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A Survey of Lesser Snow Geese and Canada Geese on Jenny Lind Island, Northwest Territories



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A SURVEY OF LESSER SNOW GEESE AND CANADA GEESE
ON JENNY LIND ISLAND, NORTHWEST TERRITORIES

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ABSTRACT

A helicopter survey of Jenny Lind Island was conducted on 09 and 10 July 1985, with the objectives: 1) foremost, to determine the distribution and abundance of Lesser Snow Geese; 2) to determine the distribution and abundance of Canada Geese; 3) to evaluate Jenny Lind Island as a key terrestrial habitat site; and 4) to record ancillary information on other wildlife of the area.

A total of 10,837 Lesser Snow Geese and 323 Canada Geese were observed during the survey which included approximately 20 percent coverage of the Island. Estimated 1985 populations on the Island are $\pm 54,000$ Lesser Snow Geese ($\pm 17\%$ at 95% C.L.) and $\pm 1,500$ Canada Geese.

A Lesser Snow Goose colony of this magnitude was previously undocumented. This colony adds substantially to the known population in the central Arctic, supporting more than three percent of the Canadian breeding population of Lesser Snow Geese. Therefore, Jenny Lind Island is considered a key terrestrial habitat site as identified by McCormick et al. (1984).

Additional surveys to confirm the Lesser Snow Goose breeding population on Jenny Lind Island are recommended. A vegetation monitoring program to evaluate the impact of this population on the habitat should also be considered.

ACKNOWLEDGEMENTS

Polar Continental Shelf Project generously provided a survey helicopter, and a Twin Otter aircraft which was used to cache fuel.

Dr. Anne Gunn, GNWT Department of Renewable Resources, assisted with the survey and provided invaluable logistical assistance at Cambridge Bay.

Dick Kerbes and Len Shandruk provided comments on the report. Heather Breen and Michael Fournier typed the manuscript and Susan Popowich prepared the illustrations.

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1.0 INTRODUCTION

1.1 Background

The Canadian Wildlife Service (CWS) has recently compiled a list of the key migratory bird terrestrial habitat sites in the Northwest Territories (McCormick et al. 1984). The criterion used was "any site which supports at least one percent of the Canadian population of a migratory bird species or subspecies, for any portion of the year". Evaluations were based upon the best available estimates of national and regional populations and the number of individuals present at each site. Some of the site-specific data are of variable quality and recency. Sites, therefore, have been ranked with regard to updating the appropriate information and will be systematically surveyed as financial and personnel resources permit.

Jenny Lind Island is a priority site for the following reasons:

- 1) There has been a significant increase in breeding Lesser Snow Geese on the Island during the last 20 years (Parmalee et al. 1967, Kuyt et al. 1971, R. Decker, DRR, pers. comm.).
- 2) Available information suggests that there is considerable suitable breeding habitat on the Island (Prest et al. 1966, Parmalee et al. 1967).

1.2 Objectives

The objectives of this study were:

- 1) to determine the distribution and abundance of Lesser Snow Geese on Jenny Lind Island;
- 2) to determine the distribution and abundance of Canada Geese on Jenny Lind Island;
- 3) to evaluate Jenny Lind Island as a key terrestrial habitat site; and
- 4) to record ancillary information on other wildlife of the area.

A reconnaissance of wildlife in the Ferguson Lake - Albert Edward Bay area of Victoria Island was also conducted (Appendix 2). All observations are included, for the record, in Appendix 3.

2.0 STUDY AREA

The study area is Jenny Lind Island in its entirety, situated southeast of Victoria Island at approximately 68°43'N, 101°58'W (Figure 1). This Island, bordered by Queen Maud Gulf to the south and Victoria Strait to the north, lies approximately midway between Victoria Island and the Nordenskiold Islands.

There is a Distant Early Warning (DEW) station with an airstrip, a road, and buildings on the southeastern portion of the Island.

Cambridge Bay, the nearest community, is 120 km to the northwest.

