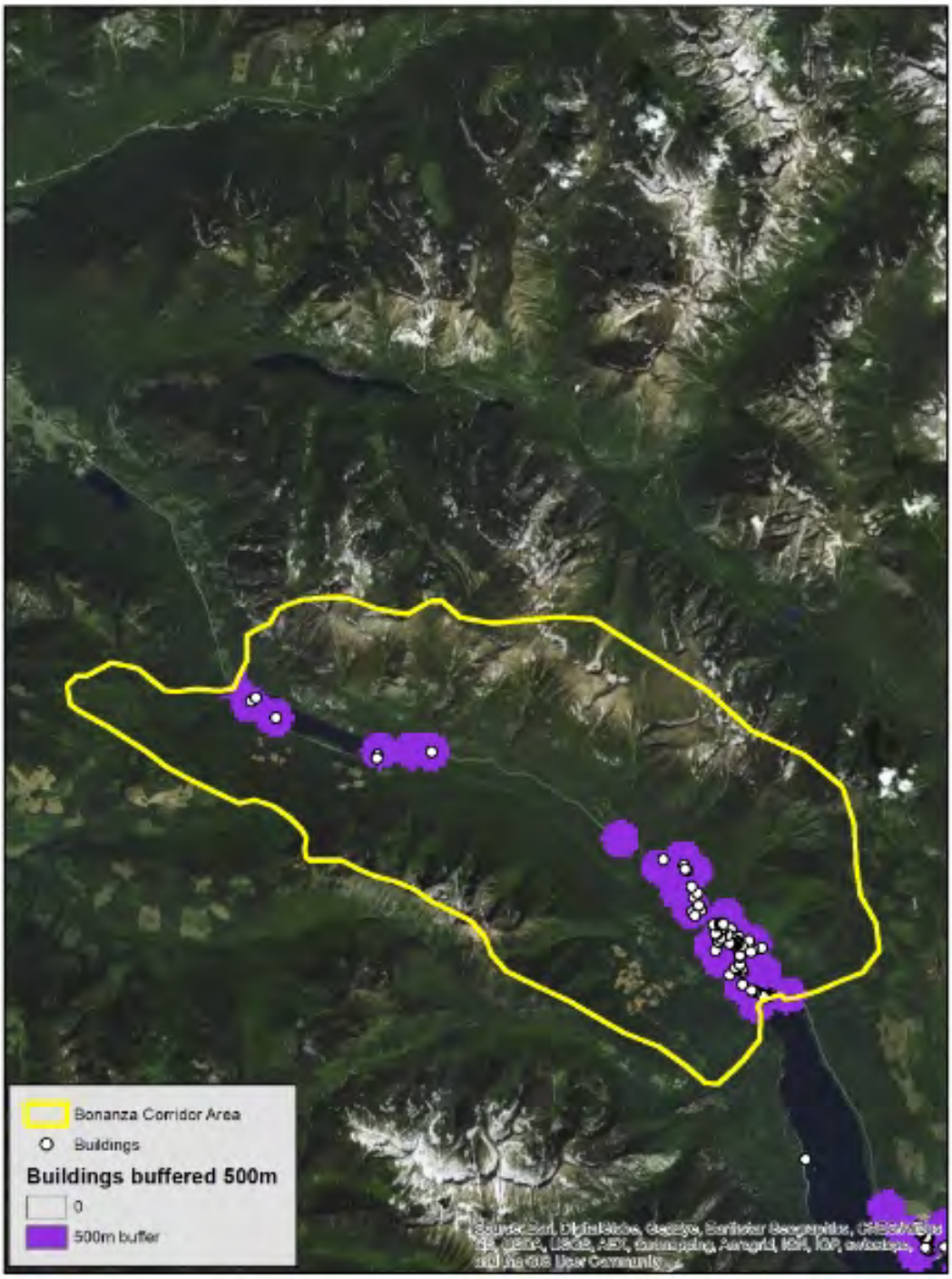

Figure 5. Locations of buildings (mostly residential) in the Bonanza Biodiversity Corridor that illustrate development patterns along Highway 6.
The buildings are buffered by 500m, a distance often used to reflect the landscape influence of human settlements.

