

Golden Area Ungulate Winter Range Project Development – 2020



PROJECT COL-F21-W-3350

PREPARED FOR: FISH AND WILDLIFE COMPENSATION PROGRAM

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***Prepared with financial support from the Fish and Wildlife Compensation Program,
on behalf of its program partners BC Hydro, the Province of B.C., Fisheries and
Oceans Canada, First Nations and Public Stakeholders.***

Date: 31-Mar-2021

Executive Summary

The Golden Area Ungulate Winter Range Project Development funding provided by the Fish and Wildlife Compensation Program was put towards accumulating information to move forward on FWCP Upland and Dryland Action Plan priority action - COLUPD.SOI.HB.30.01 Ungulate habitat enhancements-P1. Available online resources and historic Golden District Rod and Gun Club documents were reviewed to locate opportunities to improve habitats for ungulates in the Golden area. Five previous project areas were investigated and four previous inventory survey projects were reviewed to find areas where investments could be made to improve ungulate habitats. Funding proposals were submitted for three of the project areas that were reviewed, including Willowbank Mountain, The Kicking Horse Canyon and Vacation Creek enhancement areas. This project will aid in providing background on the habitat enhancement efforts that have been made in the Golden area in the past and direct future initiatives.

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Introduction

The Golden Area Ungulate Winter Range Project Development funding was used to conduct a review of available literature and connect with local conservation groups and stakeholders to identify and prioritize potential future projects. Online reports from previously undertaken habitat and wildlife inventory projects were reviewed in addition to the Golden District Rod and Gun Club's past project files. Local biologists were engaged to discuss project ideas and connections were made with regional First Nations. This project development resulted in the identification of past projects that are in need of follow-up monitoring and potentially maintenance work to prolong the benefits of previous habitat works. Covid-19 restrictions limited the ability to meet in person and further develop relationships with regional First Nations, though engagements were positive in developing common ground. Three project locations were moved forward for funding proposals as a result of this project development funding.

The projects identified in this work are inline with the habitat-based actions in the FWCP Upland and Dryland Action Plans (COLUPD.SOI.HB.30.01 Ungulate habitat enhancements-P1) for the Columbia Region. These projects are focused at moving forward with habitat improvements for a variety of ungulate species in and around the Golden area.

Goals and Objectives

This project development was aimed at generating a list of potential projects for habitat enhancement to improve conditions in ungulate winter ranges in the Golden area. The main goal was to determine the need for future work and move forward on the development of projects to enhance habitats. Potential projects were identified through reviewing available literature from previously conducted regional work. These projects were discussed with local biologists, interest groups, and regionally based First Nations.

Study Area

This project was focused on ungulate winter range habitats between Donald and Parson in the Rocky Mountain Trench. These habitats are in the traditional territories of the Ktunaxa and Secwépemc peoples. The literature review, conversations with local biologists and discussions with members of the Golden District Rod and Gun Club yielded five areas of focus for habitat work and an additional area for further research and investigation. Figure 1 shows the general study area as well as specific locations of interest for future works.

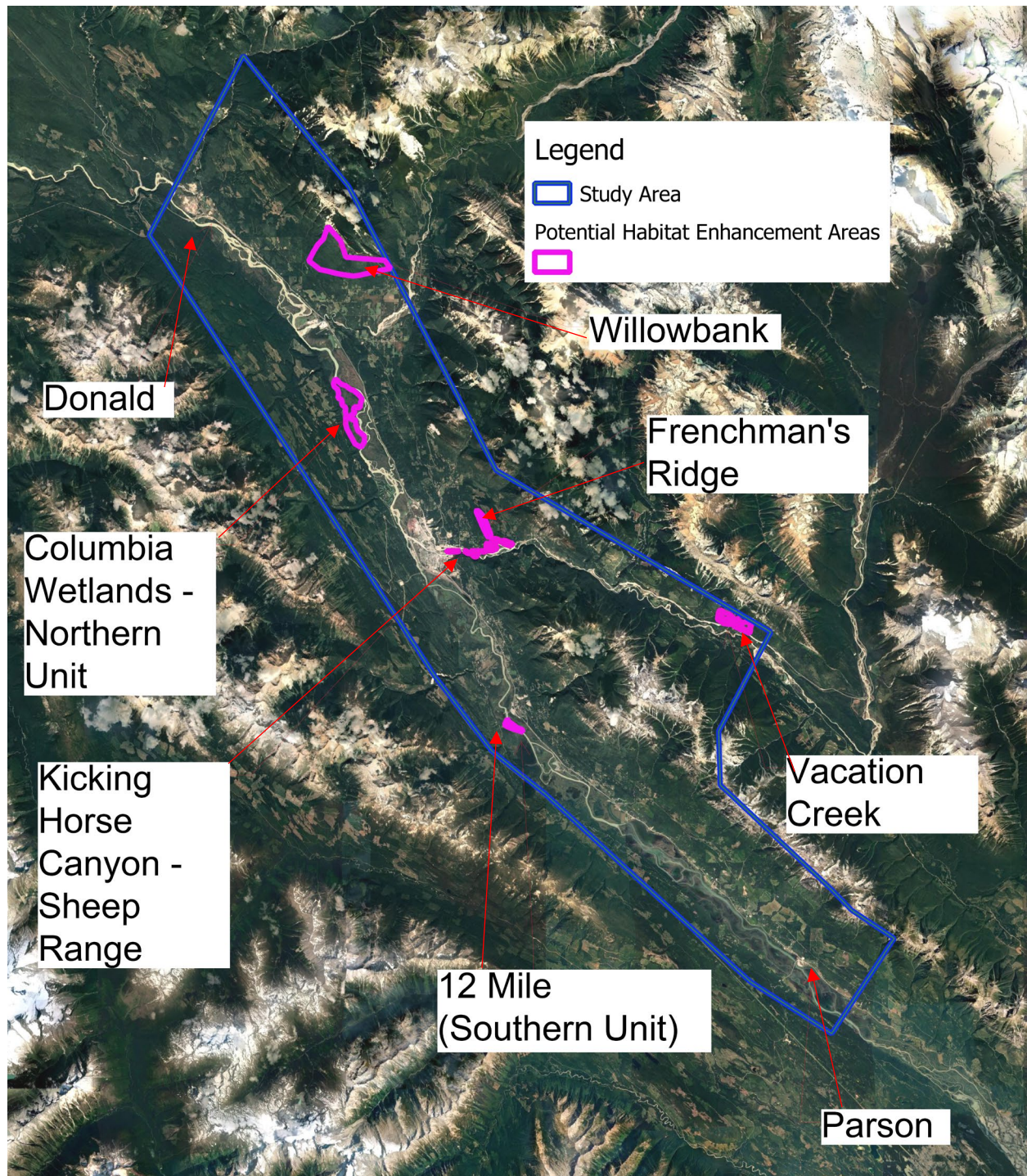


Figure 1: Overview map of study area with highlighted areas of focus.

