FINAL REPORT

Reducing the Threat of Predation by Wolves within the Prophet Caribou Range

Pilot Research—Utilizing First Nation Resources and Expertise

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EXECUTIVE SUMMARY

Management of predators, and in particular wolves (*Canis lupus*), has been identified as one of the tools for recovering populations of threatened boreal caribou (*Rangifer tarandus caribou*). The Prophet caribou herd in northeastern British Columbia, numbers ~54, is one of six designated boreal caribou ranges in the province, and is considered to be threatened by unsustainable levels of predation from wolves. To address the predation on caribou, community members of the Prophet River First Nation conducted a trial to use traditional methods (i.e., trapping and hunting) to remove wolves from the herd area. Though more socially accepted than the removal of wolves by aerial methods, the efficacy of reducing wolf populations through trapping and hunting to benefit caribou is still debated and generally believed to be ineffective. The outcomes of the trial were intended to help test the notion that ground-based methods can be effective and that the efforts would manifest in improved caribou population demographics; in particular, higher annual survival rates. Other indirect benefits of the program were expected as well; improved safety for children and pets around the community itself and increased populations of moose (*Alces canadensis*). An organizational meeting was held with 16 community members to provide a defined scope for the project (i.e., spatial boundaries for the trial, how hunters would be reimbursed for their effort, what information would be collected, etc.) and to make decisions on how to manage the work. Hunters were provided with Hunter Information Cards to record information about their hunts, a Confirming Evidence Sheet to record evidence of wolf kills, and a map delineating high- and low-priority zones for hunting within. Although the goal was to remove up to 25 wolves, only five were harvested. However, in a debriefing meeting held in April 2016, community members felt that results could have been better had it not been for the late start to the project (i.e., the project did not begin until late January, almost 3 months late). Coincidentally, the winter weather was unusually mild and led to an early spring; conditions that were not conducive to hunting wolves. Also, it was originally intended that Government would provide locations of radio-collared wolves within the area but that never transpired. Everyone recognized that a consistent, long-term effort is required for wolf removals to have an influence on caribou survival, and the community members were keen to try again next year.

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A special thanks to the PRFN Lands Department (Robin and Larissa Tsakoza) for coordinating the project in Prophet River, and to Shelley Ergang and Valerie Askoty for their behind-the-scenes help. And of course, thanks to the hunters and trappers on the land who made this project successful.

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INTRODUCTION

Many populations of woodland caribou (*Rangifer tarandus*) in British Columbia (BC) are in decline, and some are at risk of extirpation (Wittmer *et al.* 2005, Cichowski 2010). There are currently ~1,300 boreal caribou, an ecotype of woodland caribou found only in the north-eastern corner of the province, inhabiting six designated boreal caribou ranges[1]. Because of population declines and range retraction, boreal caribou are a provincially red-listed species (BC CDC 2015) and federally designated as *Threatened* under the *Species At Risk Act* (Environment Canada 2012). The proximate cause of the decline has been related to excessive predation (Bergerud 2006, DeMars and Boutin 2014). In northeastern BC, wolves are generally thought to be responsible for at least half of the annual mortality in adults (Diversified 2016) and some of the mortality in newborn calves (Culling and Cichowski 2010, DeMars and Boutin 2014).

Several research experiments have been conducted in BC with the goal of expanding our understanding of how to improve the survival of caribou by managing wolves:

- Removal of wolves that occupied habitat within the range of the threatened and declining population of Klinse-Za caribou (Sittler *et al.* 2015). The Klinze-Za population is now increasing (unpubl. Data; Wildlife Infometrics Inc., Mackenzie, BC) but that may be due in part to a maternity pen project being conducted within the same herd area.
- An experimental program initiated in the South Peace region in 2014/2015 and ongoing in 2016 to better understand the role of wolf predation on caribou and to determine the effectiveness of wolf reduction on improving adult caribou survival (Seip 2014). No results yet.
- Removal of wolves from a treatment area with comparisons of caribou population response between treatment and control areas (Seip 1992); Quesnel Lake and Wells Gray Provincial Park, 1984-1989, resulted in a significant increase in calf survival where wolves were removed.
- Removal of wolves from a localized area with comparisons of caribou population response between treatment and control areas (McNay *et al.* 2009); Osilinka River; 2006 – 2009; 78 wolves removed; final results not available.
- Liberalized hunting seasons on moose while monitoring response of wolves and caribou populations between treatment and control areas (Steenweg 2011); Parsnip River, since 2007. The moose population appeared to decline, emigration of wolves did occur but slowly; but the caribou population continued to decline.
- Liberalized hunting seasons on moose while monitoring response of wolves and caribou populations between treatment and control areas (Serrouya 2013); Revelstoke, since 2007. The moose population appeared to decline, emigration of wolves did occur but slowly; and the effect on caribou was equivocal.

Despite the mixed results of the experiments listed above, the need for widespread mitigation of predation has been recommended for all boreal caribou herds (Ministry of Environment 2011). Predator management has been identified as one of the tools for

[1] See http://www.env.gov.bc.ca/wld/speciesconservation/bc/ (accessed September 15, 2016).

recovering boreal caribou in the Provincial Implementation Plan for ongoing Management of Boreal Caribou (Ministry of Environment 2011) and in the Federal Recovery Strategy (Environment Canada 2012). We expect that the removal of wolves in the vicinity of the Prophet and Parker caribou range will have beneficial impacts on caribou survival in that area.

In 2010, the Prophet caribou herd was estimated to number 54 animals, but the population trend was of unknown status (McNay and Hamilton 2010). One of the goals of BC's Boreal Caribou Implementation plan is to reduce the risk of extirpation of this herd (BC Ministry of Environment 2011). Under the current practices, without mitigation efforts it is estimated that there is a 99% probability that this herd will be extirpated in less than 50 years (BC Ministry of Environment 2011).

In addition to caribou population considerations, community members from Prophet River First Nation have voiced concern about safety of children and pets around the community of Prophet River. Several wolves have been sighted in the vicinity of the community, and community members thought the wolves were "getting bolder" (e.g., two dogs were killed this past winter by wolves).

Ungulates are an important source of food for the community of Prophet River. In 1998, a survey conducted by Pool *et al.* (1998) found that moose (*Alces alces*) numbers in the southeast portion of the Prophet River Territory were declining. Reducing the density of wolves, the primary predator of moose, can only have positive influence for moose and other ungulate populations in the area.

OBJECTIVES

Numerous studies, as well as other historic attempts to manage predation by wolves, have demonstrated that such management is complex, expensive, and sometimes controversial (Wilson 2012). Wolf populations are very resilient and difficult to reduce due to their high reproductive potential and recolonization rate (Wilson 2012). Nonetheless, wolf control programs in other caribou range have led to 10% herd growth rate resulting from lower adult mortality and increased calf recruitment (Farnell and McDonald 1987, Hayes et al 2003). As such, we expect that a focus on reducing the rate of boreal caribou mortality from wolf predation will continue to be an immediate management priority in BC. The objectives for this project were:

1) To reduce the risk of predation by wolves on the Prophet caribou herd by reducing the density of wolves in the area, and

2) To increase safety for children and pets in and around the community of Prophet River by removing wolves near the community.

METHODS

This program was designed to be implemented by the community of Prophet River. To do this, governance of the program relied on two key points: 1) that local community members will be directly involved, and 2) a person from the First Nations Lands

Department (with the assistance of a biologist from Wildlife Infometrics Inc.) would coordinate the data collection. Wildlife Infometrics Inc. was contracted to guide project staff on how to collect specific kinds of data and how to summarize the project results.

The project consisted of 2 phases: 1) a workshop used to specify what data to collect, and 2) conducting wolf removals.