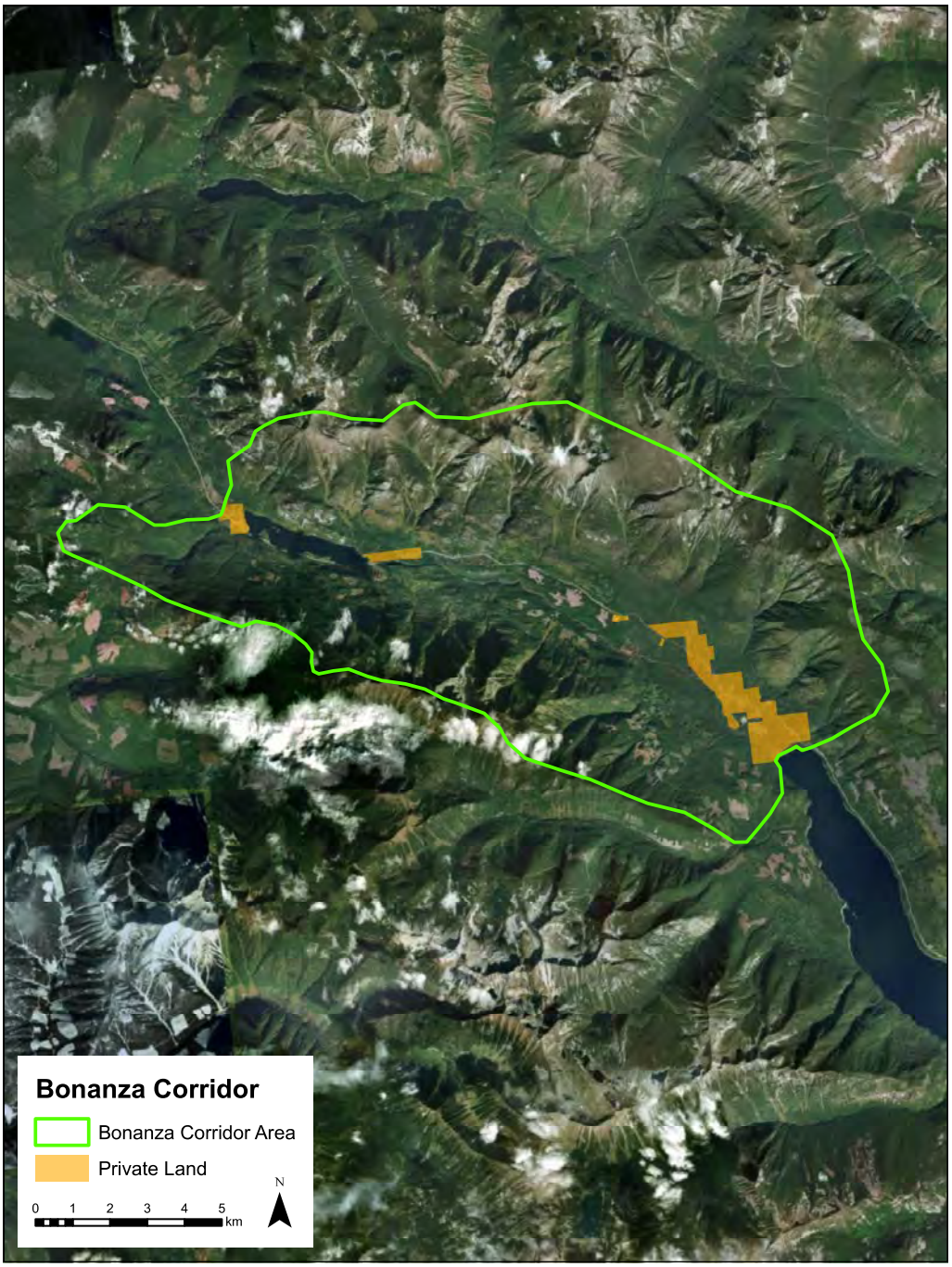

Figure 6. Private land parcels modified from cadastre information from the Regional District of Central Kootenay.
These lands may see future developments including subdivision; and they also may be where private land conservation opportunities exist in the future. (Source: Land Resource Data Warehouse).

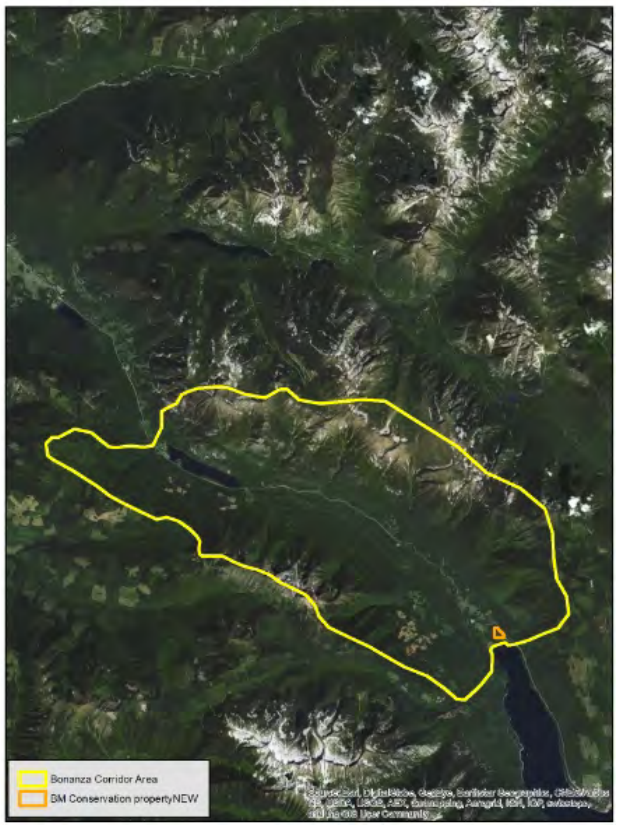

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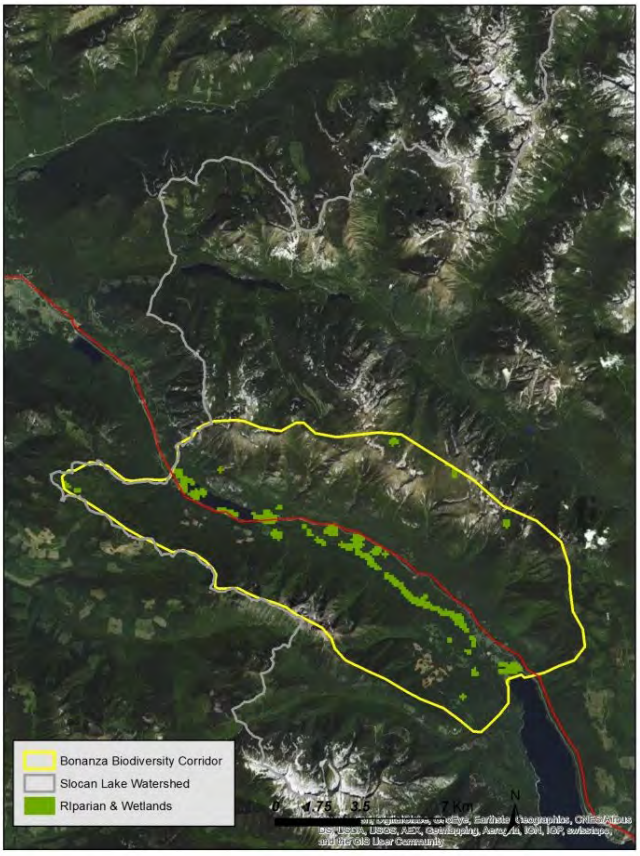
Figure 7. Location of the 35-acre Snk'mip (Bonanza) Marsh Nature Preserve (in orange) within the Bonanza Biodiversity Corridor.
Figure 8. Location of the 35-acre Snk'mip (Bonanza) Marsh Nature Preserve (in orange) at the head of Slocan Lake. The marsh provides the southern conservation anchor of the Bonanza Biodiversity Corridor.



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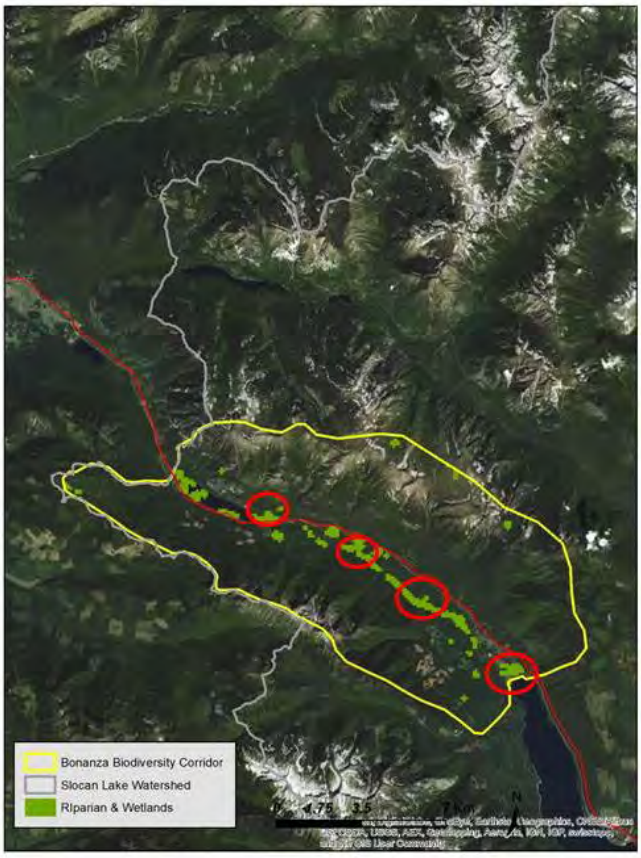

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Figure 9. Extent of riparian and wetlands habitat (in bright green) within the Bonanza Biodiversity Corridor.
Figure 10. Four important wetland diversity hotspots (red ovals) identified during SWAMP field surveys of 29 plots in 2015.
This led SWAMP to prioritize this area for further study due to its sensitive ecosystems, species of concern, and value as a cross-valley linkage zone for wide-ranging species.

