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Tener, J.S. & Solman, V.E.F.
Aerial survey of Baffin Island caribou,
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92 map.

1. Caribou - Surveys - Baffin Island.
1 Title.

Aerial Survey of Baffin Island Caribou
March 16-22, 1960.
J.S. Tener and V.E.F. Solman

Introduction

Prior to that of the survey just completed, the caribou on Baffin Island, N.W.T. were the subject of two aerial surveys. In 1949, Mr. J.F. Kelsall estimated that between 4,500 and 6,500 caribou were on the Island and in 1954 Mr. A.G. Loughrey estimated the population to be between 8,000 and 10,000. In recent years several R.C.M. Police establishments on the Island have reported increasing numbers of the animals. A reassessment of caribou numbers was desirable to determine the trend in the population since 1954 and to see if the reported hunter kills, given in Table II, were consistent with sound wildlife management practices.

Objective

The recent survey was designed to sample about ten per cent of possible caribou winter range on Baffin Island, so that a total population estimate could be obtained for the Island. Attempts were made to obtain yearling counts as well, as a measure of the productivity of the species.

Action

We arrived in Probysher Bay March 15. Between March 16 and March 21 survey flights over the southern half

of the Island were carried out in an Otter aircraft at an altitude of about 1,000 feet above ground level and at an airspeed of 115 m.p.h. On March 22 a special flight was carried out in the area between Amadjuak and Nettilling Lakes to get two sets of data, yearling counts and a population estimate of the caribou occupying the area. A DC-3 aircraft was used March 24 and 25 to fly transects over the northern half of Baffin Island. The altitude was the same but the airspeed was 140 m.p.h. Wheeler Air Lines Ltd. provided the aircraft.

Visibility generally was good except for the north end of the Island near the Gifford River, on March 24 and 25th and for a westward flight on March 20.

Results

The flight routes are marked on the map, Figure 1, and the miles flown over these routes are given in Table 1 along with figures on caribou observations and calculated densities. About an eight per cent coverage of possible caribou range was achieved.

With the exception of two concentrations, caribou were widely and sparsely distributed. Many areas such as the Great Plain of the Koukdjuak and along the edge of the Barnes

Ice Cap, revealed no tracks or caribou. Other regions revealed very few indications of caribou, only the occasional animal or track being recorded. In still other areas tracks were relatively frequent but no animals were observed. Two concentrations were found, however, one due east of Inuktorfik Lake at $71^{\circ}05'$ N., $78^{\circ}31'$ W., containing an estimated 555 individuals, and one in the area immediately southeast of Nettilling Lake. A population estimate based on the March 22nd flight over the latter area could not be attempted because the survey routes were uncertain.

On the basis of 3016 square miles of surveying, in which 605 caribou were observed, plus the population estimates of the Inuktorfik Lake herds, the total caribou population on Baffin Island is estimated to be about 7725 caribou (Table I). It is interesting to note that over 63 per cent of all caribou observed were in small, widely scattered groups containing between one and 19 individuals, with 39 per cent containing seven or fewer. The two concentrations were composed of small groups of animals also. The graph, Figure 2, reveals that sizes of herds were similar in the concentrations and in widely scattered groups.

Yearling Counts

Counts of yearlings were obtained during flights in the Otter aircraft on March 18, 19 and 22. As stated earlier, one of the objectives of the March 22 flight was to determine the proportion of yearlings in the herds occupying a large area between Amadjuak and Nottilling Lakes. Because the transects covered the same area as that surveyed on the 18th and 19th, the March 22nd data have been kept separate for comparative purposes. In all, 351 caribou were segregated on the 18th and 19th, of which 45, or 14.7 per cent, were yearlings. The March 22 flight revealed that 39 of 267 caribou, 17.1 per cent, were yearlings, a figure reasonably close to that of the earlier flights.

No yearling counts were obtained from the DC-3 aircraft. Its higher ground speed made identification of yearlings uncertain.