Phase 1 – Workshop

The workshop was held on January 29, 2016, prior to the commencement of the wolf removals (See Progress Report 1; Sittler *et al.* 2016). This workshop included:

1) A session with the Lands Department Coordinator consisting of the following information:
    a. protocols for collecting data from hunters: upon a successful hunt, hunters were required to fill out a hunter form and a confirming evidence sheet with the Lands Coordinator (APPENDIX A);
    b. protocols for storing collected samples: hunters were allowed to keep the hide but required to submit the skull; and
    c. protocols for entering and filing data.
2) A meeting with hunters to go over the following
    a. Goals and objectives;
    b. Study area boundaries; and
    c. Data collection obligations.

Phase 2 – Wolf Removals

This phase involved using First Nation expertise and experience in the area to harvest wolves. The goal was to remove 25 wolves in areas that could directly benefit the Prophet Boreal Caribou.

Community members from Prophet River hunted/trapped wolves from January 29 – May 30 2016. Most people chose to hunt without bait and not trap. Once a wolf was harvested, hunters submitted the wolf skull and filled out two data forms: 1) Hunter Information card – providing information about the harvest method (hunt/trap) and the harvested wolf (age, color, sex, general health); 2) Confirming Evidence sheet – this is filled out with the Lands Coordinator to ensure all the data and samples have been submitted. If desired by the hunter, they were allowed to keep the hide.

Once all the information had been submitted to Wildlife Infometrics Inc., a progress report for each wolf was provided to Prophet River (APPENDIX B & APPENDIX C).

STUDY AREA

Boreal caribou range in northeastern BC is found exclusively in the lowlands of the Boreal Plains and Taiga Plains ecoprovinces. These low elevation areas occur within old-growth forested habitats and black spruce peatlands (Culling and Culling 2006). The

Prophet range is on the western portion of the boreal caribou range and is approximately 916 km^2 in size (Figure 1).