Methods

A literature review was conducted to gather data on past habitat enhancement projects that have occurred in the area including follow up monitoring reports and projects that were planned but never enacted. Wildlife inventory and habitat use initiatives were also reviewed for the area.

Conversations were had with local biologists to gather information on past projects and get input on potential future projects. The Golden District Rod and Gun Club (GDRGC) opened their filing cabinet to allow for a review of past initiative from the club. Regional First Nations representatives were contacted to build relationships and interest in habitat enhancement projects.

Results and Outcomes

The review of previous FWCP work in the area brought up two projects that have been conducted in the study area. The Willowbank and Frenchman's Ridge areas were treated to enhance ungulate habitats in the 1990s. Four projects were discovered in the GDRGC files; two investigated the potential to improve habitats for elk in the Columbia Wetlands in the 80s and 90s, one was a 2005 feasibility study to enhance Rocky Mountain bighorn sheep habitat in the Kicking Horse Canyon and one was an elk habitat enhancement project in the Vacation Creek area from the mid 1980s. Local biologists, Doug Adama and Richard Klafki, were contacted to give further information on the project that they were involved in and to help direct future project development.

Project proposals have been developed to move forward with the follow up monitoring and maintenance prescription drafting for the Willowbank Mountain and Vacation Creek areas. Funding has also been sought to conduct baseline habitat use surveys and to draft treatment prescriptions in the Kicking Horse Canyon. The identified project locations are presented and summarized based on geographic location, from north to south. Table 1 displays also summarizes these future projects which are listed by priority (1 = highest priority – 6 = lowest priority). All of these identifies projects support FWCP's Upland and Dryland habitat-based action plans (COLUPD.SOI.HB.30.01 Ungulate habitat enhancements-P1) with the end goal being the improvement or enhancement of a variety of ungulate habitats.

Table 1: Summary of future project areas with species of focus, suggested work to be completed and the priority of moving forward with these projects.

Location	Species	Treatment / Future Work	Priority
Kicking Horse Canyon Bighorn Sheep Habitats	Bighorn Sheep	Develop habitat enhancement plan within ingrown IDF habitats of the sheep's home range.	1
Vacation Creek Habitat Enhancement Areas	Elk	Develop treatment prescriptions to restore winter habitats; conduct maintenance to previously treated units.	2
Willowbank Mountain	Elk Mule Deer White tailed Deer	Follow up monitoring of treatments; potential maintenance of treatments.	3

Aerial Surveys	Mule Deer	Conduct mule deer habitat use and distribution surveys on west-facing slopes of Columbia Valley in WMU 4-35 – 4-36 to understand mule deer winter range use.	4
Frenchman's Ridge Habitat Enhancement Areas	White tailed Deer Elk Mule Deer Bighorn sheep	Conduct habitat enhancement maintenance work.	5
Columbia Wetland Elk Enhancement Areas	Elk	Follow up on current conditions of treatment; additional treatments not recommended.	6

Willowbank Habitat Enhancement Area

Krebs & Adama (1996) detailed plans for the habitat enhancement project on the south-facing slopes of Willowbank Mountain (Figure 3) that was planned to treat 101ha of predominantly deciduous forests to increase browse availability for ungulate species. No follow up monitoring reporting was discovered from the Willowbank enhancement project, however, the aerial population and distribution work conducted by Tinker, Heaven, & Ingram (1997) and Klafki (2007) specifically mention this enhancement area. Upward trends in populations were noted for white-tailed (*Odocoileus virginianus*) and mule (*Odocoileus hemionus*) deer while elk (*Cervus canadensis*) populations were suggested to be stable in the treatment area. Conversations with Doug Adama and Larry Ingram, who were both involved in the project, indicated that there was no known follow up monitoring or maintenance done on the project area.



Figure 2: Looking north at the treatment areas on Willowbank Mountain. (Photo: B.Gustafson)

This area holds high-quality habitats in an area that is exceedingly pressured with the development of subdivisions. Follow up monitoring should be done in this area to assess the condition of the previously conducted works and determine if maintenance is needed to the original treatments. The GDRGC applied for funding through the FWCP for this work in October 2020.

