CARIBOU TRACKING SURVEY IN THE PAULATUK AREA ASSOCIATED WITH THE DARNLEY BAY RESOURCES AEROMAGNETIC SURVEY, SEPTEMBER 1997

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ABSTRACT

As part of an agreement between Darnley Bay Resources and the Department of Resources, Wildlife & Economic Development a caribou tracking program was implemented prior to the Darnley Bay Phase I aeromagnetic survey in order to avoid low level flights over large aggregations of caribou. If large aggregations of caribou were observed then blocks of a minimum 30km^2 would be excluded from the aeromagnetic survey. The caribou tracking program surveyed an area *ca.* 15,600km^2 bounded by latitudes 69^o 45' N and 68^o 30' N to the north and south, and by longitudes 122^o 30' W and 125^o 15' W to the east and west. The survey was conducted on September 9 and 10, 1997 and was flown at 10% coverage with observations on transects 1.0km wide. Thirty-five caribou were observed, 33 on transect and 2 off transect, there were no large aggregations of caribou in the area. Darnley Bay Resources was advised that they could proceed with Phase I aeromagnetic survey over the entire survey area.

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INTRODUCTION

One of the major summering and post-calving areas used by the Bluenose-West barren-ground caribou is to the south and east of Paulatuk. Mineral exploration has also been approved and initiated in this area by Darnley Bay Resources Ltd. Before Darnley Bay Phase I could conduct a low level aeromagnetic survey of the area late summer - early fall, a caribou tracking program had to be completed. As part of an agreement between Darnley Bay Resources Ltd. and the Department of Resources, Wildlife & Economic Development (DRWED) a caribou tracking program was developed. This caribou tracking program would only be conducted after data received from satellite-collared caribou indicated that all satellite-collared caribou had moved out of the aeromagnetic survey area. The tracking program was to be designed to determine if large aggregations of caribou were still in the survey area, and if so, to block off areas from the aeromagnetic survey in order to avoid low level flights over large aggregations of caribou. The tracking program was to be conducted by DRWED staff assisted by local residents of Paulatuk. This report describes the caribou tracking survey design and reports the survey results.

METHODS

The caribou tracking program was conducted on 9 and 10 September, 1997. The survey area covered *ca.* 15,600km^2 and was bounded by latitudes 69^o 45' N and 68^o 30' N to the north and south, and by longitudes 122^o 30' W and 125^o 15' W to the east and west (Figure 1). The survey area was subdivided into 14 blocks designated A through N. Subdivisions were made by using latitudes 69^o 15' N, 68^o 59' N, and 68^o 43' N and longitudes 123^o 13' W, 124^o 0' W, and 124^o 30' W (Figure 1). Thirteen parallel transects, running in an east - west direction, were spaced 10km apart. This resulted in 5 transects traversing blocks A and B, 3 transects traversing blocks C, D, F, G, I, J, L and M, and 2 transects traversing blocks E, H, K and N (Figure 1).

The survey was conducted from a Cessna 206 fixed-wing aircraft. Transects were flown at 1,000 feet above ground levels at approximately 160km/hr. Observations were made in an 0.5km wide strip on each side of the aircraft; tape marks on the windows delineated transect boundaries (following Norton-Griffiths, 1978). Transect widths were checked by overflights of fuel drums spaced 0.5km apart adjacent to the Paulatuk airstrip. The survey crew consisted of 2 observers in the rear seats, a pilot, and a recorder/observer in the front passenger seat. Part way through the survey we were without the right rear observer, so the observations were taken by the recorder/observer in the front seat. Observations of all wildlife seen on and off transect were plotted on 1:250,000 NTS map sheets by the recorder/observer. Animals were designated into sex and age categories whenever possible. When traversing Darnley Bay, flight elevation increased to 2,000 - 4,000 feet above sea level and observers used binoculars to scan for whales.

Once the survey was completed, transect lines were subdivided into 3km segments to determine if large aggregations of caribou were present in the survey area. To avoid low level flights over large aggregations of caribou, the following criteria were used to determine whether large aggregations of caribou were present and whether blocks or portions of blocks would be excluded from the aeromagnetic survey:

i) If there were $\geq$5 caribou/km^2 on 3 or more consecutive 3km segments of a caribou tracking flight line within a block, then a strip 5km wide on either side of that caribou tracking flight line would be excluded from aeromagnetic survey work until caribou move out of that area.

ii) If there were <5 caribou/km^2 on all 3km segments of a caribou tracking flight line within a block, then a strip 5km wide on either side of the caribou tracking flight line would be available to be flown over during the aeromagnetic survey.

iii) If 450 or more cows and calves were counted in one or more 3km segments of a caribou tracking flight line within a block, then a strip 5km wide on either side of that caribou tracking flight line would not be available for aeromagnetic survey work.