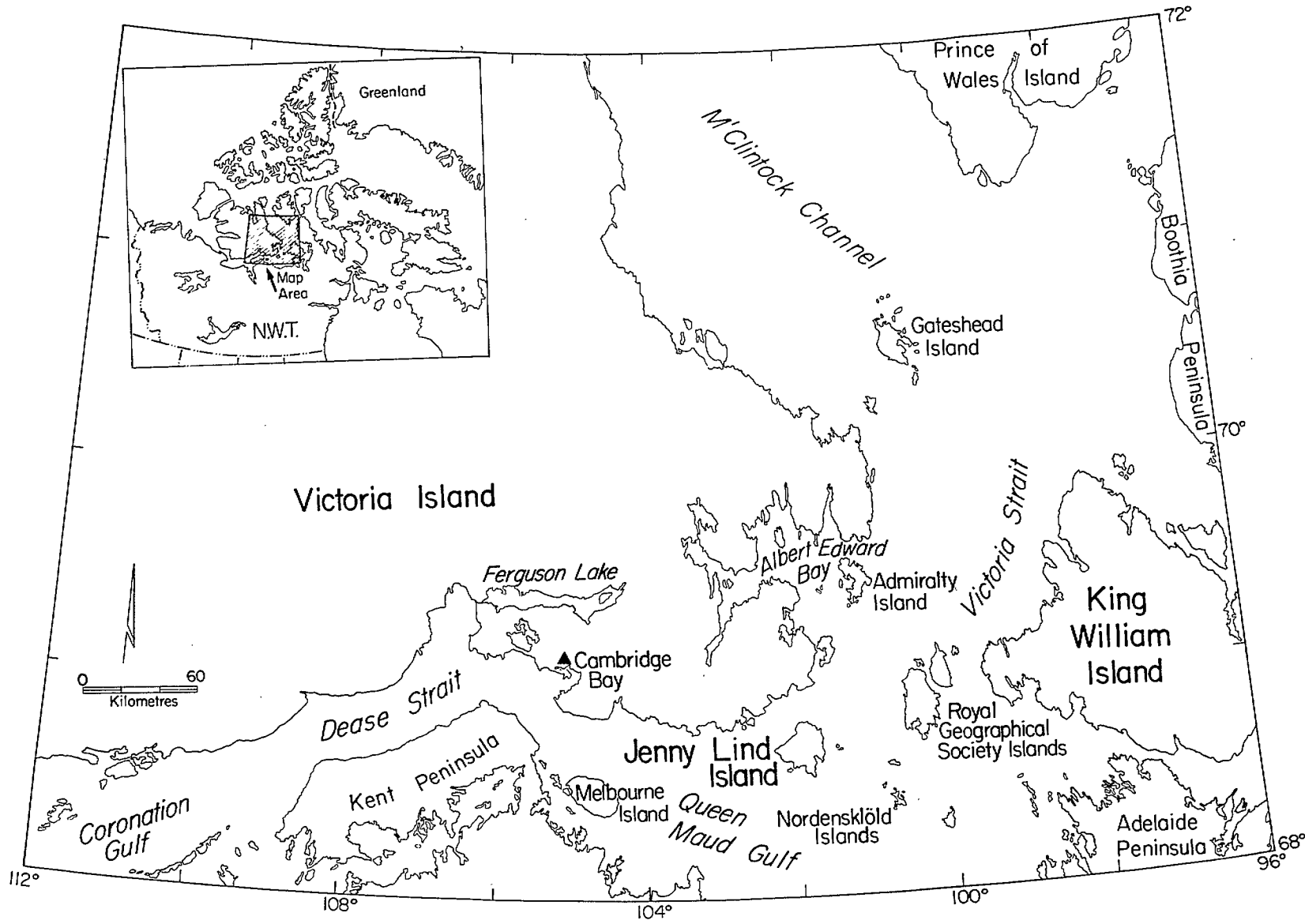


Figure 1. Location of the study area within Northwest Territories.

2.1 Physiography

Jenny Lind Island is within the Victoria Lowland Division of the Arctic Lowlands Physiographic Region (Bostock 1970). The Arctic Lowlands, formed on the flat-lying or nearly flat Paleozoic and late Proterozoic rocks lying adjacent to the Precambrian Shield, represent the northern continuation of the Interior Plains of the continental mainland. This Region was subject to complete marine inundation during the last glacial period (Prest et al. 1966).

The Island has minimal relief with the maximum elevation being less than 80 m.

It is low-undulating to flattish, with several rocky ridges having barren crests and scant vegetation. Most of the coastline is sandy with scattered rocks. Less than 32 kms (20 miles) across in any direction, Jenny Lind Island lies at the mercy of chilling winds that blow almost continuously across Queen Maud Gulf or down ice-choked Victoria Strait from the north (Parmalee et al. 1967).

2.2 Vegetation

Jenny Lind Island lies within the Low Arctic ecosystem (Polunin 1951). The vegetation of this area has not been intensively studied. As negligible ground field work was undertaken in this goose survey, detailed accounts of vegetation were not recorded.

Extensive areas of marshy tundra surround the numerous shallow lakes and ponds; and tundra meadows extend over low-sloping expanses. According to Parmalee et al. (1967), Jenny Lind Island's stunted vegetation is mute evidence of high arctic conditions that prevail there; and, "fewer types of habitats are to be found on Jenny Lind Island, but several habitats found there are extensive and favour birds".