In 2014 and 2015, SWAMP completed field sampling of 150 plots in over 40 wetlands and wetland complexes throughout the Slocan Valley, of which 29 plots in **seven** wetland complexes were completed in the Bonanza Biodiversity Corridor. Based on this survey, SWAMP identified **four** of the wetland complexes as regionally important (Figure 10) based on different wetland types (open shallow water, marsh, fen, swamp) and different dominant vegetation cover types:

1. Bonanza Marsh complex: located at the head of Slocan Lake and confluence of Bonanza Creek with the lake;
2. Hunter Siding Swamp complex: located east of Bonanza Creek forming a wide swath straddling both sides of the rail trail;

3. Highway 6 Wetlands: located within forested benchlands along the west-side of the highway; and

4. Summit Lakeshore wetland complexes: beginning at the east-end of the lake and encompassing the entire north side from lakeshore to toe-slope.

These four wetland complexes represent some of the best examples of low elevation wetlands in the Slocan Watershed. They are generally intact, having either limited disturbance or are recovering from historic disturbances, and highly functional. Multiple sites were classified as either provincially or regionally rare or uncommon, or unique wetland ecosystem types that have not previously been sampled in the province (Mahr and Durand, 2015).

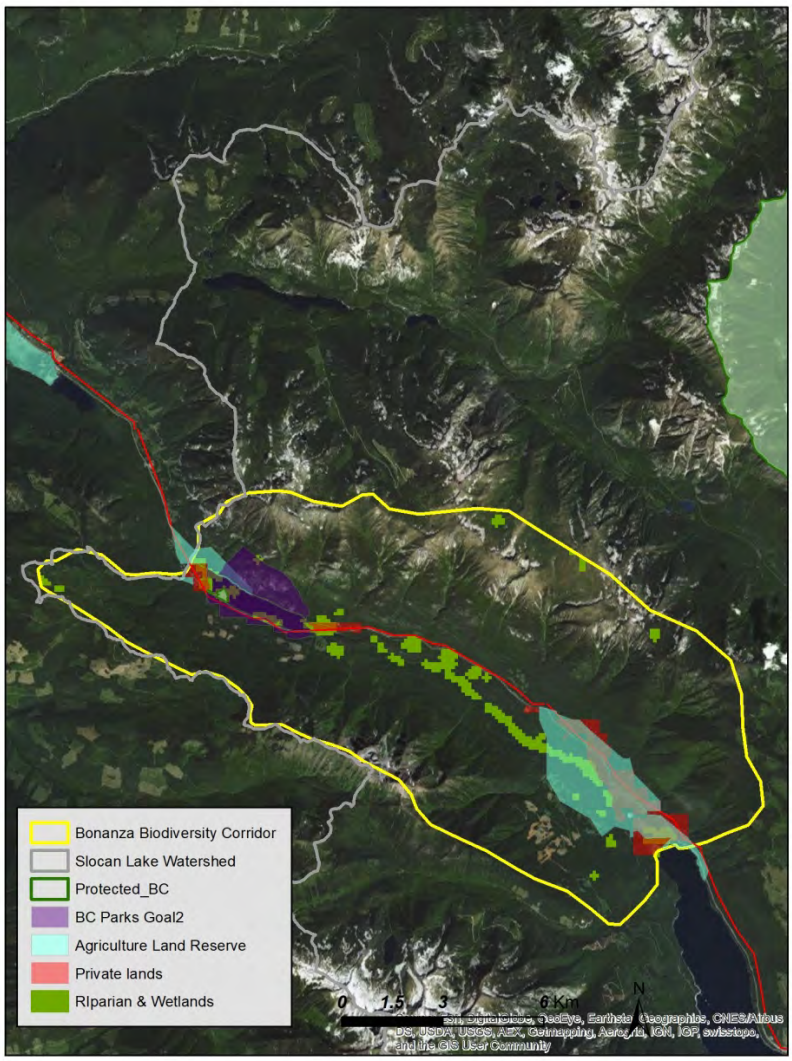
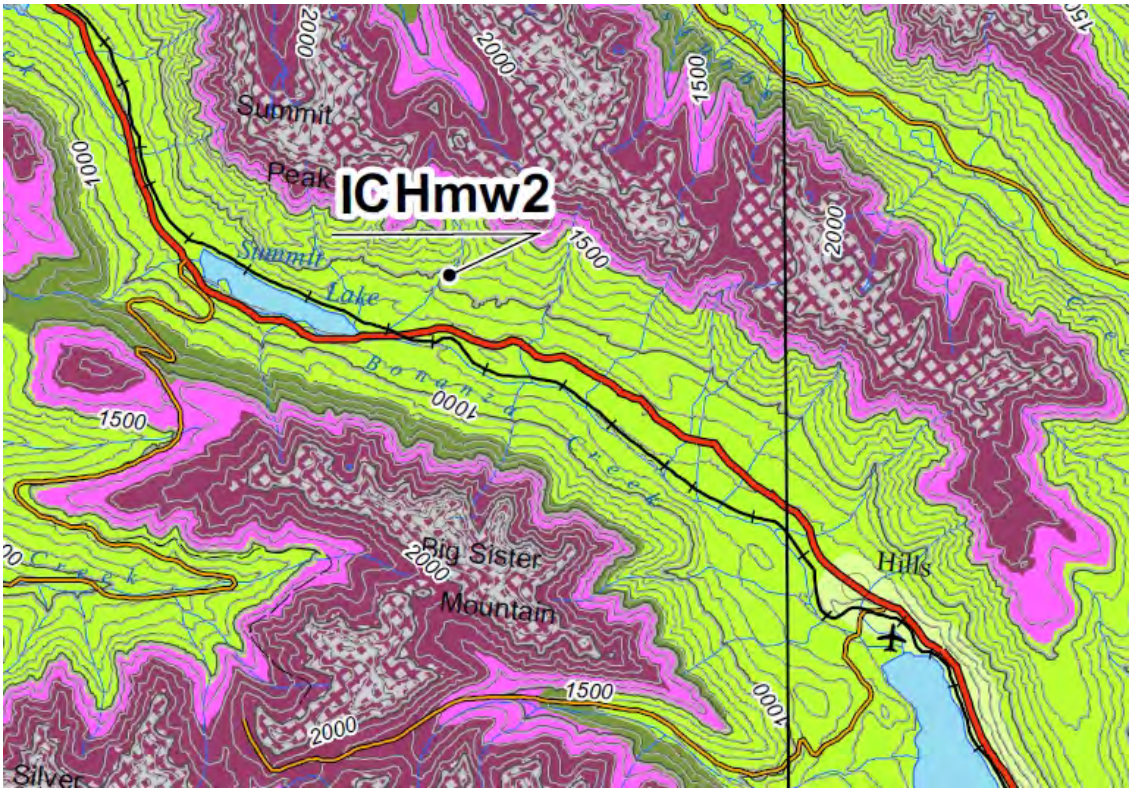
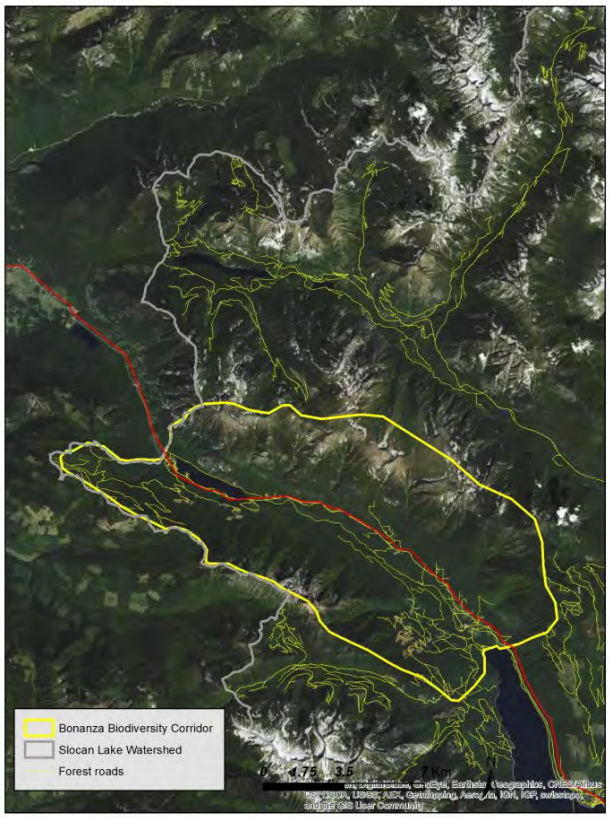