Bryant Environmental Consultants Ltd., working for Darnley Bay Resources Ltd., were to be notified of the survey results and advised of any areas that would be excluded from

the aeromagnetic survey based upon the above criteria within 48 hours of the completion of the caribou tracking program.

RESULTS

The survey was completed in 2 days with all transects being flown in their entirety. No large aggregations of caribou were observed. The most caribou observed in any 3km segment of the caribou tracking line was 8. A total of 11 groups of caribou were observed (Figure 2), 12 adults of unknown sex, 11 adult males, 5 adult females and 5 calves on transect and 1 adult female with calf off transect (Appendix 1). Other wildlife observations included: 20 adult and 1 calf muskox all on transect, 4 grizzly bears all off transect, 1 moose on transect, and 1 fox on transect (Appendix 1). No whales were observed in Darnley Bay. Total flying time for the survey was 10.6 hours and 3.0 hours flight time for the Inuvik to Paulatuk return flight.

On 11 September, 1997 Bryant Environmental Consultants Ltd. were notified of the survey results and advised that no blocks or portions of blocks were excluded from Phase I aeromagnetic survey (Appendix 2).

DISCUSSION

Satellite tracking of satellite collared female caribou indicated that collared caribou had moved out of the aeromagnetic survey area by 16 August, 1997. However, because of difficulty in acquiring an aircraft and inclement weather the earliest possible date for conducting the caribou tracking survey was 9 September, 1997. This did not delay the Phase I aeromagnetic survey because the survey plane could not arrive in Paulatuk until 11 September at the earliest, and in fact did not arrive until later in the week. By the second week in September we expected there would be few caribou in the aeromagnetic survey area based upon previous years' satellite tracking data (J. Nagy and M. Branigan, unpubl. data) and local knowledge. That was the case as only 35 caribou were seen on the entire caribou tracking survey. Therefore, the low level aeromagnetic survey was conducted over this area with little disturbance to the caribou population.

RECOMMENDATIONS

1) Caribou tracking flights will continue to be conducted prior to future aeromagnetic surveys in order to minimize disturbance to caribou.
2) The criteria established to avoid low level flights over large aggregations of caribou by the Department of Resources, Wildlife & Economic Development and Darnley Bay Resources Ltd. will continue to be used for future caribou tracking flights.

ACKNOWLEDGEMENTS

I would like to thank Steve Moore for his piloting. The late Noel Green and Bobby Ruben assisted as observers. Wayne Bryant assisted with logistics. Funding for this project was provided by Darnley Bay Resources Ltd.

LITERATURE CITED

(1) Norton-Griffiths, M. 1978. Counting Animals. Afr. Wildl. Leadership Foundation. Kenya. 139pp