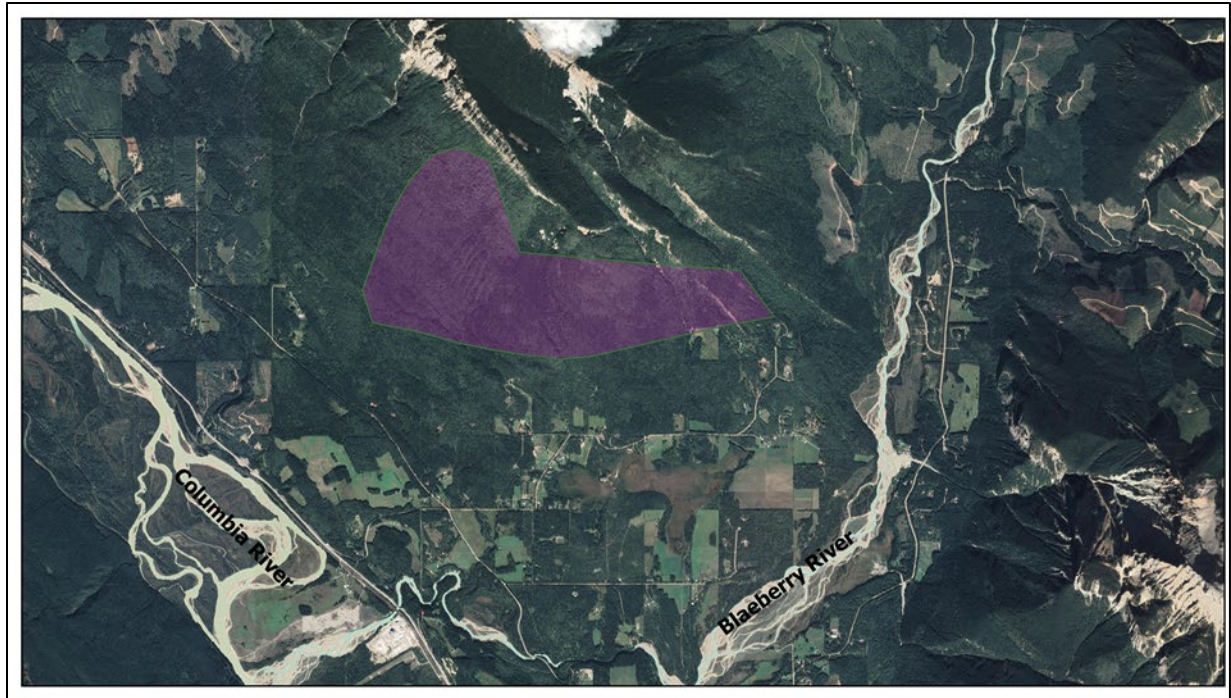


Figure 3: Polygon highlighting the area targeted in the habitat enhancement work conducted in the 1990s by the FWCP.

Columbia Wetlands Elk Habitat Enhancement

Documentation for planned burn treatments for two different locations in valley bottom wetlands were discovered in the GDRGC files. Burns were planned in 1986-1987 in the northern unit and 1997 in the southern unit (Appendix A). The northern location is on an island surrounded by river channel near Lang Creek and across from the south end of the Burgess James Gadson Provincial Park. The southern location is located near 12 Mile Creek, and the exact location of the proposed treatment unit is unclear. Figure 4 shows the locations of these units. Documentation in the GDRGC files suggest that treatment in the northern unit occurred while the proposal for treatment in the 12 Mile unit was not funded. The rejection letter from this proposal application suggests that the burning treatment was not ecologically suited to the target area. All discovered documentation from these projects, including a note detailing post-treatment observations in the northern unit and elk scat analysis from the southern units is included in Appendix A.

These projects are unique as they looked at enhancing habitats within the Columbia Wetlands Wildlife Management Area. Further investigation should be done to assess site conditions in the unit that was treated, but no additional treatment should occur.

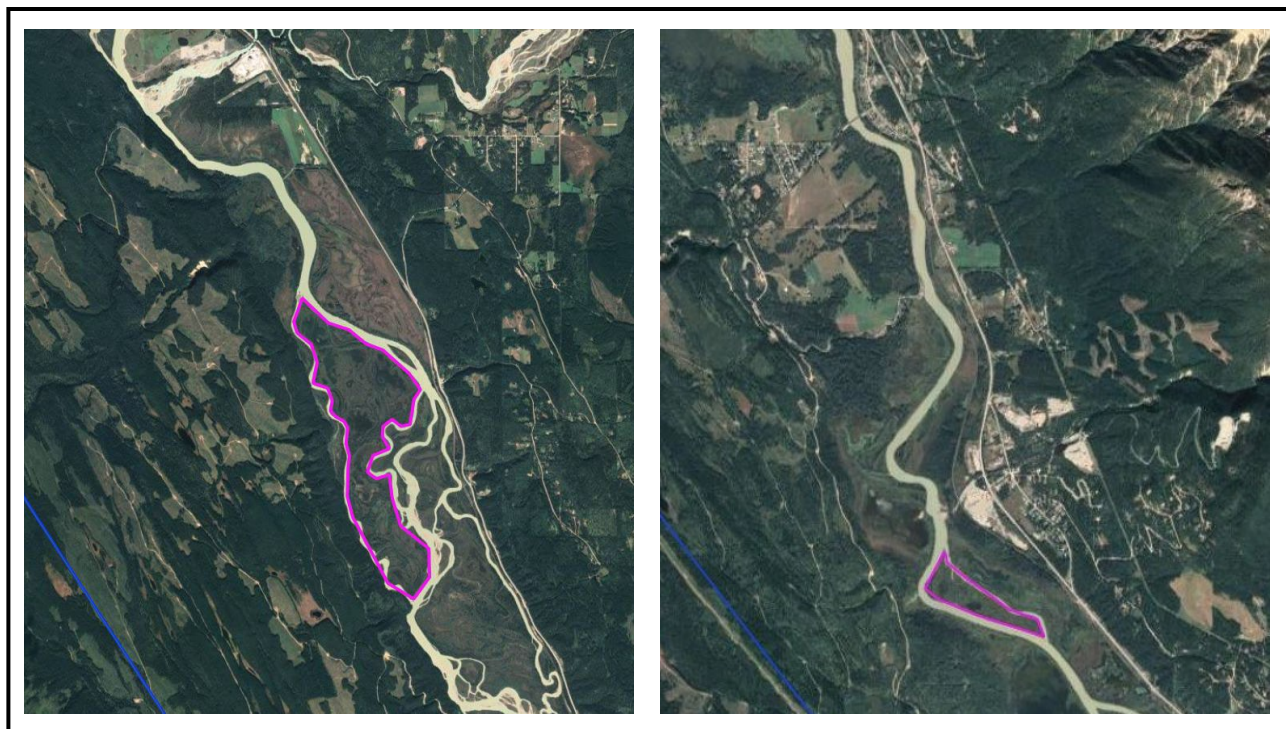


Figure 4: Columbia Wetlands elk habitat enhancement area, the northern unit on the left and the southern 12 Mile unit on the right.