3.0 METHODS

On 09 July 1985, Jenny Lind Island was surveyed in a Bell 206-B helicopter at approximately 30 m agl and 125 km/h. The pre-determined flight lines were delineated on 1:50,000 topographic maps such that north-south transects, spaced at two-kilometre intervals, were segmented into three-kilometre units to facilitate data collection (Figures 2 and 3). The 400-metre-wide survey route (200 metres on either side of the flight line) resulted in approximately 20 percent survey coverage of the Island. The outer margins of the transect were determined by means of visual "guides" which were taped on to the helicopter windows. The position of the guides was established by positioning the helicopter at flight height and equidistant between two reference points which were 400 metres apart. The navigator occupied the left front seat, whereas the two observers were in the rear seats.

All Lesser Snow Geese and Canada Geese within each transect were recorded. All information, including habitat observations, were recorded on magnetic tape and later transcribed onto summary forms.

The recording of the colour-phase ratio of Snow Geese was given secondary priority and other wildlife were noted as time permitted. The colour-phase ratio was determined by counting the number of white and blue phase individuals occurring in discrete flocks.

On 11 July 1985, an additional survey was conducted in the vicinity of Ferguson Lake and Albert Edward Bay (Appendices 2 and 3). As this was a reconnaissance survey, all wildlife within sight were recorded.

A sample of 24 moulting Canada Geese was collected and shipped to the University of Toronto for analyses of taxonomic features.

The estimated Lesser Snow Goose population was determined according to Kerbes (1975; P.46).

4.0 RESULTS

4.1 Lesser Snow Geese

4.1.1 Distribution and Abundance

A total of 10,837 Lesser Snow Geese were recorded. The tendency of geese to flock in the face of danger precluded the separation of breeding from non-breeding birds.

Being delayed by aircraft availability, the survey was conducted after the young had hatched and the birds had dispersed from their nest sites. Accordingly, geese were scattered over the entire Island, with the exception of the southeast portion which consisted of extensive sand and gravel with very limited vegetation (Figure 2).

