Forest Practices Board

Follow-up Report on Wildlife and Cattle Grazing in the East Kootenay

FPB/SR/51

July 2015

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Introduction

In 2008, the Board published the complaint investigation report *Wildlife and Cattle Grazing in the East Kootenay*.[1] The report addressed concerns that: forest in-growth on grasslands had caused forage supply to decline; elk and deer numbers had been allowed to increase causing forage to be overgrazed; and individual ranchers had to reduce the number and duration of cattle grazing on Crown lands. The report concluded that:

- monitoring indicated that grassland carrying capacity was insufficient to meet the forage demands of both cattle and wildlife, and
- East Kootenay grasslands were in poor condition and continuing to decline, and that they remained over-used by cattle and elk.

At the time, ecosystem restoration[2] work was ongoing at a rate of 80 percent of what was reported as needed. The report recommended that, **"With appropriate consultation and expert advice, the Ministry of Forests and Range and the Ministry of Environment direct reductions of forage use in the East Kootenay to levels sufficient to achieve a positive and continuing trend in grassland ecosystem condition."**

The Board requested that government respond in writing by December 31, 2008. Government requested, and was granted, three extensions to the deadline. Government responded in March 2011 and outlined actions they had taken to address the recommendation from the 2008 report. These actions were:

- Rocky Mountain District has made efforts to reduce livestock grazing by not issuing new grazing tenures when animal unit month (AUMs) are surrendered.
- Fish and Wildlife Branch developed a 2010-14 Kootenay elk management plan that identified range health and crop degradation as issues requiring attention and established elk population reduction targets for the southern trench population.
- The Rocky Mountain District and Habitat Branch have been carrying out ecosystem restoration activities in the East Kootenay Trench that are helping restore and enhance forage production.

The Ministry of Forests, Lands and Natural Resource Operations (FLNR) also stated that, "...government will continue to take a moderate, progressive approach to improving rangeland health in the East Kootenay in a manner that does not adversely impact this region's ranching and hunting community."

In March 2011, the Board responded to FLNR and said that it would continue to observe the East Kootenay situation, looking for demonstrated improvement in grassland ecosystem condition. The Board intended to follow-up at a later date.

In 2013, the vice president of the East Kootenay Hunters Association contacted the Board to ask if the Board had followed up on government's actions. This report is the follow-up to examine government's actions.

[1] <http://www.bcfpb.ca/sites/default/files/reports/IRC144_web%20copy.pdf>

[2] Refer to the Trench Ecosystem Restoration website for additional information <http://trench-er.com/about/trench/>

Approach

Objective

To assess the current status of FLNR actions outlined in their March 2011 letter.

Methods and Scope

The review was restricted to the Rocky Mountain Trench portion of the Rocky Mountain Resource District (see Figure 1), focussing on three questions, which were examined by interviewing government staff:

1. Has authorized grazing been reduced since 2008?
2. Are the objectives of the elk management plan objectives being met?
3. Are the net effects of the ecosystem restoration (ER) activities meeting the desired target condition?

