INFORMATION NOTE

Late-Winter Habitat and Its Use by Caribou in the Upper Pelly and Finlay-Russell Portion of the Muskwa-Kechika Management Area

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Prepared for Muskwa-Kechika Advisory Board

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ABSTRACT

The status of caribou (*Rangifer tarandus caribou*) and the suitability of their high-elevation winter range in the Upper Pelly Special Wildland Zone and the Finlay-Russell Protected Area of the Muskwa-Kechika Management Area (M-KMA) was previously unknown. The area is bordered by the Finlay River and the Russell Ranges to the East, the Finlay River to the North and West, and Tucha Creek to the South. Caribou herds adjacent to this area include the: Frog, Gataga, Finlay, Chase and Spatsizi. We undertook an aerial reconnaissance of this area on March 5, 2009 to investigate the potential for caribou range. Most of the area along the flight line was unsuitable range for caribou during winter conditions but was likely high-value calving and summer range. In an area west of the Frog herd, we did find a relatively small area of high-valued winter range where we encountered 80 caribou in 3 groups in relative proximity of each other. The specific location of this winter range and the caribou was in the northern section of the survey area on Mt. Basnett and Mt. Bower. Based on the success of finding caribou in previously unrecorded locations, we provide recommendations for further work in this area to help increase the accuracy of provincial-level caribou inventory.

ACKNOWLEDGMENTS

The survey was funded by the Muskwa Kechika Advisory Board. We appreciate and acknowledge Altoft Helicopters and pilot Ryan Madley for providing rotary-wing services. Dwayne Kryschuk helped with animal observation during the reconnaissance and Viktor Brumovsky provided the study area map.

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INTRODUCTION

Background

Many of the woodland caribou (*Rangifer tarandus caribou*) herd areas in northern British Columbia have been identified and are now surveyed on a regular basis. However, an area of unknown status both in terms of potential caribou habitat and the presence of caribou remains in north-central British Columbia (BC). This area was roughly encompassed by the Upper Pelly Special Wildland Zone and the Finlay Russell Protected Area within the Muskwa-Kechika Management Area (M-KMA). Part of the unknown area was also part of the Chase Caribou Recovery Planning Area (RPA) (McNay et al. 2008). This area is surrounded by caribou herds known as Frog herd to the north, the Gataga herd to the north-east, the Finlay herd to the east, the Chase herd to the south, and the Spatsizi to the west (Heard and Vagt 1998). A late-winter, aerial reconnaissance survey for caribou and for suitable caribou habitat was undertaken in this area on March 5, 2009.

As part of this aerial survey our objectives were to:

1. Determine if the area in question contained suitable high-elevation winter range for caribou.
2. Record the location, number, age class, and sex of all caribou observed.
3. Record the location, number, age class, and sex of other species (particularly, mountain goat (*Oreamnus americanus*), stone sheep (*Ovis dalli* ssp. *stonei*) and moose (*Alces alces*)).

STUDY AREAS

Muskwa-Kechika Management Area

The Muskwa-Kechika Management Area (M-KMA) was created in 1998 as part of the British Columbia Land and Resource Planning (LRMP) process. It is located in north-central British Columbia, east of Ft. Nelson and Ft. St John. Its boundaries include the Liard River to the North, the Muskwa River to the east, the Graham River to the south, and the Spatsizi plateau to the west. Originally, the M-KMA was composed of 4.45 million hectares. After the completion of the Mackenzie LRMP in 2000 the M-KMA encompassed an area of 6.4 million hectares (Muskwa-Kechika Management Area (M-KMA-1) 2009). The area surveyed included the Upper Pelly Special Wildland, the Finlay Russel Protected Area and a northern portion of the Chase Caribou Recovery Planning Area.

Upper Pelly Special Wildland Management Zone

The Upper Pelly Special Wildland Management Zone was created as part of the Mackenzie LRMP and is composed of the area west of the Pelly Creek drainage, south of Finlay River bend, north of Tucha Creek, and east of the Upper Ingenika and Upper Finlay Rivers. As a special wildland zone, timber harvesting in the Pelly???, timber

harvesting is not allowed, although mining and oil and gas exploration is allowed. Non-roaded exploration is preferred and any roads built must be temporary. The zone is primarily managed for wilderness and non-commercial backcountry recreation (M-KMA-2 2009).