Frenchman's Ridge Habitat Enhancement Area

63 ha of habitats on Frenchman's Ridge were enhanced between 1994 to 1996. The focus was on reducing stem densities in deciduous stands and promoting suckering and browse regeneration (Klafki, 2001). Klafki (2001) conducted effectiveness monitoring on these units immediately after treatments and suggested an increase in deer use was observed. Klafki (2007) and (Tinker et al., 1997) reference the Frenchman's Ridge enhancement area in their aerial inventories and indicate an increase in both deer species abundance and stable occurrences of elk.

The GDRGC holds a woodlot forest harvest tenure on Frenchman's Ridge and has a desire to manage this tenure in a manner that enhances habitats for ungulates. The GDRGC commissioned an assessment of this woodlot area which includes the treatment areas that were enhanced in 1994-1996. In this assessment, Adama (2019) concluded that deer that overwinter in the Frenchman's Ridge area select mature coniferous forest with dense crown cover over the aspen stands on the ridge that were previously targeted for enhancement. These findings from Adama (2019) suggest that additional treatments in the previously managed units from 1994-1996 may not provide the best outcome for enhancing winter ungulate habitats.



Figure 5: Frenchman's Ridge treatment area in relation to the Town of Golden.

Kicking Horse Canyon Habitat Enhancement Area

A small herd of Rocky Mountain bighorn sheep range in the Kicking Horse Canyon at the gateway to the town of Golden. This population of blue-listed sheep are declining in number and face greater threats to their survival as Phase 4 of the Trans Canada Highway expansion starts in the Kicking Horse Canyon. Habitats are limited in the herd's home range and the plan to install exclusion fencing along through this area will address the largest threat to the herd (vehicle collisions) but has the potential to increase habitat fragmentation.

Klafki & Pezderic (2005) conducted a feasibility study in the Kicking Horse Canyon investigating potential to enhance habitat for the herd. This feasibility study suggested that forest ingrowth in these ecosystems (IDF dk5) is a major concern in the sheep's home range and that opening the forest with mechanical means could provide better quality habitats for this herd. The GDRGC provided funding in 2020 to conduct additional field surveys in the areas adjacent to the feasibility study area which confirmed that these forests have high volumes of forest ingrowth (up to 2725 Stems/ha and as low as 475 Stems per/ha). In some areas, the forest ingrowth completely restricted the growth of an herb layer on the forest floor (personal observations).

With the threats to this local herd of bighorn sheep and the poor condition of its habitats, the GDRGC has actively moved forward in pursuing funding for the enhancement of these habitats. The Columbia Basin Trust Ecosystem Enhancement Program is being pursued as a major funder of this work. As well the GDRGC has submitted applications to the FWCP and Habitat Conservation Trust Fund for additional support. The next phase of this project is to collect baseline habitat use data and develop treatment prescriptions. Figure 6 shows the targeted treatment units for developing a connectivity corridor through the herd's home range. Figure 8 is a photo of the enhancement area from the south side of the Kicking Horse River.



Figure 6: Proposed bighorn sheep connectivity corridor enhancement project treatment units in relation to the Town of Golden.



Figure 7: West view of the Trans Canada Highway and Frenchman's Ridge.

Vacation Creek Habitat Enhancement Area

175 ha of south-facing, moderately-sloped habitats were enhanced through efforts made by the GDRGC in 1986-87 in the Vacation Creek area east of Golden. Slash and burn treatments promoted the regrowth of graze and browse species in these units. The original proposal for this work is presented in Appendix 2. Figure 8 shows these units at a post-treatment stage in the mid-90s. The GDRGC put forth funding to conduct site condition surveys in this area in 2020 which showed stem densities in the previously treated areas that ranged from 4600 stems/ ha to 1125 stems/ha. These two treatment units are on the upslope side of the TCH and are near an overhead wildlife crossing structure. During site

investigations, piles of bones and fur were observed on the upslope side of the crossing, suggesting regular predation.

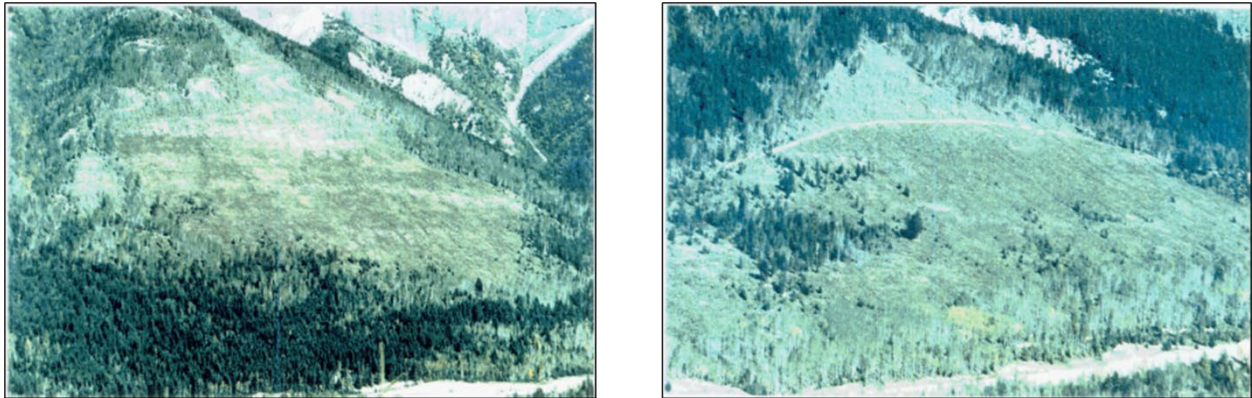


Figure 8: Photos of Vacation Creek treatment units from Harvey Research Ltd. for MOTH (1994)

The GDRGC has moved forward on securing funding to conduct maintenance treatments on these previously treated units. The Columbia Basin Trust Ecosystem Enhancement Program is targeted as the major funding source for this work. Additional funds have been applied for through the FWCP to progress with the next phase of the project which includes collecting a baseline of habitat use and drafting treatment prescriptions. Figure 9 shows the targeted treatment area in Vacation Creek.