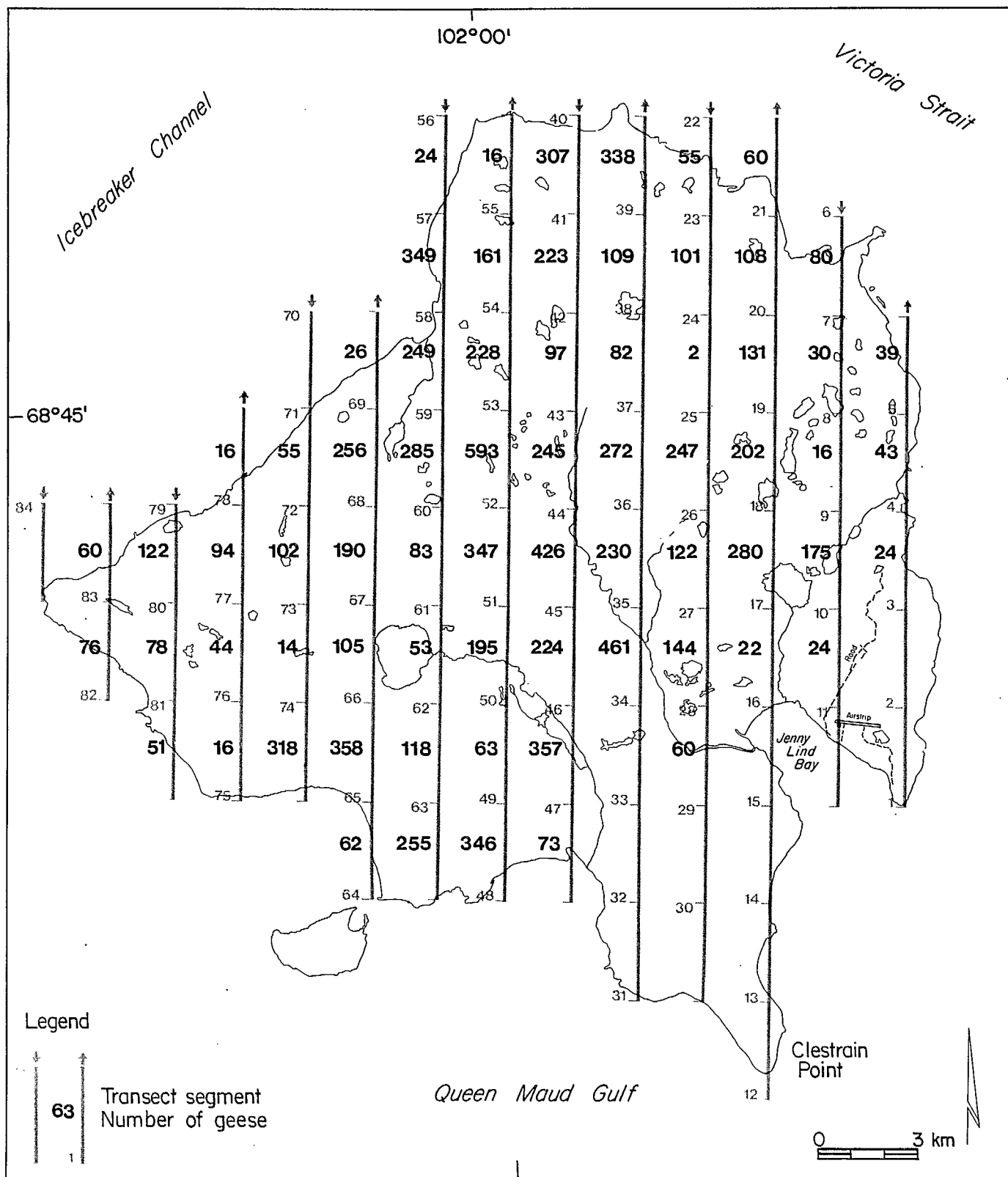


Figure 2. Distribution of Lesser Snow Geese on Jenny Lind Island, July 1985.

The main concentrations of birds occurred in the central, low-lying portions of the Island which had numerous wetlands and extensive adjacent sedge meadows.

4.1.2 Colour Phases

Of the 6,584 Snow Geese identified with respect to colour phases, 891 or approximately 13 percent were "blue phase" birds.

4.2 Canada Geese

4.2.1 Distribution and Abundance

The 323 Canada Geese observed during the survey, included 270 moulting, non-breeding birds and 53 actual or presumed to be breeding birds. Eight pairs accompanied broods; seven birds were incubating; and the remaining 30 birds were paired, suggesting that they also were attending a nest or young.

Breeding Canada Geese were sparsely scattered over much of the Island, particularly the low-lying areas (Figure 3). However, birds were not observed on the southeast portion and only a few were on the northern part of the Island. Moulting concentrations focussed on waterbodies, probably as escape habitat.

4.2.2 Taxonomy

Of 24 Canada Geese collected for taxonomic studies, 18 were identified as Branta canadensis hutchinsii (based on physical measurements) and six had features of both B. c. hutchinsii and B. c. parvipes. Protein electrophoresis tests indicated that these birds were most similar to B. c. hutchinsii (C. Van Wagner, Royal Ontario Museum, pers. comm.).

