

## Ethier, Tom FLNR:EX

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**From:** s.15,s.19 FLNR:EX  
**Sent:** Wednesday, April 16, 2014 6:27 PM  
**To:** Ethier, Tom FLNR:EX  
**Subject:** FW: Operational Plan 2014-Apr-16 draft\_LD.docx

Second try for you Tom, my auto fill put in your old address...

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**From:** s.15,s.19 FLNR:EX  
**Sent:** Wednesday, April 16, 2014 6:24 PM  
**To:** Ethier, Tom ENV:EX; s.15,s.19  
**Cc:** s.15,s.19 FLNR:EX  
**Subject:** Operational Plan 2014-Apr-16 draft\_LD.docx

FLNR:EX



Operational Plan  
2014-Apr-16 d...

I added the bullet about refraining from a public release until we are sure this is going to go ahead (in yellow at the end).

s.15,s  
.19

## **South Selkirk Mountain Caribou Recovery Implementation Plan**

### **Operational Plan – April 16<sup>th</sup> draft**

#### **BACKGROUND**

- The South Selkirk mountain caribou population declined from 46 animals in 2009 to 27 in 2012 to 18 in 2014.
- This caribou population moves between BC, Idaho and Washington, and is the only herd in the lower 48 states. The herd is designated endangered in the US, and BC has international obligations to assist its partners in recovering this herd.
- Caribou in the South Selkirks are managed under the guidance of the Mountain Caribou Recovery Implementation Plan (MCRIP). The MCRIP has resulted in protection of winter habitat from logging and road building, reduced disturbance from motorized winter recreation. In the late 1990s, prior to the establishment of the MCRIP, the South Selkirk herd was subject of a successful translocation of caribou.
- A research project was launched in 2014 in collaboration with U.S. federal and state agencies, U.S. First Nations (Kalispel and Kootenai Tribe of Idaho), Nature Conservancy of Canada, and BC Hydro's Fish and Wildlife Compensation Program. The project proposed to collar ten caribou in the Selkirk herd to investigate the cause of the decline.
- From 2000 to 2009, the South Selkirk caribou population increased gradually. There were no known wolf packs established in the area during this time. Since 2009, a pack of 10 - 12 wolves has frequently been observed in or near the caribou range.
- On March 18, 2014, Forests, Lands and Natural Resources Operations (FLNR) staff found a caribou mortality. They observed tracks from 1-2 wolf packs in caribou habitat near the kill site and the remains strongly suggest wolf predation was the cause of death.
- There is a strong correlation between the establishment of wolf packs in the South Selkirk and the decline of the caribou population over the past five years.
- The South Selkirk caribou population is expected to continue to decline with current wolf predation rates. There is a high risk of extirpation within 2 years.
- Hunting and trapping of wolves has not effectively reduced populations and may even split up packs and increase predation rates on caribou.
- Helicopter shooting to eliminate wolves in or adjacent to the South Selkirk caribou recovery area is necessary to reduce the risk of imminent extirpation of the population.
- Aerial shooting is the most humane, effective and efficient method to remove wolves.
- The appropriate time to track and eliminate these wolf packs is during late winter to early spring (February –April) when snow conditions facilitate aerial tracking.
- Six of the 18 remaining caribou have been recently fitted with satellite GPS collars that will send notification of mortalities after 12 hours of inactivity.

#### **LOGISTICS**

- Immediate action to reduce wolf predation is a priority because of rapid declines in the caribou population, correlations with wolf pack establishment in the area, and a recent caribou mortality that was likely due to wolf predation.
- This operational plan is for wolf removal in spring 2014 only. A longer term plan will be devised and implemented afterwards if necessary.

- If the project is approved by the B.C. government the operations would proceed as soon as possible thereafter.
- We plan to search the core area for wolf tracks using a fixed-wing aircraft. Flights will occur after fresh snow if possible, and on multiple days to increase the likelihood of detection.
- If wolf tracks are found, the number of tracks and location will be recorded and communicated to the helicopter company, so that wolves can be tracked. The helicopter company will be on stand-by, ready to be deployed as soon as wolf tracks are found.
- The search area will be within core caribou range and a 20 km buffer around this range, from the U.S.-Canada border north to Porcupine Lakes. If Washington and/or Idaho States participate, then the search area will be expanded to include core caribou range and the buffer in those states.
- The provincial wildlife veterinarian will review the contracted helicopter company's Standard Operating Procedures for wolf capture/collaring and aerial shooting. A government staff person will provide oversight to the wolf capture and/or shooting from the ground through close communication with the contractor.
- All wolves encountered in the treatment area will be removed. Carcasses will be recovered and examined for condition.
- However, removal of single or pairs of wolves will not significantly reduce the wolf population and may split packs up, which could increase predation rates.
- If groups of 1 - 2 wolves are found, we will attempt to capture them using helicopter net-gunning. Wolves will be fit with satellite GPS collars and followed every few days (on the ground or by air). The collars should lead us to the larger group over a few days and facilitate removal of the entire pack.
- Short-term success will be:
  1. Removal of 80-100% of the estimated wolves in the core caribou area (i.e. removal of approximately 8-12 wolves in 1-2 packs)
  2. No wolf predation on radio-collared caribou in 2014
- Long-term success will be no further declines in the caribou population and eventually a recovery of the population.
- Over the next 20 to 30 years, wolves are expected to decline in the caribou recovery area as early seral deciduous shrubs (created by forest harvesting) are replaced by young conifers. Coniferous forest will be less favourable for alternate prey (elk, moose and deer). Fewer alternate prey will result in fewer wolves and other predators (e.g., cougar).
- The expected cost is up to \$25,000 for aerial shooting and potentially net gunning of wolves. Idaho will provide the aircraft and will cover the costs for fixed wing flights.

s.13

## Ethier, Tom FLNR:EX

**From:** s.15,s.19 FLNR:EX  
**Sent:** Friday, April 18, 2014 1:34 PM  
**To:** s.15,s.19 GCPE:EX  
**Cc:** s.15,s.19 A FLNR:EX; Ethier, Tom FLNR:EX; s.15,s.1 D FLNR:EX  
**Subject:** RE: Notes from April 17 2014 meeting, Spokane WA, re: South Selkirk Caribou Recovery

I asked s.15,s.19 but may not hear back until Monday due to Good Friday?  
The fixed wing pilot and observer are ready to go, tomorrow (Saturday) looks like the best day for fixed wing flying weather in the next five days, but maybe that is too soon if we are not ready with the helicopter. Overall the weather forecast looks iffy over the next 5 days, but if everything is in place small windows might open up. For example we had significant new snow down to 1000 meters elevation last night so tracking by helicopter on logging roads and cutblocks from 1000 meters to the cloud ceiling of 1700 meters may have worked today but would have been difficult to predict in advance. Even though the weather forecast is for solid rain Monday and Tuesday it should be snow up higher and windows might open up then or soon after?  
That is all I have for now.  
s.15,s.19

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**From:** s.15,s.19 FLNR:EX  
**Sent:** April 18, 2014 10:32 AM  
**To:** s.15,s.19 GCPE:EX  
**Cc:** s.15,s.19 Ethier, Tom FLNR:EX s.15,s.19  
s.15,s.19  
**Subject:** Re: Notes from April 17 2014 meeting, Spokane WA, re: South Selkirk Caribou Recovery

I think s.15,s.19 has left message for s.15,s.19 as of yesterday.

s.15,s.19 please update all on this email as soon as discussion is had (outcome, etc)  
s.15,s.16,s.19

s.15,s.19 please update all on this email list when you have an idea of when this can be completed  
Believe s.15,s.19 for Monday s.16

s.15,s.19 please update all on what you think final timelines are on start up.