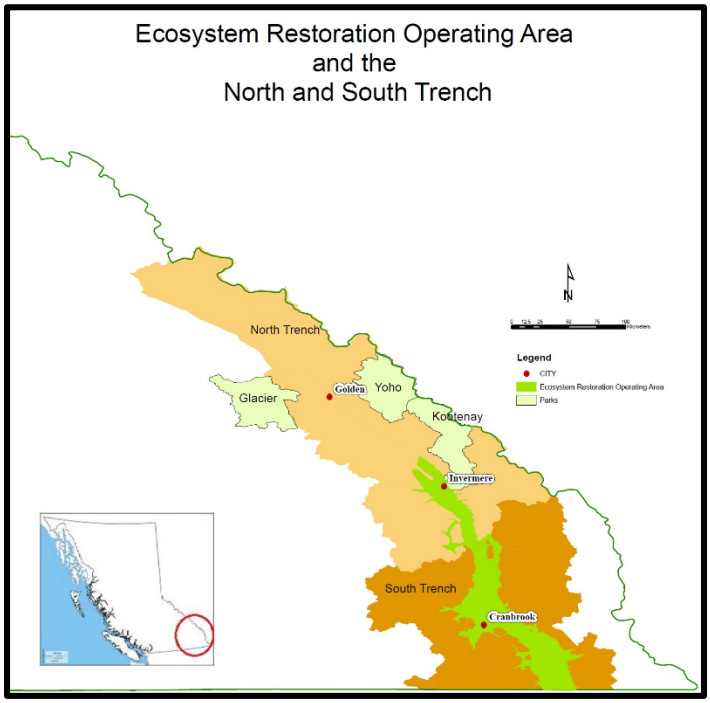

Figure 1. Key Map

Findings and Discussion

Has authorized grazing been reduced since 2008?

Over the past half century, forage in the East Kootenay has been reduced by forest encroachment and in-growth of grassland and open forest habitats, and by overgrazing, which causes a change from preferred climax plant communities to younger, less productive successional stages. As forage availability and grassland condition decline, competition and conflict between cattle and ungulates over use of the remaining forage escalates. Therefore, it is critical that resource managers have a reasonable estimate of the available forage and control the number of wild and domestic animals that graze specific areas to avoid overgrazing.

Forage Availability and Grazing Opportunity

Grassland carrying capacity is a theoretical maximum population grasslands can sustain indefinitely, given the food, habitat, water and other necessities available in the environment, without significantly depleting or degrading the grassland. It is determined by estimating the amount of forage in a forage supply analysis[3] and dividing the amount of forage by the forage consumption, as defined by AUM.

An animal unit month (AUM) is the quantity of forage consumed by a 450 kilogram cow (with or without calf) in a 30-day period. Because bulls consume more forage than cows, they account for 1.5 AUMs for each 30-day period of grazing.

FLNR authorizes a specific number of AUMs through grazing tenures. In the Rocky Mountain Trench, FLNR is taking a conservative approach when authorizing AUMs by considering the inherent uncertainty in estimating forage supply associated with seasonal and annual variation in weather and soil moisture, changing plant communities as a result of past grazing pressure, natural and human disturbance events, and changing climatic patterns. For new tenures, FLNR only allocates up to 45 percent of the estimated forage to grazing: 10 to 20 percent to cattle, depending on the condition of the range and importance to wildlife, and 25 percent to elk. The remainder is expected to maintain a healthy grassland ecosystem.

Trend in AUM Authorizations

Data provided to the Board by FLNR range staff shows a general decline in the number of range tenures and authorized AUMs for cattle since 2005 (Table 1). The reductions in the number of tenures are due to tenures being surrendered and not reissued, and the amalgamation of surrendered tenures with active tenures.

Table 1. Number of Range Tenures and Authorized AUMs 2005-2014

Year	# Tenures	# Authorized AUMs
2005	143	48,141
2006	144	48,390
2007	144	50,588
2008	140	48,772
2009	132	46,100
2010	133	46,462
2011	128	46,906
2012	120	43,390
2013	106	38,398
2014	107	37,468

However, the actual impact of grazing is difficult to quantify and there is little monitoring to ensure that range management plans are followed, including the timing and number of cattle put on the range. FLNR staff told the Board this is due to low staffing levels, constrained budgets and range activities being a low priority for compliance and enforcement.

The *Range Act* specifies a limited number of situations when authorized AUMs can be reduced[4] on existing tenures. Consequently, AUMs are seldom reduced on existing active tenures. However, surrendered tenures provide FLNR with two opportunities to reduce grazing pressures. First, when grazing tenures are surrendered, FLNR can recalculate forge supply and adjust authorized AUMs before re-issuing them. Second, FLNR can increase the area of some existing tenures with areas from surrendered tenures without increasing the AUMs. This is a strategy FLNR is currently using.