Figure 11. Location of proposed BC Provincial Park Goal 2 area (purple) and Agricultural Land Reserve (ALR, light blue) in relation to private land and riparian and wetlands.



Label	Zone Name	Subzone Name	Variant Name
IMAun	Interior Mountain-heather Alpine	Undifferentiated	-
ESSFdc1	Engelmann Spruce -- Subalpine Fir	Dry Cold	Monashee
ESSFmh	Engelmann Spruce -- Subalpine Fir	Moist Hot	-
ESSFvc	Engelmann Spruce -- Subalpine Fir	Very Wet Cold	-
ESSFwc4	Engelmann Spruce -- Subalpine Fir	Wet Cold	Selkirk
ESSFwh1	Engelmann Spruce -- Subalpine Fir	Wet Hot	Columbia
ESSFwh3	Engelmann Spruce -- Subalpine Fir	Wet Hot	Salmo
ESSFwm3	Engelmann Spruce -- Subalpine Fir	Wet Mild	Ymir
ICHdw1	Interior Cedar -- Hemlock	Dry Warm	West Kootenay
ICHmw2	Interior Cedar -- Hemlock	Moist Warm	Slocan
ICHmw4	Interior Cedar -- Hemlock	Moist Warm	Ymir
ICHmw5	Interior Cedar -- Hemlock	Moist Warm	Granby
ICHvk1	Interior Cedar -- Hemlock	Very Wet Cool	Columbia
ICHwk1	Interior Cedar -- Hemlock	Wet Cool	Shuswap

Figure 12. Biogeoclimatic zones in the Bonanza Biodiversity Corridor.
Zones range from ICHmw2 (Slocan Moist Warm Interior Cedar-Hemlock) in the valley bottom to ESSFwh1 (Columbia Wet Hot Engelmann Spruce-Subalpine Fir) and ESSFwc4 (Selkirk Wet Cold Engelmann Spruce-Subalpine Fir) in the montane with a small amount of IMAun (Interior Mountain-heather Alpine) above treeline at high elevation.



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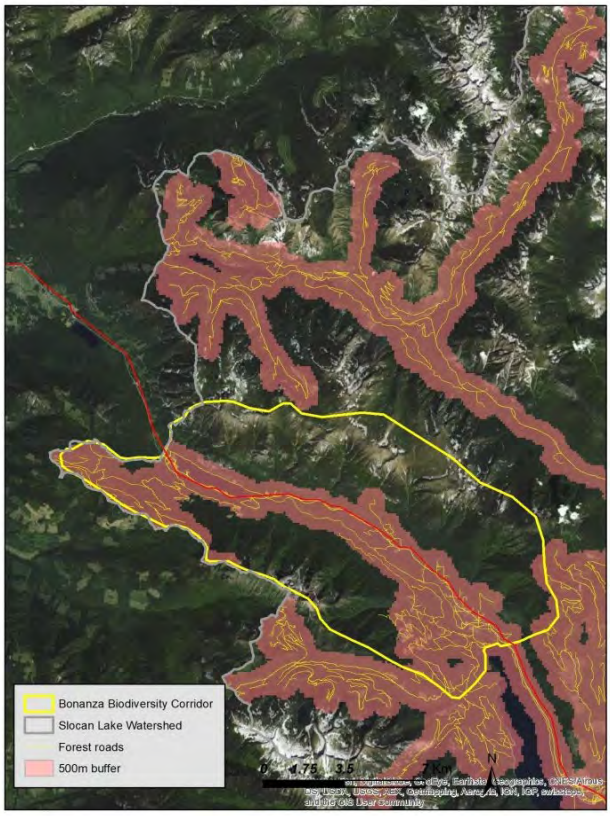

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Figure 13. Forestry roads (in yellow).
Figure 14. Forestry roads with a 500m buffer (red).
A distance often used to reflect the landscape influence of backcountry roads given that wildlife have been found to avoid open roads up to 500m.