Figure 9: Previously treated units at Vacation Creek with proposed next phase of treatment units delineated.

Aerial Surveys

Four projects were reviewed that inventoried ungulate population and distributions in the Upper Columbia Basin spanning from 1997 to 2011. The earlier projects which were reported in 1997 and 2007 followed similar methods and involved similar study areas contributing to a reoccurring data set that could show trends in populations and distribution. These projects were funded by the FWCP and included inventories of habitat use in previously mentioned habitat enhancement areas (Willowbank and Frenchman's Ridge) and also reference an additional baseline survey that was conducted in 1991 by Bindernagel et al. The study areas for these surveys ranged throughout the Rocky Mountain Trench from Canal Flats to north of McBride. Figure 10 shows the study area.

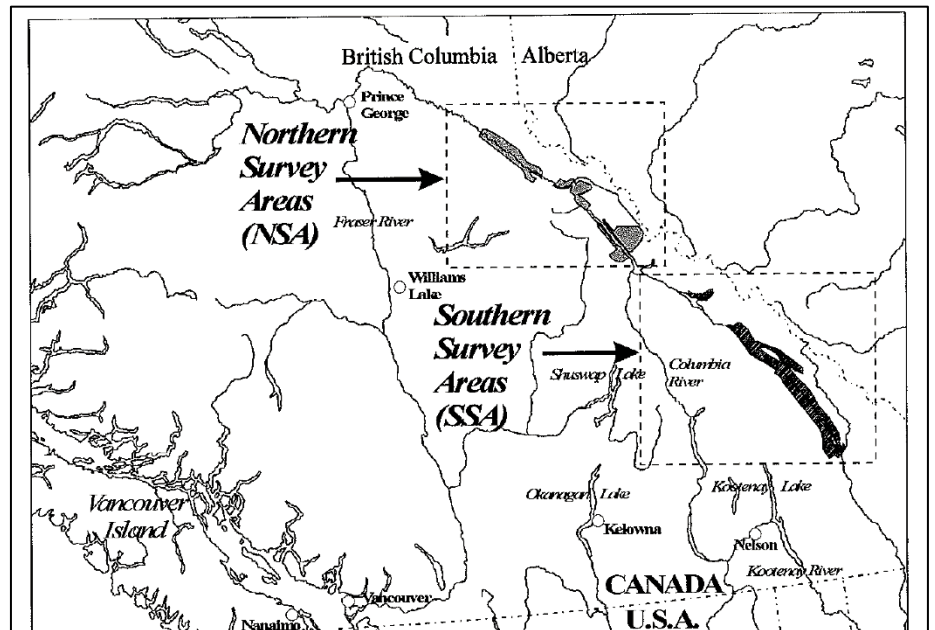


Figure 10: Study area used by Bindernagel et al (1991), Tinker et al (1997).

Klafki (2007) followed much of the same study area as Bindernagel (1991) and Tinker et al. (1997) with the exception of portions of the southern study area from Golden to Canal Flats (figure 11). Klafki's (2007) survey followed the guidance of the Columbia Basin Ungulate Monitoring Plan (Tinker, Adams, & Heaven, 1997a). No inventory surveys were discovered following the same areas and methods since Klafki (2007).

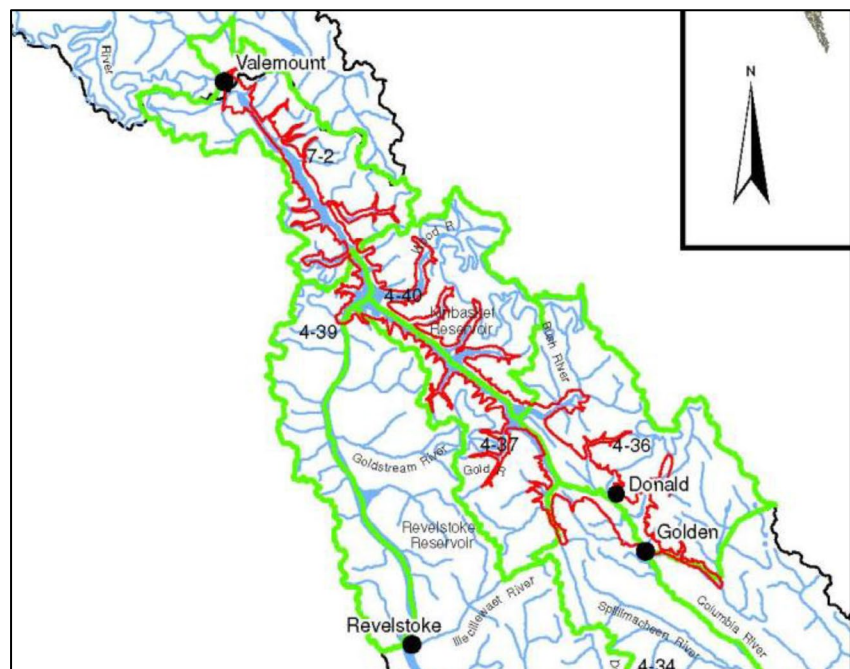


Figure 11: Study area surveyed by Klafki (2007) highlighted in red. Map from Klafki (2007)

More recent reports from 2009 and 2011 were reviewed which were species specific for moose and elk. Stent (2009) covered much of Wildlife Management Unit (WMU) 4-34, which extends from Radium to Kinbasket Lake on the west side of the Columbia River, surveying for primarily for moose and secondarily for elk (figure 12).