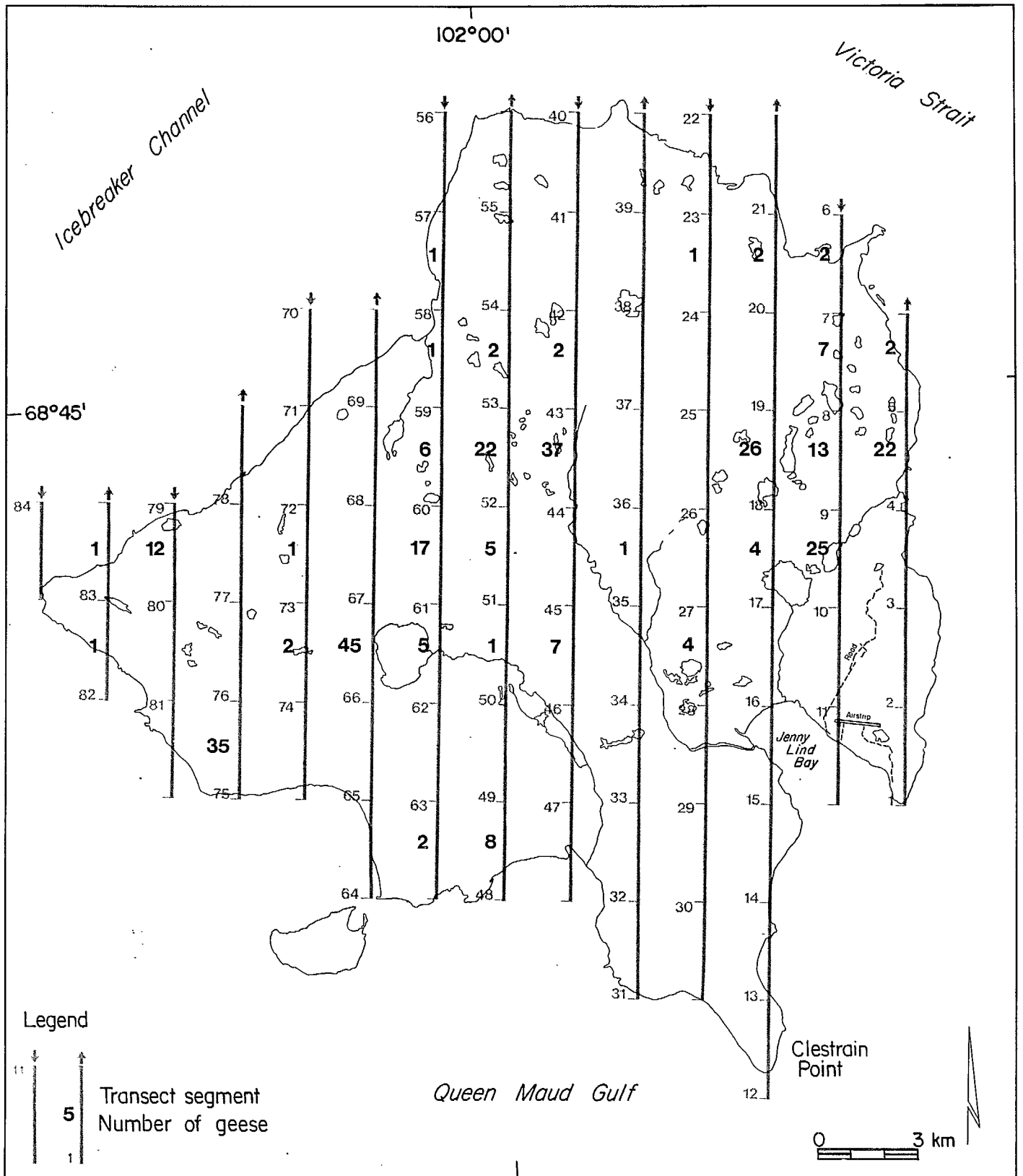


Figure 3. Distribution of Canada Geese on Jenny Lind Island, July 1985.

4.3 Ancillary Observations

4.3.1 Glaucous Gull

A Glaucous Gull colony was situated on the two sandspits on the northeast portion of the Island (Figure 4). Approximately 15 nests were on the southern spit and 4 nests were situated on the northern islet. Approximately 30 birds were in flight about the colony and additional birds were on nests.

Two more nests were located on the shore of a lake in unit 17 (Figure 4).

4.3.2 Muskoxen

A herd of Muskoxen observed in the vicinity of unit 49 (Figure 4) on 10 July consisted of one adult bull, three sub-adult bulls, and one adult cow with a calf. This is the first record indicating that Muskoxen may be breeding on Jenny Lind Island. The only recent record of Muskoxen was of an aged cow which died during the winter of 1984-85 in the vicinity of the DEW station (A. Gunn, DRR, pers. comm.).

5.0 DISCUSSION

5.1 Lesser Snow Geese

5.1.1 Distribution and Abundance

The historical Lesser Snow Goose populations on Jenny Lind Island are not well known.

Parmalee et al. (1967) visited the Island in 1962 and 1966, and based on extensive coverage of the eastern one-third of the Island, estimated a Snow Goose population of approximately 200 birds.