The average road density in the Bonanza Biodiversity Corridor is 0.91 km/km^2. Across Western North America, 0.6 km/km^2 is often used as a target road density compatible with minimizing human impact in the backcountry. The Bonanza Biodiversity Corridor's road density is slightly above this target, and roads are primarily located in two cutblock areas to the east and west, and then within the BBC's valley bottom, concentrating impacts in riparian and wetland habitats. Roads and road density are conservation issues because they are associated with human activities, risks and direct impacts that influence wildlife survivability/mortality and displacement from important habitats near roads.

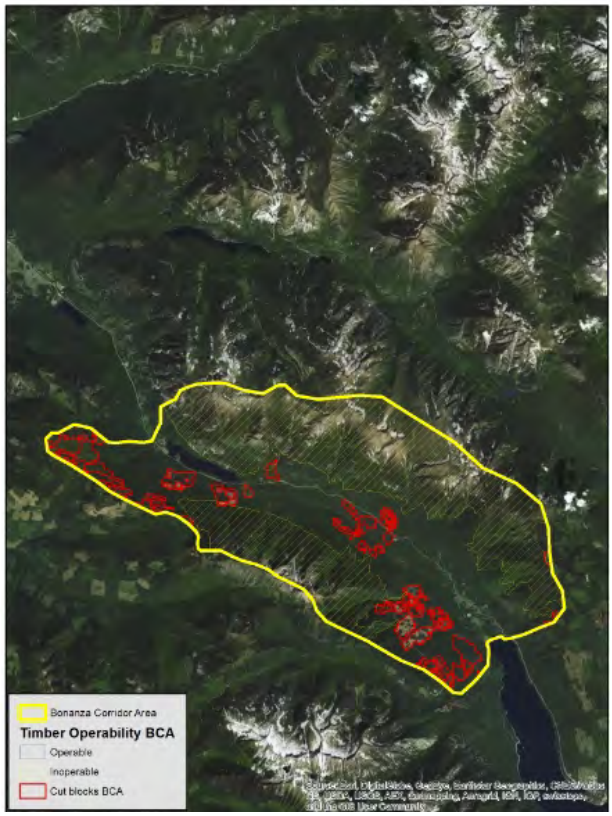

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Figure 15. Cutblocks (red) within the Bonanza Biodiversity Corridor's operable timber areas. Inoperable areas are indicated by hash-marks on the map.
Figure 16. Western Toad Management Area for Summit Lake (FLNRO, 2017).
Established at Summit Lake to protect this regionally important site for western toad populations in the Kootenay-Boundary Region.
Specific management strategies are recommended for activities within a 2-km buffer area (in red) around Summit Lake. These activities include forestry, recreation, highway infrastructure, pesticide and herbicide use, riparian and lake foreshore disturbance, dock installation, and landscaping.

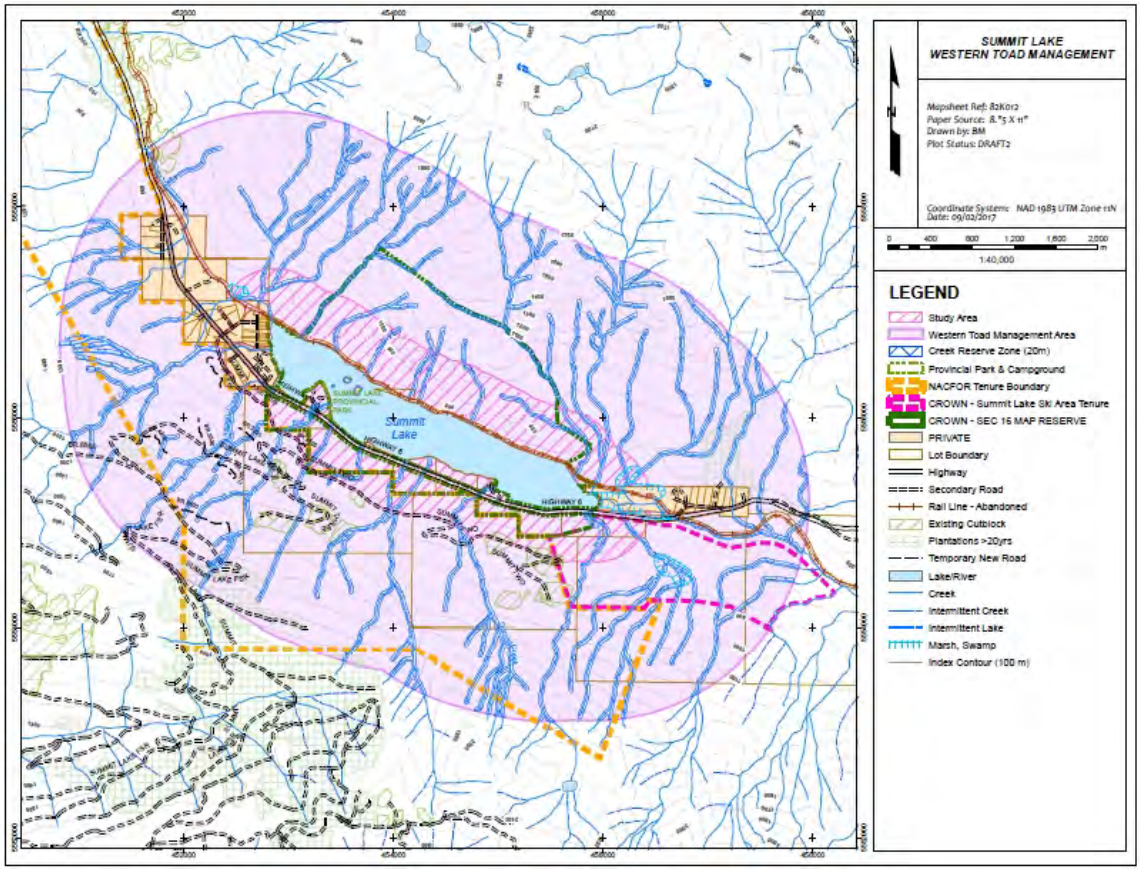

Figure 17. More detailed map of the Western Toad Management Area for Summit Lake (FLNRO, 2017).