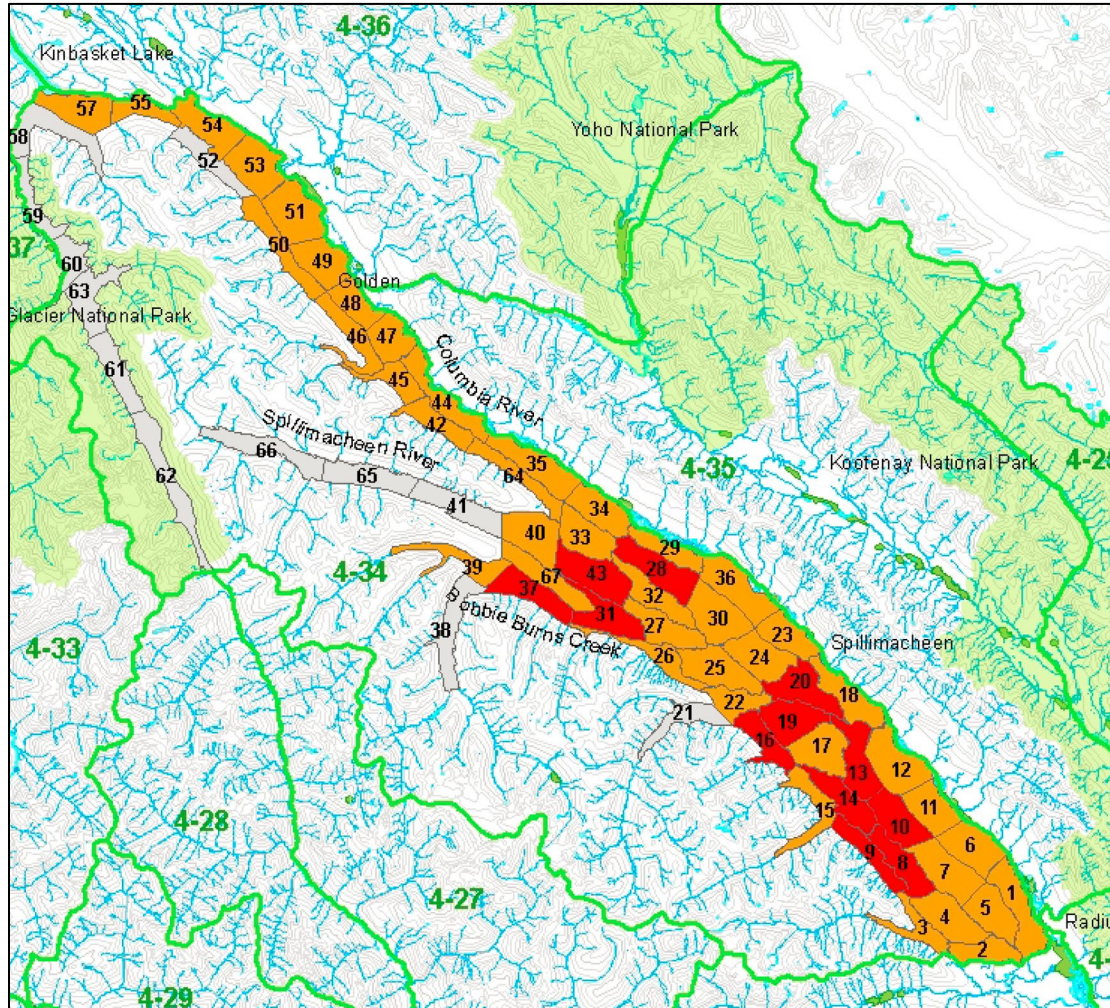


Figure 12: Area surveyed by Stent (2009).

Szkorupa & Thornton (2011) surveyed the valley bottom lands near agricultural properties for elk through WMU 4-34 and 4-35 between Radium and Birchlands (south of Golden; figure 13). These surveys were focused on elk habitat use and populations in the valley bottoms and did not look at higher elevation slopes on the east side of the valley.