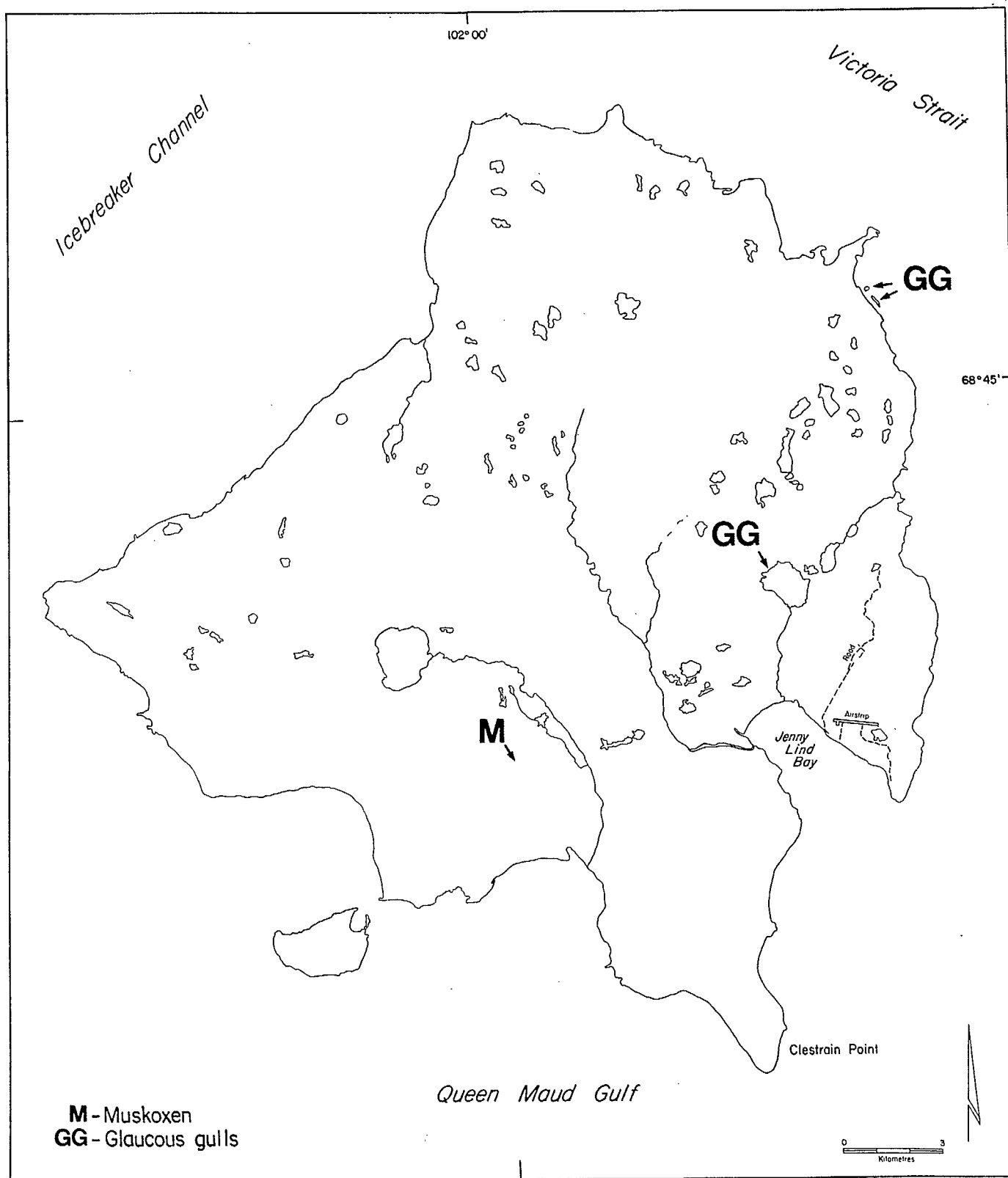


Figure 4. Location of ancillary wildlife observations on Jenny Lind Island, July 1985.

Kuyt et al. (1971) surveyed the Island on 05 August 1971, flying approximately 35 miles (58 km) of survey. The total Snow Goose population on the Island was not estimated, however 558 birds of both blue and white colour phases were observed.

R. Decker (DRR, pers. comm.) surveyed the Island on 13 July 1982, and estimated that 3,000-4,000 birds were present.

The current survey which covered about 20 percent of the Island indicated a total of 10,837 birds. The extrapolated total population on the Island is estimated at 54,000 birds (+17% at 95% confidence limits).

A tremendous increase in Snow Goose numbers has occurred during the last few years. If the apparent 12-15 fold increase occurred only as a result of resident colony growth, the birds must have experienced ideal breeding conditions over the last few years. It is likely that some immigration has occurred although there is no clear indication of the possible origin of the birds. The West Hudson Bay and Queen Maud Gulf colonies are the most likely sources (Dzubin 1979, Kerbes 1982).

A photographic inventory of the colony is required to accurately determine the number of resident Lesser Snow Geese. The colony should also be closely monitored to determine if the apparent rapid increase in numbers continues. If so, numbers may soon exceed the carrying capacity of the available habitat. The situation presents an ideal opportunity to study the response of a colony under such circumstances.

As a major concentration of Ross Geese occur in the Queen Maud Gulf Sanctuary (Kerbes et al. 1983) it is possible that some birds also breed on the Island. However, despite the extensive survey coverage no birds were observed. Clearly, ground surveys are required to confirm their presence or absence.

5.1.2 Colour Phases

Parmalee et al. (1967) determined the ratio of the blue colour phase in the small resident population in 1962. The ratio was 14-19 percent blue phase, whereas in 1966 it was estimated at 19 percent. The present sample of 6,584 birds yielded 13 percent blue phase birds. Aerial surveys may under-estimate the percentage of blue phase birds (particularly "blue-blue" pairs) for they are difficult to observe against the dull green-brown tundra. The apparent decline in blue-phase birds may not be an accurate reflection of the real situation, particularly in light of the small sample sizes of the 1960's.