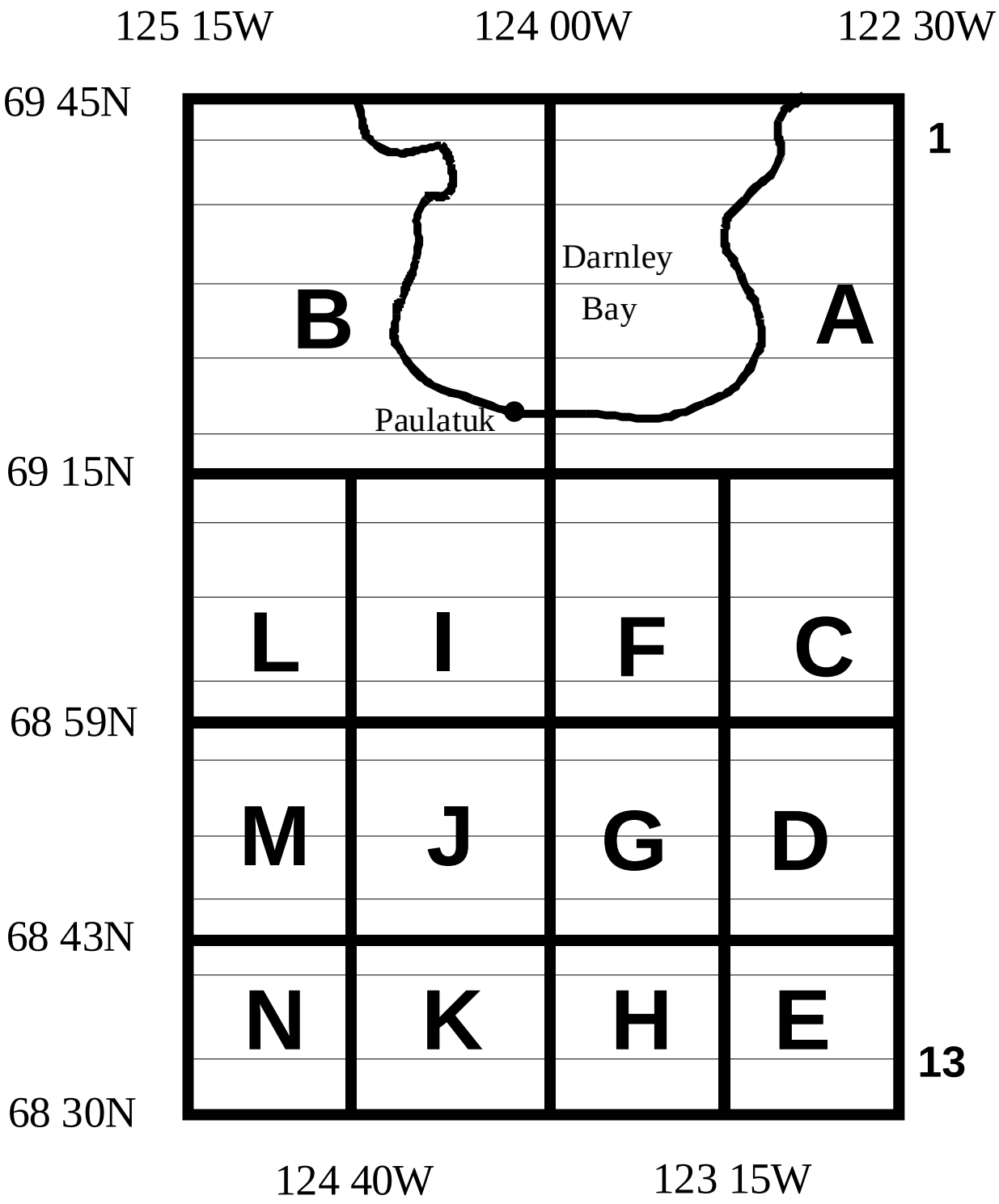

Figure 1. Schematic showing transect lines (1-13) flown over the survey area with the different blocks labeled.