Finlay-Russell Protected Area

The Finlay Russell Protected Area is a class A Provincial Park and Protected area within the M-MKA. It is 122,795 hectares in size and follows the Finlay River from its confluence with the Toodoggone River at Bend Mountain to the Russell Range and Pelly Creek. As a protected area no resource development is permitted within its boundaries (M-KMA-3 2009).

Chase Caribou Recovery Planning Area

The northern portion of the Chase Caribou Recovery Planning Area north of Tucha Creek was included in the survey area. The area surveyed was only a minimal part of the Chase RPA which is composed of 1,733,039 hectares of steep mountainous terrain. The Chase RPA is roughly bounded in the north by the most northerly portion of the Finlay River, in the west by the Thutade, Sustut and Driftwood rivers, in the south by Ominicetla Creek, the back end of the Osilinka River, the headwater of Wasi and Flegez creeks, and in the east by the Williston Reservoir

METHODS

Survey techniques and data collection protocols adhered to BC Resource Inventory Standards Committee guidelines for aerial ungulate inventories (British Columbia Ministry of Sustainable Resource Management (MSRM) 2002). The survey was conducted using a Bell 206 helicopter outfitted with bubble windows to allow for increased potential to observe animals. The helicopter was flown by a pilot experienced with flying in rugged mountainous terrain during winter. The crew members accompanying the pilots consisted of one navigator and two observers (in the back). Any animals observed were classified according to the level two classifications standards (BC MSRM 2002). We did not use level three classifications because most mature bulls had lost their antlers by the time of the survey. Groups were considered to be separate if they were at least 150 m apart, occurred in different habitats, or displayed different group characteristics or behaviours.

For each animal observation the following was recorded: project name, study area, crew name, survey and census type, date, general location, general weather conditions, animal identification if marked, species, observation time, group number, group size, gender (if possible), age class, activities, location type, UTM co-ordinates, habitat type, approximate sinking depth in snow (if present), snow cover, and other marked animals in the group (if present).

The navigator used a lap top computer with ArcView® (Environmental Systems Research Institute, Redlands, California) and DNR Garmin ArcView extensions[1] to navigate during the survey and record the flight line. Aircraft speed varied from 40-100 mph depending on relative visibility and terrain encountered. Height-above-ground ranged from 50-200 m and depended on openness, tree density, and safety of the crew.

Due to the available flight time, the entire area could not be surveyed by following elevation contours. Rather a direct flight approach was used and time was only spent in areas where high-elevation caribou winter range was observed. No low-elevation winter range was surveyed.

Digital photographs of the habitat encountered during the aerial survey were taken. These photos were then cross referenced with their location along the flight line and displayed as results within this report (Figure 1). The original raw data forms are included in Appendix A.

RESULTS

The survey flight, lasting 3.2 hours (Figure 1) started from the west end of the Swannell Mountains and Wrede Creek, through the Upper Ingenika River, through the Tucha Range over to Pelly Creek, then past Cake Lake to Bower Creek and Mount Basnett, then over the Fishing Range and down the Finlay River to Thutade Lake.

A total of 80 caribou were observed in three different groups (Appendix A). All caribou were found in the vicinity of Mount Basnett. The first group was composed of 9 males. The second group was 11 males, 25 females, 6 unknown adults and 7 calves for a total of 49. The third group was 9 males and 13 females for a total of 22 caribou. All the caribou were observed in the alpine on moderate south or southwest aspect slopes. In addition to the caribou observed, 2 mountain goats (*Oreamnos americanus*) in 2 separate groups, 12 stone sheep (*Ovis dalli* ssp. *stonei*) in 2 groups (Appendix A), and 7 moose (*Alces alces*) in 3 separate groups were observed and recorded (Appendix A). The groups of stone sheep were in close proximity to the caribou on Mt. Basnett.