Thanks  
s.15,s.19

Sent from my iPhone

On Apr 18, 2014, at 10:01, s.15,s.19 s.15,s.19 wrote:

Thx s.15,s.19 I just want to clarify the timing of the some of the actions.  
When will follow-up discussions with the s.16  
When will the issues with s.15,s.19  
And is the date for next fixed wing flight and possible helicopter action Tuesday, April 22?  
Thx,  
s.15,s.19

-----Original Message-----

From: s.15,s.19 FLNR:EX

Page 05

Withheld pursuant to/removed as

s.16;s.19;s.15;s.13

Page 06

Withheld pursuant to/removed as

s.16;s.13

## **Ethier, Tom FLNR:EX**

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**From:** s.15,s.19 FLNR:EX  
**Sent:** Wednesday, April 23, 2014 9:35 AM  
**To:** Ethier, Tom FLNR:EX;s.15,s.19 FLNR:EX  
**Subject:** RE: Update: South Selkirk Caribou Recovery

Thanks Tom. I just spoke to s.15,s.  
To keep it quick and efficient, I have asked that he will communicate directly with you s.15,s., cc me as it goes along.

s.15,s.19

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**From:** Ethier, Tom FLNR:EX  
**Sent:** Wednesday, April 23, 2014 9:29 AM  
**To:** s.15,s.19  
**Cc:**  
**Subject:** RE: Update: South Selkirk Caribou Recovery  
**Importance:** High

Hi s.15,s.19

We have discussed the plan with MST this morning and he has given us approval to proceed according to the plans that we have laid out in front of him. He will be looking for updates throughout the day so please keep us informed of your activities. You folks have done a great job getting us to this point. Best of luck and safety first. Cheers, Tom.

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**From:** Ethier, Tom FLNR:EX  
**Sent:** Tuesday, April 22, 2014 5:25 PM  
**To:** s.15,s.19  
**Cc:**  
**Subject:** Update: South Selkirk Caribou Recovery

Good Afternoon Minister

s.13

We have reattached the associated documents so they are all in one place and have updated the communications plan to reflect revised timing and to make the positions of the Ktunaxa and Mountain Caribou Progress Board members clearer.

I have also attached an email from ADM Zacharias on the position of MOE.

*Key Consultations:*

- Mountain Caribou Progress Board - Reps from COFI, BCWF, and Assoc/ BC Snowmobile Clubs are very strongly in support. BCWF will write a letter to that effect if asked. Not able to reach a heli-ski sector rep. ENGO doesn't like it, but understand why it is necessary.

*Proposed Operational Procedure:*

- Fresh snow is falling in the south Selkirk herd area which will enable good tracking of wolves in the treatment area.
- Forecast weather conditions make fixed wing flights unlikely for the balance of the week (no flight occurred today because of weather).
- The reconnaissance work initially contemplated for fixed wing immediately prior to removal operations will now be undertaken by helicopter because of higher operability in poorer weather conditions.
- Subject to Minister approval and weather conditions, a helicopter will start reconnaissance of the treatment area to locate wolf tracks and wolves at mid-day April 23.
- If wolves are encountered in the treatment area the helicopter crew will notify the Ministry and the operational control press release will be distributed.
- The helicopter crew will shift from reconnaissance to removal and the detected wolves will be removed. Carcasses will be recovered and examined for condition.
- However, if groups of 1 - 2 wolves are found, we will attempt to capture them using helicopter net-gunning. Wolves will be fit with satellite GPS collars and followed every few days (on the ground or by air). The collars should lead us to the larger group over a few days and facilitate removal of the entire pack. Removal of single or pairs of wolves will not significantly reduce the wolf population and may split packs up, which could increase predation rates.
- If no wolves are detected, no wolves will be collared or removed and no press release will be distributed
- After 3 days of searching without detection, or if conditions indicate a high likelihood of poor sightability, the project will be suspended pending a change in conditions.

Let me know if you have any questions or concerns – we can also discuss tomorrow at 9 am if you like.

Regards,

**Tom Ethier**

Assistant Deputy Minister

Resource Stewardship Division

Ministry of Forests, Lands and Natural Resource Operations

Phone: 250 356 0972



## Ethier, Tom FLNR:EX

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**From:** s.15,s.19 FLNR:EX  
**Sent:** Wednesday, April 23, 2014 9:59 AM  
**To:** s.15,s.19 Ethier, Tom FLNR:EX; s.15,s.19 FLNR:EX;  
EX; s.15,s.19  
**Cc:** EX  
**Subject:** RE: Update: South Selkirk Caribou Recovery

Thanks Everyone! I have let s.15,s.19 know and he plans to start at 3pm today, the later start to allow the wolves to make tracks in the new snow. I am meeting s.15 at Kootenay Pass at 3. I will have regular phone access but not cell or internet. I will not be in the helicopter but will be in radio communication with s.15 if he finds tracks I will immediately call s.15 as we discussed yesterday. Will reply to all when done for the day and back in Nelson (one hour from Kootenay Pass).

s.15,  
s.19

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**From:** s.15,s.19 FLNR:EX  
**Sent:** Wednesday, April 23, 2014 9:39 AM  
**To:** Ethier, Tom FLNR:EX; s.15,s.19 FLNR:EX;  
s.15,s.19  
**Subject:** RE: Update: South Selkirk Caribou Recovery

Green light when conditions are right.  
s.15, as you are the point, can you ensure this group is advised as the project progresses (ie strat of recon flying; wolf sighting/start of removal; done for day and brief results)

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**From:** Ethier, Tom FLNR:EX  
**Sent:** Wednesday, April 23, 2014 9:29 AM  
**To:** s.15,s.19  
**Cc:**  
**Subject:** RE: Update: South Selkirk Caribou Recovery  
**Importance:** High

Hi s.15,s.19

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**From:** Ethier, Tom FLNR:EX  
**Sent:** Tuesday, April 22, 2014 5:25 PM  
**To:** s.15,s.19  
**Cc:**  
**Subject:** Update: South Selkirk Caribou Recovery

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*Key Consultations:*

- s.16

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Let me know if you have any questions or concerns – we can also discuss tomorrow at 9 am if you like.

Regards,

**Tom Ethier**

Assistant Deputy Minister

Resource Stewardship Division

Ministry of Forests, Lands and Natural Resource Operations

Phone: 250 356 0972

## **Ethier, Tom FLNR:EX**

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**From:** s.15,s.19 FLNR:EX  
**Sent:** Thursday, April 24, 2014 3:33 PM  
**To:** Ethier, Tom FLNR:EX  
**Cc:** s.15,s.19  
**Subject:** CONFIDENTIAL Cabinet/ELUC Minute: Wolf Management  
  
**Importance:** High

Please find the minute excerpts below.

1. s.12,s.13

5. Environment and Land Use Committee (ELUC): March 4

s.12,s.13

1.