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[3] In 2013, the Range Branch produced *Forage Supply Analysis: the Range Vegetation Inventory (RVI).* The RVI provides a "...consistent, data-grounded approach for determining forage availability, and subsequent forage allocation." The RVI combines spatial analysis, fieldwork, and local knowledge. It relies on the vegetation resource inventory and has little information on composition and productivity of grass or forage cover.
<http://www.for.gov.bc.ca/ftp/hfp/external/!publish/frep/indicators/Forage-Supply-Analysis-Methods-Range.pdf>

[4] Conditions under which AUM may be reduced are specified in the *Range Act* and can only be made to existing tenures.
<http://www.bclaws.ca/Recon/document/ID/freeside/00_04071_01>

There has been a 26 percent overall reduction in tenure AUMs where the forage supply analysis was completed since 2009 (Table 2). Most of the reductions are related to reissuing surrendered tenures and apply to the entire tenure and not to site specific areas.

It would be beneficial to calculate forage supply on all tenures at regular intervals (i.e., every five years), however, FLNR says staffing and budget limitations make this impractical. Rather, district and branch range staff prioritize range tenures for reassessment and are continuing with reassessments as time and budgets allow.

Table 2. Changes in AUM Authorization after Forage Supply Analysis 2009-2014

Range Unit	Previous AUM Allocation	Current AUM Allocation	Change in AUM	% Reduction in AUMs
Steamboat	384	300	84	22%
Forester/Horsethief	300	225	75	25%
Wildhorse/Lewis-Lewis/Wolf	1,620	1,200	420	26%
Cranbrook/Ft Steele	300	200	100	33%
Peavine	730	450	280	38%
Pickering Hills	1,803	1,552	251	14%
Powerplant	341	218	123	36%
Waldo, Hotel and North Star Pastures	120	100	20	17%
Burton Lake	245	200	45	18%
Cutts Tenure (Part of Waldo Range Unit)	792	300	492	62%

Findings

- The number of tenures and authorized grazing has declined since 2005.
- FLNR is recalculating forage supply, primarily when tenures are surrendered, and in all cases there has been a reduction in total AUMs.
- The *Range Act* provides little opportunity for government to reduce authorized AUMs on active tenures.

Are the objectives of the elk management plan being met?

The 2010-2014 Kootenay Elk Management Plan

FLNR staff used a structured decision-making process to assess and make recommendations for elk management in seven population management units:[5] West Kootenay North, West Kootenay South, Creston, North Rocky Mountain Trench (North Trench), South Rocky Mountain Trench (South Trench), Elk Valley and Flathead. Population management units (PMUs) align with hunting regulation management unit boundaries. Only the North Trench and South Trench PMUs are discussed in this report.

[5] The spatial scale at which a given big game population will be managed. This will normally be the geographic area that represents the year-round range of a big game population, while keeping interchange with other populations to a minimum MOE (Ministry of Environment), 2009, Big Game Harvest Management Procedure Manual, British Columbia, Ministry of Environment, Victoria, BC. Each PMU includes a number of hunting regulation management units.

FLNR staff developed elk management plans for 2000-2004, 2005-2009 and 2010-2014 periods. The plans were designed in consultation with First Nations, stakeholder groups, staff from other ministries and the general public. They were then implemented through hunting regulations.[6] The 2010-2014 elk management plan population objectives for the Trench population management units were:

- **North Trench**: Stabilize the population in areas with landowner conflicts and allow fluctuations elsewhere.
- **South Trench**: Reduce the population wintering in the South Trench by about 20 to 40 percent over 3 to 5 years.