There was a relatively low abundance of quality high-elevation winter range observed (Appendix B). The majority of the area observed was terrain suitable for mountain goats or suitable for caribou during calving or summer. Where slopes were more suitable for caribou winter range there was usually too much snow to allow for lichen foraging. The best caribou winter habitat observed was on Mt. Basnett where our only observations of caribou occurred. There were extensive windswept slopes in this area that allowed for lichen foraging.

[1] http://www.dnr.state.mn.us/mis/gis/tools/arcview/extensions/DNRGarmin/DNRGarmin.html

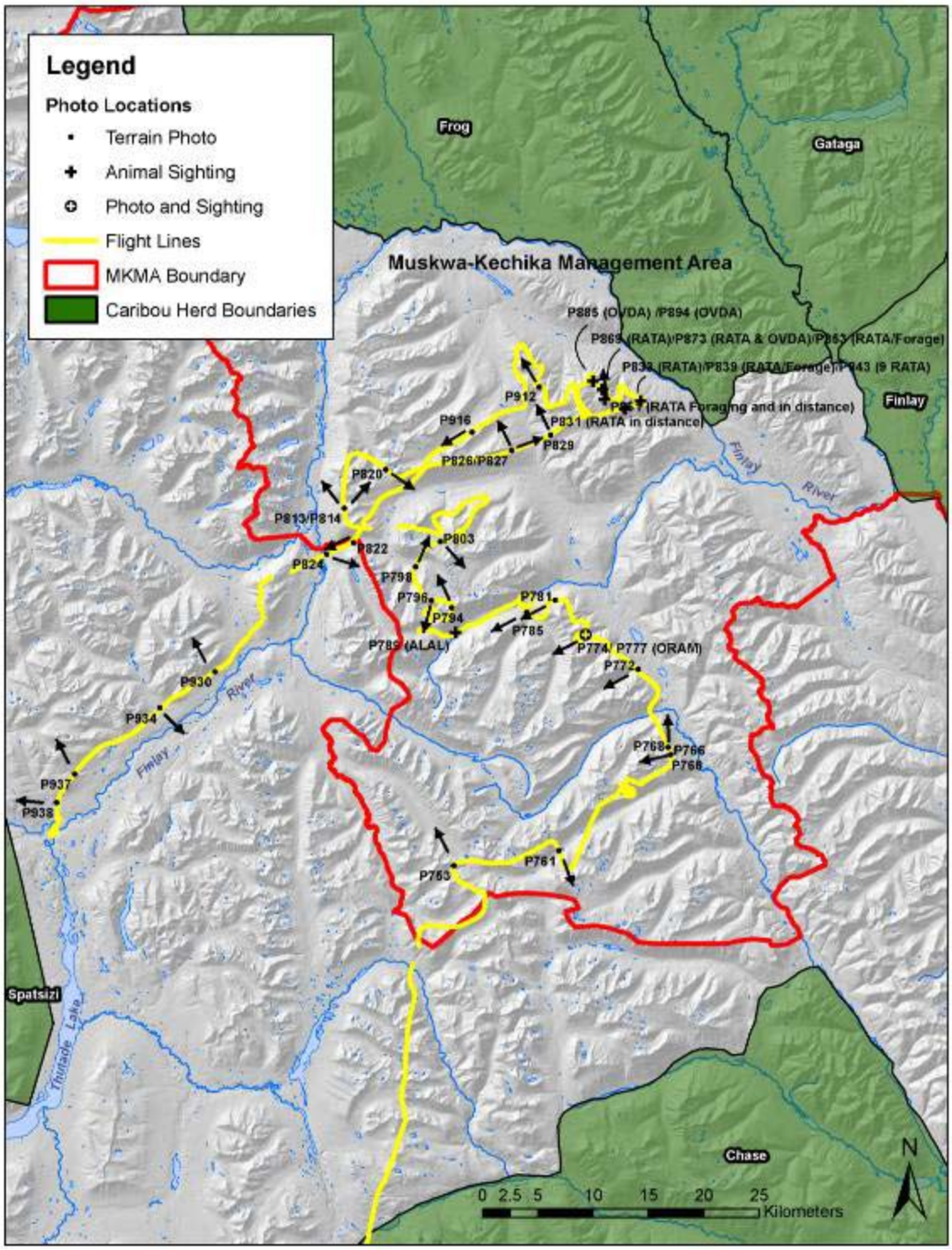

Figure 1. Aerial survey for caribou and caribou habitat flight-line with photo reference locations (corresponding photos in Appendix B), Muskwa-Kechika Management Area, north-central British Columbia, March 2009. Arrows indicate direction of the photographs.