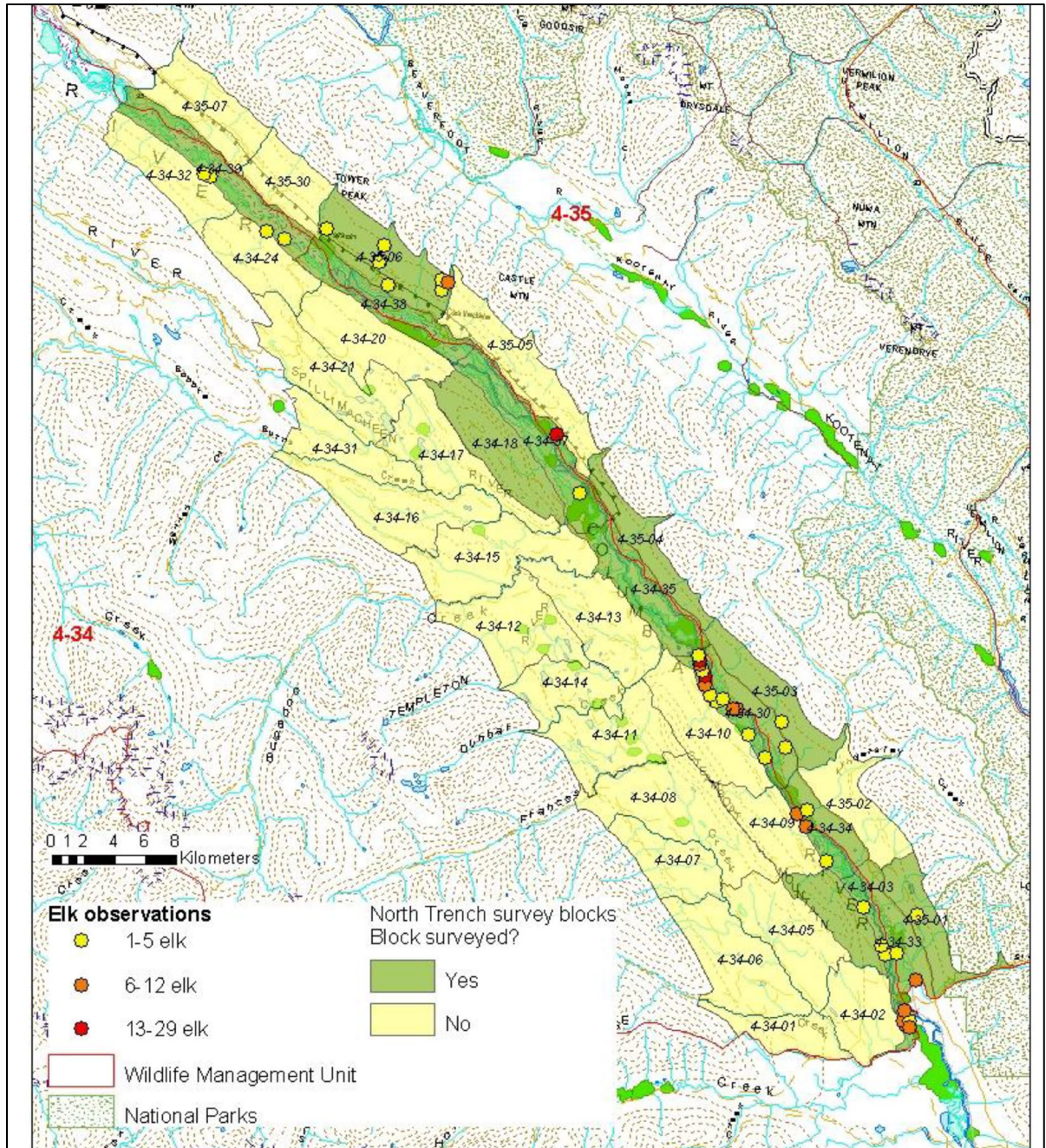


Figure 13: Area covered by Szkorupa & Thornton's (2011) aerial surveys for elk in WMUs 4-35 and 4-34.

The projects that were reviewed in the study area provide options for more immediate ungulate winter range enhancement projects. The monitoring and maintenance of previous work is important in learning lessons and ensuring long-term benefits from the initial investments. This is very evident in the Vacation Creek treatment units where no monitoring or maintenance has occurred resulting in very dense ingrown forests. Previous habitat enhancement work in the study area is concentrated in the northern portions of the study area with no treatment units between Golden and Parson.

Wider ranging aerial surveys such as those conducted by Tinker et al (1997) and Klafki (2007) have not been replicated in over 14 years. The more recent surveys by Stent (2009) and Szkorupa & Thornton (2011) are species- and project-focused and do not cover a wider range of population and distribution. In completing this review, it has become apparent that there is a gap in recent and continued data for winter habitat use and distribution of mule deer in 4-35 and 4-36. Future work could focus on closing this gap and identifying important winter areas used by mule deer in the steep slopes above the east side of the Columbia Valley.

Summary of Projects and Recommendations

Table 2 summarizes the projects that were reviewed above and the recommendations that were gleaned from this work.

Table 2: Summary of reviewed projects and the associated recommendations for future actions.

Location	Project(s) Reviewed	Recommendations
Willowbank Mountain	Ungulate habitat enhancement work – 1996	Follow up monitoring of treatments; potential maintenance of treatments.
Columbia Wetland Elk Enhancement Areas	Burning of islands in Columbia Wetlands- 1986-87	Follow up on current conditions of treatment; additional treatments not recommended.
Frenchman’s Ridge Habitat Enhancement Areas	Ungulate Habitat Enhancements – 1994 – 1996.	Follow suggestions in Adama (2019).
Kicking Horse Canyon Bighorn Sheep Habitats	Habitat enhancement feasibility study – 2005	Develop habitat enhancement plan within ingrown IDF habitats of the sheep’s home range.
Vacation Creek Habitat Enhancement Areas	Ungulate Habitat Enhancement – 1986-87	Develop treatment prescriptions to restore winter habitats; conduct maintenance to previously treated units.
Aerial Surveys	Tinker et al (1997), Klafki (2007), Stent (2009), Szkorupa & Thornton (2011)	Conduct mule deer habitat use and distribution surveys on west-facing slopes of Columbia Valley in WMU 4-35 – 4-36 to understand mule deer winter range use.

Acknowledgements

This project was delivered and managed with funding from the Fish and Wildlife Compensation Program. The Golden District Rod and Gun Club provided additional funding for site investigations and to pursue additional funding for the suggested projects in this report. Russell Wagner, Chad Parent and Adam Sherriff provided support and assistance from the GDRGC. Chad volunteered many hours to assist with site condition surveys. Doug Adama, Richard Klafki and Larry Ingram provided direction and answered many questions.

References

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Appendix A: Columbia Wetlands Elk Habitat Enhancement Projects

HABITAT

CONSERVATION FUND

HABITAT ENHANCEMENT PROPOSAL (1986-87)

PROJECT NAME: Columbia River

LOCATION: The Columbia River has numerous islands along its length from Radium to Donald. These islands support an ungulate population during the year with higher concentrations during the late fall and winter months. The islands of interest at this time are located 11 km northwest of Golden, B.C.

Within: Wildlife Management Unit 4-34
Columbia Shuswap Regional District
Columbia River Electoral District

PROJECT DESCRIPTION: The elimination of decadent and dead brush on the islands with the use of fire will provide better access to new forage (browse, etc.) for the ungulates to use. Burning would be done in the spring to prevent root damage to the brush species using the broadcast method. See attached map for area description.

ESTIMATED COST: A budget of \$1,200.00 is required to burn this island and provide mop-up and patrol of the burn where required. Costs include all materials and labour. Project will be completed by the Golden and District Rod and Gun Club.

TIMETABLE: Burning of the island will be carried out late April or early May of 1986 depending on burning conditions. If the burn brings the desired results then other burns within the Golden and District Rod and Gun Club area of influence will be proposed.

.../2

ECONOMIC EVALUATION: With increased winter forage for ungulate use the populations should live through the winter in better condition. The increase in ungulate populations should benefit the users of wildlife from hunters to photographers.

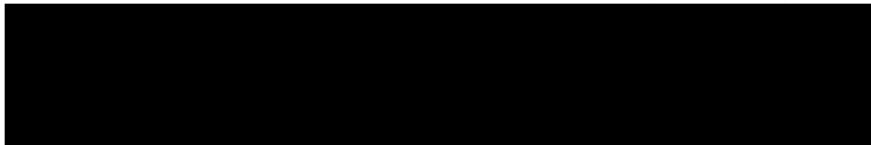
VALUE OF THE WILDLIFE RESOURCE: Enhancing winter range for ungulates should increase their populations providing more opportunities to the increasing number of sportsmen to pursue their sport; whether the sport is photography, hunting or observing wildlife.