Confidential – NOT FOR DISTRIBUTION

s.15,s.19

## Ethier, Tom FLNR:EX

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**From:** s.15,s.19 FLNR:EX  
**Sent:** Monday, July 21, 2014 10:50 AM  
**To:** Ethier, Tom FLNR:EX s.15,s.19  
**Cc:** s.15,s.19 FLNR:EX  
**Subject:** RE: Wolf Implementation Plan

s.12,s.13

s.15,s.19

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**From:** Ethier, Tom FLNR:EX  
**Sent:** Monday, July 21, 2014 10:36 AM  
**To:** s.15,s.19  
**Cc:**  
**Subject:** Wolf Implementation Plan

FLNR:EX

s.12,s.13

### Tom Ethier

Assistant Deputy Minister  
Resource Stewardship Division  
Ministry of Forests, Lands and Natural Resource Operations  
Phone: 250 356 0972

## **Ethier, Tom FLNR:EX**

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**From:** s.15,s.19 FLNR:EX  
**Sent:** Monday, July 21, 2014 10:58 AM  
**To:** Ethier, Tom FLNR:EX; s.15,s.19 FLNR:EX  
**Cc:** s.15,s.19 FLNR:EX  
**Subject:** RE: Wolf Implementation Plan  
**Attachments:** NR  
quintettewolfreduction.pdf; Operational Plan winter 2014 july 16 fin.docx

s.12,s.13

s.13

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**From:** Ethier, Tom FLNR:EX  
**Sent:** Monday, July 21, 2014 10:36 AM  
**To:** s.15,s.19 FLNR:EX  
**Cc:**  
**Subject:** Wolf Implementation Plan

s.12,s.13

### **Tom Ethier**

Assistant Deputy Minister  
Resource Stewardship Division  
Ministry of Forests, Lands and Natural Resource Operations  
Phone: 250 356 0972

## South Selkirk Mountain Caribou Wolf Management Plan

### Operational Plan – July 2014 draft

#### BACKGROUND

- The South Selkirk mountain caribou population moves between BC, Idaho and Washington, and is the only herd in the lower 48 states. The herd is designated endangered in the US, and BC has international obligations to assist its partners in recovering this herd.
- Caribou in the South Selkirks in BC are managed under the guidance of the Mountain Caribou Recovery Implementation Plan (MCRIP). The MCRIP has resulted in protection of winter habitat from logging and road building and reduced disturbance from motorized winter recreation. In the late 1980's and 1990's, prior to the establishment of the MCRIP, the South Selkirk herd was recipient of several successful translocations of caribou.
- From 2000 to 2009, the South Selkirk caribou population increased gradually. There were no known wolf packs established in the area during this time.
- Since 2009, a pack of 10 - 12 wolves has frequently been observed in or near the caribou range.
- This caribou population declined from 46 animals in 2009 to 27 in 2012 to 18 in 2014.
- A caribou freshly killed by wolves was found in March 2014.
- There is a strong correlation between the establishment of wolf packs in the South Selkirk and the decline of the caribou population over the past five years.
- The South Selkirk caribou population is expected to continue to decline with current wolf predation rates. There is a high risk of extirpation within 2 years.
- A research project was launched in 2014 in collaboration with U.S. federal and state agencies, U.S. First Nations (Kalispel and Kootenai Tribe of Idaho), Nature Conservancy of Canada, and BC Hydro's Fish and Wildlife Compensation Program. The project proposed to collar ten caribou in the Selkirk herd to investigate the cause of the decline. Six caribou were collared in March 2014 with plans to collar four more this coming winter.
- In recognition of these dire circumstances and dramatic drop in herd size, the BC government initiated aerial wolf removal in the South Selkirk herd area in mid April 2014. However, in 2 days of reconnaissance, no wolves or wolf tracks were detected in the proposed treatment area. It was suspected that wolves had moved below the snow line. Given poor tracking conditions and with no likelihood of improvement, the aerial removal program was suspended for the season on April 28, 2014.
- A ground based trapper was employed for 2 weeks in May in an attempt to trap and collar individual wolves. Information from collared wolves would help determine the amount of overlap of a particular pack's hunting territory with caribou areas and enhance aerial removal at the opportune time. No wolves were captured or killed during this period.
- A ground based trapper has been retained to respond if circumstances arise where trapping may be successful (e.g. locate a rendezvous site or active den).

#### PROJECT PROPOSAL WINTER 2014-5

##### Objective

- **Conduct aerial wolf removal to remove >80% of the wolves within or immediately adjacent to South Selkirk caribou range.**

### **Rationale**

- Wolf predation is likely limiting recovery of the South Selkirk mountain caribou herd, and appears to be the cause of a recent dramatic decline.
- Immediate action to reduce wolf predation is a priority because of rapid declines in the caribou population, correlations with wolf pack establishment in the area, and a recent caribou mortality that was attributed to wolf predation.
- Hunting and trapping of wolves has not effectively reduced populations and may even split up packs and increase predation rates on caribou.
- Helicopter shooting to eliminate wolves in or adjacent to the South Selkirk caribou herd area is necessary to reduce the risk of imminent extirpation of the population.
- Aerial shooting is the most humane, effective and efficient method to remove wolves.
- Over the next 20 to 30 years, wolves are expected to decline in the caribou recovery area as early seral deciduous shrubs (created by forest harvesting) are replaced by young conifers. Coniferous forest will be less favourable for alternate prey (elk, moose and deer). Fewer alternate prey will result in fewer wolves and other predators (e.g., cougar).
- In addition, wolf populations in the South Selkirk caribou area may decline over the next 5-10 years since wolves are no longer increasing in northern Idaho and Washington.
- South Selkirk caribou herd habitat has been designated as Priority-1 for fire suppression. This affords it top priority for initial attack and fire fighting subject to availability of wildfire management resources. This will help reduce the risk of improving habitat for the primary prey of wolves.
- Cougar hunting seasons have been liberalized within caribou areas and the harvest will be closely monitored through Compulsory Inspections.

### **First Nation Consultation**

s.16

### **Communication**

- Wolf control remains a controversial wildlife management tool opposed by many people.



- Regional staff have worked closely with the Kootenay region local trapping community over the past few years encouraging wolf trapping. This has included explaining the management regime for wolves and caribou, providing trapper training, wolf snares and incentives to surrender wolf carcasses. Aerial removal of wolves will reduce the likelihood of successful wolf trapping and may inadvertently alienate local trappers. To help avoid this consequence, meeting will be held with local trapping groups to explain the project and explain how trapping may compliment aerial removal once wolf numbers have been reduced.
- Other stakeholder and the public will be informed through release of the South Selkirk Caribou Wolf Control Plan via a regional information bulletin on date targeted to begin wolf removal actions.

s.13

## Logistics

### Methodology

- Ground based trapping will be initiated in October once snow conditions enable track detection. The objective is to trap and collar wolves in early winter to help learn about wolf movement and to make removal more efficient.
- Bait stations will be established at several suitable locations within the core caribou range in early December. This avoid the period when bears are active and could use baits, but has snow conditions well suited for tracking wolves. Information on habitat use by radio-collared bears will help further avoid conflicts with bears. Large ungulate carcasses will be delivered to large openings (e.g. meadows, lakes) to attract and temporarily retain wolves travelling thru caribou habitat. Bait stations improve the ability to locate, count and remove wolves.
- Aerial searches will be conducted in the core caribou habitat area for wolf tracks using a fixed-wing aircraft within 2 days of a fresh snowfall of >10cm. Idaho State Fish and Wildlife will assistance on some fixed wing surveys.
- The search area in BC will be the core caribou range and a 20 km buffer around this range, from the U.S.-Canada border north to Porcupine Lakes. Caribou range in Idaho and Washington will also be searched.
- If wolf tracks are found, the number of tracks and location will be recorded and communicated to the helicopter company, so that wolves can tracked. The helicopter company will be on stand-by, ready to be deployed as soon as wolf tracks are found.
- If groups of >2 wolves are found, we will attempt to remove all wolves by aerial shooting. If groups of 1 - 2 wolves are found, we will attempt to capture them using helicopter net-

gunning. Wolves will be fit with satellite GPS collars and the data monitored daily. Tracks in the snow will be followed by foot and / or the collared individual(s) observed by air on several occasions to attempt to determine pack size. Removal of single or pairs of wolves will not significantly reduce the wolf population and may split packs up, which could increase predation rates. Once pack size is determined attempts will be made to remove the entire pack. The collared individual(s) will be taken out last in case the complete pack is not removed at one time.