DISCUSSION

Our aerial observations determined that most of the area surveyed was likely more suitable as spring, summer, and fall caribou habitat rather than winter range. This was due to the high snow-loading and lack of windswept slopes. The area was also suitable as habitat for mountain goats and although we observed only two, this was more likely because our flight path was not consistent with standard aerial inventory methods for goats.

We still cannot be certain about the lack of caribou habitat in the areas that we were unable to fly although much of it appeared from topographic maps to be unsuitable as winter range. For example, one area observed from afar, the Sifton Range which is located within the Frog herd area seemed likely to contain a large amount of high-elevation winter range. Despite the apparent lack of habitat, we did locate a relatively insular amount of winter range west of the Frog herd area and encountered a reasonable number of caribou that have not been previously documented as part of the provincial records. We consider this evidence that the area should be surveyed more thoroughly and that research is required to determine herd associations among the adjacent herd areas.

RECOMMENDATIONS

The area between the known herds of caribou in north-central BC should be thoroughly surveyed for caribou during both winter and summer seasons. However, since the area is extensive and remote, it would be efficient to apply a caribou habitat model before conducting any surveys. For example, the high-elevation winter range component of our Caribou Habitat Assessment and Supply Estimator (McNay et al. 2006) has been successfully tested against caribou observed in the Chase, Wolverine, Scott, Takla, and Graham caribou herd areas and now guides us on most caribou surveys. The most appropriate time for these surveys would be when caribou aggregate in alpine habitats during post-calving (i.e., early July) and during late winter (i.e., mid –March). The timing of these surveys would also allow for estimates of post neo-natal calf survival and juvenile recruitment. The placement of radio-collars in the newly discovered group of caribou on Mt. Basnett would be beneficial in adding to the understanding of association with adjacent caribou herds; in particular the Frog herd. The seasonal use information gathered from radio collars would allow us to determine if this group of caribou belongs to one of the known herds or is a group composed of entirely different animals.

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APPENDIX A. AERIAL SURVEY DATA FORMS

Census – Navigation

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NORTH CHASE AREA

Project: Caribou & Goat Project **Survey:** *2007 Aerial Census* - Caribou & Goat **Study Area** *(circle)*: *Akie/Ospika - Akie/Pesika - Chase/Sustut - Wolverine - Scott*

Navigator: LINE GIGUERE **Counting Recorder:** DUANE KRYSCHUK **Habitat Recorder:** Scott McNAY

Aircraft type: *Bell 206* **Pilot name:** RYAN MADLEY **Aircraft Speed:** 80-100

Survey Type *(circle one)*: PN RA AA **Session #:** 05 **Obs Date** *(yyyy/mm/dd)*: 2009 103 105

Coordinates: Meridian UTM **Map Standard:** NAD83 *or Other:* _____ Time Start *(24 hrs)*: 1032 Start Coor.: 65991 6325160

General Location: SWANNELL RANGE - AREA South McConnell Pass Time Stop*(24 hrs)*: 1220 End Coor.: 626010 6332925

Transect, Polygon, or Block #: NA **General Description:** HEWR CARIBOU - STEEP ALPINE, deep snow, rocky, some ridges with windswept

Weather *Code	Time (24 hr) 00:00	Cloud Cover	Wind	Temp	Precip	Snow Depth	Snow Cover	Days since 5 cm snow
When Start *(when first signal heard)*	10:12	1	2	-18	N,NA	1 8	6	1
When Ended *(when last signal heard)*	12:20	2	3	-20	N,NA	6 7	6	1