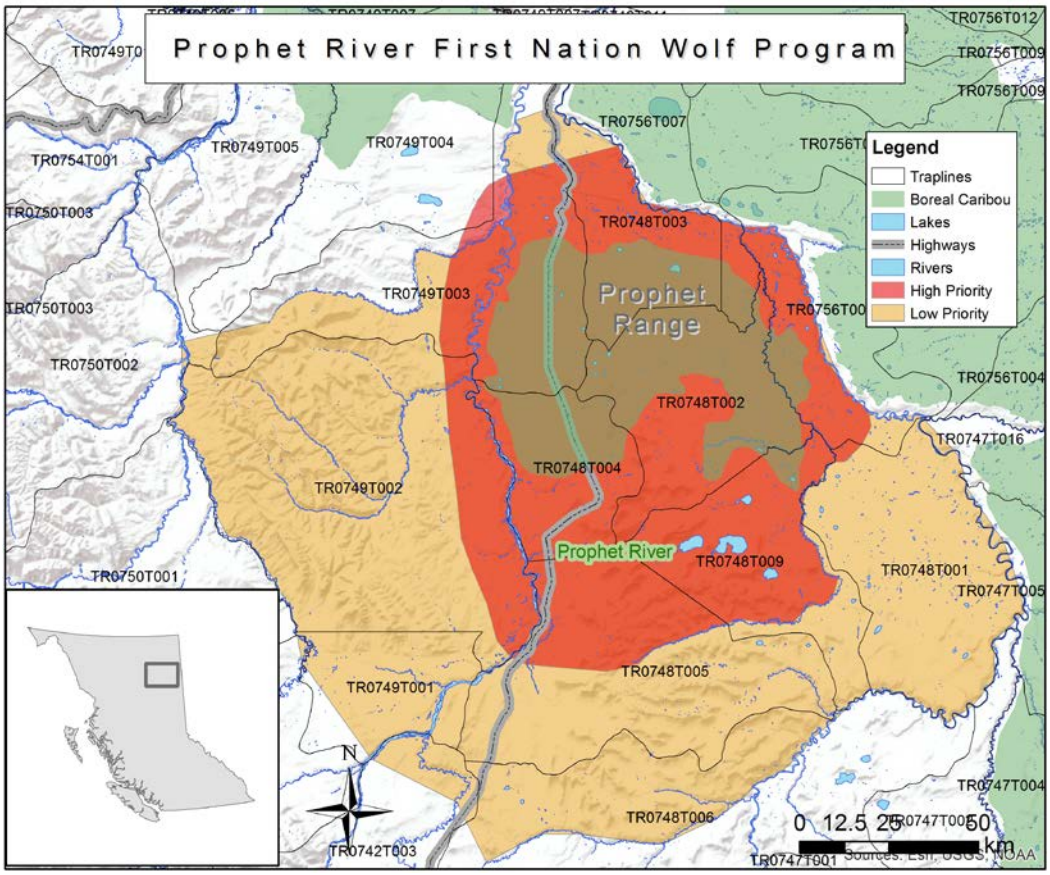

Figure 1. High priority (red) and low priority (yellow) areas for wolf removal near the Prophet caribou range and the community of Prophet River. The boreal caribou ranges are shown in green.

Wolves use rivers for easy travel in the winter. The area selected for the wolf removals was delineated by the height of lands west of the Prophet River to the west and the Fort Nelson River to the east (Figure 1). This area of concern was divided into two priority zones: 1) high priority (3580 km^2) – the area overlapping and adjacent to the Prophet caribou ranges, as well as the area surrounding the community of Prophet River, 2) low priority (4622 km^2) – the area highlighted in yellow in Figure 1. The low priority zone was thought to include movement corridors (i.e., rivers) or source populations for packs near the high priority zone, and we recognize that there is some overlap and some potential benefit to the Muskwa and Pink Mountain Caribou herds. The goal was to harvest 17 wolves from the high priority and 8 in the low priority areas.

RESULTS

Phase 1 – Training Workshop

The training workshop was attended by over 16 people interested in participating in the project (See Progress Report 1; Sittler *et al.* 2016 for specifics).

Phase 2 – Wolf Removals

Five wolves were harvested by members of Prophet River. All of these wolves were within the high priority zone south of the Prophet Caribou Range (Figure 2). One wolf