- The carcasses of all wolves killed will be recovered and examined for body condition, reproductive history, age and hair samples collected

#### Treatment area

- The treatment area for wolf removal will be within core caribou range and a 20-km buffer around this range, from the U.S.-Canada border north to Porcupine Lakes. (see attached map)

#### Timing

- The appropriate time to track and remove wolves in the South Selkirk caribou herd area is when snow conditions facilitate aerial tracking down to the lowest elevations, usually from early December to late March.
- The project should commence as soon as conditions are suitable to maximize the operational window and flexibility to use or adjust to weather conditions
- Fixed wing reconnaissance flying will be conducted in advance of the primary removal period to collect track information and wolf distribution. Timing will depend on snow cover at high elevation, likely in mid-November.

#### Duration

- Aerial removal should continue until >80% of the wolves in the designated area are removed. The program should be resumed if new packs move into the treatment area as determined by annual monitoring.
- The program should have committed resources for at least 5 years to enable annual monitoring and removal as required

#### Approvals

- The provincial wildlife veterinarian will review the contracted helicopter company's Standard Operating Procedures for wolf capture/collaring and aerial shooting. A government staff person will provide oversight to the wolf capture and/or shooting from the ground through close communication with the contractor.
- Regional staff will ensure that all necessary Wildlife Act authorities are in place.

#### Monitoring

- Six of the 18 remaining caribou have been recently fitted with satellite GPS collars that will send notification of mortalities after 12 hours of inactivity.
- All caribou mortalities will be visited within 48 hours to confirm mortality and its cause. Consistent with advice from the Provincial veterinarian, information will be collected at

each site on predator type and number, caribou body condition. Information will also be collected on site level habitat characteristics.

- Information will be collected from each recovered wolf carcass on body condition, reproductive history, age and hair samples collected. This information will help assess the general health and fitness of the pack members, the pack productivity and through isotope analysis of hair, if caribou is a significant part of their diet.
- The South Selkirk caribou herd will be surveyed annually to assess population response. Population size, sex composition and recruitment will be assessed.
- Wolf abundance and distribution within the caribou area will be monitored at least every 3 years through fixed wing flights.
- A process to monitor habitat condition in the treatment area will be initiated on a 5 year frequency. Changes in the amount of forest cover removal and roading in the core area will be monitored.

#### Reporting

- A communication plan will be prepared to outline the dissemination of information within government, with affected First Nations, between agencies and groups that are partners on South Selkirk caribou management and with the public.
- Weekly updates will be developed during the treatment period. This will include the details on reconnaissance surveys, aerial removal activities, and data from radio-collared caribou and wolves.
- An annual report will be submitted by May 30 that summarizes the results from the year, budget details and recommendations for improvement.

#### Performance Measures

- Short-term success will be:
  1. Removal of 80-100% of the estimated wolves in the core caribou area (i.e. removal of approximately 8-12 wolves in 1-2 packs)
  2. No wolf predation on radio-collared caribou in 2014
- Long-term success will be no further declines in the caribou population and eventually a recovery of the population.
- Maintenance of the partnership with US state and federal agencies and tribes, including cost sharing, inter-jurisdictional cooperation, and information sharing.
- The expected cost is up to \$150,000 for the initial aerial shooting of wolves. Annual costs are slightly less in subsequent years. Funding may be available from external sources but is unconfirmed at this time.

South Selkirks Wolf Control project annual budget						
year	1	2	3	4	5	total
Wolf collars (4 wolves in 2 packs)	5k	s.13,s.17				
Initial wolf collaring	40k					
Replacement wolf collaring						
Reconn track survey 10@\$1k/	10					
Annual caribou survey	15k					
Baiting	3k					
Caribou mortality inspections assume 2/y @\$3k/	6k					
Wolf/caribou Collar data fees	1k					
Wolf removal	30k					
BC Gov't FTE*	0.5					
Annual Total	150k					

- Staff time is necessary to provide general project oversight, permitting, ground monitoring of removal, communications, reporting, organizing baiting, mortality site visits, carcass assessment, caribou surveys

Page 21 to/à Page 27

Withheld pursuant to/removed as

NR

## Experimental Wolf Reduction to Enhance the Recovery of the Threatened Quintette Caribou Herd In the South Peace

s.15,s.19

Ministry of Environment

June 2014

### Background:

Woodland caribou herds in the south Peace region of British Columbia (Figure 1) are part of the Southern Mountain caribou population which is nationally listed as Threatened. In April 2014, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) re-evaluated the status of these herds as part of the Central Mountain caribou population and recommended that their status be upgraded to Endangered.

The herds in the south Peace are experiencing rapid and dramatic population declines (Seip and Jones 2014). The Moberly herd declined from 191 caribou in 1997 to 22 caribou in 2014. The Burnt-Pine herd numbered about 17 animals in 2006 but as of 2014 appears to have been extirpated. The Kennedy Siding herd decreased from 120 in 2007 to 25-35 by 2014. The Narraway herd (including the Bearhole/Redwillow subgroup) is also believed to be declining based on the population parameters, but actual numbers are uncertain as this herd winters in forest cover and is difficult to census. The Quintette herd has declined from 173-218 in 2008 to 98-113 in 2014. The population trend of the Scott herd (n=20) is unknown.

Annual mortality rates of radio-collared adult females range from 12-24% for the different herds (Seip and Jones 2014). Wolf predation is the cause of 37% of adult mortalities that have been documented, but the actual rate of wolf predation is likely higher as some portion of adult mortalities classed as unknown predator and unknown cause are probably wolf predation. Calf recruitment rates for the herds range from 9 to 14% calves in the March population which is inadequate to compensate for the adult mortality in most of the herds. The causes of calf mortality have not been documented for the south Peace caribou herds, but other studies have identified wolf predation as a significant cause of caribou calf mortality (Gustine et al. 2006), and calf survival has been documented to increase in response to wolf reductions (Farnell and McDonald 1988, Seip 1992, Hayes et al. 2003).

Wolf distribution has been documented within the range of the Quintette caribou herd (Figure 2). The Quintette herd ranges over an area of about 5000 square km, and this area contained 3 primary wolf packs and several peripheral packs. The 3 primary wolf packs numbered about 30-40 wolves for a wolf density of about 6-8 wolves/1000 square km. Most of the packs had territories of about 1000 square km in size, although one of the packs ranged more widely. Similar densities of wolves have been reported within mountainous caribou range in west-central Alberta (11 wolves/1000 square km) and in the Yukon 5-9 wolves/1000 square km) (Kuzyk 2002, Hayes et al. 2003).