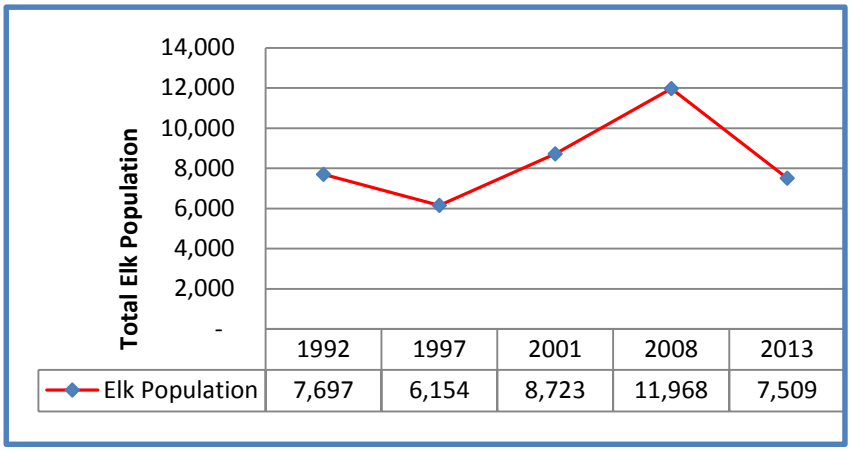
Population Trends

Elk populations are estimated and monitored through standard aerial population surveys, and by tracking individuals with radio collars. FLNR conducted a full survey of the South Trench in 1992, 1997, 2001, 2008 and 2013.[7] FLNR did not complete a survey of management units outside of the South Trench over the same intervals.[i]

The Board reviewed the available data and determined the population trends for the areas identified in the 2010–2014 elk management plan.

- **North Trench**: It is unclear whether the elk management plans objective of stabilizing the population in agricultural areas was met. The population declined in one hunting regulation management unit, increased in one and is unknown in two.

Graph 1. South Trench Elk Population Estimate



- **South Trench**: The elk management objective to reduce the population wintering in the South Trench by 20 to 40 percent over 3 to 5 years was met. The population decreased from 11 968 animals in 2008 to 7509 animals in 2013, a 37 percent reduction (Graph 1).

Findings

- The elk management plan is being implemented and elk populations are being monitored sufficiently in the South Trench. Trend data are lacking for portions of the North Trench.
- Generally, elk populations in the South Trench are being reduced. Additional information is needed to determine whether objectives are being met in the North Trench.

[6] The North Trench management units include the hunting regulation management units 4-25, 4-26, 4-34, 4-35, 4-35 and 4-40. The South Trench PMU include the hunting regulation management units 4-02, 4-03, 4-04, 4-05, 4-20, 4-21, 4-22 and 4-24.
[7] <http://www.env.gov.bc.ca/wildlife/wsi/reports/4428_WSI_4428_RPT_2013.PDF>

Are the net effects of the ecosystem restoration activities meeting the desired target condition?

The Rocky Mountain Trench Ecosystem Restoration Program (ER Program) is a collaborative effort of 30 partners, led by FLNR (refer to Appendix 1) to restore grasslands and open forests in the fire-maintained ecosystems[8] of the East Kootenay area. While the ER Program team leader is a FLNR employee; its steering committee[9] is composed of government, the forest and ranching industries, environmental organizations and other stakeholders that fund raise, prioritize and coordinate ER treatments on an annual basis.

ER is the process of assisting with the recovery of an ecosystem that has been degraded, damaged or destroyed, by re-establishing its structural characteristics, species composition and ecological processes. In the fire-maintained ecosystems of British Columbia's interior, a lack of wildfire due to decades of suppression, the absence of prescribed fire and applying no other intervention or disturbance processes as an adequate surrogate for the role of fire, has contributed to trees encroaching onto historic grasslands, as well as excessive in-growth of trees in previously open forests.[10]

In 2000, the ER Program produced its first Blueprint for Action[11] (Blueprint), which was updated in 2006 and again in 2013. The 2000 Blueprint established management principles and restoration targets for four ecosystem categories to achieve a healthy rangeland ecosystem by 2030 (Table 3). The restoration targets were based on 250 000 hectares of fire-maintained Crown lands in the Rocky Mountain Trench, extending from the Montana border south of Cranbrook to Golden in the north.