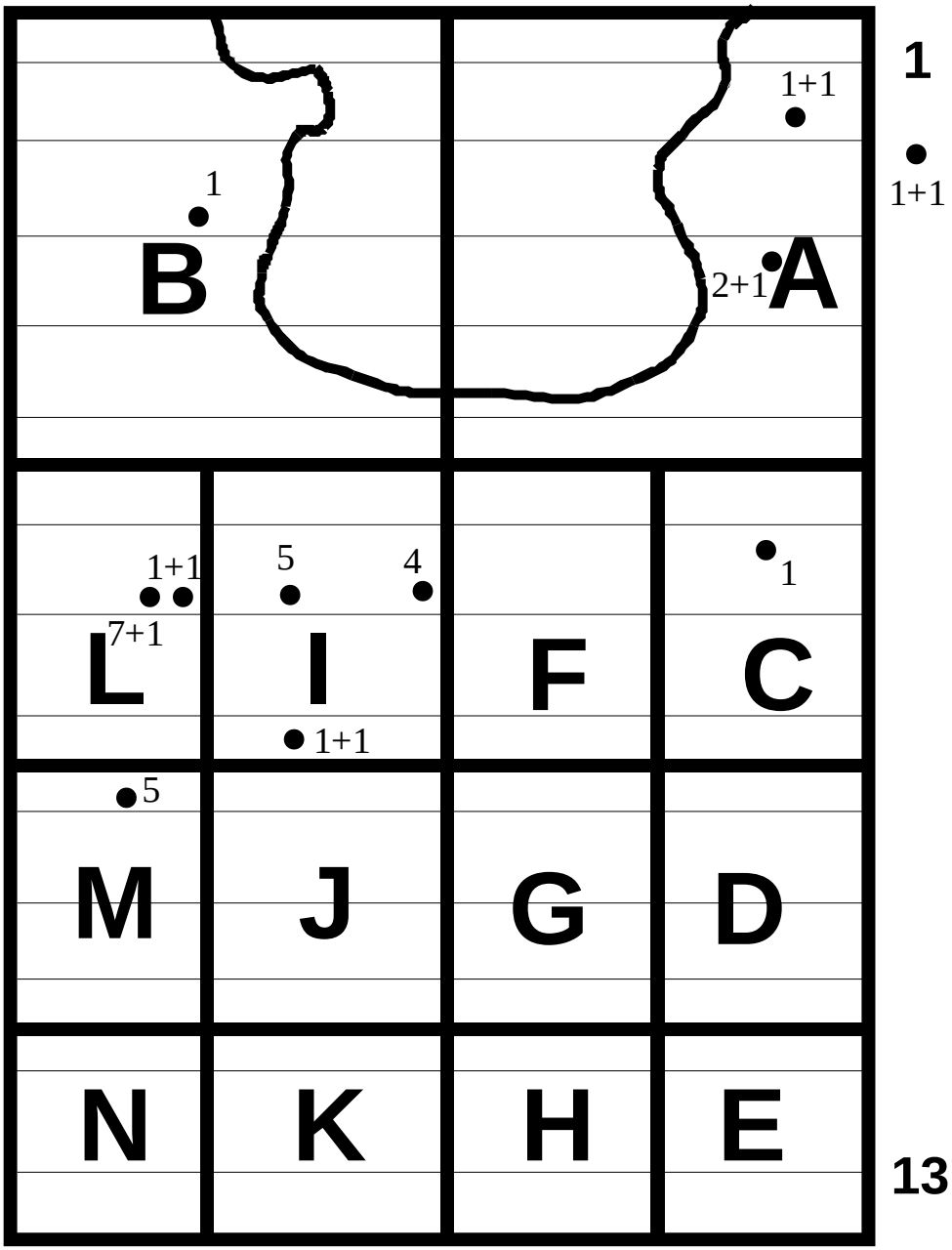

Figure 2. Schematic showing the location and number of caribou observed (adults + calves).

APPENDIX 1

All wildlife observations are from the caribou tracking flight.

Date	Transect (# on/off)	Block	Caribou	Muskox	Grizzly	Moose	Fox
Sept. 9	2 on	A	1 cow, 1 calf				
Sept. 9	2 off	A	1 cow, 1 calf				
Sept. 9	3 on	A	2 cows, 1 calf				
Sept. 9	3 on	B					1
Sept. 9	3 on	B	1 bull				
Sept. 9	5 off	B			3		
Sept. 9	6 on	C	1 bull				
Sept. 10	10 on	M		14 adults			
Sept. 10	10 on	G		4 adults, 1 calf			
Sept. 10	9 on	J				1	
Sept. 10	9 on	M	5 adults				
Sept. 10	8 on	L		1 adult			
Sept. 10	8 on	L		1 adult			
Sept. 10	8 on	I	1 cow, 1 calf				
Sept. 10	7 off	F			1		
Sept. 10	7 on	I	4 bulls				
Sept. 10	7 on	I	5 bulls				
Sept. 10	7 on	L	1 cow, 1 calf				
Sept. 10	7 on	L	7 adults, 1 calf				

APPENDIX 2

Text of the letter forwarded to Bryant Environmental Consultants Ltd. Regarding the results of the caribou tracking flight.

Nic Larter
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11 September, 1997

Wayne Bryant
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5016 - 48th St., Box 1324
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RE: CARIBOU TRACKING PROGRAM FOR DARNLEY BAY RESOURCES

The reconnaissance survey, flown at 10% coverage and 1000 feet above ground level, was flown on 9 and 10 September. All 13 transects covering the 14 blocks were covered, visibility was good. The additional block encompassing Darnley Bay could not legally be flown at 10km intervals 1000 feet above sea level with a single engine aircraft. We did fly across Darnley Bay but at 2000-4000 feet and across the shortest distance of water from the end of the adjoining land transects. We used binoculars to scan as much of the Bay as possible and did not see any whales. Few caribou were seen over the entire survey area. There were fewer than 5 caribou/km^2 on all 3km segments of all transect lines in all survey blocks, therefore, as per the protocol agreed upon, no blocks or portions of blocks need to be excluded from the upcoming aeromagnetic survey.

In regard to the fuel situation, we used 5 drums of Department AVGAS. We request those 5 drums to be replaced and placed at our fuel cache at the airport in Paulatuk with the next fuel haul for the aeromagnetic survey. Could you please make sure that the drums are spray painted DRWED for identification.

Sincerely,
Nic Larter, PhD
Caribou/Muskox Biologist

cc: Ron Morrison, A/Regional Superintendent, Inuvik Region
John Nagy, Supervisor Wildlife Management, Inuvik Region
Phil Chidgzey, Darnley Bay Resources
Paulatuk Hunters' and Trappers' Committee