In winter, wolves remain primarily in the valley bottoms (97% of telemetry locations) and feed primarily on moose, elk and deer. Most of the South Peace caribou winter in high elevation alpine and subalpine habitats which keeps them spatially separated from wolves in winter. However, the Narraway herd winters in low elevation forested habitat which puts them in close contact with wolves throughout the winter. Also, in recent years some of the Quintette caribou have used low elevation habitat in winter,

apparently due to being displaced from high elevation habitat by expanded mining activity. In summer, wolves make more use of high elevation caribou range (10% of telemetry locations) where they occasionally encounter and kill caribou.

Although caribou and wolves co-existed in the south Peace for thousands of years, the level of wolf predation has become unsustainable over the past few decades. That period corresponded to extensive landscape change due to industrial activities. Forest harvesting, road building and oil and gas developments modified valley bottom forests. Mining exploration and development occurred in some high elevation caribou habitat. It is thought that the recent increase in the amount and distribution of early seral habitat has increased the abundance and distribution of moose, elk and deer and led to an increase in wolf numbers and distribution on caribou ranges. A similar process is believed to be threatening woodland caribou herds across Canada.

Even if all industrial activities on and adjacent to caribou habitat were to cease immediately, it would take decades for the habitat to recover, and direct management of the predator prey system would likely be necessary to maintain caribou populations until the habitat recovered. In practice, industrial activities within and adjacent to core caribou habitat are expanding and continue to make the situation worse, so recovery of the caribou herds will require ongoing predator prey management. The 2014 National "Recovery Strategy for Woodland Caribou, Southern Mountain Population (*Rangifer tarandus* caribou), in Canada" recommends wolf reduction in addition to habitat protection to recover these Threatened herds.

Wolf control programs in other areas of caribou range have reported that when effective wolf control programs have been implemented, improved calf recruitment rates and reduced adult mortality rates result in a caribou population growth rate of about 10% (Farnell and McDonald 1987, Boertje et al. 1996, Hayes et al. 2003). Given that effective wolf control is only likely to generate 10% annual population growth, the benefits will be greater when applied to a larger herd. Therefore, wolf reduction to enhance the Quintette herd (n=98-113) would be the most effective, with the Kennedy Siding herd (n=25-35) being second. The small Moberly herd (n=22) likely requires much more intensive recovery actions such as the ongoing maternity penning in combination with wolf reduction to allow recovery in a reasonable time frame. Wolf reduction for the Narraway herd would be very challenging as they have a very large annual range that includes both low elevation forested winter range, and high elevation summer ranges that are over 100 km apart.

Wolf reduction can be very challenging as wolf populations are very resilient and difficult to reduce due to a high reproductive and recolonization rate. In the Little Smokey boreal caribou range in Alberta, the wolf numbers completely recovered after each year of control so the same number had to be removed every year. However wolf reduction programs in more mountainous habitat usually find fewer wolves present after control is initiated so the number killed in subsequent years is somewhat less (Farnell and McDonald 1988, Hayes et al. 2003). Wolf control programs need to be very intensive and ongoing if they are to be effective.

The efficacy of wolf reduction using enhanced trapping and hunting is unproven and most effective wolf control programs have relied on aerial shooting and poison. Consequently, any attempt to effectively reduce wolves in the south Peace would likely require the use of aerial shooting. The efficacy of the program may be improved by first collaring some wolves in each pack to help locate the packs for removal later in the year.

It is likely that about 30-50 wolves live within the range of the Quintette caribou, possibly occupying similar territories to the wolves during the previous study. If those wolves were eliminated, the caribou population would potentially increase up to 10% each year. At that rate, the caribou population would recover to over 220 caribou after 9 years. Wolf removal would have to occur each year as new wolves from surrounding areas recolonize the range. It may be necessary to kill 270-450 wolves over a 9 year period to increase the caribou population by 120 caribou, for a total population of about 220, the number present in 2008. After that, more limited or periodic wolf control may be sufficient to maintain the caribou population at that number.

The effectiveness of wolf control to improve caribou population growth has not been demonstrated in these herds, so there is some chance that the programs would not be effective. Difficulty in achieving an adequate level of control, high levels of wolf immigration, or high levels of caribou mortality due to other causes may limit the success of the program. To maximize the probability of success, the wolf reduction should be very intensive over the entire herd area and there must be a financial commitment to keep the program going for at least a decade. Also, it is very likely that moose and other early seral ungulate populations will increase more quickly than caribou in response to wolf reduction. That increase in early seral ungulates will attract wolves from surrounding areas and potentially exacerbate the risk to caribou unless the moose population increase is suppressed by increased human harvest. Therefore, liberalized hunting for moose, elk and deer should be instituted within the treatment area.

Ultimately, as long as the habitat conditions on and adjacent to caribou ranges remain heavily modified by industrial activities, it is unlikely that any self-sustaining caribou populations will be able to exist in the south Peace. If extirpation of the caribou herds is to be prevented, an ongoing, intensive wolf control program is the management action that has the greatest likelihood of success.

#### **Experimental Wolf Control:**

Wolf control to enhance caribou populations in the South Peace should be viewed as an experimental program. Although numerous caribou recovery plans in B.C. have recommended wolf control, in reality the efficacy of wolf control has yet to be demonstrated for B.C. caribou herds. There are several uncertainties that can only be resolved by conducting a rigorous experimental program:

- i) The role of wolf predation in caribou calf mortality in the south Peace is unknown. Caribou herds throughout B.C. have low calf recruitment, but the causes of calf mortality are not clearly understood. Calf mortality can be studied by collaring newborn calves and recording the causes of mortality, but this method is very intrusive, expensive and the results can still be ambiguous. Capturing and collaring newborn calves puts them at risk of injury or abandonment, and may make them somewhat more vulnerable. This risk is unacceptable for critically Threatened caribou herds. The best method to evaluate the importance of wolf predation on caribou calf survival is to effectively reduce the wolf numbers and monitor calf survival.
- ii) Although the importance of wolf predation on adult caribou mortality has been documented, there remains some uncertainty how effective wolf reduction will be at improving adult caribou survival.



- iii) Even if wolf predation is a major limiting factor and reducing wolves would benefit the caribou population, it is not known how effective a wolf control program will be at reducing wolves to sufficiently low numbers and maintaining them at low numbers throughout the year. Efficient reduction of wolves that range over large areas in forested habitat is challenging. Also, maintaining the wolf population at low numbers can be difficult due to high reproductive rates and recolonization from surrounding areas.

### Wolf Reduction and Monitoring Plan

#### **Treatment Area:**

- i) The wolf reduction program will occur on the range of the Quintette caribou herd because that herd is most likely to exhibit a strong positive response to wolf reduction.
- ii) Wolves will be removed from a treatment area of 6354 square km incorporating most of the range of the Quintette caribou herd (Figure 3). The area includes the watersheds of the Sukunka, Wolverine, Murray and Wapiti Rivers.
- iii) This area incorporates most of the summer (95.9%) and winter (94.2%) locations of the Quintette caribou herd (Figure 4). It does not include past winter locations of Quintette caribou at low elevations in the Bearhole Lake area. However, there has been no use of this area by Quintette caribou in recent years. Also, the treatment area does not include locations on the west side of the Rocky Mountains that some caribou use in summer. However, caribou that summer in that area have a very high survival rate compared to caribou within the treatment area.
- iv) The treatment area contains most of the locations of the 3 core wolf packs (Figure 5) that were monitored in past years, as well as some locations of peripheral packs. The treatment boundary generally follows the height land of watersheds used by the wolves in winter.