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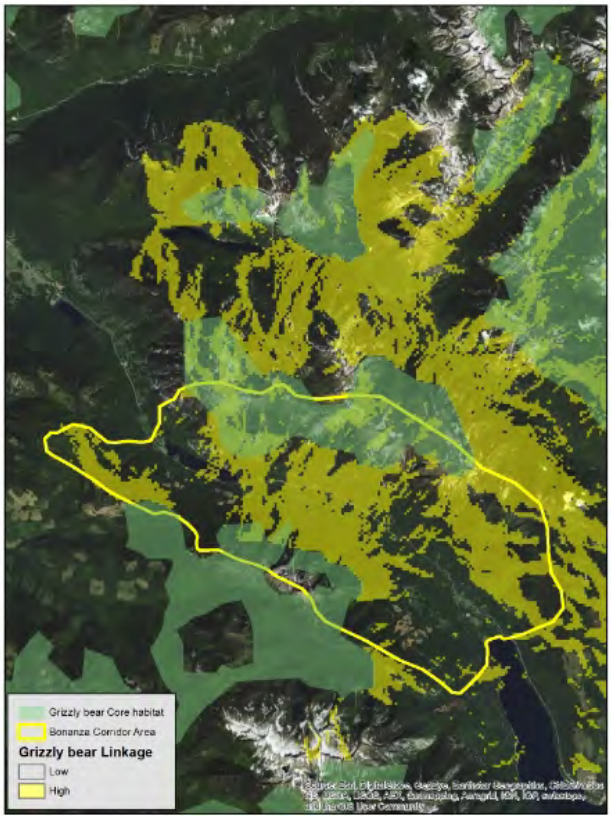
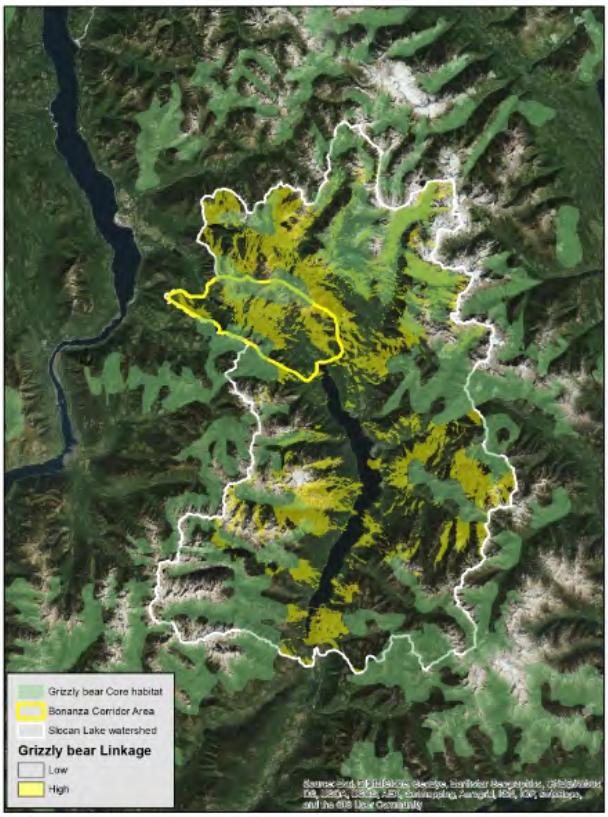
Figure 18. Non-legal / unofficially designated Old Growth Management Areas (OGMAs) in the Bonanza Biodiversity Corridor total approximately 0.63 km2 or 4.4% of the corridor's land area.
Figure 19. The Bonanza Biodiversity Corridor located at the very south end of the Selkirk Mountain Caribou Recovery Area and thus includes only an extremely small portion of the total area.

Aside from mountain caribou, other species of ungulates are regularly active in the Bonanza Corridor throughout the year. The local significance of the BBC as Ungulate Winter Range is **moderate** for white-tailed deer, elk and moose. Ungulates use the entire corridor and cross Highway 6 throughout the corridor, especially in the east-west crossing area marked below on the map in Figure 22.





20. 21.

Figure 20. Grizzly bear core habitats (green polygons) and corridor habitats (yellow): zoomed in view.
Figure 21. Grizzly bear core habitats (green polygons) and corridor habitats (yellow): Slocan Lake Watershed view.
These maps underscore the importance of the Bonanza Biodiversity Corridor for connecting the Selkirk Mountains and the Valhalla Range.