*** Weather Code**

CC: 1=clear, 2=<50%, 3=>50%, 4=unbroken clouds

Wind: 0=calm, 1=light air, 2=light breeze, 3=gentle breeze, 4=moderate breeze, 5=fresh breeze, 6=strong breeze

Temp: degrees Celsius

Precip: N=none, F=fog, M=misty, D=drizzle, LR=light rain, HR=hard rain, S=snow

Snow Depth: 1=no snow, 2=*1-5*cm, 3=*6-25*cm, 4=*26-50*cm, 5=*51-75*cm, 6=*76-100*cm, 7=*101-150*cm, 8=>*150*cm

Snow Cover: 1=0%, 2=1-5%, 3=6-25%, 4=26-50%, 5=51-75%, 6=76-100%

Days since 5cm snow: 1<1/2 day, 2=<3 days, 3=<14 days, 4=>14 days, 5=information of no value

Obs #	Time 24 Hrs	Coordinates		Marked Animal: Freq.#	Type, Color, Gender	Other Marking	Snow: Sinking Depth	Sight Success: Mark, Gender	Comments
1	1054	0672143	6354820	NA	, ,	→	0-20	NA →	1 ORAM
2	1101	0664613	6356925	NA	, ,	→	UNK	NA →	1 ALAL, General location flying too high
3	1104	0665358	6354350	NA	, ,	→	30-60	NA →	5 ALAL
4	1116	0661405	6365486	NA	, ,	→	10-30	NA →	1 ORAM
5	1136	0675526	6376671	NA	, ,	→	0-30	NA →	9 RATA ♂
6	1140	0672491	6376630	NA	, ,	→	0-40	NA →	49 RATA
7	1143	0671592	6377687	NA	, ,	→	0-10	NA →	21 RATA
8	1145	0670953	6378474	NA	, ,	→	0-30	NA →	12 Skwp
9	1154	0666341	6378599	NA	, ,	→	0-30	NA →	1 Skwp
10	1214	0637115	6347252	NA	, ,	→	UNK	NA →	1 ALAL, General location flying too high
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Census – Count/Classification

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Project: *Caribou Project* **Survey:** *2009 Aerial Census – Caribou* **Study Area** *(circle)*: NORTH CHASE AREA *Akie/Ospika - Akie/Pesika - Chase/Sustut - Wolverine - Scott*

Transect, Polygon, or Block #: NA **Obs Date** *(yyyy/mm/dd)*: 2009 / 03 / 05 **Counting Recorder:** Duane Krysczak

Obs #	Spp	Grp Tot	Adult Male	Adult MM / YM	Adult Fem	Adult Unk	Calf (<1 yr) Male	Calf Fem	Calf Unk	Unk	Comments (Antler – Juvenile – Injury …)
1	M-ORAM	1	1	0	0	→					GOAT
2	M-ALAL	1	0		0	1	0 →				MOOSE
3	M-ALAL	5	0		0	5	0 →				MOOSE
4	M-ORAM	1	0		0	1	0 →				GOAT
5	M-RATA	9	9	0 0	0	0	0	0	0	0	CARIBOU (ALL MALE)
6	M-RATA	49	11		25	6	0	0	7	0	CARIBOU
7	M-RATA	22	9		13	0	0	0	0	0	CARIBOU → Too close to the sheep to continue to see them, then all counted w/ other group
8	M-OVDA	11	0		0	10	0	0	1	0	SHEEP
9	M-OVDA	1	1		0	0	0	0	0	0	SHEEP
10	M-ALAL	1	0		0	1	0	0	0	0	MOOSE
11	M-										
12	M-										
13	M-										
14	M-										
15	M-										
16	M-										
17	M-										
18	M-										
19	M-										
20	M-										