5.2 Canada Geese

5.2.1 Distribution and Abundance

Parmalee et al. (1967) recorded 22 nests in 1962 and 33 nests in 1966, on surveys of only the eastern third of the Island. They considered the Island to be prime Canada Goose habitat for this latitude, although no moulting birds were recorded.

In 1971, Kuyt et al. (1971) counted 200 Canada geese on the Island, whereas R. Decker (DRR, pers. comm.) recorded 62 birds in 1982

A total of 323 Canada geese were recorded during this survey which covered about 20 percent of the Island. Accordingly, the extrapolated total population is 1,615 birds. A conservative estimate would be 1,500 birds. There appears to have also been a recent increase in numbers of Canada Geese on this Island.

5.3 Jenny Lind Island "Key Habitat Site"

Approximately 50,000 Lesser Snow Geese occur on Jenny Lind Island, representing over three percent of the total Canadian population of this species. Jenny Lind Island is, therefore, a "key terrestrial habitat site" of the Northwest Territories (McCormick et al. 1984).

6.0 RECOMMENDATIONS

It is recommended that:

- 1) a photographic inventory of the colony be undertaken to accurately determine the number of birds present on this Island;
- 2) a bi-annual population inventory of the colony be undertaken to chart the growth of the colony; and
- 3) a habitat monitoring study be initiated to evaluate the impact of the colony on the habitat.

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Appendix 1. Wildlife observations on Jenny Lind Island, July 1985.

Date: 09 July 1985
 Unit

No.	Species*										
	RTL	L	TS	SG	CG	E	GG	SAG	AT	OLD	PT
1											
2							25				
3			2	24							
4				43	22						3
5				39	2		30				
6				80	2						
7				30	7						
8				16	13						
9				175	25						
10				24							
11						25					
12								3	2		
13	4						1				
14											
15							1				
16				22							
17			4	280	4		2			2	
18			4	202	26						
19				131							
20			2	108	2						
21				60							
22				55							
23			5	101	1						
24				2							
25			1	247							
26				122							
27				144	4						
28	7		1	60							
29											
30											
31			2				40				
32											
33			6								
34				461							
35			2	230	1						
36			4	272							
37				82							
38				109							
39			2	388							
40				307							

Cont'd.

Appendix 1. Continued.

Date: 09 July 1985

Unit

Species*

No.	RTL	L	TS	SG	CG	E	GG	SAG	AT	OLD	PT
41				223							
42				97	2						
43				245	37						
44				426							
45				224	7			2			
46				357							
47				73							
48				346	8						
49				63							
50			2+3 ¹	195	1						
51				347	5						
52			1	593	22						
53				228	2						
54				161							
55				16							
56				24							
57				349	1						
58				249	1						
59				285	6						
60		2		83	17						
61				53	5						
62			2	118							
63				225	2		1				
64				62							
65		5		358							
66			2	105	45						
67				190							
68				256							
69				26							
70											
71				55							
72				102	1						
73				14	2						
74				318							
75				16	35						
76				44			1				
77				94							
78				16							
79				122	12						
80				78							

Cont'd.

Appendix 1. Continued.