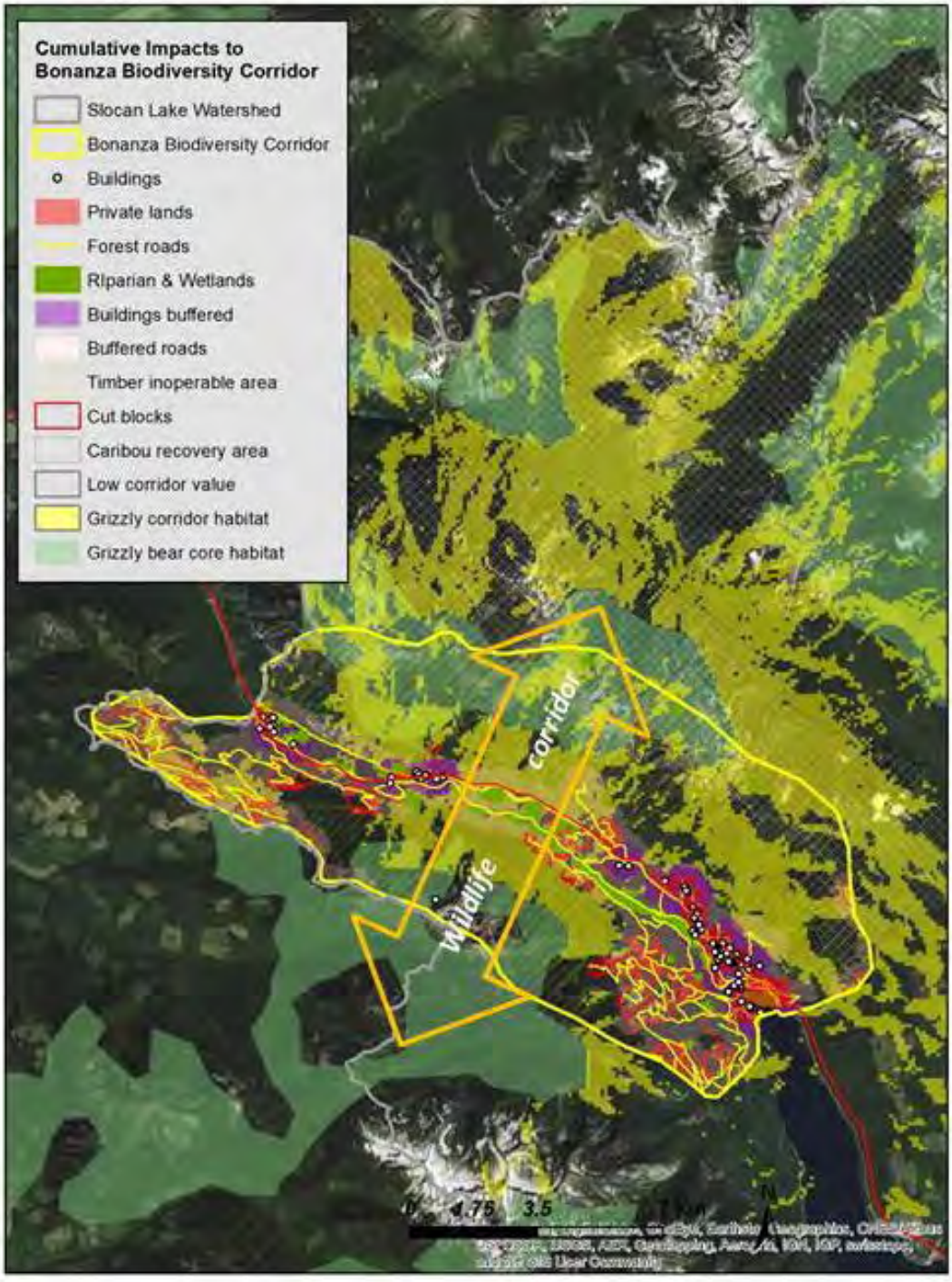


Figure 22. Cumulative impacts to wildlife connectivity based on a composite of layers presented above. The highest quality/least impacted area for east-west movement across Highway 6 between Hills and the east end of Summit Lake is indicated with a broad arrow. Within the larger Bonanza Corridor, this area offers the best chances for continued and future secure wildlife movement across the highway and valley bottom.

BONANZA BIODIVERSITY CORRIDOR: POTENTIAL CLIMATE CHANGE REFUGIA

Climate change is anticipated to have significant impacts on most species over the coming decades, potentially resulting in increased stress, shifts in species ranges, and possibly a dramatic increase in the extinction rate. Given the important biological and ecological values discussed above, conservation of the existing biological diversity in the Bonanza Biodiversity Corridor in the face of climate change is very important regionally and locally.

Due to its orientation and diverse landscape elements, the Bonanza Biodiversity Corridor could help reduce the potential negative impacts of climate change on biological diversity and play a regionally important role as a north-south connector between the Slocan Valley-Arrow Lakes-Revelstoke. In fact, the Bonanza Biodiversity Corridor could be more important and functional than Kootenay Lake-Duncan connection because of the lack of riparian and wetlands in the reservoirs' footprint areas (G. Utzig 2017, pers. comm. 1 August).

The Bonanza Biodiversity Corridor is also locally critical for linking low to high elevations, i.e., from valley bottom wetlands and riparian up to alpine and talus. Utzig and Holt's (2015a)[3] climate change analysis recommends the future management of the BBC as a proposed linkage and conservation area (Figure 23) because the variety of habitats in the corridor will help this area stay cooler and wetter than other areas in the West Kootenay. The BBC's ability to maintain similar conditions over time as the regional landscape gets hotter and drier is what Utzig has defined as "climate refugia" in the context of climate change. Thus a key function of the Bonanza Biodiversity Corridor is its ability to provide future refugia where existing flora might hold on longer and maintain a safe haven for wildlife adapting to a changing environment.

In conclusion, the valley bottom wetlands and riparian area of the Bonanza Biodiversity Corridor are a biodiversity hotspot and a potential climate change refugia, both locally and within a regional network of refugia.

[3] More information is available from Kutenai Nature Investigations Ltd. at www.kootenayresilience.org under Conservation Documents – Draft Materials for the Mid-South Selkirk Mountains.

PROPOSED CONSERVATION AND RESILIENCE MANAGEMENT STRATEGY

Based on their modeling, Utzig and Holt (2015a, b, c) provide a strategy that is relevant to maintaining the biodiversity values and ecological functioning of the Bonanza Biodiversity Corridor in the long term. According to Utzig and Holt, all the climate change scenarios project a general shift to warmer/drier bioclimates in the lower elevations, differing mainly in the intensity and extent of this shift. Increased fire frequency will become a major driver of ecosystem change and an issue for protection of human infrastructure. In addition, controlling invasive weeds will be important while still maintaining connectivity for native species to expand ranges northward and upslope.

Significant changes are also forecasted for mid to high elevation systems, although the direction of those changes is less certain – ranging from warmer and wetter to hotter and drier. These changes will impact current wildlife populations in these zones, especially habitat specialists[4] such as, caribou and western toad, and also grizzly bear and wolverine from a connectivity perspective. Conserving and managing existing habitat, protecting additional areas, reducing access conflicts, and managing for connectivity upslope and across major valleys and mountain ranges will be key. Protecting wetlands and riparian zones and buffering them from cumulative impacts, including climate change, is also an important component to help sustain these necessary habitats for resident and migratory populations of birds, amphibians and reptiles (Figure 23 and Table 2).

Conservation strategies from Utzig and Holt (2015b) adapted for the Bonanza Biodiversity Corridor:

- Increase the amount of conservation lands and ensure representation of habitats and ecosystems currently under-represented in conservation lands for this landscape (typically at lower elevations)
- Identify and manage for connectivity within the broader region, including movement of individuals between seasonal habitats (including key winter ranges) and during dispersal, and for range shifts with climate change
  Key connectivity includes:
  - north-south from the Slocan Valley to Arrow Lakes and Revelstoke
  - east-west from Goat Range Provincial Park to Valhalla Provincial Park
  - through key mountain passes
- Increase the protection and conservation management of remaining riparian and wetland areas as these are known to provide a diversity of habitat types and natural corridors across landscapes at multiple scales

[4] Habitat specialists require a very specific habitat type for all or a critical part of their life cycle. When these particular habitats types are rare on the landscape or under great threat, these specialists tend to be at risk. (Stewardship Centre for British Columbia).

- maintain and/or manage habitats and movement corridors for grizzly bear, western toad and mountain caribou populations
- conserve high value aquatic habitats (e.g., stream and lake spawning areas)