Caribou Classification Levels *

Code	Class	Criteria	Lev 1	Lev 2	Lev 3	Lev 4
	Adult	->= 1 year of age	X	X		
	Calf	-< 1 year of age -antlers (if any) are short (spike) w velvet -darker body & smaller than adult	X	X	X	X
Male	Adult Bull	-antlers or antler pedicels -no vulval patch			X	
Fem	Adult Cow	-small antlers 2-3 times the ear length -black vulval patch			X	X
MM	Mature Bull	-large bull generally Class II or III			X	
YM	Class I Bull	-1-2 years -antlers are similar to Fem antlers -no vulval patch			X	X
MM	Class II Bull	-antlers larger than I em but smaller than large bulls -Brow Tine not palmated				X
MM	Class III Bull	-large antlers that usually have palmated Brow Tine		X		X

Moose Classification Level *

Code	Class	Criteria	Lev 1	Lev 2	Lev 3	Lev 4
	Adult	->= 1 year of age	X			
	Calf	-< 1 year of age -small body size without antlers	X	X	X	X
Male	Adult Bull	-antlers or antler scars -no vulval patch		X		
Fem	Adult Cow	-no antlers & short bell, medium size -white vulval patch & light brown face		X	X	X
MM	Mature Bull	-bull with palmated antlers			X	
YM	Yearling Bull	-antler, if palmated does not extend beyond eartip -antler pole-type usually a spike or fork			X	X
MM	Class I Bull Class II Bull Class III Bull	-palmated extend ear & BT- spike or fork -palmated extend ear & BT- >2 points -palmated smaller than II & BT- spike fork				X X X

APPENDIX B. PHOTOS FROM SURVEY

Census – Habitat

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NORTH CHASE AREA

Project: Caribou Project **Survey:** 2009 Aerial Census - Caribou **Study Area** (circle): Akie/Ospika - Akie/Pesika - Chase/Sustut - Wolverine - Scott

Transect, Polygon, or Block #: NA **Obs Date** (yyyy/mm/dd): 2009 / 03 / 05 **Habitat Recorder:** Scott McNay

****** Habitat Codes**

WA	Water	SB	SpruceEngl./Subalpine Fir	TA	Talus Slope
WE	Wetland/Bog	SP	SpruceEngl./White	SU	Subalpine
ME	Meadow	CD	Coniferous/Deciduous Mixed	BU	Burn
RI	Riparian	CS	Cottonwood/Spruce	CU	Cut Block
WS	Willow/Shrub	BS	Black Spruce	UV	Unvegetated
DE	Deciduous	AR	Alpine/Alpine Ridge	RD	Road
LP	Lodgepole	AV	Avalanche Track	LD	Landing

**** Slope Code**

0%	Flat
5-20%	Minimal Slope
20-50%	Moderate Slope
>50%	Steep

***** Aspect Code**

N, NE, E, SE, S, SW, W, NW, N

Obs #	Slope Code **	Aspect Code ***	Elev Feet	Habitat Specific Code *	Habitat General Code *	Percent Composition (=100%) Pine %	Spr/Fir %	Decid %	Open %	% Veg Multi Sheet #1	Comments
1	20-50	S	1914	AR	AR	0	0	0	100		
2	0	S	1233	SP	RI	0	15	10	75		
3	20-50	S	1821	TA	DE	0	0	20	80		
4	5-20	S	2009	TA	AR	0	0	0	100		
5	5-20	S	1807	AR	AR	0	0	0	100		
6	5-20	SW	1852	AR	AR	0	0	0	100		
7	5-20	SW	1850	AR	AR	0	0	0	100		
8	5-20	SW	1857	AR	AR	0	0	0	100		
9	20-50	SE	2005	AR	AR	0	0	0	100		
10	20-50	SE	1550	SB	SB	0	60	0	40		
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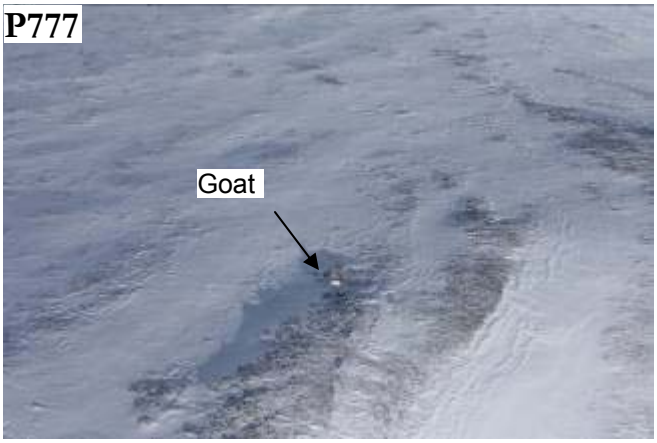