FORECAST IN THE ABSENCE OF FUNDING: The absence of funding for this project would allow the further degradation of the forage on the islands allowing the ungulate population to remain static or decline further if event of adverse winter conditions.

ENHANCEMENT TECHNIQUES: The island will be broadcast burned by hand-ignition using the Columbia River and marshy areas as natural fireguards. Hand guards will be constructed where required prior to the burn.

BUDGET BREAKDOWN: Equipment and labour costs estimate of \$600.00 per day. Estimate of two days to burn the area and carry out mop-up where required.

REPORTING: A final report will be submitted by July, 1986 when the project should be complete.



April 30, 1985
Golden, B.C.

Mr. Ray Demarchi
Fish & Wildlife Branch
106 - 5th Avenue South
Cranbrook, B.C. V1C 2G2

Re: Burning of Columbia River
Islands & Marshes

Dear Sir:

I received a request from Ken Petty to check the Columbia River Islands burned by the Fish & Wildlife (Bill Blower) and the Forest Service (Art Krane) to see if they are used by the local ungulates and to what extent. Gary Persson and myself checked this area on April 28, 1985.

A walk through of the largest Island burnt indicated a moderate use by the moose, deer and elk. The willow and red osier dogwood varied in height from 3 feet to 6 feet. The areas outlined in red were burned.

We have plans to burn other Islands before returning to these Islands for another burn.

If you would like further information about the burn of the Islands you may contact me through the club or Art Krane in Cranbrook (Ministry of Forests).

Yours truly

Vice-President
Golden & District
Rod & Gun Club
Box 176
Golden, B.C. VOA 1HO

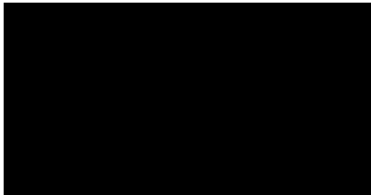
GA/cp

12-mile

Copy for Rod + Shun
Club files.



May 27, 1997



Further to recent verbal notification by Maureen Wayne, please be advised that your project proposal *Twelve Mile Creek Experimental Burn* to the Habitat Conservation Trust Fund was not approved for funding for 1997-98.

An "evaluation and summary" form relating to technical aspects of the project is attached. It describes concerns that were raised in the review by the technical committee and the Public Advisory Board.

On behalf of the Trustee of the Habitat Conservation Trust Fund, I thank you for your proposal and interest in the Trust Fund.

Yours sincerely,

R. S. Silver
Manager
Habitat Conservation Trust Fund and Special Projects

cc: Rick Morley, Regional Fish and Wildlife Manager
HCTF Project File

P.O. Box 9354
Stn Prov Govt
Victoria BC V8W 9M1

Results of Elk Diet Analysis from Washington State University

	Percent Occurrence in Elk Pellets		
	December	January	February
Equisetum species	59.7	35.9	24.9
Sedges and rushes	21.8	52.1	22.5
Woody browse	12.2	4.7	28.5
Willow	(5.2)	(3.0)	(17.3)
Dogwood	(3.6)	(0.6)	(6.0)
Cottonwood	(1.6)	0	(3.2)
Alder	(0.8)	0	(1.8)
Other shrubs	(1.0)	(1.1)	(0.2)
Conifers	0	2.5	24.1
Lodgepole pine	0	0	(0.8)
Douglas-fir	0	(0.8)	(3.6)
Cedar	0	(1.7)	(19.7)
Grasses	6.3	4.8	0

Appendix B: Vacation Creek Proposal- 1986-87

HABITAT CONSERVATION FUND

Habitat Enhancement Proposal 1986-87

PROJECT NAME: Vacation Creek

LOCATION: Vacation Creek Project is located above the Trans Canada approximately 22 km east of Golden. The proposal areas (2) are situated on either side of Vacation Creek. They support a wintering ungulate population.

PROJECT DESCRIPTION: The slashing of the Aspen and brush in these two areas was carried out in 1984. We propose to burn the Aspen-brush slash in the spring of 1986. Machine constructed fire guards to Ministry of Forests' standards will have to be constructed around the blocks prior to burning them.

ESTIMATED COST: A budget of \$3,000.00 is required to burn these two blocks and provide fire guard construction, mop-up and patrol of the burn where required. Costs include all materials, labour and machine costs. Project will be completed by the Golden and District Rod and Gun Club.

TIMETABLE: Burning of the two areas will be carried out after the fireguards have been constructed and burning conditions are correct - approximately mid-April.

ECONOMIC EVALUATION: With the increased amount and quality of winter forage for the ungulate populations in the immediate areas they should survive the areas in better physical condition. The increase in the ungulate populations should benefit the users of wildlife, ie. tourists, photographers, hunters, etc.

VALUE OF THE WILDLIFE RESOURCE: Enhancing winter range habitat for ungulates should maintain their numbers and increase them in milder winters.

The increase in ungulate populations will benefit the users of wildlife by providing more opportunities to the increasing number of sportsmen to pursue their sport; whether the sport is photography, observing wildlife or hunting.

FORECAST IN THE ABSENCE OF FUNDING: The absence of funding for this project would not allow for the elimination of the slash fire hazard and the obstruction the slash creates for the wildlife as they move through the area.

ENHANCEMENT TECHNIQUES: The areas (2) will be broadcast burned by hand-ignition. Fireguards will be constructed prior to the burn.

PROJECT BREAKDOWN: Machine cost for fireguard construction around area A-1 (80 ha) and A-2 (95 ha) is estimated to be \$1,500.00. The cost of labour (15 men) and materials to burn the areas is estimated at \$1,500.00. The total cost is \$3,000.00.

REPORTING: A final report will be submitted by July, 1986 when the projects should be completed.

Project Co-ordinators:

Golden and District Rod and Gun Club - *Grant Arlt
Ministry of Environment - Dennis Hamilton