Table 3. Restoration Targets by Ecosystem Category at the End of 2030 (2000 Blueprint for Action)

Ecosystem Category	Tree Stocking Range/Targets Stems Per Hectare (sph)	%	(ha)
Shrublands	0	5	12,500
Open Range	<75 sph	17	57,750
Open Forest	76–400 sph	30	77,500
Managed Forest	>400 sph	48	102,000

The Blueprints recommend annual treatment activities for harvesting, slashing and piling, and ecosystem/broadcast burns to achieve restoration targets.[ii] Between 2000 and 2013 approximately 78 percent of the harvesting and 40 percent of the prescribed burn objectives have been met, while the slash and pile targets were exceeded (Graph 2).

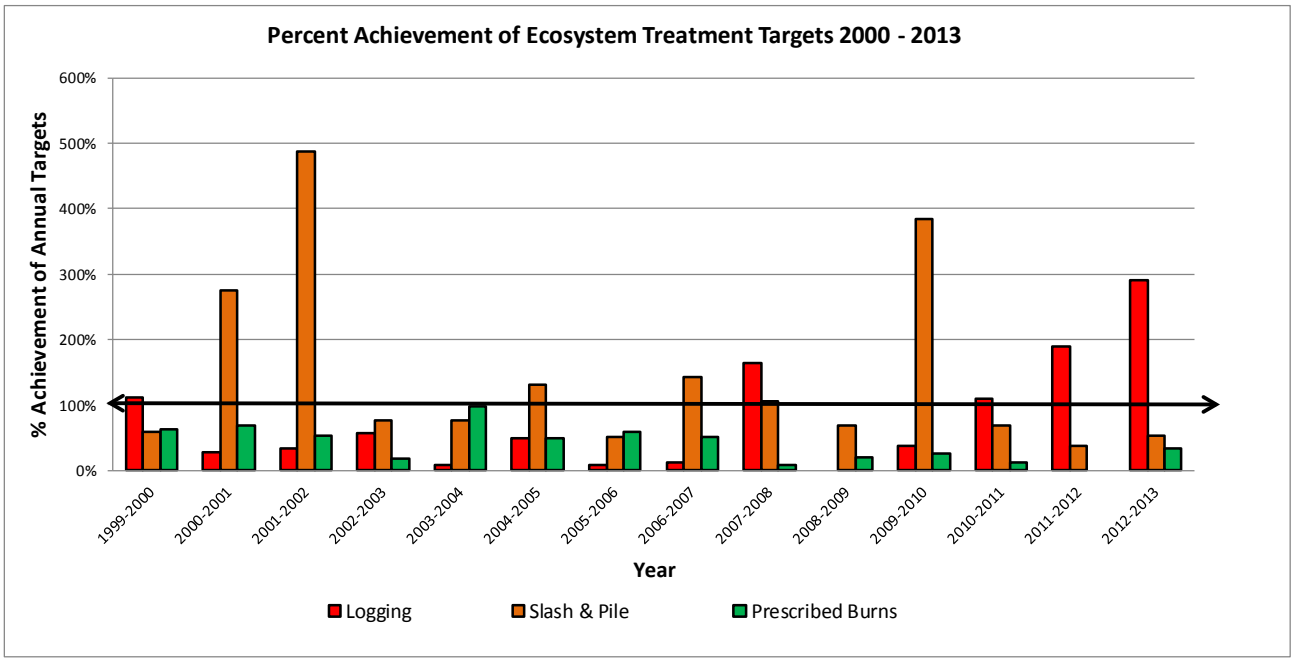
[8] Ecosystems with frequent stand-maintaining fires that include grasslands, shrublands, and forested communities that normally experience frequent low intensity fires.
<https://www.for.gov.bc.ca/tasb/legsregs/fpc/fpcguide/biodiv/chap2c.htm#ndt>

[9] The Steering Committee was established by the BC Government in 1998 to plan and deliver a fire-maintained ER program on designated Crown land in what is now called the Rocky Mountain Natural Resource District. The committee evolved into today's Rocky Mountain Trench Ecosystem Restoration Program.