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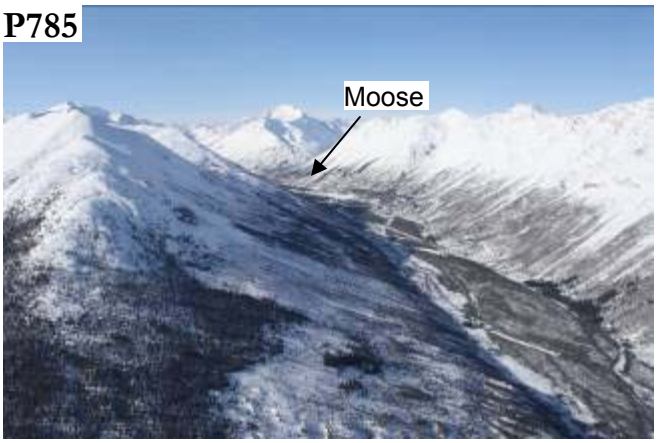

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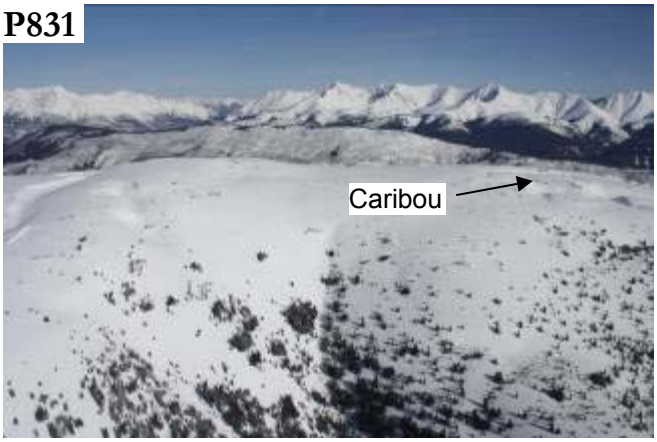

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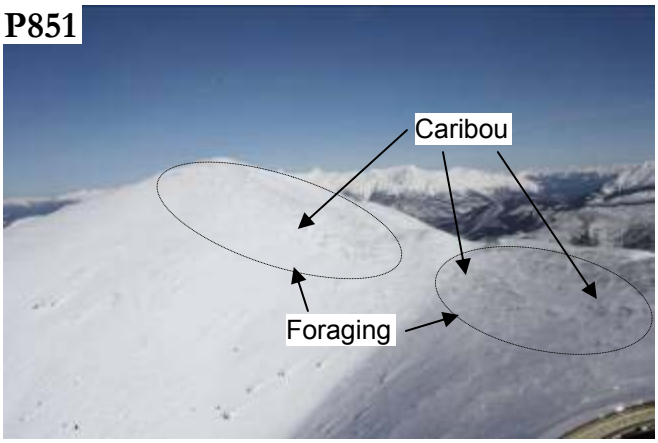