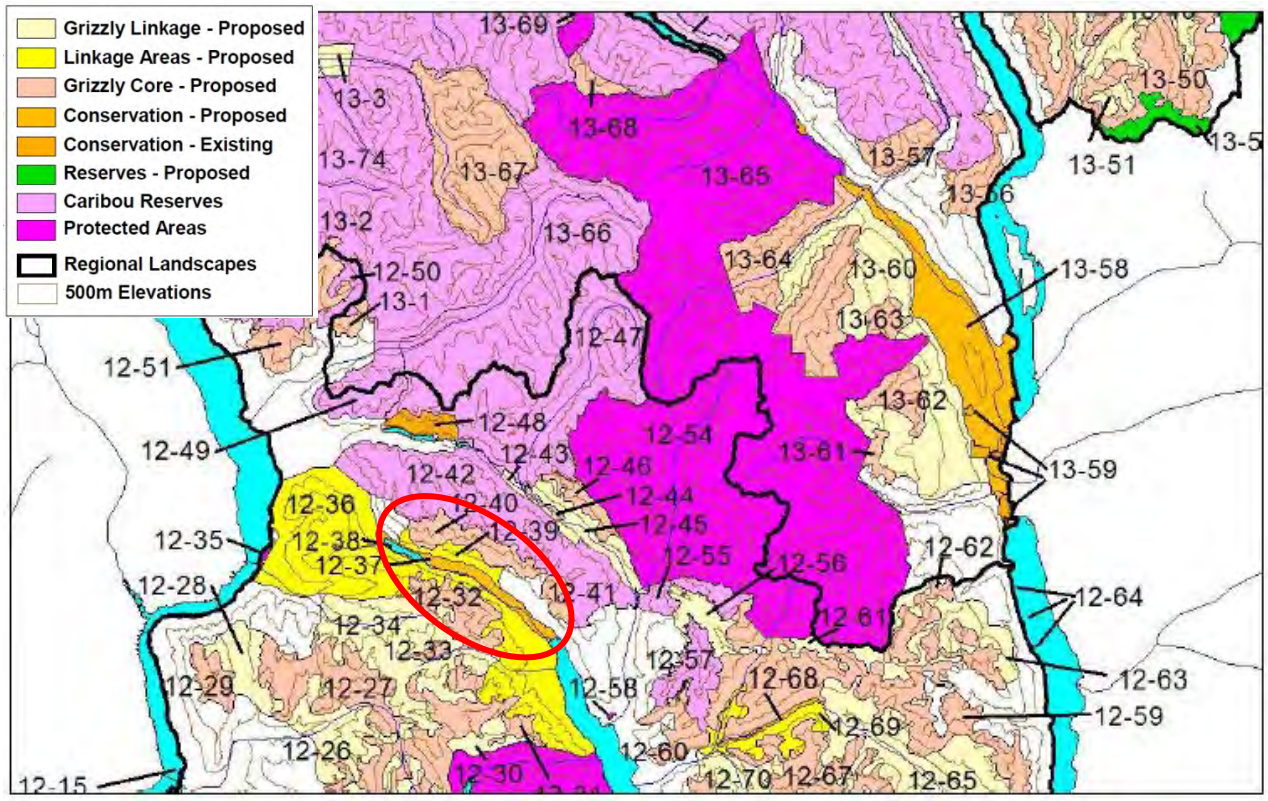


Figure 23. The Bonanza Biodiversity Corridor (red oval) is both regionally and locally important in reducing the negative impacts of climate change.
Utzig and Holt (2015a) have proposed that the BBC be managed for conservation and as important wildlife linkage and grizzly bear habitat core area.

Table 2. Descriptions of mapped polygons of a Conservation Network for Regional Landscapes in Figure 23 above. (Source: Utzig and Holt (2015a). Kutenai Nature Investigations Ltd.)

RL-Poly#	Conservation Type	Polygon Name	Key Conservation Values	Current Designat.	Existing Management	Proposed Management
12-32	Cons-GB Core	Ruby Range	Grizzly Bear core habitat, some old growth, some hardwoods, rare Ponderosa Pine	None	Basic FRPA	Grizzly Bear, Old Growth
12-36	Linkage	Summit Lake South	Grizzly Bear linkage habitat, regional linkage, hardwoods	None	Basic FRPA	Grizzly Bear, Connectivity
12-37	Conservation	Bonanza Creek Riparian	Wetlands, riparian, Ungulate Winter Range, some old growth, some hardwoods	None	Basic FRPA	Riparian, Connectivity, Old Growth
12-38	Protected Area	Summit Lake Provincial Park	Riparian, hardwoods	Protected Area	BC Parks	Riparian, Connectivity
12-39	Linkage	Summit Lake North	Grizzly Bear linkage habitat, regional linkage, hardwoods	None	Basic FRPA	Grizzly Bear, Connectivity
12-40	Cons-GB Core	Upper Bonanza Face	Some hardwoods, rare Ponderosa Pine	None	Basic FRPA	Grizzly Bear, Connectivity
12-41	Cons-GB Core	Upper Cadden-Arthur Creeks	Some hardwoods	None	Basic FRPA	Grizzly Bear

CONSERVATION RECOMMENDATIONS & POTENTIAL PARTNERS

Looking back to KCP's 2009 Biological Evaluation Report for a private property on the north shore of Slocan Lake, the description of the area still rings true: *Bonanza Creek is one of the most important drainages in the Slocan Lake system; and Bonanza Marsh is one of the most productive wetlands in the system. The biodiversity of the riparian-wetland habitats includes hundreds of species including important ones like kokanee, river otters, rare orchids, great blue heron, grizzly bears, and large cottonwood galleries. The complex hydrological system of springs, drainage channels, creeks, and Slocan Lake offer unique habitat conditions that should be conserved and managed as a package.*

The 2009 assessment initiated early discussions about a broad conservation strategy for protecting the entire Bonanza Marsh, and for looking further up the Bonanza Creek corridor to Summit Lake. From the Slocan Lake Conservation Planning Forum, the following activities and partners were identified as next steps following the completion of the mapping contained in this report in order to continue the momentum of conserving this exceptional landscape (Mahr, 2017a, pp. 12-13).

- Assess what needs to be done to protect the corridor in terms of crown and private land ownership: Where are there conservation opportunities? Where is there urgency? What actions need government support? And what can be done outside government to partition effort?
- Collaborate with Greg Utzig and the Kootenay Resilience Project to illustrate how habitat corridors and mountain passes are key to facilitating changes in wildlife ranges with climate change
- Establish a Bonanza Biodiversity Corridor Committee to prepare a conservation proposal for local and provincial government to formally recognize the BBC as an ecological priority area in order to enhance landscape connectivity and protect critical habitat from Bonanza Marsh to Summit Lake

Potential partners or collaborators include a variety of local biologists that know the Bonanza Biodiversity Corridor such as, Dr. Michael Proctor (bears), Doris Hausleitner (wolverine and western screech-owl), Jakob Dulisse (amphibians and reptiles), Gary Davidson (birds), and Dr. Cori Lausen (bats). Local groups such as the Slocan Lake Stewardship Society, Valhalla Foundation, Slocan Wetlands Assessment and Monitoring Project, Hills Recreation Society, North Slocan Trail Society, and Rosebery to Summit Lake Rail Trail Committee as well as regional organizations like the Nature Conservancy of Canada, Kootenay Resilience Project, Ministry of Forests, Lands, Natural Resource Operations, and Rural Development, BC Timber Sales, Selkirk College's Geospatial Research Centre plus the Regional District of Central Kootenay, Villages of Silverton, New Denver and Slocan, Sinixt and Okanagan Nation Alliance all can help further protect the ecological integrity of this exceptional landscape for future generations.

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