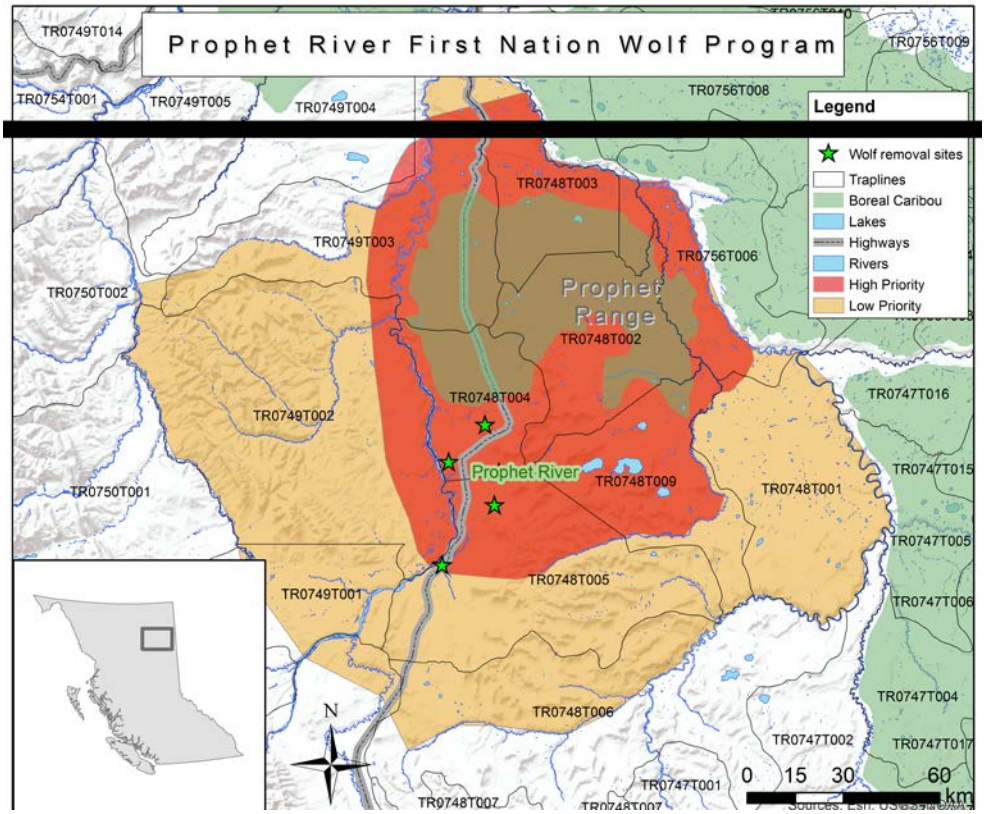

Figure 2. Locations of wolves harvested (green stars) near the Prophet caribou range and the community of Prophet River between 28 Feb – 31 May, 2016.

was harvested right in the community after it was noticed behind a house, trying to lure dogs away. Four wolves were shot and one was trapped. Hunters were either spot and stalk hunting or calling the wolves out. The one trapper caught the wolf in a snare using beaver for bait. For full details and description of each wolf harvested, see APPENDIX B – Progress Report for Prophet River First Nations.

DISCUSSION

Boreal caribou have successfully co-existed with wolves for thousands of years. But in the past few decades, wolf predation within boreal caribou range has increased to an unsustainable level as wolves respond to and capitalize on: 1) recent anthropogenic disturbances to the forested landscape and 2) the elimination of government-led management to reduce wolf populations (Wilson 2012). Linear features such as seismic lines and roads aid in movements and increase hunting efficiency for wolves (Latham *et al.* 2011). It is also thought that the increase in the amount and distribution of early seral habitat has increased the abundance and distribution of moose, elk and deer, supporting an increase in wolf numbers and distribution (Latham *et al.* 2013). It will take decades for the disturbed habitat to recover and therefore the caribou-wolf system will require ongoing predator-prey interventions (Seip 2014) if caribou are to persist until such a recovery. Reducing the wolf density near the Prophet caribou herd will have direct and immediate benefits to the caribou in the area.

Though more socially accepted than the aerial removal of wolves, the efficacy of reducing wolf populations through trapping and hunting to benefit caribou is still debated and generally believed to be ineffective (Wilson 2012). However, there have been a few cases in northern BC where targeted wolf trapping over several years is believed to have benefited caribou populations (McNay 2009, Sittler *et al.* 2015). The goal this year was to harvest 25 wolves from an area of concern around the Prophet caribou range. Unfortunately, due to the late start of the project (January 29th) and difficult hunting conditions (warm weather and an early spring made for difficult tracking), only 5 wolves were harvested. In the original proposal for this project, wolf harvesting was planned to start in November 2015 and run the entire winter. Also, it was originally intended that the project would be supported with the provision of locations of radio-collared wolves in the area (Pers. Comm.; Matt Austin; Director, BC Min. of Nat. Gas Development; 2014.11.05) however that support never occurred.

We had a meeting on April 29, 2016 in Prophet River with the Chief, Councillors and hunters to discuss what worked on the project and what didn't work. The biggest frustration revealed in the meeting was the late start (almost 3 months later than planned), as well as the fact that rivers thawed so early that they were unsafe to hunt. Hunters were still motivated and had planned to do more hunting in May but were not successful. Everyone recognized that a consistent, long-term effort is required for wolf removals to have an influence on caribou survival, and the community members were keen to try again next year.

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