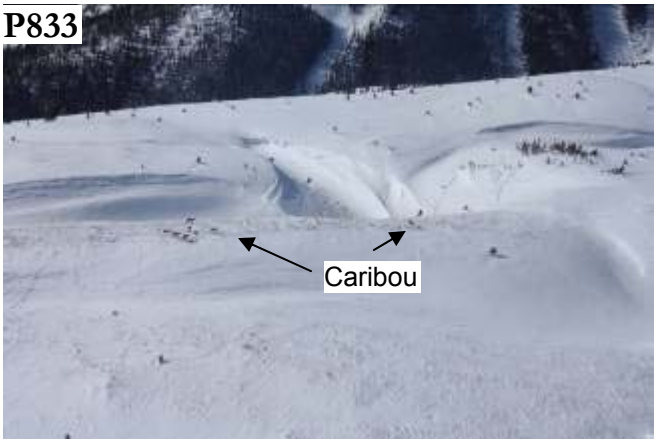
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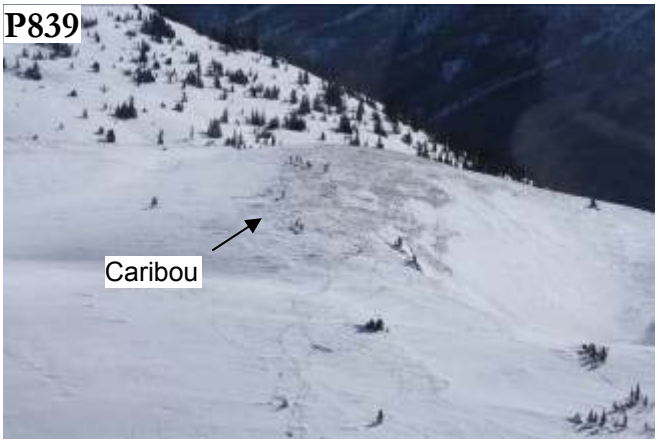
Caribou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Caribou


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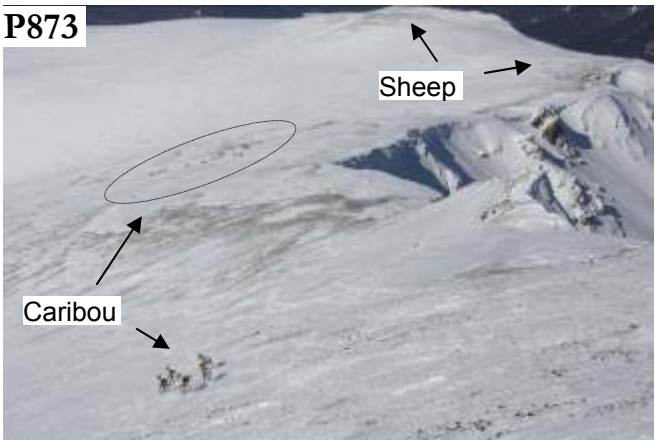
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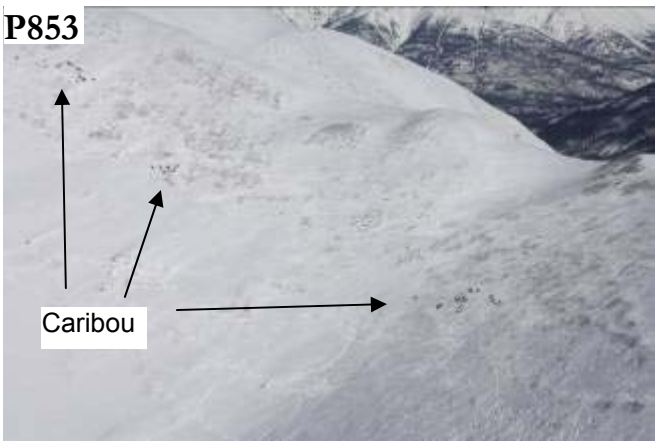
Sheep
Caribou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Caribou

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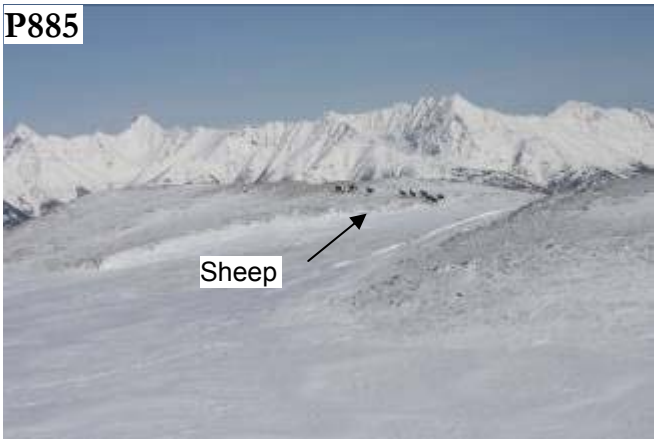

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