#### **Objective:**

- i) The objective would be to kill all of the wolves in the experimental reduction area to maximize the likelihood of caribou recovery. It is anticipated that the area contains 3-5 wolf packs and 30-50 wolves. The conservation of wolves will not be jeopardized because wolves are abundant in the surrounding area.

#### **Wolf Reduction Methods:**

- i) Wolves will be removed by aerial gunning from a helicopter each winter. Removal will commence as soon as snow conditions are suitable in early winter, and continue through the winter.
- ii) Wolves will be located by searching for tracks in valley bottoms, especially along frozen rivers and other open areas. Tracks will then be followed until the wolves are located.

Based on the previous radio-telemetry project, about 97% of winter wolf locations are in the valley bottoms.

- iii) In some cases, wolves may be captured by darting and radio-collared if they are in open habitat. The radio-collared wolves will then allow the pack to be located at a later date for removal. In situations where capture and collaring are not possible, the wolves will be shot as soon as they are located.
- iv) When practical, dead wolves will be transported to an area where they can be picked up by the registered trapper for the area to utilize the pelts.

#### **Monitoring of the Caribou Response:**

- i) A sample of 20 radio-collared adult female caribou will be maintained in the Quintette caribou herd each year using GPS radio-collars that upload to a satellite. Those caribou will be captured by net-gunning and collared in March.
- ii) The radio-collars transmit a mortality signal that is relayed by satellite if the caribou dies. Mortality sites will be visited immediately after death to determine the cause of death. Survival rate of adult female caribou will be evaluated based on the survival rate of the collared caribou.
- iii) Calf recruitment will be determined each March by aerial surveys to count the number of calves located in groups of caribou located by aerial telemetry.
- iv) A sample of 10 radio-collared caribou will be maintained in adjacent herds (Kennedy Siding and Bearhole/Redwillow) where wolf reduction is not occurring to collect comparable data on adult mortality and calf recruitment.
- v) Adult mortality rate and calf recruitment will be compared to data collected for the Quintette herd since 2002 in the absence of wolf control, and also with other herds in the South Peace where wolf reduction is not occurring.
- vi) The population will be counted every 3 years by aerial surveys of the alpine winter range, using the collared animals to correct the count for sightability.
- vii) The objective will be to double the Quintette caribou population to 220 caribou which is anticipated to take 8-10 years. However, if after 4 years there is no evidence that the program is working, it should be reconsidered.

**Budget:****2014-15:**

30 GPS Life-cycle radio-collars .....	30,000
Capture and collaring of 30 caribou .....	45,000
Wolf control costs (helicopter and contractor) .....	75,000
Total .....	150,000

**Subsequent Years:**

Additional radio-collaring of caribou .....	s.13,s.17
Monitoring of collared caribou (data fees, mortality investigations, calf counts) .....	
Wolf control costs .....	
Total .....	

**Every 3 years (2015-16):**

Quintette population census .....	
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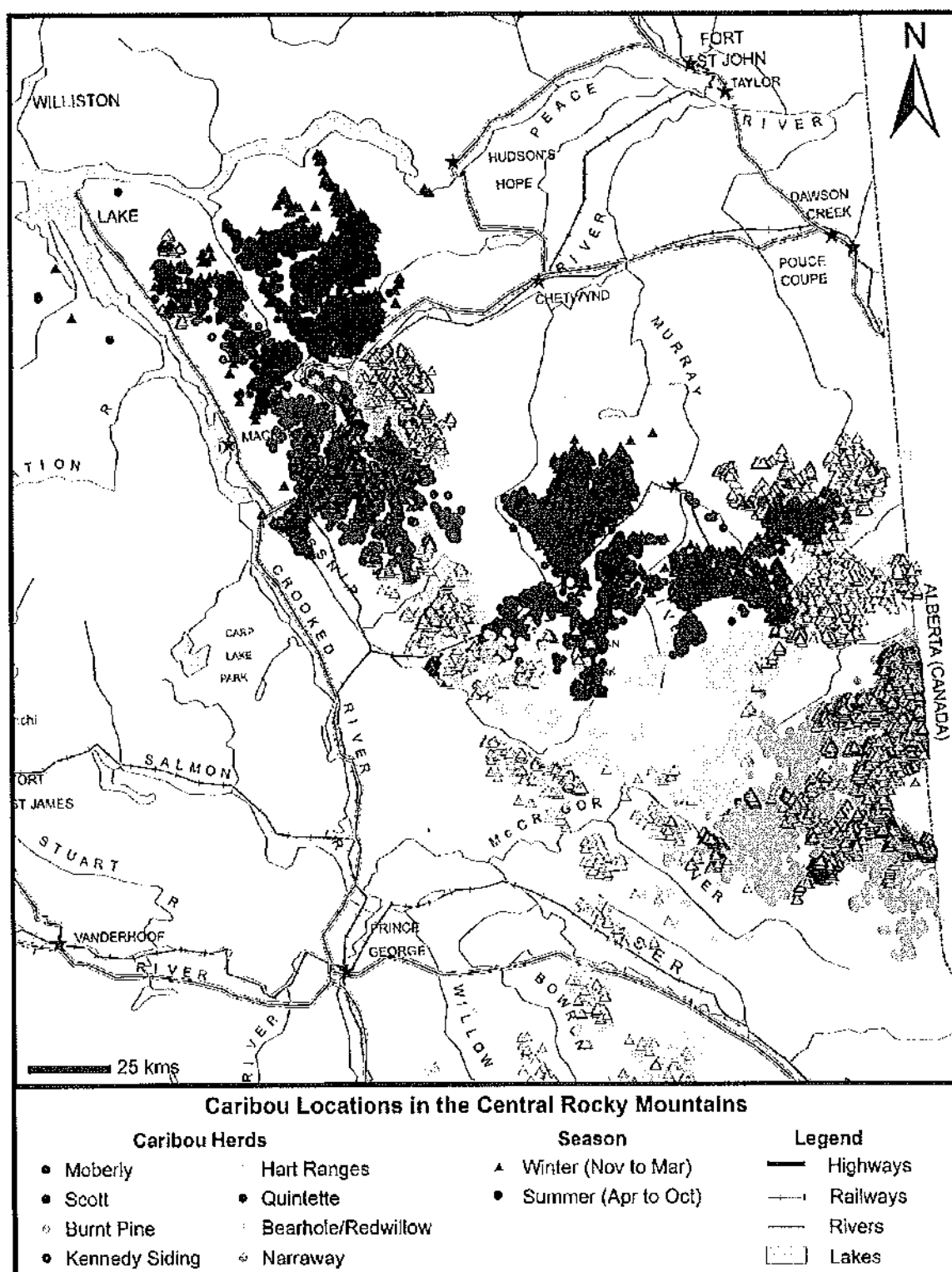


Figure 1. Telemetry locations of northern ecotype caribou herds in the South Peace, including the adjacent Hart Ranges mountain caribou herd.