Date: 09 July 1985

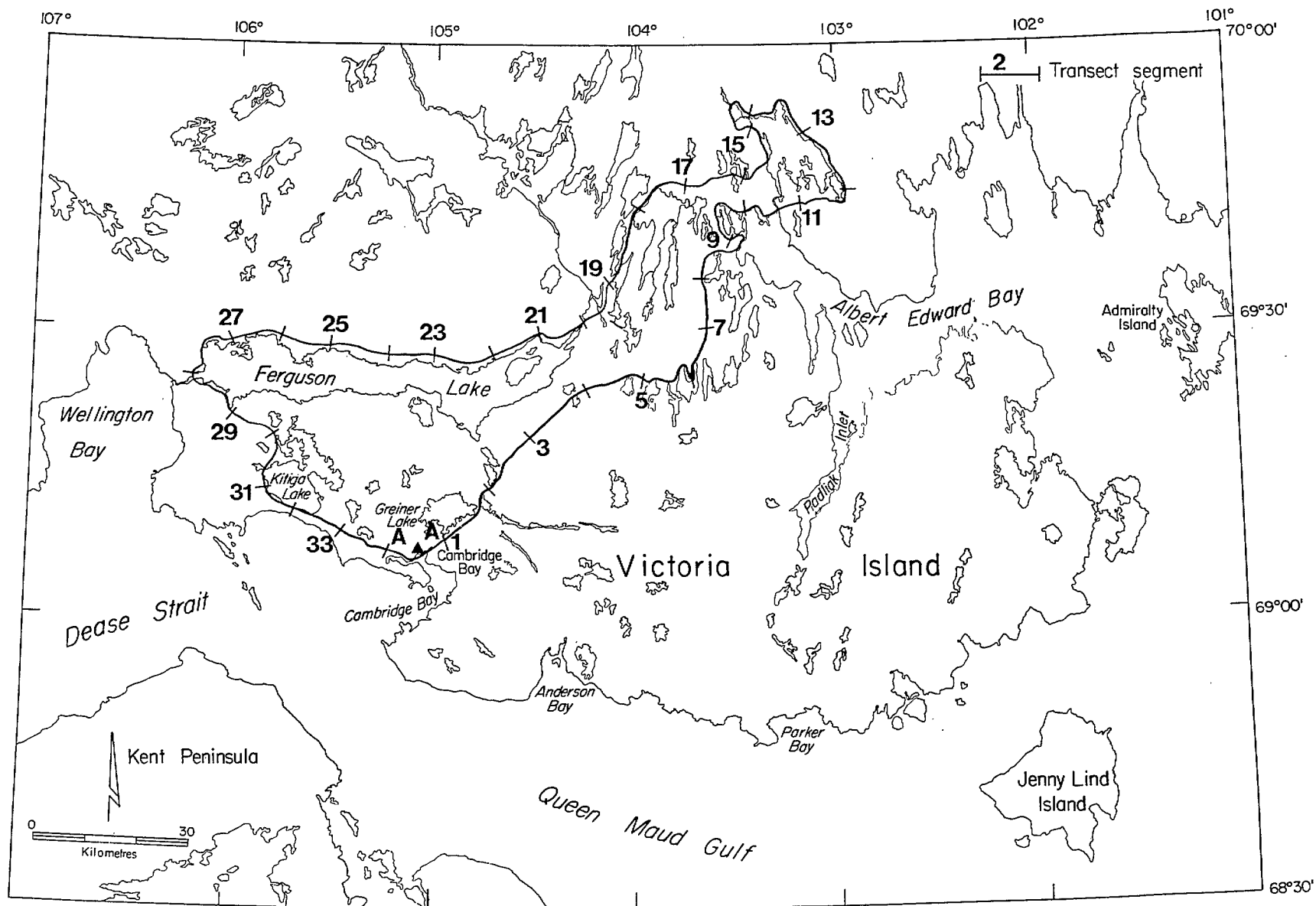
Unit

Species*

No.	RTL	L	TS	SG	CG	E	GG	SAG	AT	OLD	PT
81				51							
82				76		1					
83				60		2					

*Species observed during the survey were: red-throated loon (RTL), unidentified loon (L), tundra swan (TS), snow goose (SG), Canada goose (CG), unidentified eider (E), glaucous gull (GG), Sabine's gull (SG), arctic tern (AT), oldsquaw (OLD), ptarmigan (PT).

¹eggs



Appendix 2. Route of wildlife survey, Cambridge Bay area, July 1985.

Appendix 2. Wildlife observations, Cambridge Bay area, July 1985.

Date: 11 July 1985

Unit

Species*

No.	AL	TS	CG	WFG	SG	UDG	E	SC	SAG	SO	M	F
2									1 ¹			
3		2	10 ²									
			10 ²									
4		2										D
5		1									1	
7		2	3									
8		1 ³	20 ²			2+3						
			20 ²		2				2			
9											3+2	
											6+2	
10		2									2	
		2									1	
		2										
11											1	
12			2+2								1	
			+40 ²									
			12 ²									
13		2	30			15				6	1	
		2	2			20						
14	1	1 ³										
		2	+85 ²									
15			50							1		
			+18									
16		2+2	6 ²			6					7+1	
			20			4					15	
											7+1	
18				20								
20		2									2	
21		2									1	
		2									9+4	
		2	12 ²									1
22		4	8							1		
23		2+2	9							4		
										1		
										1		
24		2	20							8+1		
		1	10							2		

Cont'd.

Appendix 2. Continued.

Date: 11 July 1985.

Unit	Species*												
	No.	AL	TS	CG	WFG	SG	UDG	E	SC	SAG	SO	M	F
25							20						15+3
											10		
											1		
													12+2
26		1									8+2		
		2									5+1		
											1		
											1		
											3		
											6+2		
27			8				12						
28		1											
29			+20					40	1				
			+30 ²										
30		2					20						
		2											
33		15											

*Species observed during the survey were: arctic loon (AL), tundra swan (TS), Canada goose (CG), white-fronted goose (WFG), unidentified dark goose (UDG), snow goose (SG), unidentified eider (E), glaucous gull (GS), Sabine's gull (SG), arctic tern (AT), oldsquaw (OLD).

¹Potential colony

²Moulting

³On nest

"+n" Number of young

D - Den

Y - Young

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