[10] < http://trench-er.com/about/trench/>

[11] <http://www.trenchsociety.com>

Graph 2. Achievement of Treatment Activity by Ecosystem Category



Although the ER Program was not achieving the treatment targets the Board did not evaluate if the desired area by ecosystem category were reasonable targets. However, the Board found that the amount and effectiveness of treatment activity carried out is controlled by factors outside the control of the ER Program. For example:

- Harvesting is very dependent on market conditions. Most of the stands targeted for ER harvesting are economically marginal stands with few trees per hectare and small piece size.
- Government funding and staff involvement have diminished over time, demanding more committee time and resources dedicated to sourcing funds and coordinating activities (refer to *Appendix I* for funding sources).
- Areas with good forage response are often overgrazed by elk and, to a lesser extent, cattle immediately after the ER treatment. Overgrazed areas may take several years to rebound so the effectiveness of the ER treatment may not be optimized.
- Invasive plants continue to degrade forage productivity and control measures are not being implemented. Some of these invasive plants respond favourably to fire, so prescribed burning is not suitable in areas they occupy.

In 2009, the ER Program steering committee reviewed the original restoration targets and the assumptions behind setting the targets to confirm the progress and re-evaluate the targets. The steering committee concluded that it is very difficult to maintain the original targets through the use of range management and prescribed fire alone. The review also determined that a new approach to ER was required.

In 2014, the ER Program reduced the area of Crown land to manage as open forest or open range from 135 250 hectares to 109 000 hectares. In addition, 35 000 hectares of Parks/Conservancy and Indian Reserve lands were added to the program. The target condition and management objectives on the Crown land portion were revised to reflect current practices and operational constraints:

- maintain 65 000 hectares of core rangelands as open range or open forest directly through the ER Program,
- maintain 40 000 hectares of open forest through future economic harvest entries for sawlog, pulpwood or bio-energy opportunities, and
- maintain 4000 hectares of open forest through fire interface and fuel management activities.

In addition, 5000 hectares are managed outside of the grassland ecosystem for wildlife movement corridors that connect ER projects with higher elevation ecosystems.

The ER Program has also been active in conducting and implementing research. The ER Program has established 21 different long term research projects and produced 77 scientific reports[12] used to guide ER activities. They have also amalgamated data from the 21 separate projects into one data base so that it can be more efficiently and effectively analysed. The ER Program is currently using GIS to evaluate a new state of accomplishments against the new target conditions. Finally, the program has partnered with UBC and helped sponsor a Ph.D. student to examine the rate of forest infill and the mechanism of infill as it relates to ER treatments and historic fire. This work will help guide the maintenance schedule of the total ER area moving forward.

Findings

- The impact of ER treatments has been significant in the South Trench since 2000. Yet, on average the program has not met the targets set in the Blueprints for Action. Recently, the targets have been revised to reflect budget limitations to direct the program from this point onward.
- Invasive plants are not being adequately addressed and their impacts cannot be accurately quantified.
- The ER Program has been proactive in conducting research and implementing the results.
- The ER Program uses GIS to assess the revised target area against actual areas for each ecosystem category.

[12] <http://www.trench-er.com/library>

Conclusion

The Rocky Mountain Trench is rich in ecological diversity. Its ecosystems range from alpine to forests, from wetlands to grasslands and provides habitat for nearly every species of large mammal found in North America, along with a host of smaller mammals, birds, fish, insects, reptiles and amphibians. However, it is the low-elevation grassland and open forest ecosystems that support the greatest biological diversity and the greatest concentration of forage use, and human settlement and development.[13] Maintaining a healthy grassland ecosystem in the Rocky Mountain Trench is important, but challenging.

On examining the extent to which the Board's previous recommendation in its report, *Wildlife and Cattle Grazing in the East Kootenay (2008)*, was generally addressed by FLNR, the Board concludes that FLNR has made progress including:

a. FLNR is implementing a conservative approach on the grazing opportunity when re-issuing grazing tenures or recalculating existing tenures.
b. The 2010-2014 elk management plan is being implemented and the population targets are trending in the right direction.
c. FLNR has developed an ER strategy, taken the lead role and treated a significant amount of area.