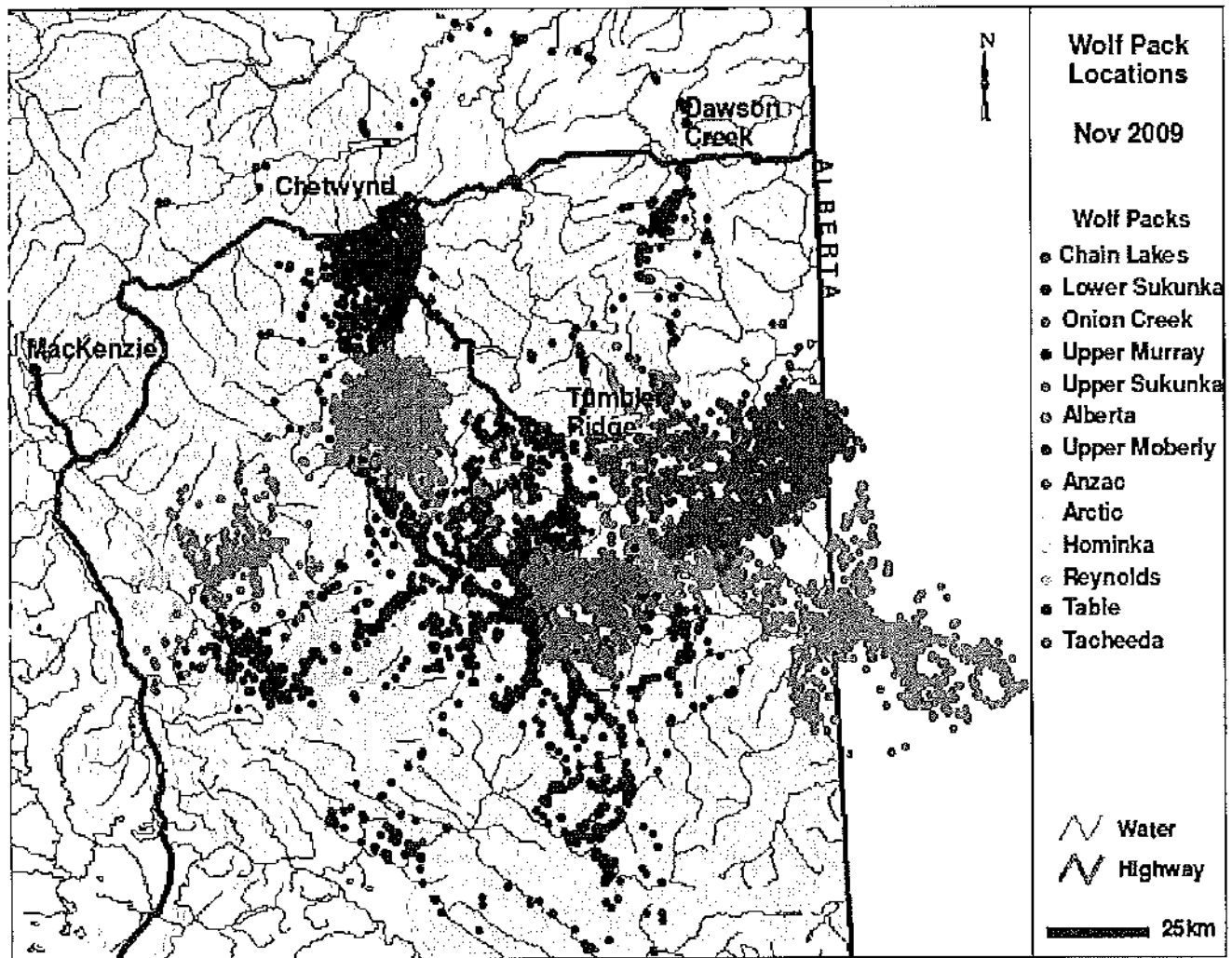


Figure 2. Distribution of radio-collared wolves in the South Peace, 2008-2009.

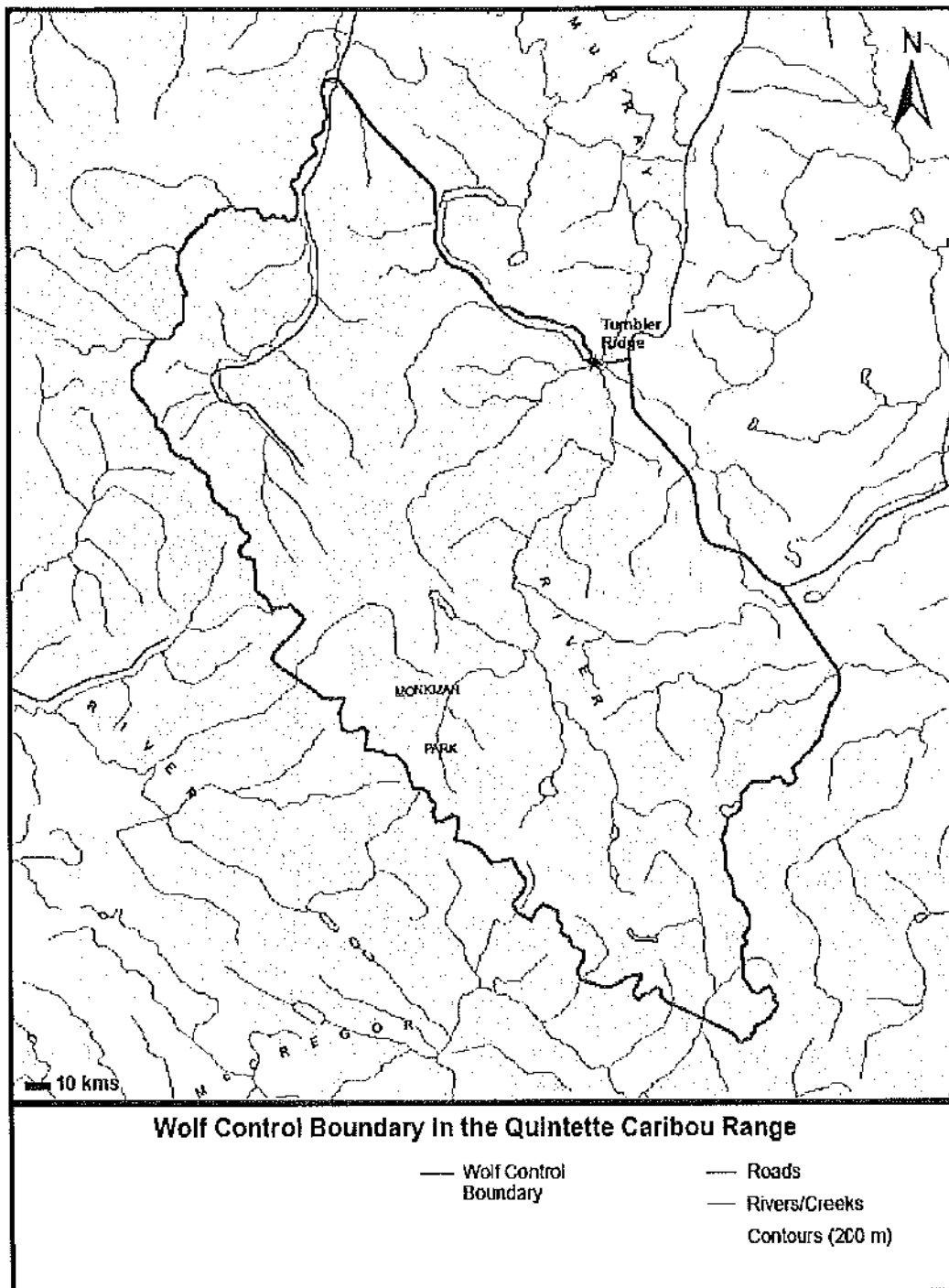


Figure 3: Boundary of wolf control area.