Eskimo Hunting Returns

Records of the R.C.M. Police detachments on Baffin Island have been examined to obtain annual kills of caribou at Eskimo settlements. Kelsall (1949) has summarized the reported kills for the years 1932-33 to 1947-48. Subsequent to his report the curtailing of kills resulted in little factual infor-

mation until 1955-56. The data recorded for the various posts between 1955-56 and 1958-59 are given in Table II. It can be seen that the heaviest kills have been made by Eskimos from Pangnirtung and Cape Dorset, followed by Igloodik, Frobisher Bay and Pond Inlet Eskimos.

Discussion

Studies of the behaviour of caribou on the western Arctic mainland have revealed that when a population of the species has been drastically reduced in numbers, it no longer moves in large herds along past migration routes, but tends to remain in small, widely scattered herds which do not show a mass migrating pattern. Historical records of Baffin Island reveal large numbers of caribou which undertook definite migrations, a marked contrast with most of the caribou on the Island today. Migrations do occur but apart from the herds near Nettilling Lake and perhaps those near Inuktorfik Lake, very small, isolated herds are involved.

In view of reports in recent years of greater numbers of animals being observed, the population estimate derived from the present survey is disappointing. In spite of the fact that the survey flights were planned on the basis of the latest available information, it is quite possible that

important segments of the caribou population were missed in those areas not surveyed. In particular, the hilly country along the eastern half of the Island between Home Bay and Eclipse Sound may support numbers of caribou. The northern half of Foze Peninsula also may contain the animals.

On the basis of the survey carried out, however, the total kill reported in recent years must be viewed with alarm. The 1958-59 kill of 1405 caribou constitutes 18.2 per cent of the estimated current total population. It exceeds the crop of yearlings by at least one per cent. When mortality of caribou from other sources such as predation and accidents, estimated on the western Arctic mainland as five per cent of the population, is added to the human kill, it is evident that total mortality of the Baffin Island caribou exceeds the annual increment. The consequences of such a situation have been only too well demonstrated by the continental barren-ground caribou population. It is not surprising to read that the R.C.M. Police constable at Cape Christian noted with alarm that "caribou had virtually disappeared" from his area during the winter of 1958-59.

Conclusions

The total population of caribou on Eaffin Island was calculated to be 7725. That figure is tentative and subject to change as more data become available.

The proportion of yearlings in the population occupying the winter range south and east of Nettilling Lake was between 14.7 and 17.1 per cent.

The total kill of caribou in 1958-59 was 18.2 per cent of the current population. It is probable that losses from human kill and other forms of mortality exceed yearling increment by at least six per cent.

Recommendations

1. The human kill must be reduced to not more than 10 per cent of the population, or about 750 caribou, if our figures are correct. Pangnirtung, Frobisher Bay, Cape Dorset and Igloolik Eskimos particularly should be encouraged to reduce their kills.
2. Another survey of Eaffin Island caribou should be carried out next year, with emphasis on the areas found to be productive this year, and on areas not yet surveyed.

Table I

Tabulated Results of 1960 Baffin Island Caribou Survey

<u>Date</u> <u>1960</u>	<u>Survey</u> <u>Mileage Flown</u>	<u>Area</u> <u>Observed</u>	<u>Caribou</u> <u>Observed</u>	<u>Caribou</u> <u>per mi.²</u>	<u>Total Area</u> <u>in mi.²</u>	<u>Calculated</u> <u>Popn.</u>
March						
16	304	600	0	0		
18	523	1056	250	.237		
19	803	1616	244	.151		
20	96	192	0	0		
20	264	523	20	.033		
21	600	1200	15	.002		
24	712	1424	51	.036		
25	696	1392	25	.018		
Total	4008	8016	605	.075	95,600	7170
Inuktorfik Lake						
March 25	13	26	150	6.1	91	555
Grand Total						7725

PRELIMINARY DATA
NOT FOR PUBLICATION

Table II

Hunter Kills of Caribou at Certain Baffin Island Communities,
1955-56 to 1958-59

	<u>1955-56</u> "Feb"	<u>1956-57</u> 100	<u>1957-58</u> 200	<u>1958-59</u> 160
Probishor Bay				
Cape Dorset	53 (incl. Lake H.)	180	400	350
Lake Harbour	53 (incl. C. Dorset)	25	26	26
Pangnirtung	378	500	500	500
Padloping			7	
Cape Christian	162	100	200	25
Pond Inlet	47	125	185	124
Arctic Bay	57	54	25	50
Igloolik	<u>c. 110</u>	<u>c. 100</u>	<u>c. 100</u>	<u>c. 170</u>
Total	860	1189	1653	1405