However, there are still issues to address.

a. The impact of grazing due to reductions in tenures on the grassland ecosystem has not been determined.
b. There is little opportunity for government to reduce AUM authorization on active tenures.
c. Appropriate government manpower, budgets and monitoring is essential to the integrity of the East Kootenay grasslands ecosystem and its ability to support elk and cattle over the long term.
d. Government needs to evaluate the encroachment of invasive plants and develop a strategy to mitigate impact on the grassland ecosystem.

Endnotes

[i] In the North Trench, different MUs were surveyed at different intervals. MU 4-26 was surveyed in part or in whole in 1992, 1997, 2001, 2008, 2011 and 2013, and has shown population declines.[i] MU 4-25 was surveyed in 1992, 1997, 2001, and 2008 and showed a population increase in 2008 compared to all previous years.[i] The first and only full survey of MU 4-34 and 4-35 was conducted in 2011, and resulted in an estimate of 500 elk.[i]

[ii] Annual treatment objectives in hectares:

- 2000 Blueprint: Logging – 600 – 1,200, Slashing/Piling – 750, ER Burns – 2,325
- 2006 Blueprint: Logging – 600 – 1,200, Slashing/Piling – 750, ER Burns – 2,325
- 2013 Blueprint: Logging – 500, Slashing/Piling – 1,500, ER Burns – 2,100, Mastication - 750

[13] <http://trench-er.com/images/uploads/Blueprint2013_booklet_web.pdf>

Appendix I: Funding Sources 1997- 2013

The following funding sources have supported ecosystem restoration program activities on Crown land, and on Parks, Conservation Properties and First Nations Lands. Their contributions have paid for on-the-ground restoration and fuel management treatments, scientific research and monitoring, mapping, database development, public outreach and communications.

Refer to the 2013 Blueprint for more detail.

Ecosystem Restoration Funders	Parks, Conservation Properties & First Nations Funders
Job Opportunities Program	Akisqnuk First Nation
First Nations Emergency Services Society	BC Parks
Land Based Investment Account	BC Trust for Public Lands
Fish and Wildlife Compensation Program – Columbia Region	Community Adjustment Fund
Community Adjustment Fund	Columbia Basin Trust
Forest Investment Account	BC Parks Conservation Land
Habitat Conservation Trust Foundation	First Nations Emergency Services Society
Forest Renewal BC	Fish and Wildlife Compensation Program – Columbia
Grazing Enhancement Fund	Habitat Conservation Trust Foundation
Steering Committee Fund – supplemented by FLNR	Job Opportunities Program
Columbia Basin Trust (CBT) Environmental Initiatives Program	Kootenay National Park
Community Gaming Grant	BC Land Based Investment Account
Rocky Mountain Elk Foundation	The Nature Conservancy of Canada
Union of BC Municipalities	Natural Resources Canada
BC Wildfire Management Branch	Parks Canada
BC Ministry of Forests, Lands and Natural Resource Operations (FLNRO)	Regional District of East Kootenay Columbia Valley Local Conservation Fund
Kootenay Livestock Association (KLA) – Ministry of Forests grant	Rocky Mountain Elk Foundation
BC Ministry of Agriculture	Shuswap Band
BC Ministry of Environment	Tobacco Plains Indian Band
BC Cabinet Land Use Committee	Union of BC Municipalities
CBT Grassland & Rangeland Enhancement Program – KLA	BC Wildfire Management Branch
Enhanced Forest Management Program	
Fraser Basin Council BC CLEAR Fund	
Village of Canal Flats	
Premier's Sheep Fund	
BC Ministry of Transportation and Highways	
Agriculture Environment & Wildlife Fund	
BC Wildlife Federation	
Human Resources Canada	
Small Business Forest Enterprise Program	

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