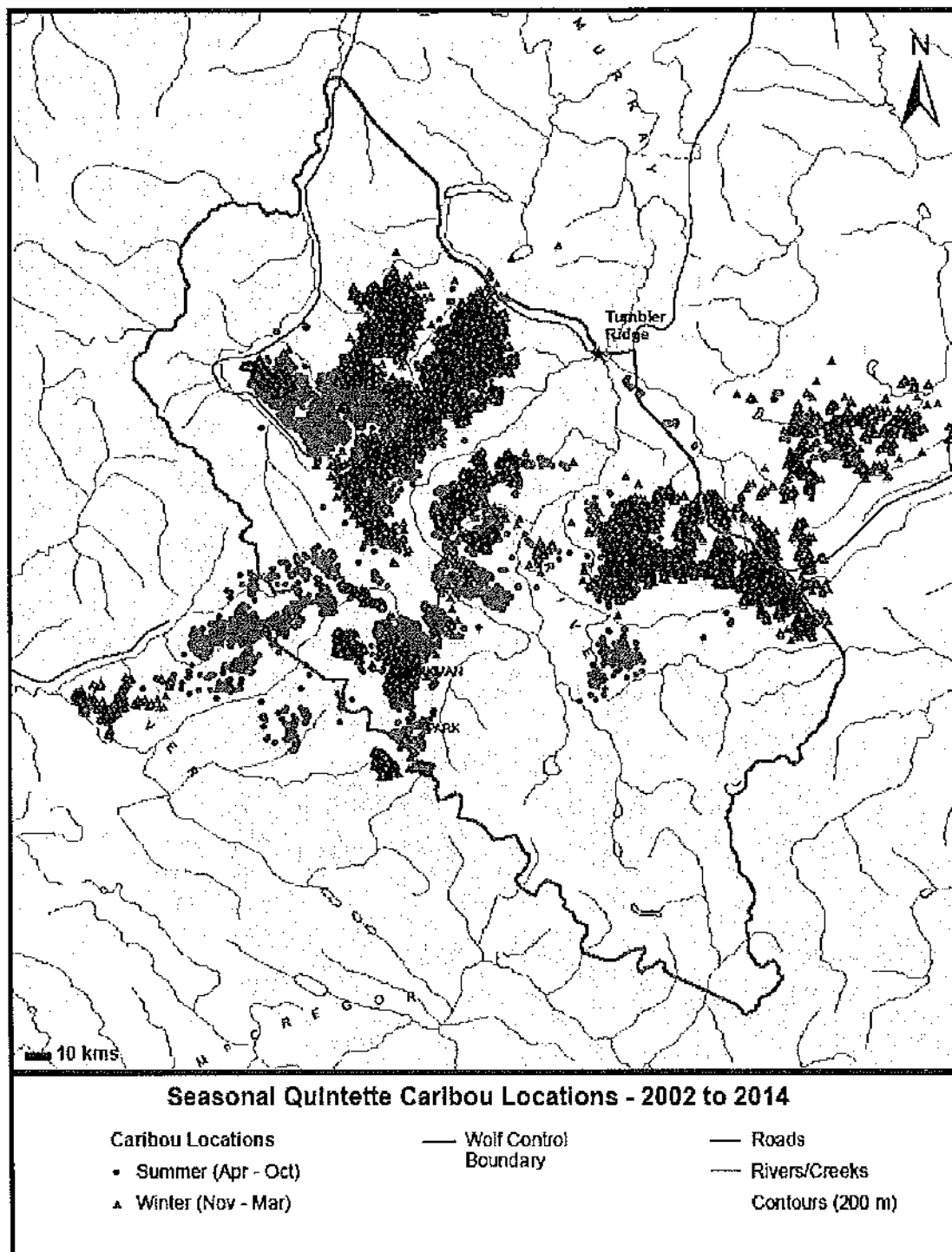


Figure 4. Quintette caribou locations in relation to the wolf removal area.



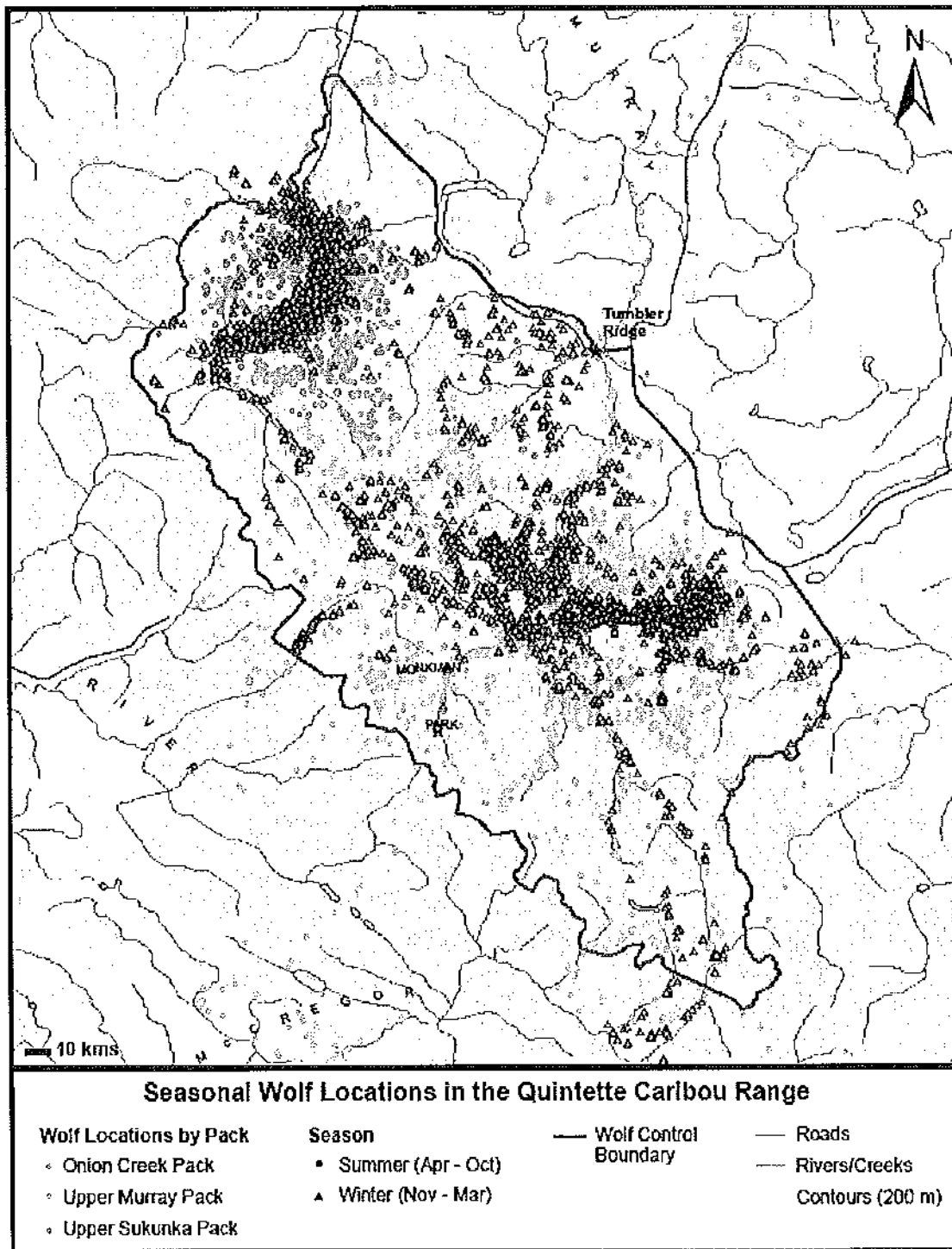


Figure 5. Locations of wolves in relation to wolf removal area.