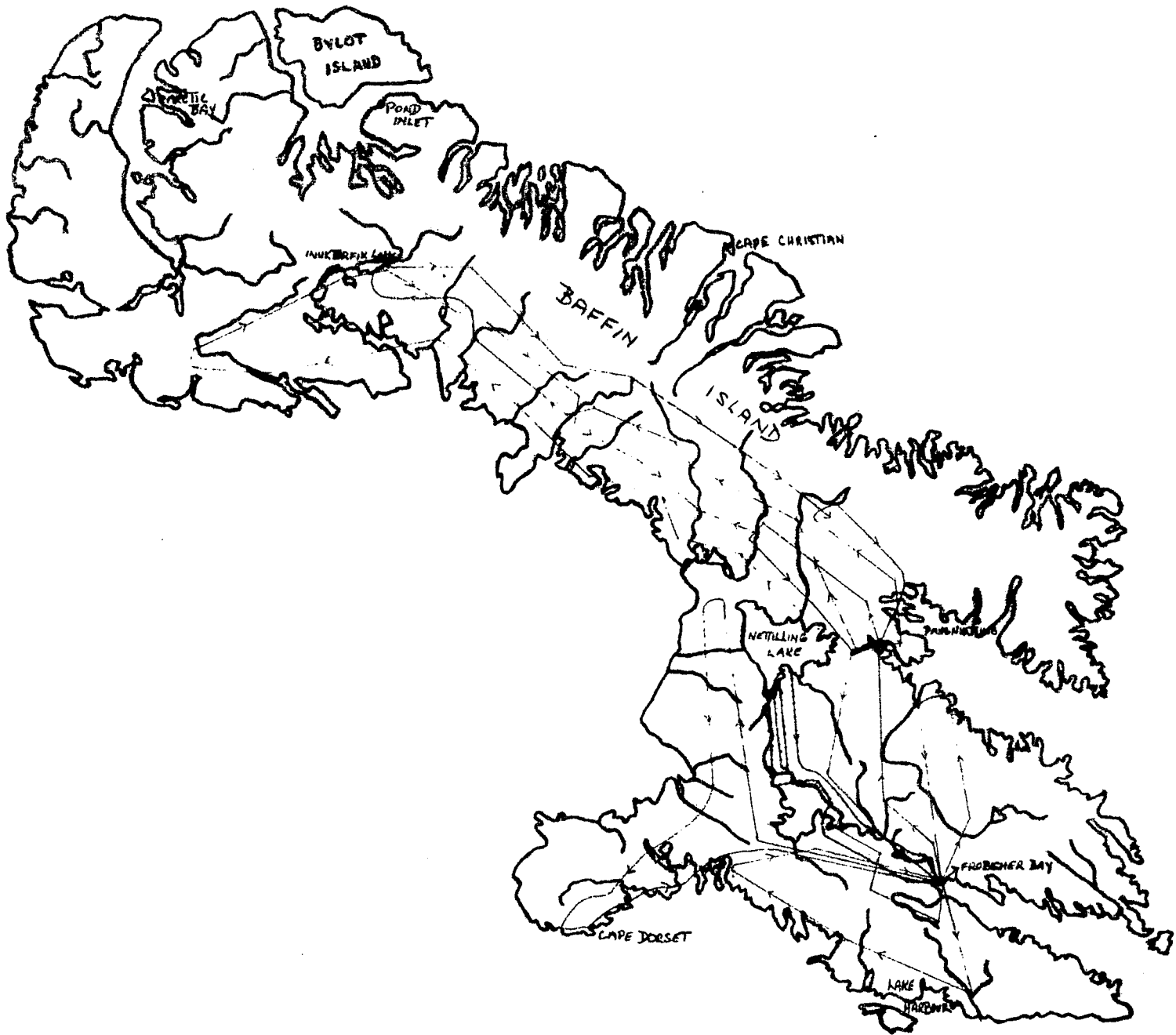


FIGURE 1
 SURVEY FLIGHT LINES
 BAFFIN ISLAND N.W.T.
 MARCH 16 TO 25,
 1960

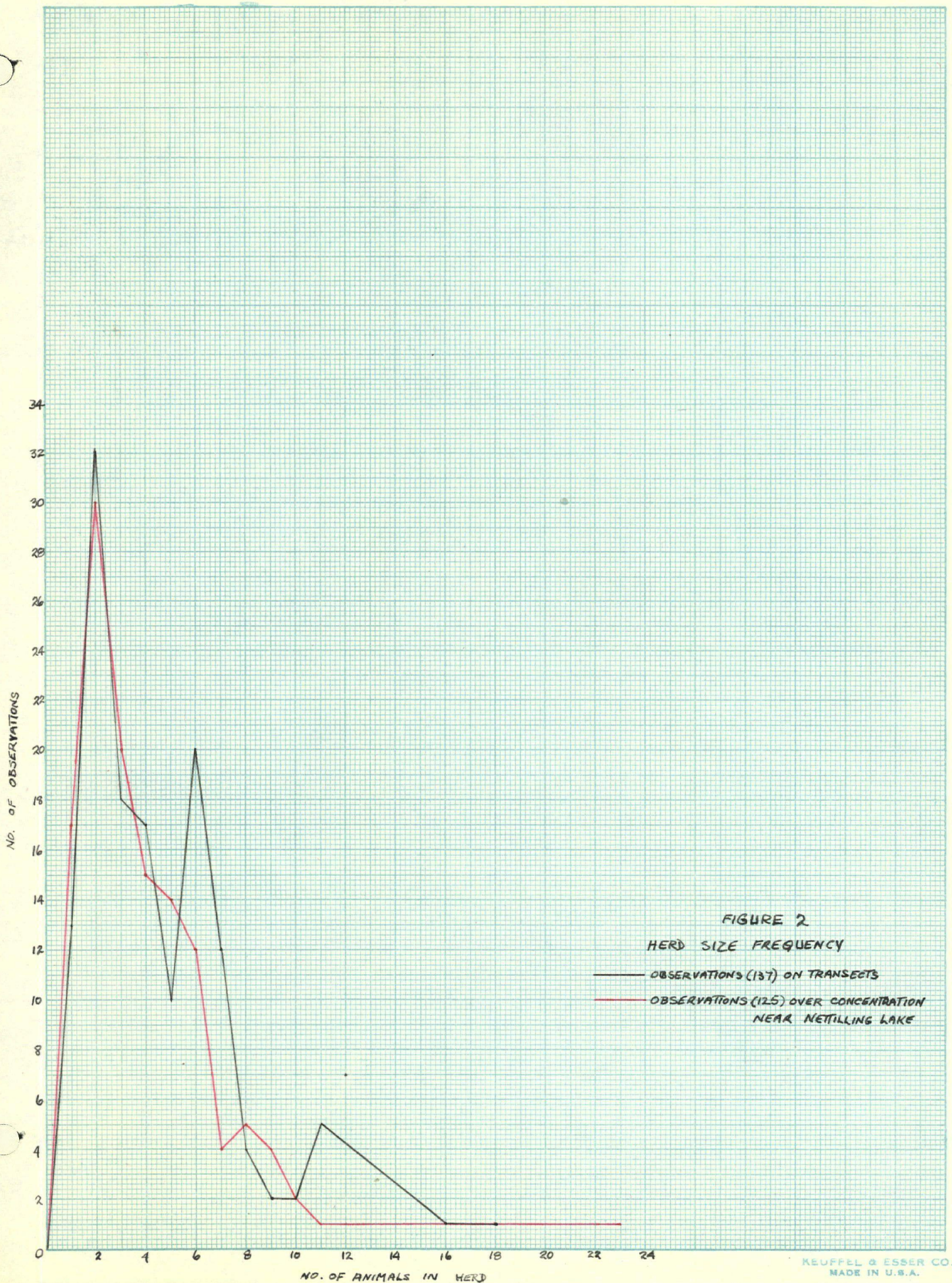


FIGURE 2
HERD SIZE FREQUENCY

— OBSERVATIONS (137) ON TRANSECTS
— OBSERVATIONS (125) OVER CONCENTRATION
NEAR NETILLING LAKE

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